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From the Chief Editor,

International Journal of Curriculum and Instructional Studies (IJOCIS) proudly presents the first issue of this year. The June 2026 issue includes diverse articles in terms of their research problems, methodologies, and conceptual focuses. The articles focus on teachers' instructional planning, perceptions of curriculum, teaching in different school settings, textbooks, curriculum implementation, curriculum transformation, 21st century skills in curriculum, needs assessment, curriculum awareness, and comparative analyses of curriculum in different countries.

Conventional research articles usually establish the bulk of the articles published in our journal but we also welcome SLR articles that analyze research studies through a relevant theoretical framework and an established SLR methodology to contribute to our critical and meta-level understanding of the knowledge claims in a specific research context. Theoretical/conceptual articles that have the potential for offering new concepts, theoretical arguments, and models are also welcomed.

Our Editorial Team now consists of nine editors. Assoc. Prof. Sibel Akin Sabuncu has recently joined the team. She has also been one of the international editors of Teachers College Record, and her experience will be valuable to the editorial work of IJOCIS. In addition, new members have also joined the language and production editor teams: Asst. Prof. Duygu İleritürk and Ahmet Girgin as English language editor, and Abdülkadir Palancı, Hatice Hanım Erol and Muhammed Faruk Erdoğan as production editor. The full list of our editors can be found in this issue.

As I indicated in presenting the December 2025 issue, we have simplified the submission process for the authors and shortened the manuscript review and publication process considerably thanks to standardization of the editorial and peer review processes. It is our goal that all the submissions receive a timely and quality assessment. With this, once again, I invite all researchers in the field of Curriculum and Instruction to submit their research studies and conceptual discussion articles to IJOCIS.

I would like to congratulate all the authors who contributed to this issue, and thank the reviewers who spent their valuable time to assess and improve submissions, the Editorial Team for their devoted time and effort to lead the manuscript review processes, and the language and production team for finalizing the manuscripts for this issue. Together, we help disseminate new knowledge, develop new perspectives, and equip our readers to understand and influence the world around them through scientific research. We will continue to work with researchers and the IJOCIS Team collectively to publish further high-quality scientific research in the field of Curriculum and Instruction.

With my best regards,

Prof. Dr. Ali YILDIRIM (University of Gothenburg)

Editor in Chief

Baş Editörden

Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi (IJOCIS) 2026'daki ilk sayısını okurlarına sunmanın gururunu yaşamaktadır. Haziran sayısı, araştırma problemleri, yöntemleri ve kavramsal odakları açısından çeşitli makaleler içermektedir. Makaleler; öğretmenlerin öğretim planlaması, eğitim programları algıları, farklı okul ortamlarında öğretim, ders kitapları, eğitim programlarının farkındalığı, dönüşümü ve uygulanması, eğitim programlarında 21. yüzyıl becerileri, ihtiyaç analizi ve farklı ülkelerdeki eğitim programlarının karşılaştırmalı analizine odaklanmaktadır.

Geleneksel araştırma makaleleri dergimizde yayımlanan makalelerin çoğunluğunu oluşturmaktadır. Bununla birlikte, geçerli bir kuramsal yapı ve alanyazında kabul edilen bir analiz yöntemi çerçevesinde yapılan sistematik araştırma analizi çalışmalarına da dergimizde yer vermekteyiz. Böylece temel araştırmalar ve sistematik analizler yoluyla alandaki bilgi birikiminin farklı düzeylerde okuyucularımızla buluşmasını hedeflemekteyiz. Dergi sayfamızda da belirtildiği gibi yeni kavramlar, kuramsal tartışmalar ve modeller orata koyan kuramsal/kavramsal makaleler de dergimizde yer almaktadır.

Editör ekibimiz şu anda dokuz editörden oluşmaktadır. TED Üniversitesi'nden Doç. Dr. Sibel Akın Sabuncu yakın zamanda ekibe katılmıştır. Kendisi aynı zamanda Teachers College Record dergisinin uluslararası editörüdür ve bu deneyimi ile IJOCIS'e önemli katkılarda bulunacaktır. Ayrıca Asst. Prof. Duygu İleritürk ve Ahmet Girgin dil editörü ve Abdülkadir Palancı, Hatice Hanım Erol ve Muhammed Faruk Erdoğan dizgi editörü olarak Dergi ekibine katılmıştır. Editörlerimizin tam listesi bu sayıda yer almaktadır.

Aralık 2025 sayısını sunarken belirttiğim gibi, makale yükleme sürecini basitleştirdik ve başvuruların incelenmesi ve hakem değerlendirme süreçlerini önemli ölçüde kısalttık. Amacımız, tüm başvuruların zamanında ve nitelikli bir biçimde değerlendirilmesidir. Bu kapsamda Eğitim Programları ve Öğretim alanındaki tüm araştırmacıları, makalelerini IJOCIS'e göndermeye davet ediyorum.

Bu sayıya katkıda bulunan tüm yazarları tebrik ediyor; makaleleri değerlendirmek için değerli zamanlarını ayıran hakemlerimize, makale değerlendirme ve niteliği güvence altına alma sürecinde önemli zaman ve çaba harcayan Editör Ekibine, Dil ve Üretim Editörlerine bir kez daha teşekkür etmek istiyorum. Amacımız hep birlikte, bilimsel bilginin paylaşılmasına, yeni bakış açıları geliştirilmesine ve okuyucularımızın bilimsel araştırmalar yoluyla alandaki konuları daha iyi anlamalarına ve uygulamaya aktarmalarına katkıda bulunmaktır. Bu süreç gelecek sayılarımızda da artan nitelikte devam edecektir.

Saygılarımla,

Prof. Dr. Ali YILDIRIM (Göteborg Üniversitesi)

Baş Editör

Teachers' Instructional Planning as a Cognitive and Deliberative Practice: A Systematic Review of Research (2005–2025)

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Abstract

Instructional planning is a central but theoretically dispersed domain of teacher education research. This systematic review synthesizes empirical evidence on instructional planning published between 2005 and 2025, examining the field through the dual lens of teacher cognition and curriculum deliberation. Guided by the PRISMA 2020 statement and a theory-driven design, the review addresses three research questions concerning theoretical traditions, methodological approaches, and knowledge claims characterizing the field. 43 empirical studies were identified across five electronic databases following a staged screening process applied to 987 initially retrieved records. Each included study was coded against the seven constructs of the Teacher Thinking–Instructional Planning (TTIP) Framework. The findings point to three key patterns. First, the field is organized around a strong but relatively narrow cognition-and-decision core, with instructional decision-making (67.4%) and pedagogical reasoning (58.1%) dominating empirical attention. Second, motivational and deliberative dimensions receive limited attention, with motivational orientations (23.3%) and teacher beliefs as a primary focus (4.7%) appearing in relatively few studies. Third, the literature is largely descriptive, with 74.5% of studies producing descriptive or explanatory claims and fewer offering developmental or evaluative evidence. The evidence reviewed here positions instructional planning as a cognitively demanding, deliberative, and contextually shaped professional practice. It cannot be reduced to procedural skill. The TTIP Framework is proposed as an integrated conceptual platform for building more cumulative and explanatory research.

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Introduction

Instructional planning is widely regarded as one of the most central professional activities in teaching. The decisions teachers make about what to teach, how to organize content, and how to respond to students extend beyond technical considerations; they involve complex forms of professional reasoning shaped by knowledge, beliefs, contextual conditions, and interpretations of curriculum expectations (Clark & Peterson, 1986; Shulman, 1987).

Over time, the literature on instructional planning has developed along several interconnected theoretical lines. One strand has focused on teacher cognition, examining how teachers' knowledge, beliefs, and thinking inform planning practices (Borg, 2003). Another has emphasized pedagogical reasoning and teacher knowledge, particularly the role of pedagogical content knowledge in shaping instructional design (Shulman, 1986, 1987). A third line of work, grounded in curriculum deliberation, conceptualizes planning as a process of practical reasoning through which teachers interpret and actively rework curriculum rather than simply implement it (Ben-Peretz, 1990; Schwab, 1969). More recent research has also foregrounded teacher agency and sense-making, highlighting how motivational orientations and contextual conditions shape both the process and quality of planning (Priestley et al., 2015).

Empirical research on instructional planning has expanded considerably over the past two decades. Studies have examined how teachers plan across different contexts, how preservice teachers develop planning competence, and how planning relates to professional beliefs, motivational orientations, and self-efficacy (Karlström & Hamza, 2021; Kohler et al., 2008; Şahin-Taşkın, 2017). In parallel, a growing body of work has examined how contextual factors, such as curriculum policies, institutional expectations, and subject-specific pedagogical demands, shape teachers' planning practices and agency (Bieda et al., 2020; Yıldırım, 2003). Despite this expansion, however, the field continues to exhibit both conceptual and methodological fragmentation.

Three gaps remain in the instructional planning literature. First, the cognitive and deliberative processes involved in instructional planning are rarely examined together. Studies often focus on single constructs, such as decision-making, beliefs, or agency, which leaves the relational structure of planning insufficiently explained. As a result, existing research shows how individual dimensions operate but offers limited insight into their interaction within the broader planning process. Second, although curriculum deliberation has long emphasized teachers' practical reasoning with curriculum materials (Schwab, 1969; Walker, 1971), this dimension remains less visible in empirical research. Constructs such as sense-making, platform orientations, curriculum potential, and teacher agency are rarely examined as primary analytical focuses. Third, motivational orientations and teacher agency remain less developed in empirical research, particularly in centralized curriculum contexts such as Turkey (Yıldırım, 2003), where structural conditions may restrict agentive planning even among professionally competent teachers.

Overall, these gaps point to a broader limitation. Despite substantial empirical growth, the literature still lacks an integrated account of instructional planning as a form of professional practice that is both cognitive and deliberative. Such an account is needed to explain how teachers think and decide, as well as how contextual and motivational conditions shape planning.

The present study addresses this gap through a PRISMA-based systematic review of empirical research published between 2005 and 2025. This period was chosen because it brings together three influential lines of scholarship: Borg's (2003) teacher cognition synthesis, Remillard's (2005) curriculum enactment review, and Priestley et al.'s (2015) ecological agency framework. The review synthesizes 43 empirical studies through the dual lens of teacher cognition and curriculum deliberation, organized by the seven-construct Teacher Thinking–Instructional Planning (TTIP) Framework: mental processes in teaching, instructional decision-making, pedagogical reasoning, teacher beliefs, motivational orientations, teacher agency, and sense-making. The review is guided by the following research questions:

RQ1: What theoretical perspectives underpin empirical research on instructional planning?

RQ2: What methodological approaches characterize empirical research on instructional planning?

RQ3: What knowledge claims does the empirical research reveal about teachers' cognitive and deliberative processes in instructional planning?

This study makes three interrelated contributions. First, it offers a theoretically integrated account of instructional planning by synthesizing teacher cognition and curriculum deliberation traditions within the TTIP Framework, moving beyond single-construct approaches. Second, it provides a theory-driven systematic mapping showing not only what has been studied but how constructs have been distributed and combined across the field. Third, it identifies important gaps in the literature, particularly the limited attention given to motivational orientations and teacher beliefs. These gaps point to a research agenda that examines instructional planning as a professional practice shaped by teachers' cognition, curriculum interpretation, motivation, and working conditions.

Theoretical Framework

Instructional planning does not take place in a cognitive vacuum. The decisions teachers make before entering the classroom are shaped by professional knowledge, interpretive frameworks, and normative commitments about how curriculum should be enacted. Understanding instructional planning therefore requires a framework that accounts for both the internal cognitive work teachers perform and the deliberative processes through which they interpret and engage with the curriculum. The present review draws on two complementary traditions: teacher cognition (Borg, 2003) and curriculum deliberation (Ben-Peretz, 1990; Remillard, 2005; Schwab, 1969; Walker, 1971).

The teacher cognition framework rests on the proposition that teaching is fundamentally a cognitive activity. Borg (2003) defines teacher cognition as the underlying cognitive dimension of teaching; what teachers know, believe, and think. This definition highlights that knowledge, beliefs, and thought operate as an interdependent system mediating between curriculum intention and classroom enactment. Within this framework, instructional planning occupies a key position. It is the point at which professional cognition becomes most visible, before it is shaped by the interactive demands of live instruction (Clark & Peterson, 1986; McCutcheon, 1980). Expert planners tend to organize their thinking hierarchically around learning goals and are better able to anticipate student errors than novice planners. This difference reflects deeper

knowledge and belief structures that teacher education needs to address (Borko & Livingston, 1989; Westerman, 1991).

Within the teacher cognition tradition, teacher beliefs play a central role in shaping the planning process (Fives & Buehl, 2012; Pajares, 1992). They influence how curriculum materials are interpreted, so that the same textbook chapter can lead to different instructional approaches depending on teachers' professional commitments. They also guide decisions toward approaches that are familiar or supported by prior experience. This helps explain why teacher education that attends only to procedural skills is likely to have limited impact if underlying belief systems remain unchanged (Pajares, 1992).

The curriculum deliberation tradition offers a complementary perspective by foregrounding the practical reasoning through which teachers navigate the relationship between curriculum prescription and classroom action. Schwab (1969) argued that curriculum questions are inherently practical and cannot be resolved through theory alone; they require deliberation, where alternatives are weighed and context-specific judgments are made. Walker (1971) described this process through three elements: a platform (values and assumptions), a deliberation phase (examining alternatives), and a design phase (producing decisions). Instructional planning can be understood as the teacher's enactment of all three: beliefs shape what is considered, deliberation shapes how options are evaluated, and the lesson plan represents the final design.

Ben-Peretz (1990) extended this framework by introducing the concept of curriculum potential, which refers to the range of possibilities for action that a curriculum document affords to a professionally engaged teacher, thereby positioning the teacher not as a curriculum deliverer but as a curriculum author. Remillard (2005) further developed this analysis by identifying empirically observable modes of teacher-curriculum engagement, including following and adapting, drawing on and connecting, interpreting and constructing, and creating and building. These modes make visible how teachers' professional knowledge, beliefs, and institutional contexts shape their work with curriculum materials. Priestley et al. (2015) later reconceptualized teacher agency as an ecological achievement, emerging through the interaction of professional dispositions with structural, cultural, and material conditions. In centralized curriculum systems such as Turkey, this perspective helps explain why compliance-oriented planning can persist even among teachers with well-developed professional knowledge (Yıldırım, 2003).

Although these traditions offer complementary insights into instructional planning, they have largely developed separately. Curriculum deliberation emphasizes practical reasoning, teacher interpretation, and curriculum authorship, while teacher cognition focuses on the internal processes through which teachers think, decide, and plan. Together, they have broadened understandings of instructional planning, but less is known about how these dimensions interact in practice.

Neither tradition, on its own, fully explains instructional planning as a professional practice. The teacher cognition tradition offers strong accounts of how teachers use knowledge, beliefs, and decision-making in planning, but gives less attention to the conditions that shape how these processes are used in practice. The curriculum deliberation tradition, by contrast,

emphasizes practical reasoning, curriculum authorship, and teacher–curriculum relations, but says less about the cognitive processes involved in deliberation. For this reason, existing frameworks remain limited in different ways. For example, König et al.’s (2021) CODE-PLAN model provides a detailed account of planning cognition, while motivational and agentic dimensions remain comparatively underdeveloped. Remillard’s (2005) curriculum enactment typologies capture contextual variation but offer limited insight into the internal structure of planning. These limitations show that instructional planning cannot be fully understood through cognition or deliberation alone.

To address these limitations, this study proposes the Teachers’ Instructional Planning as a Cognitive and Deliberative Practice (TTIP) Framework. The framework views instructional planning as a professional practice shaped by the interaction of cognitive, motivational, deliberative, and agentic dimensions. By drawing on teacher cognition and curriculum deliberation traditions, it offers a structure for examining planning beyond cognitive processes or contextual deliberation alone. Table 1 presents the seven constructs included in the framework.

Table 1

Seven Constructs of the TTIP Framework at the Intersection of Teacher Cognition and Curriculum Deliberation

<i>Construct</i>	<i>Teacher cognition perspective</i>	<i>Curriculum deliberation perspective</i>
Mental processes	Planning as cognitive rehearsal and anticipation (Clark & Peterson, 1986; Yinger, 1980)	Practical reasoning about possible instructional actions (Schwab, 1969)
Instructional decision-making	Judgments shaped by knowledge and experience (Shavelson & Stern, 1981)	Context-sensitive choices among alternative interpretations (Walker, 1971)
Pedagogical reasoning	Transforming subject knowledge into teachable forms (Shulman, 1986, 1987)	Justifying instructional choices for specific learners and contexts
Teacher beliefs	Filters shaping planning and instructional thinking (Pajares, 1992)	Underlying assumptions about curriculum purpose and use
Motivational orientations	Self-efficacy influencing effort and persistence (Bandura, 1997)	Commitment to planning as meaningful professional work
Teacher agency	Autonomy in instructional decision-making (Borg, 2006)	Active role in shaping and adapting curriculum (Priestley et al., 2015)
Sense-making	Interpreting curriculum through professional knowledge (Grossman, 1990)	Translating curriculum into context-specific practice (Remillard, 2005)

The TTIP Framework conceptualizes instructional planning as an interconnected process rather than a set of separate constructs. Teachers’ mental processes are closely linked to their beliefs, which shape how they anticipate, prioritize, and translate curriculum possibilities into instructional action. Similarly, instructional decision-making is influenced by motivational orientations. Teachers with stronger planning self-efficacy are more likely to evaluate alternatives deliberately, while lower confidence may lead to more routine or compliance-based planning (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2001).

Pedagogical reasoning is also shaped by sense-making. How teachers interpret curriculum materials affects which instructional choices they see as possible and professionally appropriate (Ben-Peretz, 1990; Remillard, 2005). These processes unfold within curriculum systems, accountability pressures, and institutional cultures that may support or limit teacher agency (Priestley et al., 2015).

From this perspective, the construct distribution reported in the findings shows more than differences in research attention. It also shows which aspects of instructional planning have been easier to study and which remain less examined. The framework therefore presents instructional planning as a professional practice shaped by cognition, deliberation, motivation, and agency.

Method

This study used a PRISMA-informed systematic literature review design (Page et al., 2021). The review was guided by the TTIP Framework, which informed the inclusion criteria, data extraction categories, and analytical structure. This allowed the literature to be mapped within a clear conceptual frame. The analysis was based mainly on thematic synthesis (Thomas & Harden, 2008), with support from narrative synthesis (Popay et al., 2006).

Search Strategy

A systematic search was conducted across five databases: Web of Science, Scopus, ERIC, Google Scholar, and DergiPark. Web of Science and Scopus served as the primary sources due to their rigorous indexing. ERIC was included as a field-specific education database. Google Scholar was used cautiously as a supplementary source to identify additional studies. DergiPark was included to ensure the representation of Turkish-language research within the scope of the review.

Search strings were constructed using Boolean operators across three conceptual clusters: (1) planning constructs (instructional planning, lesson planning), (2) cognitive constructs (teacher cognition, teacher thinking, curriculum deliberation), and (3) curriculum-related constructs (curriculum enactment, curriculum implementation, teacher agency). The search strategy was intentionally focused on studies that address planning through cognitive and deliberative dimensions, in line with the theory-driven design. The overall structure of the database selection and search scope is summarized in Table 2.

Table 2

Search Strategy and Conceptual Scope

<i>Component</i>	<i>Description</i>
<i>Planning terms</i>	<i>"instructional planning", "lesson planning"</i>
<i>Cognition terms</i>	<i>"teacher cognition", "teacher thinking", "pedagogical reasoning"</i>
<i>Deliberation terms</i>	<i>"curriculum deliberation", "sense-making"</i>
<i>Curriculum terms</i>	<i>"curriculum enactment", "implementation", "teacher agency"</i>
<i>Databases</i>	<i>Web of Science, Scopus, ERIC, Google Scholar, DergiPark</i>
<i>Time frame</i>	<i>2005–2025</i>
<i>Language</i>	<i>English and Turkish</i>

Note. Search strings were adapted to database-specific syntax requirements. DergiPark strings were reformed in Turkish, the language of that database's indexing system.

Citation tracking was conducted using key works informing the theoretical framework, including Borg (2003, 2006), Schwab (1969), Walker (1971), Ben-Peretz (1990), and Remillard (2005). Empirical studies identified as relevant during initial screening were also followed up. The reference lists of all included studies were then reviewed to identify additional empirical work not retrieved through database searching.

Inclusion and Exclusion Criteria

Eligibility criteria were defined a priori (Dixon-Woods et al., 2006). The review included studies published between 2005 and 2025. The starting point of 2005 was chosen because this period brought together three influential lines of scholarship on instructional planning. Borg's (2003) work on teacher cognition highlighted teachers' knowledge, beliefs, and thinking as central to the relationship between curriculum intentions and classroom practice. Remillard's (2005) work on curriculum enactment shifted attention from curriculum delivery to teachers' interpretive engagement with curriculum materials. Priestley et al.'s (2015) ecological agency framework further helped explain how structural conditions shape what teachers can deliberate about and enact in practice.

These traditions provided the conceptual basis for the TTIP Framework, particularly its focus on teacher cognition, curriculum deliberation, and ecological agency. The 2025 endpoint was selected to capture the current state of empirical research in this area. Studies were included if they focused primarily on instructional or lesson planning, addressed at least one TTIP construct, used an empirical design, involved preservice or in-service teachers, were published between 2005 and 2025, and were written in English or Turkish. Studies were excluded if they were purely theoretical or review-based, did not involve teacher participants, treated planning solely as a product (e.g., lesson plan scores), or were not peer-reviewed. Theses, dissertations, unpublished manuscripts, and other non-peer-reviewed sources were also excluded. The full inclusion and exclusion criteria are summarized in Table 3.

Table 3

Inclusion and Exclusion Criteria

<i>Criterion</i>	<i>Inclusion</i>	<i>Exclusion</i>
Focus	Instructional/lesson planning as the primary focus, addressing at least one TTIP construct	Planning as peripheral or treated only as a product (e.g., scores)
Participants	Preservice teachers, in-service teachers, teacher educators	Non-teacher participants
Study type	Empirical studies (qualitative, quantitative, mixed methods)	Theoretical papers, reviews, meta-analyses, opinion pieces; editorials
Publication type	Peer-reviewed journal articles, empirical book chapters	Conference abstracts; theses or dissertations; unpublished manuscripts
Language	English, Turkish	Other languages
Time frame	2005–2025	Pre-2005 studies
Scope	Teacher-level planning processes	Policy/administrative planning only

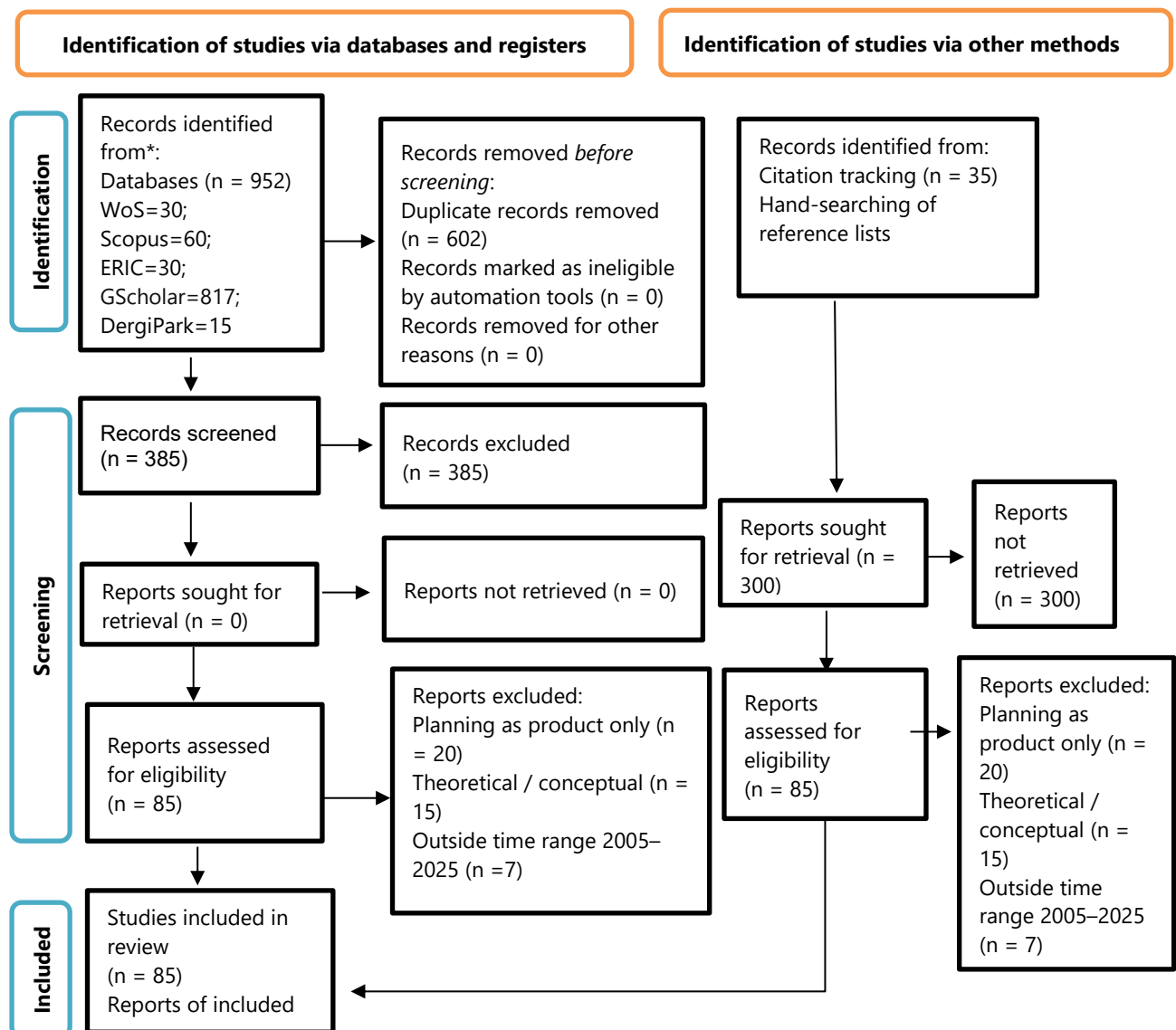
Screening and Selection

The screening process involved three stages: (1) duplicate removal, (2) title and abstract screening, and (3) full-text assessment. To ensure rigor, two verification steps were applied: first, all excluded records were rechecked and then a 20% subsample was re-evaluated after a two-week interval.

Initially, the search retrieved 987 records (952 database, 35 citation tracking). Following removal of 602 duplicates, 385 records were screened at the title and abstract stage; 300 were excluded on eligibility grounds. Of 85 full-text records assessed, 42 were excluded. The final synthesis comprised 43 empirical studies. The complete selection procedure is reported in the PRISMA 2020 flow diagram (Figure 1) and summarized in Section 4.

Figure 1

The PRISMA 2020 Flow Diagram Illustrating Record Screening and Selection



*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools. Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

Data Extraction and Construct Coding

Data were extracted using a structured coding framework aligned with three analytical dimensions: theoretical orientation, methodological design, and knowledge claims. The coding structure is summarized in Table 4.

Table 4

Data Extraction Coding Form

<i>Dimension</i>	<i>Variable</i>	<i>Categories / coding instructions</i>
Bibliographic	<i>Author(s), year, title, journal, country</i>	Standard APA fields; country = data collection site
Context	<i>Participant type, sample size, education level, subject area, curriculum system</i>	Preservice / in-service / both; n; primary / secondary / HE; maths / language / science / general; centralized / decentralized
Methodological (RQ2)	<i>Research design, data source(s), analytical procedure, validated instrument</i>	Quantitative / qualitative / mixed / experimental; questionnaire / lesson plan / interview / observation / think-aloud; instrument name if applicable
Theoretical (RQ1)	<i>Dominant theoretical framework, secondary framework, key constructs addressed</i>	Teacher cognition / curriculum deliberation / both / related / no framework; constructs coded from the seven-construct framework
TTIP constructs	Seven constructs	Multi-select: [1] Mental processes [2] Instructional decision-making [3] Pedagogical reasoning [4] Teacher beliefs [5] Motivational orientations [6] Teacher agency [7] Sense-making. Code as Primary (P) or Secondary (S) for each construct addressed
Knowledge claims (RQ3)	<i>Claim type, principal finding, implication for teacher education</i>	D = Descriptive / E = Explanatory / DV = Developmental / EV = Evaluative; principal finding: 1–2 sentence summary in coder's own words; implication: brief note if stated by authors
Quality appraisal	<i>Seven criteria (Table 6), overall flag</i>	Met (M) / Partially met (P) / Not met (N) per criterion; Overall: HIGH (6–7 met) / MEDIUM (4–5) / LOW (≤ 3)

In line with the theory-driven approach, each study was also coded across the seven TTIP constructs: mental processes, instructional decision-making, pedagogical reasoning, teacher beliefs, motivational orientations, teacher agency, and sense-making. Each construct was coded as primary (P), secondary (S), or absent (–). A construct was considered primary when it was an explicit focus of the study, and secondary when it appeared in a supporting or contextual role. Data extraction and coding were conducted by the author using a standardized coding form. Because this was a theory-driven review, coding involved applying predefined constructs to diverse empirical studies through interpretive judgment. The main aim was therefore to ensure interpretive consistency, that is, the coherent application of construct definitions across the full sample, rather than to maximize inter-rater agreement (Dixon-Woods et al., 2006; Thomas & Harden, 2008). This approach is consistent with qualitative synthesis traditions, where rigor depends on transparency and reflexive consistency as well as procedural clarity.

To strengthen consistency, a two-stage audit was conducted. First, all excluded records were rechecked against the inclusion criteria. Second, a randomly selected 15% subsample ($n = 7$) was re-coded after a two-week interval without consulting the original coding decisions. Differences between the two rounds were used to identify possible shifts in construct application rather than treated simply as errors. These differences were documented through analytic memos and checked against the construct definitions presented in Section 2. The implications and limitations of single-researcher coding are discussed in the Limitations section. The finalized coding sheet formed the basis for the quantitative descriptive analysis reported in the Results section.

Quality Appraisal

All included studies were appraised using a seven-criterion framework adapted from the MMAT (Hong et al., 2018) and CASP checklists, with an additional criterion assessing relevance to the TTIP Framework (Table 5). Each criterion was rated as met, partially met, or not met.

Table 5

Quality Appraisal Criteria

<i>Quality criterion</i>	<i>Assessment question</i>
Clarity of research aim	Is the study's aim or research question clearly stated?
Appropriateness of design	Does the research design align with the study aims?
Sampling transparency	Are participant selection and sample characteristics clearly described?
Data collection	Are data collection methods and procedures clearly reported?
Analytical transparency	Are analysis procedures clearly described?
Validity / credibility	Are measures taken to ensure reliability (quantitative) or credibility (qualitative)?
Framework relevance	Do the findings address at least one TTIP construct in instructional planning?

Forty-two studies (97.7%) met six or more criteria and were classified as high quality, while one study (Hall & Smith, 2006) was rated as medium. Study-level appraisal results are presented in Table 7. Sensitivity analysis indicated that excluding the medium-rated study did not materially affect the analytical themes.

The high concentration of studies in the high-quality category requires some caution. This pattern may be partly explained by the eligibility criteria used in the review. Only peer-reviewed empirical studies with clear aims, explicit designs, and relevance to at least one TTIP construct were included. Studies that did not meet these criteria were excluded during screening, so a basic level of methodological quality had already been ensured before appraisal.

The appraisal framework may also have contributed to this pattern. The seven-criterion framework, adapted from MMAT and CASP and supplemented with TTIP-specific relevance indicators, was applied to a literature base that had already passed strict inclusion criteria. Broad criteria and partial-credit scoring may have created a ceiling effect, making it difficult to distinguish among stronger studies. Future theory-driven reviews may need more detailed criteria that assess not only methodological quality, but also the fit between empirical indicators and theoretical constructs. Excluding the single medium-quality study (Hall & Smith,

2006) did not change the thematic findings, suggesting that the overall interpretation remained stable.

Data Synthesis

Thematic synthesis proceeded in three stages: (a) line-by-line coding of principal findings using the TTIP Framework as an analytical scaffold; (b) construction of descriptive themes through grouping related codes across studies; and (c) development of analytical themes generating interpretive insights into the relational structure of instructional planning as a cognitive and deliberative practice.

In addition, quantitative descriptive mapping was conducted to summarize the distribution of studies by publication period, country, research design, participant type, and construct coverage. Given the heterogeneity of the included studies, no meta-analysis was undertaken (Arksey & O'Malley, 2005). The review is reported in accordance with the PRISMA 2020 checklist (Page et al., 2021).

Results

The results below are organized first through a descriptive review of the studies including their methodological and geographical profile. Then the theoretical (RQ1) and methodological (RQ2) aspects of the studies are presented. Finally, the knowledge claims emerging from the studies (RQ3) are presented in line with the seven constructs of the TTIP Framework.

Descriptive Overview of the Studies

The search yielded 987 records. After removing 602 duplicates, 385 unique records were screened at the title and abstract stage. Of the 85 full-text articles assessed against the eligibility criteria, 42 were excluded, resulting in a final set of 43 empirical studies. One study - Yıldırım (2003) - predates the 2005–2025 boundary by two years. It was retained as a foundational empirical study of instructional planning in a centralized Turkish curriculum context and is treated as a comparative anchor for the Turkish studies rather than as part of the main sample. The study selection process follows the PRISMA 2020 framework and is summarized in Figure 1.

The descriptive profile of the 43 included studies reveals several clear patterns. The distribution of studies over time shows a clear increase: five studies were published before 2010, four between 2010 and 2014, nine between 2015 and 2019, and twenty-five after 2020 (58.1%). This trend suggests that instructional planning has become an increasingly prominent area for examining professional cognition, particularly in contexts shaped by policy change and pedagogical complexity. The studies span North America ($n = 11$), Turkey ($n = 8$), Germany ($n = 7$), Asia-Pacific contexts ($n = 9$), and other European and African/MENA settings. Participant groups are evenly distributed between preservice ($n = 19$, 44.2%) and in-service teachers ($n = 19$, 44.2%), with five studies (11.6%) including both. Qualitative designs predominate ($n = 26$, 60.5%), followed by mixed-methods ($n = 11$, 25.6%) and quantitative designs ($n = 6$, 14.0%). In terms of theoretical orientation, 27 studies (62.8%) draw on teacher cognition traditions, while 13 (30.2%) are grounded in curriculum deliberation. Quality appraisal indicates consistently high standards: 42 studies (97.7%) were rated HIGH; detailed results are presented in Table 7. A full overview is provided in Table 6.

Table 6*Summary of Studies Included in the Review (N = 43)*

<i>Author(s) (Year)</i>	<i>Country</i>	<i>Part.</i>	<i>n</i>	<i>Design</i>	<i>FW</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C5</i>	<i>C6</i>	<i>C7</i>	<i>Cl.</i>
Backfisch et al. (2020)	Germany	IS	83	Qt	TC	--	P	P	--	P	--	--	E
Beckmann & Ehmke (2023)	Germany	PS	89	Mx	TC	P	P	S	--	--	--	--	D
Bieda et al. (2020)	USA	IS	176	Mx	CD	--	P	--	--	--	P	P	E
Cevikbas et al. (2024)	Germany	Both	Mixed	Mx	TC	P	P	P	--	--	--	--	D
Cherbow & McNeill (2022)	USA	IS	1(case)	QI	CD	--	S	--	--	--	P	P	D
Contreras et al. (2020)	Chile	Both	40	QI	TC	P	P	--	S	--	--	--	E
Dasas (2021)	Philippines	IS	8	QI	CD	--	--	--	--	--	P	P	D
Goh & Fang (2023)	Singapore	IS	12	QI	CD	--	--	P	--	--	S	P	D
Hall & Smith (2006)	USA	Both	Mixed	QI	TC	P	P	S	S	--	--	--	D
Hatch & Clark (2021)	USA	IS	6	QI	TC	P	P	P	S	--	--	--	D
John (2006)	UK	PS	12	QI	TC	P	P	S	S	--	--	S	E
Kang (2017)	USA	PS	17	QI	TC	--	P	P	S	S	--	--	DV
Karlström & Hamza (2021)	Sweden	PS	24	QI	TC	P	--	P	--	--	--	S	E
Kohler et al. (2008)	USA	PS	6	Mx	TC	--	P	S	--	S	--	--	DV
König et al. (2020)	Germany	PS	312	Qt	TC	P	P	P	--	--	--	--	E
König et al. (2021)	Germany	PS	191	Mx	TC	P	P	P	--	--	--	--	DV
König et al. (2024)	Germany	IS	1,474	Qt	TC	--	P	S	--	S	--	--	E
Krepf & König (2023)	Germany	PS	30	QI	TC	P	P	S	--	--	--	--	E
Li & Zou (2017)	China	IS	6	QI	TC	P	--	P	S	--	--	--	E
Lim et al. (2018)	S. Korea	PS	97	Qt	TC	--	P	P	--	--	--	--	D
Lui & Bonner (2016)	USA	Both	116	Mx	TC	--	S	P	P	--	--	--	E
Molina (2019)	USA	PS	3	QI	CD	--	--	--	S	S	P	P	D
Morady Moghaddam & Parsaiyan (2025)	Iran	IS	18	QI	R	--	S	--	--	--	S	P	E
Nagamine (2025)	Japan	PS	22	QI	R	--	--	--	--	S	P	--	DV
Penuel et al. (2009)	USA	IS	126	Mx	TC	--	S	P	--	S	--	--	EV
Poulton (2020)	Australia	IS	10	QI	CD	--	--	--	--	--	P	S	E
Sawyer et al. (2020)	USA	PS	89	QI	TC	--	P	S	S	--	--	P	D
Severance et al. (2016)	USA	IS	23	QI	CD	--	S	--	--	--	P	P	D
Ulusoy & İncikabı (2022)	Turkey	PS	30	Mx	CD	--	S	--	--	--	S	P	D
Valdez et al. (2024)	Philippines	IS	15	QI	CD	--	--	--	S	--	P	S	D
Voogt et al. (2011)	Netherlands	IS	31	Mx	CD	--	--	S	S	--	P	P	DV
Wallace & Priestley (2017)	UK/ Scotland	IS	6	QI	CD	--	--	--	--	--	P	P	D
Xu & Wilkins (2025)	China	IS	12	QI	TC	P	--	P	--	--	--	S	DV
Aguas (2020)	Philippines	IS	9	QI	CD	--	--	--	--	--	S	P	D
Bouguerba (2025)	Morocco	IS	10	QI	R	--	S	--	--	--	S	P	D
Geçici (2023)	Turkey	PS	25	QI	TC	--	P	S	--	--	--	--	EV
Gülten (2013)	Turkey	PS	38	QI	TC	S	--	--	S	P	--	--	D
Kablan (2012)	Turkey	PS	62	Qt	TC	--	P	P	--	--	--	--	EV
Karabay (2013)	Turkey	PS	20	Mx	TC	--	P	P	--	--	S	--	EV
Koni & Krull (2018)	Estonia	Both	217	Qt	TC	P	P	--	S	--	--	--	E
Şahin-Taşkın (2017)	Turkey	PS	47	QI	TC	S	--	--	P	P	--	--	D
Yıldırım (2003)	Turkey	IS	20	QI	CD	--	S	--	S	--	P	P	E
Aydın-Ceran & Ergül(2022)	Turkey	PS	28	Mx	TC	--	P	P	--	S	--	--	EV

Note. Part. = Participant type (PS = Preservice; IS = In-service; Both). Design = QI (Qualitative); Qt (Quantitative); Mx (Mixed methods). FW = Dominant framework: TC (Teacher Cognition); CD (Curriculum Deliberation); R (Related). C1–C7 = TTIP construct coding: P = Primary; S = Secondary; -- = Absent. Cl. = Claim type: D = Descriptive; E = Explanatory; DV = Developmental; EV = Evaluative.

Table 7*Quality Appraisal of Primary Studies (N = 43)*

<i>Author(s) (Year)</i>	<i>QA1</i>	<i>QA2</i>	<i>QA3</i>	<i>QA4</i>	<i>QA5</i>	<i>QA6</i>	<i>QA7</i>	<i>Score</i>	<i>Flag</i>
Backfisch et al. (2020)	M	M	M	M	M	P	M	6.5	HIGH
Beckmann & Ehmke (2023)	M	M	M	M	P	M	M	6.5	HIGH
Bieda et al. (2020)	M	M	M	M	M	P	M	6.5	HIGH
Cevikbas et al. (2024)	M	M	P	M	M	P	M	6.0	HIGH
Cherbow & McNeill (2022)	M	M	P	M	M	M	M	6.5	HIGH
Contreras et al. (2020)	M	M	M	M	M	M	M	7.0	HIGH
Dasas (2021)	M	M	P	M	M	M	M	6.5	HIGH
Goh & Fang (2023)	M	M	M	M	M	M	M	7.0	HIGH
Hall & Smith (2006)	P	M	P	P	P	M	M	5.0	MEDIUM
Hatch & Clark (2021)	M	M	M	M	M	M	M	7.0	HIGH
John (2006)	M	M	M	M	M	M	M	7.0	HIGH
Kang (2017)	M	M	M	M	M	M	M	7.0	HIGH
Karlström & Hamza (2021)	M	M	M	M	M	M	M	7.0	HIGH
Kohler et al. (2008)	M	M	M	M	M	M	M	7.0	HIGH
König et al. (2020)	M	M	M	M	M	M	M	7.0	HIGH
König et al. (2021)	M	M	M	M	M	M	M	7.0	HIGH
König et al. (2024)	M	M	M	M	M	M	M	7.0	HIGH
Krepf & König (2023)	M	M	M	M	M	M	M	7.0	HIGH
Li & Zou (2017)	M	M	M	M	M	M	M	7.0	HIGH
Lim et al. (2018)	M	M	M	M	M	P	M	6.5	HIGH
Lui & Bonner (2016)	M	M	M	M	M	M	M	7.0	HIGH
Molina (2019)	M	M	P	M	M	M	M	6.5	HIGH
Morady Moghaddam & Parsaiyan (2025)	M	M	M	M	M	M	M	7.0	HIGH
Nagamine (2025)	M	M	M	M	M	M	M	7.0	HIGH
Penuel et al. (2009)	M	M	M	M	M	M	M	7.0	HIGH
Poulton (2020)	M	M	M	M	M	M	M	7.0	HIGH
Sawyer et al. (2020)	M	M	M	M	M	M	M	7.0	HIGH
Severance et al. (2016)	M	M	M	M	M	M	M	7.0	HIGH
Ulusoy & İncikabı (2022)	M	M	M	M	M	M	M	7.0	HIGH
Valdez et al. (2024)	M	M	M	M	M	M	M	7.0	HIGH
Voogt et al. (2011)	M	M	M	M	M	M	M	7.0	HIGH
Wallace & Priestley (2017)	M	M	M	M	M	M	M	7.0	HIGH
Xu & Wilkins (2025)	M	M	M	M	M	M	M	7.0	HIGH
Aguas (2020)	M	M	M	M	M	M	M	7.0	HIGH
Bouguerba (2025)	M	M	P	M	M	P	M	6.0	HIGH
Geçici (2023)	M	M	M	M	P	P	M	6.0	HIGH
Gülten (2013)	M	M	P	M	M	P	M	6.0	HIGH
Kablan (2012)	M	M	M	M	M	M	M	7.0	HIGH
Karabay (2013)	M	M	M	M	M	M	M	7.0	HIGH
Koni & Krull (2018)	M	M	M	M	M	M	M	7.0	HIGH
Şahin-Taşkın (2017)	M	M	M	M	P	P	M	6.0	HIGH
Yıldırım (2003)	M	M	M	M	M	M	M	7.0	HIGH
Aydın-Ceran & Ergül (2022)	M	M	M	M	M	M	M	7.0	HIGH

Note. QA1 = Clarity of research aim; QA2 = Appropriateness of design; QA3 = Transparency of sampling; QA4 = Data collection reporting; QA5 = Analytical transparency; QA6 = Validity/credibility; QA7 = Relevance to the TTIP Framework. M = Met (1.0 pt); P = Partially met (0.5 pt); N = Not met (0 pt). Score = sum of criteria (max = 7.0). Flag: HIGH ≥ 6.0 ; MEDIUM 4.0–5.5; LOW ≤ 3.5 .

The review reveals several general categorical and quantitative trends in the literature. Instructional decision-making (67.4%) and pedagogical reasoning (58.1%) are the most frequently addressed constructs, indicating a strong concentration on cognitive and decision-related dimensions of planning. In contrast, motivational orientations (23.3%) and teacher beliefs (4.7% as a primary focus) are addressed less frequently, with agency and sense-making also appearing in a more limited number of studies. In terms of knowledge claims, most studies produce descriptive or explanatory findings (74.5%), while developmental (14.0%) and evaluative (11.6%) approaches are less common.

Theoretical and Conceptual Perspectives Guiding Research on Instructional Planning (RQ1)

The first research question focuses on the theoretical traditions underpinning empirical research on instructional planning. A clear pattern emerges in the uneven distribution of constructs. Instructional decision-making is the most prominent construct (primary: 21, secondary: 8; 67.4% total), followed by pedagogical reasoning (primary: 16, secondary: 9; 58.1% total). These two constructs define the cognition-and-decision core: a model of planning centered on professional choices about content sequencing, strategy selection, and lesson organization, converging across national contexts and methodological traditions on the view that planning is primarily a process of structured professional choice-making requiring substantive pedagogical knowledge (Contreras et al., 2020; König et al., 2021; Krepf & König, 2023).

Sense-making was a primary focus in 14 studies and a secondary focus in 5 studies, accounting for 44.2% of the sample. This suggests increasing attention to how teachers interpret and work with curriculum materials (Cherbow & McNeill, 2022; Goh & Fang, 2023). Teacher agency was a primary focus in 11 studies and a secondary focus in 6 studies, representing 39.5% of the sample. These studies mainly focused on curriculum reform (Bieda et al., 2020; Wallace & Priestley, 2017; Yıldırım, 2003), collaborative design (Severance et al., 2016; Voogt et al., 2011), and EFL contexts (Morady Moghaddam & Parsaiyan, 2025; Valdez et al., 2024). Teacher beliefs appeared as a primary focus in only two studies, despite the strong theoretical emphasis on beliefs in teacher cognition research (Borg, 2003; Pajares, 1992). Motivational orientations were also rarely central. Only three studies treated motivation as a primary focus and seven as a secondary focus, while 33 studies did not address it.

Taken together, these patterns indicate that empirical research on instructional planning is organized around a relatively strong cognition-and-decision core, while constructs associated with beliefs, motivation, agency, and sense-making are addressed less consistently. Table 8 summarizes the distribution of primary, secondary, and absent construct coverage across the included studies.

Table 8

Seven-Construct Coverage Across Included Studies (N = 43)

<i>Construct</i>	<i>P</i>	<i>S</i>	<i>–</i>	<i>Addressed (P+S)</i>
C2 Instructional decision-making	21	8	14	29 (67.4%)
C3 Pedagogical reasoning	16	9	18	25 (58.1%)
C7 Sense-making	14	5	24	19 (44.2%)
C1 Mental processes	13	2	28	15 (34.9%)
C6 Teacher agency	11	6	26	17 (39.5%)
C4 Teacher beliefs	2	13	28	15 (34.9%)
C5 Motivational orientations	3	7	33	10 (23.3%)

Methodological Orientations in Studying Instructional Planning (RQ2)

The second research question concerned the methodological character of the empirical research. Qualitative designs predominate (60.5%), most commonly case study, interpretive phenomenological analysis, and thematic analysis, drawing on interviews, lesson-plan documents, reflective journals, and think-aloud protocols. These were particularly concentrated in research on curriculum deliberation, collaborative planning, teacher agency in reform contexts, and planning development during practicum. Mixed-methods designs (25.6%) generally combined lesson-plan document analysis with interview or survey data. Quantitative designs were the least common (14.0%), concentrated in the German research program on lesson-planning competence (Beckmann & Ehmke, 2023; König et al., 2020, 2021; Krepf & König, 2023) and in Turkish teacher education research (Kablan, 2012).

The most common data sources were written lesson plans (approximately 60% of studies), semi-structured interviews (approximately 55%), and classroom observations (approximately 35%). Think-aloud protocols and stimulated recall were used in a small but theoretically important subset of studies (Contreras et al., 2020; Kablan, 2012; Krepf & König, 2023; Li & Zou, 2017). These approaches provide more direct access to real-time cognitive activity compared to the insights derived from lesson plans and retrospective interviews.

A clear link also emerges between methodological approach and theoretical tradition. Structured instruments are more common in studies grounded in teacher cognition, whereas interpretive methods are more often used in curriculum deliberation research. This pattern reflects differing ontological orientations, which makes cumulative synthesis across traditions more difficult. Most studies are cross-sectional, with relatively few adopting longitudinal designs.

In terms of claim type, 41.9% of studies produce descriptive claims, 32.6% explanatory, 14.0% developmental, and 11.6% evaluative. The predominance of descriptive and explanatory studies (74.5% combined) suggests that the field is better equipped to characterize and correlate instructional planning practices than to explain how they develop or how they might be improved.

A clear imbalance emerges across constructs, as also shown in Table 8. Decision-making and pedagogical reasoning are both empirically well established, yet they are primarily examined through descriptive accounts. In contrast, motivational orientations, sense-making, and teacher agency remain underrepresented, with relatively few studies of any type addressing these areas. This pattern reveals two related gaps. The more established constructs are often studied through limited designs, whereas areas requiring developmental and evaluative evidence remain less examined.

Knowledge Claims Emerging from Instructional Planning Research (RQ3)

Knowledge claims in the reviewed studies can be organized into four thematic areas, identified through the lenses of teacher cognition and curriculum deliberation.

Planning as Cognitively Demanding Professional Judgment

The most robust finding across the studies is that instructional planning is a cognitively demanding form of professional judgment rather than a routine task. This becomes particularly clear in work such as König et al.'s (2021) CODE-PLAN model, which shows that planning

involves connecting curriculum goals to instructional activities, sequencing content, and adapting instruction to learner differences. These processes can be examined systematically through structured plan analysis.

Other studies point to the conditions that shape this cognitive work. Backfisch et al. (2020) show that both professional knowledge and motivational orientations play an important role in determining lesson plan quality, while Krepf and König (2023) highlight that structuring decisions follow a sequential pattern and depend closely on teachers' knowledge.

Qualitative research adds further insight into how this process unfolds in practice. Expert teachers tend to build richer mental representations than novices, develop more elaborate decision pathways, and anticipate a wider range of learner responses (Contreras et al., 2020; Li & Zou, 2017). A similar pattern appears in studies on pre-service teachers, which show that learning to plan is not simply about applying templates, but about developing the ability to reason pedagogically (Kang, 2017; Karlström & Hamza, 2021; Kohler et al., 2008).

Planning as Deliberative and Interpretive Encounter with Curriculum

A second major finding is that instructional planning cannot be fully understood through cognition and decision-making alone. The studies instead point to planning as an interpretive and deliberative process, where teachers actively engage with, negotiate, and transform curriculum rather than simply implement it.

This becomes visible in several empirical contexts. Cherbow and McNeill (2022), for example, document how a teacher designs lessons to support student-driven discussion through sustained interpretive engagement with curriculum materials. Similarly, Goh and Fang (2023) show that lesson study creates space for deliberation within planning, allowing teachers to examine curriculum possibilities together and develop richer instructional designs. In contrast, Bieda et al. (2020) demonstrate that more prescriptive curriculum policies tend to narrow this space, leading to more compliance-oriented planning practices.

Across these studies, sense-making connects teachers' cognitive work with their deliberative engagement with curriculum. Teachers who interpret curriculum materials more flexibly tend to recognize more instructional possibilities and produce more responsive plans (Ben-Peretz, 1990; Remillard, 2005).

The Turkish sub-sample provides a particularly useful lens in this regard. It shows how planning practices change when deliberative and agentic dimensions are structurally constrained, while also suggesting that these capacities can be reactivated through targeted pedagogical interventions (Kablan, 2012; Karabay, 2013).

Agency in Planning as Contextually Enabled and Constrained

A third major finding is that planning agency is not a fixed trait of individual teachers. Rather, it is shaped by context and emerges from the interaction between teachers and their working conditions, in line with Priestley et al.'s (2015) ecological perspective. This pattern becomes clear across different settings. Severance et al. (2016) show that collaborative curriculum co-design can significantly strengthen planning agency. Similarly, Voogt et al. (2011) find that collaborative design within professional learning communities leads to forms of planning that individual teachers are unlikely to achieve on their own. Even in decentralized systems with

greater autonomy, curriculum reforms produce uneven outcomes depending on teachers' professional histories and institutional contexts (Wallace & Priestley, 2017).

In more centralized systems, these constraints are more apparent. Yıldırım (2003) shows that teachers' planning is strongly influenced by mandated formats, while later studies suggest that similar compliance-oriented patterns may persist in pre-service education (Gülten, 2013; Şahin-Taşkın, 2017). These findings suggest that improving planning practices depends on strengthening teachers' capacities as well as addressing the institutional conditions that shape planning agency.

Structural Gaps and Underrepresented Constructs

The analysis of construct coverage highlights several important blind spots in the literature. Motivational orientations (23.3%) and teacher beliefs as a primary focus (4.7%) remain the least developed areas. As a result, the field can explain what teachers decide and how they reason during planning, but it offers more limited insight into why teachers engage in planning or under which conditions high-quality deliberation is sustained.

Another important gap concerns research design. Longitudinal and intervention-based studies remain relatively rare, pointing to a key direction for future research.

Summary of Results

This review shows that instructional planning research is strongly centered on cognitive and decision-making processes, with instructional decision making and pedagogical reasoning forming the core of the field. At the same time, motivational orientations, teacher beliefs, and, to some extent, agency and sense-making remain less visible. The literature is also largely descriptive, with fewer studies addressing how planning develops or how it can be improved. Taken together, these patterns suggest that the field offers a solid understanding of how teachers plan, but a more limited account of why planning takes the forms it does and under which conditions it can be strengthened.

Discussion

This study reviewed 43 research studies to produce an evidence-based map of the instructional planning literature organized by the seven constructs of the TTIP Framework. This section interprets the results elaborating three interlocking arguments: a theoretical argument about what the TTIP Framework contributes to the conceptualization of planning; a comparative argument about what the Turkish sub-studies reveals as theoretically generative evidence; and a methodological argument about the systematic limitations constraining the field's cumulative explanatory capacity.

TTIP Framework as an Integrative Theoretical Contribution

The TTIP Framework's main theoretical contribution is to show that the instructional planning literature is partly coherent but still unevenly developed. Much research has examined planning as a cognitively demanding professional practice shaped by teachers' judgment across contexts and methods. Yet this apparent coherence also reveals a clear imbalance in the field.

Instructional decision-making and pedagogical reasoning continue to dominate empirical attention, reflecting the enduring influence of foundational work by Shavelson and Stern (1981) and Shulman (1986). Yet other dimensions of planning remain far less visible. Motivational orientations are addressed in only a limited number of studies, and teacher beliefs are rarely treated as a central focus. This distribution suggests that research has explained how teachers make planning decisions more clearly than why these decisions take particular forms. Teacher agency and sense-making occupy a middle ground: both are often recognized in theory, yet their empirical examination remains uneven.

This asymmetry reflects a broader divide between the two traditions that structure this review. The teacher cognition tradition has contributed substantially to understanding decision-making and pedagogical reasoning in instructional planning. However, concepts linked to curriculum deliberation, including platform orientations (Walker, 1971), professional investment (Ben-Peretz, 1990), and deliberative agency, have received less empirical attention. As a result, the field has become better at examining the cognitive work of planning than at explaining the motivational and deliberative conditions that support high-quality planning. This imbalance may also reflect how instructional planning has typically been studied. Instructional decision-making and pedagogical reasoning are easier to examine with established methodological tools. Lesson plans can be scored, sequencing decisions can be coded, and planning quality can be assessed through existing frameworks. These constructs are important, but this focus can privilege visible planning performance over the motivational and deliberative conditions that make planning professionally meaningful.

Motivational orientations and teacher beliefs are less visible. They concern what teachers value, how they interpret curriculum purposes, and how confident they feel when using professional judgment. These dimensions are difficult to capture through lesson-plan analysis or interviews alone. Their limited presence in the literature may therefore stem from the methodological difficulty of studying implicit dimensions of teachers' planning, not from a lack of theoretical importance.

The TTIP Framework does not replace the cognition-and-decision core of instructional planning research. Instead, it places this core within a wider structure that also includes motivational, deliberative, and agentic dimensions. This distinguishes the framework from models such as König et al.'s (2021) CODE-PLAN, which provides a detailed account of planning cognition, while giving comparatively limited attention to the motivational and agentic aspects of planning. TTIP also complements curriculum enactment research, where teachers' interpretive and deliberative work is strongly emphasized, whereas the internal cognitive structure of planning remains comparatively under-specified.

Sense-making plays an important bridging role within the framework. Existing research has often treated sense-making as a mediating process between curriculum materials and instruction (Ben-Peretz, 1990; Remillard, 2005). In the TTIP Framework, it connects the cognitive and deliberative dimensions of planning. It involves cognitive work because teachers draw on professional knowledge to interpret curriculum materials. It is also deliberative because teachers judge what those materials mean for particular learners and contexts. Sense-making appears in 44.2% of the studies and is conceptualized differently across the two traditions. This makes it useful for connecting lines of evidence that have often remained separate. Recent

studies (Cherbow & McNeill, 2022; Goh & Fang, 2023) provide a basis for developing this role further.

TTIP Framework as a Research Design Tool

The TTIP Framework can also be used as a research design tool for studying instructional planning across cognitive, motivational, deliberative, and agentic dimensions. The framework encourages integrated designs that examine the interaction between teachers' internal planning processes and the contextual conditions that shape planning. In this way, cognition and agency can be studied within the same analytical frame. In practical terms, this means combining data sources that capture teachers' reasoning, beliefs, motivational orientations, and decision-making with data sources that illuminate the curricular, institutional, and policy conditions shaping deliberative possibilities.

For example, planning interviews, think-aloud protocols, stimulated recall, and reflective accounts can provide access to teachers' pedagogical reasoning, beliefs, and motivational orientations. These sources may be combined with curriculum documents, lesson plans, institutional observations, or policy artifacts to examine how planning is enabled or constrained by broader structural conditions. The framework also supports construct coverage analysis, allowing researchers to examine not only how instructional decisions are made but also how agency, sense-making, and motivational conditions shape those decisions. In this sense, the TTIP Framework offers not only a conceptual vocabulary for interpreting instructional planning but also a design-oriented structure for studying planning as a simultaneously cognitive, deliberative, and ecological practice.

Turkish Literature as Theoretical Evidence

The Turkish sub-sample ($n = 8$) plays a role in this review that goes beyond a national case. It offers theoretically generative evidence and can be read as a natural experiment for the TTIP Framework. By showing what planning looks like when motivational and deliberative dimensions are constrained, these studies suggest that compliance-oriented planning is not simply a matter of individual teacher capacity. Rather, it emerges as a predictable outcome of the conditions under which teachers work. This interpretation aligns with earlier findings. The compliance orientation observed in pre-service contexts (Gülten, 2013; Şahin-Taşkın, 2017) and the bureaucratic framing of planning in in-service settings (Yıldırım, 2003) align with Priestley et al.'s (2015) ecological view of agency and with Remillard's (2005) account of contextually shaped curriculum use.

However, the Turkish evidence also calls for a more differentiated interpretation of how compliance-oriented planning is produced. One explanation is structural: in centralized curriculum systems, institutional expectations and accountability pressures may narrow the space for discretionary planning and encourage alignment with prescribed curricular expectations (Priestley et al., 2015; Yıldırım, 2003). Another explanation is developmental: when teacher education programs emphasize curriculum delivery and procedural implementation, teachers may have fewer opportunities to develop the pedagogical content knowledge and interpretive capacities linked to curriculum authorship (Ben-Peretz, 1990; Remillard, 2005). Compliance-oriented planning may therefore reflect both limited opportunities for

autonomous action and unequal access to the professional resources needed for deliberative planning.

At the same time, the intervention studies point to a more dynamic picture. Karabay (2013) shows that a critical reading–writing program can improve both planning quality and professional beliefs. Kablan (2012) finds that cognitive learning style is linked to planning quality, while Aydın-Ceran and Ergül (2022) document improvements following structured reflective practice. These findings suggest that the constructs least visible in the Turkish studies are not absent, but contextually constrained. They also indicate that targeted forms of teacher education can reopen space for deliberation, even under restrictive conditions. In this sense, the Turkish case illustrates both the limiting effects of centralized systems and the potential for change, offering support for the ecological assumptions of the TTIP Framework.

The Turkish evidence also suggests a need to examine planning de-professionalization in centralized curriculum contexts more carefully. Compliance-oriented planning may indicate a narrowing of the professional space in which teachers act as curriculum authors, not simply limited autonomy (Ben-Peretz, 1990; Remillard, 2005). When planning is organized around mandated formats, prescribed sequences, and institutional documentation, teachers' role may shift from interpreting curriculum to demonstrating procedural alignment with external expectations. Teacher agency does not disappear, but becomes shaped by socio-political and institutional conditions that determine whether curriculum authorship can be meaningfully enacted (Priestley et al., 2015; Yıldırım, 2003). The Turkish evidence therefore points beyond individual or programmatic limitations to the structural conditions that enable or constrain professional planning.

Methodological Limitations: Beyond Descriptive and Single-Construct Approaches

The reviewed literature is largely qualitative, cross-sectional, and descriptive. This limits what studies can explain about how instructional planning develops over time or changes under different conditions. A first limitation concerns the data sources commonly used. Planning processes are often inferred from lesson plans and retrospective interviews rather than examined as they occur. Think-aloud studies offer a more direct way to access teachers' cognitive processes during planning (Contreras et al., 2020; Krepf & König, 2023; Li & Zou, 2017). Future research could extend this approach to examine how teachers think, decide, and revise their plans in real time.

Second, the limited use of longitudinal and developmental designs restricts understanding of how planning cognition and deliberative capacity evolve across career stages or respond to institutional reform. Only 14.0% of the studies produced developmental claims and 11.6% produced evaluative claims. This means that the literature is stronger in describing planning than in explaining how it develops or how deliberative planning can be supported. Developmental and evaluative evidence (DV + EV: $n = 11$, 25.6% combined) is especially important for teacher education and policy, yet remains limited in the current literature.

Third, methodological approaches are closely aligned with theoretical traditions. Qualitative methods are more common in curriculum deliberation research, while structured instruments

are more common in teacher cognition research. As a result, the two traditions have produced parallel bodies of evidence that are difficult to integrate. This does not mean that the field needs one dominant method; both approaches are necessary. What is needed are designs that deliberately bring these traditions together, such as ecological case analysis combined with systematic construct coding, or structured competence assessment combined with interpretive analysis of curriculum sense-making. Such designs would provide the kind of integrative evidence that the TTIP Framework aims to support and that the field still needs.

Conclusions and Implications

This review began from a simple observation: despite its size and vitality, the instructional planning literature remains theoretically dispersed and methodologically inconsistent in ways that limit its capacity to generate cumulative, integrative knowledge about one of teaching's most fundamental professional activities. By synthesizing 43 empirical studies through the dual lens of teacher cognition and curriculum deliberation, the review has produced an evidence-based map that makes three structural features visible for the first time.

Three key patterns stand out across the field. The first is a strong cognition-and-decision core. Over the past two decades, research has established instructional planning as a cognitively demanding professional practice, documented meaningful differences between novice and expert teachers, and developed validated assessment tools. The TTIP Framework builds on this work by situating it within a broader perspective instead of replacing it.

The second concerns the relative absence of motivational and deliberative dimensions. Motivational orientations (23.3%) and teacher beliefs as a primary focus (4.7%) remain limited in the literature, with teacher agency and sense-making also less frequently addressed. Yet these constructs are central to understanding the deliberative quality of planning, and their limited presence creates an imbalance in how the field conceptualizes professional practice.

The third relates to the types of knowledge the field produces. Most studies (74.5%) offer descriptive or explanatory accounts, while fewer examine how planning develops (14.0%) or how it can be improved (11.6%). Addressing this imbalance represents an important methodological direction for future research.

This review suggests that instructional planning should not be understood only as a technical skill or as a competence to be measured. Over the past two decades, studies have clarified many of the decisions teachers make during planning. What remains less clear is why particular forms of planning become possible, meaningful, and defensible within specific curricular, motivational, and institutional conditions. By bringing cognitive, motivational, deliberative, and agentic dimensions together, the TTIP Framework offers a way to examine these questions more systematically. It positions planning as a form of professional judgment and curriculum authorship, while also attending to how teachers' agency is shaped by the settings in which they work.

Implications

The findings have implications for teacher education, instructional practice, and curriculum systems. They suggest that improving instructional planning depends not only on strengthening teachers' capacities, but also on improving the pedagogical and structural conditions that shape planning.

Implications for Teacher Education Curriculum and Program Design

Teacher education that focuses only on procedural and cognitive aspects of planning remains incomplete. It prepares teachers for decision-making but leaves deliberative, motivational, and agentive dimensions underdeveloped. The findings point to the need for more integrative planning curricula. Such programs should create opportunities for preservice teachers to exercise agency, reflect on their planning beliefs, and engage with planning as meaningful professional work. Evidence also supports belief-focused and differentiated approaches (Kablan, 2012; Karabay, 2013).

Implications for the Pedagogy of Planning Instruction

Research consistently shows that expert teachers approach planning differently from novices. They build richer mental representations and interpret curriculum more flexibly (Contreras et al., 2020; Li & Zou, 2017). This suggests that planning education should move beyond template-based tasks. Three strategies stand out: think-aloud modeling by experienced teachers, collaborative planning (e.g., lesson study or co-design), and structured practice cycles that gradually develop pedagogical reasoning (Goh & Fang, 2023; Kang, 2017; Voogt et al., 2011). The CODE-PLAN model (König et al., 2021) can also be used formatively to support key planning operations.

Implications for Systemic Conditions and Centralized Curriculum Contexts

Compliance-oriented planning in centralized systems reflects structural conditions rather than individual limitations. If planning agency is shaped by context, improving practice requires attention to those conditions. Planning frameworks should clarify what needs to be addressed while leaving space for teachers to decide how content is taught and adapted. Evidence from the Turkish context suggests that deliberative capacity can develop under constrained conditions when systemic design and professional development are addressed together.

Limitations

Four limitations should be noted. First, screening and coding were conducted by a single researcher. Although structured coding and reflexive audit procedures were used to strengthen interpretive consistency, the absence of an independent second coder limits the replicability of TTIP construct assignment. This limitation is common in theory-driven qualitative synthesis (Dixon-Woods et al., 2006) and was addressed through explicit construct definitions, audit documentation, and re-coding procedures. Future studies using the framework could include independent verification for a subset of studies. Second, the review included only English and Turkish publications, which may have excluded relevant studies in other languages. Third, the high-quality appraisal ratings largely reflect the eligibility criteria used in this review and should not be read as representing the field as a whole. Finally, the TTIP Framework is proposed as a theoretical synthesis. Its relational propositions need further testing in primary studies designed to examine interactions between constructs.

Declarations

Conflict of Interest

The author declares no competing interests with other person(s), organisation(s), or institution(s).

Disclosure of Artificial Intelligence (AI) Use

Generative AI tools were used only for language editing and proofreading support during manuscript preparation. No AI tool was used for study design, data extraction, data analysis, interpretation of findings, or reference generation. The author reviewed and verified the final manuscript and takes full responsibility for its content.

Availability of Data and Materials

The data generated and analyzed during this systematic review, including the screening records and coding materials, are available from the author upon reasonable request.

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TÜRKÇE GENİŞ ÖZET

Bilişsel ve Muhakemeye Dayalı Bir Etkinlik Olarak Öğretmenlerin Öğretim Planlaması: 2005-2025 Yılları Arasında Yayınlanan Araştırmaların Sistematiik Analizi

Giriş

Öğretimin planlanması, öğretmenlik mesleğinin en temel faaliyetlerinden biri olmasına rağmen, alanyazın kuramsal açıdan parçalı bir görünüm sergilemektedir. Mevcut araştırmalar, planlamayı büyük ölçüde öğretmenlerin bilişsel süreçleri ve karar verme mekanizmaları üzerinden ele almakta; ancak bu sürecin muhakemeye dayalı, motivasyonel ve bağlamsal boyutlarını bütüncül bir çerçevede açıklamakta sınırlı kalmaktadır. Ayrıca alandaki araştırmaya dayalı bilgi üretimi planlama süreçlerinin nasıl geliştiğini, hangi koşullarda güçlendiğini ve öğretmen eğitimi yoluyla nasıl desteklenebileceğini inceleyen boylamsal, müdahale temelli ve değerlendirici çalışmalardan çok betimleyici ve kesitsel çalışmalar daha sıklıkla gözlenmektedir. Bu durum, öğretim planlamasına ilişkin araştırmaya dayalı bilgi üretiminin eksik kalmasına ve alanın birikimli ve açıklayıcı bir kuramsal yapı geliştirmesinin önünde önemli bir engel oluşturmasına neden olmaktadır.

Öğretim planlamasını anlamaya yönelik kuramsal yaklaşımlar tarihsel olarak iki temel yönelim etrafında gelişmiştir. Öğretmen bilişi geleneği, öğretmenlerin bilgi, inanç ve düşünce sistemlerinin program algısı ile sınıf içi uygulama arasında aracı bir rol oynadığını ileri sürmektedir (Borg, 2003). Buna karşılık programı yorumlayıcı ve muhakemeye dayalı bir bakış açısıyla ele alan yaklaşım, öğretmenlerin programla ilişkisini edilgen bir süreç olarak değil, aktif bir anlam kurma, yorumlama ve pedagojik karar üretme uygulaması olarak konumlandırmaktadır (Ben-Peretz, 1990; Remillard, 2005; Schwab, 1969; Walker, 1971). Bu iki yaklaşım öğretim planlamasının farklı boyutlarını açıklamakta önemli katkılar sunmakla birlikte, alanyazında çoğunlukla birbirinden kopuk biçimde ele alınmış ve farklı yöntemsel gelenekler içinde gelişmiştir.

Bu çalışma, söz konusu kuramsal temel ihtiyacına öğretmen bilişi ile programı yorumlayıcı ve muhakemeye dayalı biçimde ele alan yaklaşımları bütünleştiren 'Öğretmen Düşüncesi-Öğretim Planlaması Çerçevesi' (ÖDÖP) önerisiyle katkıda bulunmayı amaçlamaktadır. ÖDÖP Çerçevesi, öğretim planlamasını çok boyutlu ve ilişkisel bir mesleki uygulama olarak ele almakta ve Zihinsel süreçler, öğretimsel karar verme, pedagojik akıl yürütme, öğretmen inançları, motivasyonel yönelimler, öğretmen etkenliği (teacher agency) ve anlam kurma olmak üzere yedi temel yapı üzerinden analiz etmektedir. Bu çerçeve, söz konusu yapıların yalnızca ayrı

bileşenler değil, birbirleriyle etkileşim içinde işleyen bir bütünün parçaları olduğunu ve bu yapıların göreceli ağırlığının bağlamsal koşullara bağlı olarak değiştiğini ileri sürmektedir.

Bu doğrultuda çalışma, 2005–2025 yılları arasında yayımlanan araştırmaları PRISMA 2020 standartlarına dayalı sistematik değerlendirme yaklaşımıyla incelemektedir. Çalışmanın temel amacı, öğretim planlamasının bilişsel ve muhakemeye dayalı boyutlarını bütünlük bir çerçevede ele alarak alanın yapısal özelliklerini ortaya koymak ve birikimli bilgi üretimini sınırlayan boşlukları belirlemektir. Bu amaç doğrultusunda çalışma üç araştırma sorusuna odaklanmaktadır: (i) Araştırmalarda ağırlıklı olarak yer alan kuramsal gelenekler nelerdir? (ii) Araştırmalarda ne tür yöntemsel yaklaşımlar yer almaktadır? (iii) Araştırmalar öğretim planlamasına ilişkin ne tür sonuçlar ortaya koymaktadır?

Yöntem

Bu çalışmada sistematik alanyazın taraması Web of Science, Scopus, ERIC, Google Scholar ve DergiPark veritabanlarında gerçekleştirilmiştir. Tarama süreci öğretimsel planlama, öğretmen bilişi ve programla yorumlayıcı/muhakemeye dayalı ilişki boyutlarını temsil eden üç kavramsal küme temelinde, Boole işlemleri kullanılarak oluşturulan arama ifadeleriyle yürütülmüş; tarama İngilizce ve Türkçe yayınlarla sınırlandırılmıştır. Toplam 987 kayıt taranmış, aşamalı eleme süreci sonucunda analiz kapsamına 43 araştırma dâhil edilmiştir. Her çalışma, ÖDÖP Çerçevesi'nin yedi yapısı açısından birincil (P), ikincil (S) ya da yok (–) şeklinde kodlanmıştır. Veri analizi tematik yaklaşımla gerçekleştirilmiş, çalışmaların yöntemsel niteliği ise MMAT ve CASP ölçütlerinden uyarlanan bir değerlendirme çerçevesi kullanılarak incelenmiştir.

Bulgular

Bulgular üç araştırma sorusu çerçevesinde sunulmuştur. Kuramsal profil açısından en dikkat çekici bulgu, yapı kapsamındaki belirgin asimetridir. Öğretimsel karar verme (%67,4) ve pedagojik akıl yürütme (%58,1) alanyazında baskın konumdur. Bu durum, öğretmen bilişi geleneğinin planlamayı yapılandırılmış bir mesleki karar verme süreci olarak ele alan tarihsel ağırlığını yansıtmaktadır.

Buna karşılık motivasyonel yönelimler çalışmaların yalnızca %23,3'ünde ele alınmış, öğretmen inançları ise birincil odak olarak yalnızca %4,7 oranında incelenmiştir. Öğretmen etkenliği ve anlam kurma daha orta düzeyde temsil edilmekle birlikte, kuramsal çerçeve olarak kullanımları sınırlı kalmaktadır. Bu bulgu, alanyazında bilişsel karar alma çekirdeği ile motivasyonel ve muhakemeye dayalı boyutlar arasında yapısal bir dengesizliğe işaret etmektedir.

Yöntemsel açıdan nitel çalışmalar (%60,5) baskın olup, bunu karma yöntem (%25,6) ve nicel çalışmalar (%14,0) izlemektedir. Araştırma sonuçları büyük ölçüde betimleyici ve açıklayıcı niteliktedir (%74,5). Buna karşılık gelişimsel (%14,0) ve değerlendirci (%11,6) çalışmaların sınırlı olması, alanın müdahale ve dönüşüm süreçlerini açıklama kapasitesini kısıtlamaktadır.

Tematik analiz sonucunda üç temel bulgu ortaya çıkmıştır:

1. Öğretim planlaması öğretmenin bilgi, deneyim ve pedagojik muhakemesini birlikte kullanmasını gerektiren mesleki bir karar verme sürecidir.

2. Planlama öğretmenin programla yorumlayıcı ve muhakemeye dayalı bir ilişki kurduğu bir süreçtir

3. Öğretmenin anlama sürecindeki düşünsel etkinliği, bireysel bir özellikten ziyade bağlamsal koşullar içinde şekillenen bir kapasitedir.

Tartışma

ÖDÖP Çerçevesi'nin temel kuramsal katkısı, öğretim planlaması alanyazınının kuramsal açıdan tutarlı ancak alanda önemli olan diğer kuramlar açısından eksik olduğunu ortaya koymasıdır. Bu çalışmada üretilen kavramsal çerçeve (ÖDÖP), planlamanın bilişsel boyutlarını dışlamadan, bunları motivasyonel, muhakemeye dayalı ve bağlamsal boyutlarla ilişkisel bir bütün içinde yeniden konumlandırmaktadır.

Anlam kurma yapısı, bilişsel ve muhakemeye dayalı gelenekler arasında köprü kuran temel yapı olarak öne çıkmaktadır. Bu yapı, öğretmenlerin yalnızca neyi planladıklarını değil, programı nasıl yorumladıklarını ve bağlamsal olarak nasıl yeniden anlamlandırdıklarını açıklamada merkezi bir rol oynamaktadır.

Türkiye bağlamında yürütülen çalışmaların oluşturduğu alt küme (n = 8), bu kuramsal çerçevenin açıklayıcılığını test eden önemli bir karşılaştırmalı veri seti sunmaktadır. Merkezi eğitim programı sistemlerinde gözlenen uyum odaklı planlama eğilimleri, bireysel öğretmen kapasitesinden ziyade etkenlik ve motivasyonu sınırlayan yapısal koşulların bir sonucu olarak ortaya çıkmaktadır. Bununla birlikte, müdahale çalışmalarının bulguları bu eğilimlerin eğitsel olarak dönüştürülebilir olduğunu göstermektedir.

Sonuç ve Öneriler

Bu sistematik analiz, öğretim planlaması alanının yapısal özelliklerini ortaya koymaktadır. Alan güçlü bir bilişsel karar verme çekirdeğine sahip olmakla birlikte, motivasyonel ve muhakemeye dayalı boyutlar açısından önemli boşluklar içermektedir. Ayrıca alanyazının betimleyici ağırlıklı yapısı, gelecekteki araştırmalar için gelişimsel ve müdahale temelli çalışmaların öncelikli olması gerektiğini göstermektedir.

Öğretmen eğitimi açısından, planlama öğretiminin yalnızca bilişsel ve prosedürel boyutlara odaklanması yeterli değildir. Bunun yerine, öğretmen adaylarının inançlarını sorgulayan, motivasyonlarını geliştiren ve muhakemeye dayalı planlama süreçlerine aktif katılımını destekleyen bütüncül yaklaşımlara ihtiyaç vardır.

Merkezi programa dayalı sistemlerde gözlenen uyum odaklı planlama eğilimi, bireysel yetersizlikten çok yönetim yapılarının bir sonucudur. Bu nedenle politika düzeyinde yapılacak düzenlemelerin, öğretmenlere gerçek anlamda muhakeme ve yorumlama alanı tanıyacak şekilde tasarlanması gerekmektedir. ÖDÖP Çerçevesi, öğretim planlamasını çok boyutlu ve ilişkisel bir uygulama olarak inceleyen yeni araştırmalar için kavramsal bir temel sunmaktadır. Ancak sentez aşamasında geliştirilen kuramsal bir model olması nedeniyle, yapılar arasındaki ilişkilerin gelecekte yapılacak yeni araştırmalarla sınanması önerilebilir.

Continuity and Transformation in Undergraduate Child Development Curricula in Türkiye: A Policy Text Analysis (2016–2025)*

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Abstract

This article compares Türkiye's 2016 and 2025 nationally authorised undergraduate child development core curricula to examine how professional competence is carried forward, reorganised, and partially transformed in official curriculum policy. It responds to a specific gap in child development curriculum research: successive core curricula have rarely been analysed in terms of whether observed differences indicate substantive policy-text transformation, clearer textual organisation, increased explicitness, or rearticulation at a higher level of abstraction. Using a qualitative comparative document analysis design, the study focused on the two official core curriculum documents issued in 2016 and 2025. No human participants, measurement instruments, or outcome data were involved. Sections serving comparable roles in the two texts were matched, and reflexive thematic analysis was used to interpret explicit statements and less directly stated policy meanings across these sections. Bernstein's concept of recontextualisation and Ball's policy-as-text perspective informed the reading of professional knowledge, pedagogical and evaluative framing, and institutional responsibility. The analysis generated five themes: structural design and organisational logics, graduate competencies and professional profile, learning domains and content organisation, teaching strategies and assessment approaches, and implementation conditions and institutional requirements. The comparison shows continuity in the minimum-standards rationale, together with clearer textual connections in the 2025 curriculum among graduate competencies, pedagogy, assessment, and institutional conditions. The 2025 text also consolidates several previously dispersed expectations into a more integrated intended graduate profile. The findings suggest that curriculum alignment should consider faculty capacity, assessment design, learning environments, and institutional readiness alongside formal curriculum revision.

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Introduction

Undergraduate professional education is now expected to do more than organise disciplinary knowledge. It also has to define the forms of judgement, responsibility, and professional identity that graduates are expected to develop. This issue is especially important in child development, a multidisciplinary field concerned with biological, cognitive, emotional, and social dimensions of development and with professional work involving children and families in diverse, and sometimes vulnerable, contexts. Because professional competence in this field bears directly on children's and families' well-being, undergraduate preparation depends on a coherent curricular foundation that makes its assumptions about professional knowledge, pedagogy, and accountability sufficiently visible to guide institutional design.

In the Turkish higher education system, National Core Curricula (Ulusal Çekirdek Eğitim Programları, UÇEP) function as nationally authorised reference frameworks issued under the authority of the Council of Higher Education (CoHE), defining minimum expectations while leaving room for institutional adaptation (CoHE, 2016, 2025). For child development education, two texts are particularly important for understanding the recent revision of the national core curriculum framework: The Child Development National Core Curriculum (ÇUÇEP; CoHE, 2016) and the Child Development Undergraduate Core Curriculum (ÇGL-UÇEP; CoHE, 2025). As the two most recent nationally authorised core curriculum frameworks in the field, these documents make it possible to trace how professional competence has been redefined across successive national curriculum texts. ÇUÇEP (2016) represents the earlier nationally recognised framework, whereas ÇGL-UÇEP (2025) functions as the current national reference point to which undergraduate child development curricula are expected to align. Their comparison is therefore significant because it captures a transition in the officially stated framework for undergraduate child development education in Türkiye.

ÇUÇEP (CoHE, 2016) explicitly presents itself not as a fully elaborated curriculum in the conventional sense, but as a national framework that departments were expected to use when structuring their own undergraduate curricula. It organises child development education around four main components: the aims and national competencies of undergraduate child development education, core concepts and approaches, the child development professional process, and applications with related skills. The document situates curriculum development within an approach organised around learning outcomes, competencies, and process-based principles, and expects departments to balance compulsory and elective coursework broadly within the 70-75% and 25-30% ranges, respectively (CoHE, 2016). In this way, it establishes a nationally standardised point of departure for curriculum design while leaving the more detailed elaboration of pedagogical and evaluative arrangements to institutional curricula.

ÇGL-UÇEP (CoHE, 2025), by contrast, articulates an updated national framework for undergraduate child development education and establishes the current point of reference for institutions by requiring curricula to be structured in line with it. While it retains the language of minimum standards and standardisation, it presents a more visibly integrated design through a four-layer structure that brings together core skills, innovative teaching methods and environments, learning-domain weightings, and environment and instructor competencies. The document further fixes the curriculum balance at 70% compulsory and 30% elective, and more explicitly identifies problem-based learning (PBL), performance-based formative assessment, digital and self-directed resources, and baseline infrastructural and instructional requirements as part of the framework itself (CoHE, 2025). These features make

the relationship among professional competence, pedagogical guidance, and enabling conditions more visible within a single national framework.

For this reason, the two documents provide a useful basis for a policy-text comparison that goes beyond administrative curriculum design. From this perspective, the study approaches them as texts that define what counts as legitimate professional knowledge, foreground particular pedagogical priorities, and project intended graduate identities. The comparison therefore concerns differences in content and structure as well as how competence is textually organised, justified, and authorised across two nationally sanctioned frameworks. The study is informed by Bernstein's (2000) concept of recontextualisation and Ball's (1994) policy-as-text perspective, which are discussed below in relation to the analysis.

Internationally, higher education policy has increasingly moved towards competency-based and learner-centred curricular models (OECD, 2018; Schleicher, 2018). Research on curriculum-policy change further shows that such changes are mediated by institutional conditions, professional identity, and the interpretation of policy texts in practice (Li et al., 2011; Valdés Sánchez & Gutiérrez-Esteban, 2023). For curriculum policy research, this makes comparative reading of official curriculum texts especially valuable when the aim is to examine how knowledge, pedagogy, and accountability are framed before questions of enactment are addressed.

Despite these wider shifts, the recent revision of the national core curriculum framework for undergraduate child development education in Türkiye remains only partially examined at the level of the core curriculum texts. Existing national studies have tended to focus primarily on course credits, structural standardisation, or implementation challenges (Demir & Ilgaz, 2024; Kürkçü, 2021). Less attention has been given to whether the recent revision reflects substantive change, clearer organisation of existing expectations, a shift in level of abstraction, or selective reconfiguration in the way competence is stated. The gap is important because these two nationally authorised core curriculum frameworks mark successive policy moments in which professional competence in undergraduate child development education has been defined, organised, and made more or less visible. Although competency-based core curriculum models have been examined in other professional fields such as medical education (Budakoğlu et al., 2014), comparable theory-informed analyses of child development core curricula as policy texts remain limited.

The present study therefore compares ÇUÇEP (CoHE, 2016) and ÇGL-UÇEP (CoHE, 2025) as policy texts, with particular attention to their organising assumptions, professional identity model, and arrangement of competency expectations. Viewed through these theoretical lenses, the analysis examines how professional knowledge is recontextualised, how pedagogic and evaluative expectations are signalled and structured, and how responsibility for implementation and enabling conditions is positioned across system and institution. Methodologically, the study combines comparative document analysis with reflexive thematic analysis to organise and interpret evidence from the two authorised core curriculum documents.

To keep the comparison clear, the study uses three terms in a specific sense. Organising assumptions refer to the educational rationale, structural logic, and pedagogical assumptions made visible in each text. Professional identity model refers to the formal graduate profile, dispositions, and forms of judgement that the curriculum seeks to promote. Competency

structure refers to how professional expectations are arranged in the document, including whether they appear as distributed task statements or as more integrated profiles.

The central research question is: *How do ÇUÇEP (2016) and ÇGL-UÇEP (2025) articulate continuity, rearticulation, increased explicitness, and selective reconfiguration in the organising assumptions, professional identity model, and competency structure of undergraduate child development education?* This overarching question is addressed through five related sub-questions:

1. How do the two curricula frame their structural design and organisational logics, and what rationales are made explicit or implicit?
2. How is the professional identity model, including the intended graduate profile, constructed in each text, and how is competence articulated across the two frameworks?
3. How is curricular content organised through learning domains, sequencing, and disciplinary foundations, and how do these organisational choices affect the classification and visibility of legitimate knowledge?
4. What teaching strategies and assessment approaches are specified or signalled in the texts, and how are pedagogic and evaluative expectations framed across the two documents?
5. What implementation conditions and institutional responsibilities are articulated in the texts, and how do these expectations distribute responsibility across system and institution?

The study makes three contributions. First, it approaches child development core curricula as policy texts that organise professional knowledge and project intended graduate identities. Second, it offers a theory-informed comparison that treats transformation as a differentiated pattern rather than a simple break between the two texts. In doing so, it shows how continuity, rearticulation, increased explicitness, and selective reconfiguration shape the way competence, pedagogy, and institutional responsibility are stated across the 2016 and 2025 national core curricula for child development in Türkiye. Third, it clarifies the interpretive scope of document-based analysis by distinguishing intended policy-text orientation from enacted practice.

Theoretical Framework: Recontextualisation and Policy-as-Text

The comparison draws on Bernstein's (2000) concept of recontextualisation and Ball's (1994) policy-as-text perspective. This theoretical pairing is appropriate because ÇUÇEP (2016) and ÇGL-UÇEP (2025) are official curriculum texts, not simply lists of courses or competencies. They organise professional knowledge, make particular expectations more visible, and frame how undergraduate child development education is understood at the national level. Bernstein's concept of recontextualisation draws attention to how knowledge is selected, relocated, and organised for educational purposes. A curriculum text does not transmit disciplinary knowledge in a neutral form. It selects what counts as relevant knowledge, places that knowledge within a pedagogical structure, and makes it teachable, assessable, and institutionally recognisable. In this study, recontextualisation is read mainly through classification and framing. Classification refers to how professional knowledge areas are separated, grouped, or integrated in the curriculum text. Framing refers to how strongly the text specifies pedagogical expectations, assessment approaches, learning environments, and implementation responsibilities. This distinction is important for the present comparison because some differences between the 2016 and 2025 documents concern the organisation and visibility of existing expectations, while others suggest a more selective restructuring of how competence, pedagogy, assessment, and institutional conditions are connected.

Ball's (1994) policy-as-text perspective further clarifies the limits of the analysis. Policy texts set priorities, define responsibilities, and create expectations, but they do not determine practice in a linear or uniform way. Their meanings are interpreted by institutions and actors, and questions of enactment require a different kind of empirical evidence. In this sense, Ball's perspective also helps the analysis treat the two curriculum documents as texts whose meanings are open to institutional interpretation rather than as direct descriptions of practice. For this reason, statements in ÇGL-UÇEP (2025) about problem-based learning, performance-based formative assessment, digital resources, instructor competencies, or learning environments are read in this study as intended policy orientations. They are not treated as evidence that these expectations have been implemented in the same way across universities.

Together, Bernstein (2000) and Ball (1994) provide the conceptual basis for comparing continuity and transformation across the two documents. Bernstein directs attention to the organisation of professional knowledge, the naming of learning domains, and the framing of pedagogical and evaluative expectations. Ball keeps the analysis focused on policy-text meaning, institutional interpretation, and the positioning of implementation responsibility, without treating the texts as proof of implementation. In this study, these concepts guided the reading of the documents without functioning as a fixed coding scheme. They help distinguish continuity, textual rearticulation, increased explicitness, and selective reconfiguration, while the themes themselves were developed through repeated reading and comparison of the two curriculum documents.

Method

Design and Analytic Approach

The study was designed as a qualitative and interpretive comparative document analysis of two nationally authorised child development core curricula. The purpose was to examine these documents as policy texts rather than only as lists of courses or competencies. Comparative document analysis made it possible to match sections with similar roles in the two documents and to trace continuity, difference, and rearticulation in structure, emphasis, and organising rationale over time (Cleland et al., 2023). Reflexive thematic analysis was used to interpret patterned meanings within this focused document set (Braun & Clarke, 2022). Used together, these approaches supported an examination of how professional competence, pedagogy, and institutional responsibility were articulated within and across the two curriculum texts.

This combination fits the study because the analysis needed to consider both the formal provisions of the documents and the way they present intended graduate identity and professional competence. In this study, "qualitative" refers to the analysis of meaning within official curriculum texts, while "interpretive" indicates that policy meaning was developed through sustained engagement with the documents rather than treated as self-evident.

Analytic Boundaries

As explained in the theoretical framework, Bernstein (2000) and Ball (1994) informed the reading of the documents without being used as a fixed codebook. The analysis therefore remained focused on what the two documents state, emphasise, and make visible, without making claims about how the curricula are enacted in practice.

Analytic Scope and Comparison Rules

The five sub-questions were used to structure the comparison and were grouped into three broader lines of inquiry during coding. The first line of inquiry examined how the curricula classified disciplinary foundations, learning domains, sequencing, and rationales for inclusion. The second examined how the texts described teaching approaches, expected learning tasks, assessment orientations, tools, and evaluation criteria. The third examined how the documents assigned responsibility for implementation, including references to institutional roles, infrastructure, instructor capability, governance expectations, and quality assurance. Following Ball's (1994) policy-as-text perspective, prescriptive statements were treated as intended framings rather than as evidence of enacted pedagogical effects.

Because the 2016 and 2025 documents do not share the same structure, comparable sections were matched by the role they played in each document, not only by their headings. For example, the 2016 document presents teaching methods and assessment approaches under separate list-based headings, whereas the 2025 document incorporates these elements within an integrated framework of innovative teaching components. These sections were therefore compared because both shaped how the curriculum described teaching and assessment expectations. Where no comparable communicative function could be established, functional equivalence was not claimed. Such elements were treated as non-equivalent textual features and were not used as direct evidence of change. Similarly, task-level statements in the 2016 document were not treated as direct equivalents of domain-level formulations in the 2025 document unless a shared educational function could be established.

The analysis also distinguished four types of comparative relationship. Continuity referred to expectations present in both texts. Textual rearticulation referred to similar expectations expressed at a different level of abstraction or through a different mode of presentation. Increased explicitness referred to expectations that became more visible or more systematically positioned in the 2025 text. Selective reconfiguration referred to cases where the 2025 text relocated an expectation within a new relational structure, for example by formally linking graduate competence to specified pedagogical orientations, assessment approaches, or institutional conditions that were not equivalently embedded in the 2016 framework.

The comparison also accounted for differences in the nature of the two documents. ÇUÇEP (CoHE, 2016) explicitly defines itself as a national framework rather than a fully elaborated curriculum and notes that detailed explanations of teaching and assessment methods were not considered necessary. Accordingly, differences in pedagogical and evaluative specification were treated as meaningful for understanding policy-text construction, but not automatically as evidence of substantive curricular transformation. In this study, abductive analysis meant moving between the theoretical lens and the documentary evidence rather than applying a fixed theory-driven codebook. Bernstein's (2000) and Ball's (1994) concepts functioned as sensitising concepts that directed attention to classification, framing, policy orientation, and institutional responsibility. Within this broad conceptual frame, codes and themes were developed through repeated reading of the documents, with attention to their wording, emphases, and implied meanings.

Data Sources and Context

The study examined two official policy documents that constitute successive nationally authorised core curriculum frameworks for undergraduate child development education in Türkiye: (1) ÇUÇEP (CoHE, 2016), the Child Development National Core Curriculum, and (2)

ÇGL-UÇEP (CoHE, 2025), the Child Development Undergraduate Core Curriculum. Both documents were retrieved from publicly accessible online sources issued under the authority of CoHE. They were selected because they are the only nationally authorised and standardised frameworks defining curricular structure, intended learning expectations, and professional orientations in child development during their respective periods. University-level curriculum handbooks were not included because they reflect institutional adaptations of the national framework rather than national policy frameworks themselves. The analysis focused on these two CoHE-issued documents to examine how continuity, rearticulation, increased explicitness, and selective reconfiguration appear in the curricular logic and intended professional identity of the 2016 and 2025 texts. All direct quotations from the Turkish curriculum documents were translated into English by the author and checked against the original wording during analysis to preserve conceptual accuracy.

Both texts were produced through CoHE-coordinated processes that positioned core curricula within broader higher education policy priorities. The analysis therefore did not assume a simple opposition between standardisation and flexibility. Instead, each document was treated as a policy text that could simultaneously claim standardisation while articulating competence, pedagogy, evaluation, and institutional responsibility in different degrees of explicitness.

Data Analysis

Reflexive thematic analysis followed Braun and Clarke's (2022) approach. Coding stayed close to the wording, structure, and comparative features of the documents. The analysis was conducted manually because close, repeated reading of two related but differently structured policy texts was central to tracing conceptual and terminological differences, including differences in level of abstraction and mode of presentation. The analysis moved through six steps. First, each document was read repeatedly. Meaning units were then coded, related codes were grouped into preliminary patterns, and these patterns were checked against the full document set. The final themes were refined through this comparison before the analytic account of similarities and differences was written.

The findings are organised into five themes linked to the study's sub-questions, but these themes were not used as pre-set categories. They were refined through repeated comparison of coded extracts across the two documents. The study's sub-questions and the concepts drawn from Bernstein (2000) and Ball (1994) helped set limits for interpretation, while semantic coding and constant comparison shaped the final thematic structure. For example, the 2025 requirement for "PBL classrooms" was first coded semantically as an infrastructure requirement for PBL. Read through Ball's (1994) policy-as-text perspective, it was then interpreted as a policy-text articulation of enabling institutional conditions rather than as evidence of institutional enactment. This reading led to its inclusion in the theme on implementation conditions and institutional requirements. Table 1 illustrates how selected textual extracts were linked to theory-informed themes.

Table 1*Example of Coding and Theme Development*

<i>Document Extract (Original Text translated to English)</i>	<i>Initial Code</i>	<i>Interpretive Category (Theory-Informed)</i>	<i>Final Theme</i>
2016: "Determines the observation technique(s) and appropriate observation form(s)."	Task-specific practice skill	Task-specific articulation of professional capability	<i>Theme 2:</i> Graduate competencies and professional profile
2025: "Uses technology effectively in professional work and acts in accordance with contemporary requirements, ethical principles, and quality management processes."	Integrated ethical and digital accountability	Integrated textual articulation of professional accountability	<i>Theme 2:</i> Graduate competencies and professional profile
2025: "Problem-based learning classrooms (at least two), group study halls, free internet connection environments..."	Infrastructure prerequisites for PBL	Articulation of enabling institutional conditions	<i>Theme 5:</i> Implementation conditions and institutional requirements

Trustworthiness and Rigour

Credibility, dependability, and confirmability were supported through several qualitative research procedures. Because the analysis was conducted by a single researcher within a reflexive thematic analysis framework, inter-coder reliability statistics were not used. Credibility was supported through systematic cross-document comparison and repeated checking of interpretive claims against the documentary evidence.

Structured peer debriefing and a detailed audit trail were used to support the trustworthiness of the analysis. Peer debriefing consisted of three formal consultation sessions with an academic colleague whose expertise includes curriculum studies. Consistent with reflexive thematic analysis (Braun & Clarke, 2022), the colleague did not independently double-code the documents for statistical agreement. Instead, the colleague reviewed selected coded extracts from both curriculum documents, the coding rationale, and the preliminary thematic map, and then discussed possible over-readings or unsupported interpretations with the researcher.

These discussions helped identify places where the 2025 curriculum could have been over-read as evidence of pedagogical improvement rather than interpreted as a policy text articulating preferred orientations. In response, the researcher refined coding boundaries and thematic definitions to preserve a clear distinction between policy-level framing and enacted pedagogical impact. A detailed audit trail was maintained throughout the study. Analytic memos documented coding decisions, interpretive shifts, theme refinement, and the rationale for aligning functionally equivalent sections across the two documents. This documentation made it possible to trace how early coding decisions were revised, merged, or redefined over the course of the analysis.

Reflexivity was also maintained throughout the analytic process. The researcher was not involved in the development or implementation of either curriculum document. Nonetheless, disciplinary expertise may have shaped analytic sensitivity and thematic emphasis. This possibility was addressed through ongoing memo-writing, repeated returns to the documentary evidence, and continued attention to the distinction between articulated policy framing and enacted pedagogical impact.

Ethical Considerations

This study analysed publicly available official curriculum documents and did not involve human participants, personal data, or interventions. Ethics committee approval was therefore not required. All materials were analysed in accordance with academic integrity principles, and all sources are cited following APA 7.

Findings

The findings compare ÇUÇEP (CoHE, 2016) and ÇGL-UÇEP (CoHE, 2025) across five themes developed through reflexive thematic analysis. Through these themes, the comparison follows five main aspects of the two curriculum texts: purpose, competence architecture, content organisation, teaching and assessment expectations, and the conditions associated with implementation. The analysis is confined to what is made visible within the curriculum texts themselves. Accordingly, the findings are presented as patterns in policy-text construction rather than as evidence of enacted practice or pedagogical impact across institutions. The four comparative terms defined in the Method section are used consistently in the findings: continuity, textual rearticulation, increased explicitness, and selective reconfiguration.

Theme 1: Structural Design and Organisational Logics

The first theme concerns the way each curriculum text legitimises its revision rationale and organising logic by specifying what the national baseline is expected to accomplish and how the curriculum is structurally oriented to that purpose. Both texts foreground a minimum-standards and standardisation rationale, but they articulate the function of this baseline in different ways. ÇUÇEP (CoHE, 2016) frames the core curriculum primarily as a national reference for comparability, setting out minimum qualification expectations and providing a shared point of alignment for institutional curricula. This structural logic is explicitly evidenced in the text, which defines its purpose as *“establishing the main elements and principles (minimum standards) of the Child Development undergraduate education program on a national scale”* (CoHE, 2016, p. 6). Furthermore, the 2016 document frames its curriculum rationale through educational outcomes, competencies, and process-based approaches, stating that *“educational outcomes, competencies, and process-based approaches have been adopted”* (CoHE, 2016, p. 6).

ÇGL-UÇEP (CoHE, 2025) retains the same baseline rationale while expressing curriculum purpose through more explicit competence-oriented language. It foregrounds the characteristics expected of the 21st-century child development professional and incorporates learning, literacy, and life and career skills into its core structure (CoHE, 2025, pp. 4, 10). In doing so, the document signals a more explicit articulation of the organising rationale by linking this competence-oriented framing to problem-solving process-based approaches. As stated in the text, *“During the creation of ÇGL-UÇEP, the characteristics expected of a child development professional in the 21st century, competencies, and approaches based on the problem-solving process were adopted”* (CoHE, 2025, p. 4). It also makes curriculum design

considerations more explicit by specifying the teaching approach, assessment orientation, disciplinary pattern, learning environments, and instructor competencies expected to support curriculum implementation. The difference is primarily one of discursive framing. The 2025 document legitimises its structural design through a more explicit competence- and problem-solving-oriented logic, without implying pedagogical superiority or enacted institutional change. Table 2 summarises the comparative patterns in structural design and organisational logics between the two documents.

Table 2

Comparative Patterns in Structural Design and Organisational Logics Between ÇUÇEP 2016 and ÇGL-UÇEP 2025

<i>Comparative Focus</i>	<i>ÇUÇEP 2016</i>	<i>ÇGL-UÇEP 2025</i>
Main Objective	Frames the core curriculum around minimum qualification expectations and national consistency.	Retains the minimum-standards and standardisation rationale while making current professional expectations and competence orientation more explicit within the curriculum purpose.
Educational Orientation	Organises the curriculum through learning outcomes and national competencies, positioning the core text primarily as a national reference framework.	Carries forward the outcomes and competencies rationale while adding more visible 21st-century professional characteristics and problem-solving process emphases.
Core Objectives and Design Logic	Identifies graduate competencies, reflects key professional situations in education, revises topics and competencies in response to developments in the field, and guides institutional curricula in line with the national framework.	Rearticulates these objectives through a more integrated framework that connects the graduate profile, competence emphasis, core skills, learning-domain structure, and design-relevant components specified elsewhere in the text.

Overall, the two texts show continuity in their minimum-standards and standardisation rationale, alongside greater explicitness in how this rationale is connected to competence orientation and curriculum design. The 2016 curriculum establishes a concise national baseline, whereas the 2025 curriculum makes the competence rationale, 21st-century professional expectations, and organising assumptions more visible within the structure of the text. The result is greater textual integration and visibility at the level of structural design, while the minimum-standards logic remains continuous across the two documents.

Theme 2: Graduate Competencies and Professional Profile

The second theme focuses on the intended graduate profile and on how each text defines the scope, level of detail, and normative expectations of competence statements. ÇUÇEP (CoHE, 2016, pp. 17-18) specifies 18 national competencies, while related practice-based skills appear elsewhere in the document as more function- and task-oriented statements. This pattern is visible, for example, in statements such as “*Determines the observation technique(s) and appropriate observation form(s)*” (CoHE, 2016, p. 28), and in requirements that graduates make the necessary referrals to relevant specialist physicians in cases where a child has no existing medical diagnosis but the developmental condition may require medical diagnosis (CoHE, 2016, pp. 17-18). This matters for the comparison because it positions referral within

the graduate's role while reserving medical diagnosis for specialist physicians. Read in this way, the 2016 text already signals a distinction between developmental screening and diagnostic determination, although it does so through dispersed task statements rather than an integrated competency frame.

ÇGL-UÇEP (CoHE, 2025, p. 7) sets out eight nationally stated graduate competencies that present competence at a broader curriculum level, bringing into view expectations such as evidence-informed judgement, transdisciplinary working, communication, social responsibility, and digital and ethical accountability. Accountability-oriented expectations are stated explicitly within the graduate competency framework. For instance, the document notes that graduates should *"use technology effectively in professional work and act in accordance with contemporary requirements, ethical principles, and quality management processes"* (CoHE, 2025, p. 7). The reduction in the number of competency statements is therefore best understood as a change in level of abstraction and textual integration. The 2025 text gathers comparable expectations into a more compact graduate profile and brings ethical and digital accountability more clearly into the competency framework. Table 3 outlines these differences in competency articulation and graduate profile.

Table 3

Competency Articulation and Graduate Profile in ÇUÇEP 2016 and ÇGL-UÇEP 2025

<i>Comparative Focus</i>	<i>ÇUÇEP 2016</i>	<i>ÇGL-UÇEP 2025</i>
Structure and Scope	Presents 18 national competencies, with related practice expectations distributed across more detailed process and skill statements.	Defines eight national graduate competencies at a broader curriculum level.
Core Competency Focus	Combines developmental assessment, planning, implementation, reporting, communication, ethics, quality processes, and interdisciplinary cooperation across multiple statements.	Brings evidence-informed practice, assessment and decision-making, intervention and support, counselling, transdisciplinary working, communication, social responsibility, and technology-ethics-quality alignment into a more compact graduate profile.
Level of Articulation	Expresses competence through a more distributed combination of curriculum-level competencies and task-oriented practice statements.	Expresses competence through broader and more integrated curriculum-level formulations.
Competency Framing	Makes several professional responsibility expectations visible, but across a more dispersed textual structure.	Makes professional responsibility, digital accountability, and quality-related expectations more visible within a consolidated competency framework.

Overall, the main difference between the two documents lies in level of abstraction and textual integration. Responsibility-oriented expectations are already visible in ÇUÇEP (CoHE, 2016), including references to legislation, human rights, scientific and cultural values, professional ethics, and quality management processes, as well as in more detailed process and skill statements (CoHE, 2016, pp. 17-18). ÇGL-UÇEP (CoHE, 2025) gathers comparable

expectations into a smaller set of broader graduate competencies and presents them through a more unified professional profile. This pattern reflects textual rearticulation and increased explicitness in how competence is organised within the curriculum text. It also positions alignment among content organisation, practice-based components, pedagogical expectations, and institutional conditions as a more visible textual expectation within the 2025 framework.

Theme 3: Learning Domains and Content Organisation

Theme 3 examines how each curriculum text organises and legitimises curriculum content by making disciplinary foundations and professional learning structures more or less explicit. ÇUÇEP (CoHE, 2016) presents professional content through a catalogue-style, list-based structure without explicit thematic or domain-level grouping, leaving the organising logic primarily topic-driven. For instance, the 2016 document sequentially lists markedly different conceptual areas such as Moral Development, Family, and Brain Development as separate, unclustered subject headings (CoHE, 2016, pp. 24-26).

ÇGL-UÇEP (CoHE, 2025), by contrast, introduces six explicitly defined Professional Learning Domains, including Children at Risk and Children in Healthcare Settings, which foreground distinct practice contexts and professional focus areas across child development. The text formalises these boundaries by stating that *"Professional learning domains have been addressed and explained under the headings of Child Development areas and periods, children with special needs, children at risk, children in healthcare institutions, parenting and family, and supporting development"* (CoHE, 2025, p. 20). This domain-based organisation makes the curriculum content more readily interpretable by grouping it under named professional domains. In policy-text terms, the 2025 document classifies service contexts and professional focus areas more explicitly within its account of professional preparation.

Viewed through Bernstein's (2000) concept of recontextualisation, this pattern is best read cautiously as a clearer classification and naming of professional knowledge areas, rather than as evidence that the underlying knowledge base was fundamentally replaced. The 2025 text gives areas such as Parenting and Family and Children at Risk a more prominent status by positioning them as standalone domains within the core structure of professional preparation. In addition, by naming natural sciences alongside behavioural sciences and health-related foundations, the 2025 text makes the stated interdisciplinary pattern and scientific literacy expectations more explicit within the framework (CoHE, 2025, p. 26). Table 4 compares the curriculum structure and learning domains across the 2016 and 2025 texts.

Table 4*Comparative Patterns in Curriculum Content and Learning Domains in ÇUÇEP 2016 and ÇGL-UÇEP 2025*

<i>Comparative Focus</i>	<i>ÇUÇEP 2016</i>	<i>ÇGL-UÇEP 2025</i>
Curriculum Structure	Alphabetically listed content headings, without thematic categorisation.	Course content grouped under six clearly defined Professional Learning Domains.
Core Professional Domains	Key areas such as family-focused work, special needs, and risk-related practice appear within the broader list but are not presented as distinct, conceptually clustered domains.	Six structured domains: Developmental Areas and Periods, Children with Special Needs, Children at Risk, Children in Healthcare Settings, Parenting and Family, and Supporting Development.
Course Weighting	Flexible ratio: 70-75% compulsory, 25-30% elective (CoHE, 2016, p. 7).	Fixed ratio: 70% compulsory, 30% elective (CoHE, 2025, p. 26).
Disciplinary Foundations	Emphasises basic and behavioural sciences alongside professional content.	Names natural sciences alongside behavioural sciences and health-related foundations, making the stated interdisciplinary pattern more explicit (CoHE, 2025, p. 26).

Two key points warrant consideration here. First, the definition of Professional Learning Domains gives the 2025 curriculum a more explicit content architecture in relation to major service contexts in the field. This is best understood as increased textual organisation and visibility, not as evidence that the field's underlying knowledge base was replaced. Second, the shift from a flexible to a fixed compulsory-elective ratio signals tighter national specification of curriculum structure while retaining a defined elective space at 30%, which preserves a formal area for institutional discretion.

Theme 4: Teaching Strategies and Assessment Approaches

Theme 4 examines how each curriculum text regulates pedagogical communication by specifying what counts as legitimate teaching and assessment practice and by making evaluative expectations more or less explicit. The two curricula differ most clearly in how they construct teaching and assessment. ÇUÇEP (CoHE, 2016) provides extensive lists of instructional methods and evaluation tools, presenting them largely as a repertoire of approaches that can be combined. The document recommends using complementary methods and techniques together so that they support one another, instead of relying on a single method (CoHE, 2016, p. 68). Its repertoire includes case discussion, project-based learning, clinical practice, and simulation (CoHE, 2016, pp. 65-67). In assessment, ÇUÇEP (CoHE, 2016) likewise lists a wide range of options, including written and oral examinations, portfolio-based assessment, peer assessment, and individual or group evaluations embedded in problem-based and project-based interactive activities. These are presented as available assessment tools rather than as a single overarching assessment orientation for the curriculum (CoHE, 2016, pp. 68-69).

ÇGL-UÇEP (CoHE, 2025) gives these pedagogical and evaluative expectations a more explicit programmatic status. The document states that *"the basic teaching method for the Child*

Development area innovative core education program is PBL" (CoHE, 2025, p. 17). Similarly, the evaluation approach is framed as *"a performance-based formative approach"* (CoHE, 2025, p. 19), supported by tools such as rubrics, checklists, peer assessment, and self-assessment. In addition, the 2025 text specifies digital, accessible, and self-directed learning resources, linking the intended learning process to autonomy, reflection, and inquiry (CoHE, 2025, pp. 17, 19).

From a policy-as-text perspective, this increased specificity is best read as a stronger textual specification of preferred pedagogical and evaluative orientations within the national framework. This interpretation remains limited to policy-text specification and does not make claims about pedagogical improvement or classroom impact. It also suggests that the 2025 text narrows some local interpretive latitude by tying teaching and assessment more closely to a defined policy orientation. Table 5 contrasts the intended teaching and assessment orientations articulated in the two curricula.

Table 5

Teaching and Assessment Orientations in ÇUÇEP 2016 and ÇGL-UÇEP 2025

<i>Comparative Focus</i>	<i>ÇUÇEP 2016</i>	<i>ÇGL-UÇEP 2025</i>
Teaching Approach	Presents an eclectic repertoire of methods and techniques and recommends combining complementary approaches, including case discussion, project-based learning, clinical practice, and simulation (CoHE, 2016, pp. 65-68).	Identifies PBL as the basic teaching method within the innovative core curriculum (CoHE, 2025, p. 17).
Assessment Approach	Lists multiple assessment methods, including written and oral examinations, portfolio-based assessment, peer assessment, and individual or group evaluations embedded in problem-based and project-based interactive learning activities (CoHE, 2016, pp. 68-69).	Specifies performance-based formative assessment as the stated evaluation approach (CoHE, 2025, p. 19).
Learning Resources	Offers limited explicit guidance regarding the nature and selection of learning materials.	Specifies digital, accessible, and self-directed learning resources to support autonomy, reflection, and independent inquiry (CoHE, 2025, p. 19).

At the level of the policy text, the 2025 framework makes the relationship between pedagogical expectations and the organisation and evaluation of learning more explicit. The key difference lies in status and specification: approaches such as project-based or problem-based interactive learning appear in the 2016 curriculum as part of a broader repertoire, while the 2025 text assigns PBL a more central and programmatic role by identifying it as the basic teaching method. The stronger emphasis on learner-centred resources positions students as active participants expected to engage in inquiry, reflection, and collaborative problem work, while linking competence to more explicit pedagogical and assessment expectations.

Theme 5: Implementation Conditions and Institutional Requirements

The fifth theme concerns how each curriculum text allocates responsibility and specifies the conditions presented as enabling implementation, particularly through references to learning environments and instructional capacity. ÇUÇEP (CoHE, 2016) links implementation largely to the qualifications of those responsible for practice-based supervision, whereas ÇGL-UÇEP

(CoHE, 2025) incorporates learning environments and instructor competencies directly into the core structure of the framework. In ÇUÇEP (CoHE, 2016), implementation expectations are positioned primarily around practice-based supervision, with emphasis on formal preparation, professional experience, and interpersonal communication. This is evident in the requirement that the instructor should *“have at least a bachelor’s degree in the relevant field, have been working in one of the application areas for at least two years, possess good interpersonal communication skills, and have the skills to transfer professional knowledge to students in the most effective way”* (CoHE, 2016, pp. 30-31). In the same document, a detailed explanation of teaching and assessment methods is treated as unnecessary because ÇUÇEP 2016 is framed as a national framework rather than a fully elaborated curriculum (CoHE, 2016, p. 7).

ÇGL-UÇEP (CoHE, 2025) specifies a set of enabling conditions aligned with its pedagogical and evaluative orientation. At the level of stated purpose, the document presents methods, materials, assessment approaches, disciplinary pattern, and basic environment and instructor requirements as part of a holistic national framework (CoHE, 2025, p. 4). This orientation is then formalised in the four-layer design of ÇGL-UÇEP-2025, whose fourth layer comprises environment and instructor competencies (CoHE, 2025, p. 8). More concretely, the document identifies infrastructure requirements such as *“PBL classrooms (at least two), group study halls, [and] free internet connection environments”* and a teaching management system that supports interaction among students, instructors, and materials (CoHE, 2025, p. 27). Instructor expectations are likewise framed in terms of demonstrable pedagogical capability. The document specifies competencies including *“the ability to provide student-centred learning, provide PBL, conduct performance-based evaluation, provide online learning/distance education, and develop interactive multimedia content”* (CoHE, 2025, p. 27). Table 6 summarises the institutional requirements and implementation conditions set out in the two core curricula.

Table 6

Institutional Requirements in ÇUÇEP 2016 and ÇGL-UÇEP 2025

<i>Comparative Focus</i>	<i>ÇUÇEP 2016</i>	<i>ÇGL-UÇEP 2025</i>
Infrastructure and Environment	No formal infrastructure requirements are specified. The focus is placed on mentor or supervisor qualifications.	Specifies minimum standards for PBL classrooms, group study spaces, internet access environments, and a teaching management system that supports interaction and self-directed learning.
Instructional and Supervisory Competencies	Emphasises supervisor qualifications such as field experience, communication skills, and the ability to transfer professional knowledge effectively.	Specifies instructional competencies including learner-centred teaching, PBL facilitation, performance-based assessment, and online or blended teaching capabilities.
Implementation Logic	Implementation readiness is linked primarily to the qualifications of individual field guides and supervision arrangements.	Implementation readiness is articulated through environmental and instructor competencies aligned with the curriculum’s pedagogical orientation.

This theme provides the clearest basis for interpreting the 2025 framework as a selective reconfiguration of implementation conditions within the curriculum text. In contrast to themes where many differences concern abstraction level, consolidation, or increased explicitness, the 2025 curriculum incorporates environment and instructor competencies into the core

framework in a way that is not equivalently articulated in the 2016 document. The analysis shows that institutional conditions are made more explicit within the national framework, without implying that institutions have uniformly developed the capacity to meet them. This pattern suggests that learning environments, instructional infrastructure, and instructor competencies are made more visible as conditions for organising pedagogy and assessment.

Discussion

The comparison suggests that change between the two core curriculum texts is not uniform. For this reason, not every observed difference between ÇUÇEP (CoHE, 2016) and ÇGL-UÇEP (CoHE, 2025) is treated as evidence of substantive curricular change. Several expectations visible in ÇGL-UÇEP were already present in ÇUÇEP, although they were distributed across task-specific, process-oriented, or list-based formulations. The clearest change in the 2025 curriculum concerns the level of abstraction and textual integration through which these expectations are organised. Selective reconfiguration is most defensible where the 2025 text links pedagogical orientation, assessment approach, and environment and instructor competencies within the national framework in a way not equivalently articulated in the 2016 document.

Read through Bernstein's (2000) concept of recontextualisation, this pattern points to changes in the classification, visibility, and integration of professional knowledge. The later curriculum articulates its structural rationale through more explicitly competence-oriented language, consolidates graduate expectations into a smaller set of nationally framed competencies, and reinforces this organisation through named Professional Learning Domains that make service contexts and disciplinary relationships more visible within the curriculum structure. These shifts establish a clearer textual relationship among graduate expectations, pedagogical orientation, and the conditions under which learning is intended to take place.

From Ball's (1994) policy-as-text perspective, the stronger framing in the 2025 curriculum is best understood as a textual construction of preferred orientations rather than as evidence of enacted institutional change. The explicit designation of problem-based learning (PBL) and performance-based formative assessment makes pedagogical expectations more legible within the national framework. This increased specificity may be read as greater internal coherence, but it may also signal stronger central guidance, more visible accountability expectations, and reduced local interpretive latitude.

This relationship becomes clearer when pedagogical orientation is considered alongside the environments, instructor capabilities, and technological conditions specified in the 2025 curriculum text. In the later text, competence is framed in relation to graduate attributes as well as learning environments, instructional capability, and access conditions. The comparison therefore suggests that the 2025 revision links content, pedagogy, and institutional conditions more closely within the policy text. This is consistent with research showing that inquiry-oriented and formative approaches depend on facilitation quality, institutional support, systemic alignment, and adequate assessment and infrastructure conditions (Awang et al., 2025; Eğitim Reformu Girişimi [ERG], 2015; Heystek et al., 2025; Hmelo-Silver, 2004; Kusumatuty et al., 2018; McLure & Aldridge, 2023; Milner & Scholkmann, 2023; Savery, 2006). Within the limits of the document analysis, the study shows that the 2025 text incorporates these conditions more visibly into the curriculum framework.

A similar pattern appears in how accountability is stated. In the 2025 curriculum, ethical, digital, and quality-related expectations are brought into a more consolidated competency structure. Responsibility-oriented expectations were also present in the 2016 curriculum, but they were more dispersed across function- and process-oriented formulations. One concrete example of this earlier, more dispersed accountability logic is the distinction between referral and medical diagnostic authority in the 2016 text. Here, the graduate role is framed as identifying developmental concerns and directing children to relevant specialist physicians rather than making diagnostic determinations. In the 2025 curriculum, accountability-oriented expectations are gathered into a more unified competency structure and linked more visibly to assessment, communication, and professional judgement. Read through Bernstein's (2000) perspective, the key change lies in the clearer articulation and visibility of evaluative expectations within the intended graduate profile.

Overall, the findings offer a cautious and differentiated account of curriculum transformation within Türkiye's national child development core curriculum architecture. Compared with ÇUÇEP (CoHE, 2016), ÇGL-UÇEP (CoHE, 2025) connects competence, pedagogy, assessment, and implementation conditions more explicitly within the curriculum text. This comparison helps distinguish continuity, rearticulation, increased explicitness, and selective reconfiguration in how professional competence, pedagogical guidance, and institutional responsibility are codified at the level of the policy text.

Conclusion and Implications

The comparison of ÇUÇEP (CoHE, 2016) and ÇGL-UÇEP (CoHE, 2025) shows both continuity and policy-text transformation in the articulation of professional competence. Transformation appears mainly through rearticulation, increased explicitness, and selective reconfiguration within the curriculum texts. More specifically, the comparison points to a rearticulation of organising assumptions, a more integrated textual articulation of the intended graduate profile, and a more explicit competency architecture in the 2025 curriculum text. The later curriculum keeps the national minimum-standards rationale in place while making the relationship among graduate competencies, learning domains, pedagogical orientation, assessment expectations, and implementation conditions more explicit. It consolidates and re-expresses several expectations that were more dispersed in the earlier text, while selectively specifying institutional and pedagogical conditions that were not equivalently articulated in 2016.

For curriculum policy analysis, the study shows that national core curricula in child development organise professional knowledge, state pedagogical and assessment orientations, and define institutional responsibilities with varying degrees of explicitness. Its contribution is to clarify how curriculum-policy change can reshape the way professional competence is made visible and connected to pedagogy, assessment, and institutional responsibility, without assuming uniform institutional enactment. The findings therefore concern policy framing rather than institutional enactment. They show how the texts structure expectations, while questions of how those expectations are realised in practice across institutions remain beyond the scope of the study. The comparison also points to several implications. At the level of the documentary evidence, the 2025 curriculum makes more explicit the conditions under which graduate preparation, pedagogical design, and implementation are expected to align within the national framework. The recommendations

that follow distinguish between immediate text-based implications and wider context-sensitive possibilities for institutional adaptation.

Recommendations

Several implications can be drawn directly from the document analysis. As the 2025 curriculum text makes pedagogical, evaluative, infrastructural, and instructional conditions more explicit, institutions seeking alignment may need to consider these dimensions more systematically in curriculum revision and implementation. At the level of policy-text interpretation, this points in particular to faculty capacity for problem-based learning (PBL) facilitation, formative and performance-based assessment design, and the use of digital and self-directed learning resources. It also points to the learning environments and digital infrastructure named within the curriculum text itself, including collaborative workspaces and systems that support interaction, access, and continuity of learning.

Other possibilities for institutional adaptation require closer attention to local context. For example, the Professional Learning Domains could be used as an organising structure for mapping competencies, learning opportunities, and assessment tasks more coherently across the curriculum. Similarly, curriculum teams might consider developing shared case materials linked to major practice contexts where such an approach is feasible and educationally appropriate. In curricula where practice-based settings are central, structured feedback processes with relevant service contexts may support closer alignment between curricular expectations and professional demands. These suggestions are drawn from the document analysis. Their relevance is therefore likely to depend on institutional conditions, available resources, and local curriculum development processes. Read in this way, they indicate possible directions for alignment and adaptation without assuming uniform readiness or uniform enactment across institutions.

Declarations

Conflict of Interest

The author declares no competing interests with other person(s), organisation(s), or institution(s).

Disclosure of Artificial Intelligence (AI) Use

The author used generative AI tools, including OpenAI ChatGPT and SciSpace, only for grammar, language editing, and formatting support during manuscript preparation. The author retained full responsibility for the study design, document analysis, thematic interpretation, argumentation, and final manuscript content.

Availability of Data and Materials

The study analysed publicly available official curriculum documents. The documents are listed in the references and may be accessed through the cited public sources. No additional empirical dataset involving human participants was generated.

Ethics Committee Approval

Ethics committee approval was not required because the study analysed publicly accessible official curriculum documents and did not involve human participants, personal data, or interventions.

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TÜRKÇE GENİŞ ÖZET

Türkiye’deki Lisans Düzeyi Çocuk Gelişimi Çekirdek Programlarında Süreklilik ve Dönüşüm: Bir Politika Metni Analizi (2016–2025)

Giriş

Günümüzde yükseköğretim, bilgi aktarımına dayalı geleneksel işlevinin ötesine geçerek, öğrencilerin mesleki kimlik geliştirmelerini, etik duyarlılık kazanmalarını ve bütüncül yeterlikler edinmelerini destekleyen çok yönlü bir eğitim alanı olarak yeniden tanımlanmaktadır. Bu yönelim, OECD’nin (2018) ve Schleicher’in (2018) yükseköğretim politikalarına ilişkin değerlendirmelerinde de vurgulanmaktadır. Söz konusu dönüşüm, doğumdan yetişkinliğe uzanan çok boyutlu gelişim süreçlerini inceleyen çocuk gelişimi alanını doğrudan etkilemektedir. Çocuk gelişimi uzmanlarının yeterlikleri, çocukların ve ailelerin iyi oluşu kadar eğitim kurumlarının işleyişi ve toplumsal refah açısından da belirleyici görüldüğünden, lisans eğitiminin tutarlı bir kuramsal yönelim ve pedagojik anlayışla yapılandırılması kritik önem taşımaktadır. Alanyazındaki çalışmalar da program değişikliklerinin kurumsal düzeyde sahiplenildiğinde ve sürdürülebilir biçimde desteklendiğinde daha anlamlı sonuçlar üretebildiğini göstermektedir (Honkimäki vd., 2024; Laivuori vd., 2026).

Türkiye’de Ulusal Çekirdek Eğitim Programları (UÇEP), çocuk gelişimi dâhil birçok lisans alanında mesleki roller, öğrenme çıktıları ve temel yeterlikler için ulusal bir referans çerçevesi sunan politika metinleri olarak işlev görmektedir. Buna karşın çocuk gelişimi lisans eğitimindeki değişimlere yön veren yapısal, kavramsal ve pedagojik eğilimler alanyazında çoğu zaman sistematik biçimde incelenmemektedir. Kürkçü (2021) program tartışmalarında bu yönelimlerin sıklıkla uygulama sorunlarının gölgesinde kaldığını vurgulamaktadır. Demir ve Ilgaz (2024) ise program yapılarını ele almakla birlikte, çekirdek programdaki değişim ve yeniden düzenlenme sürecini analitik düzeyde ayrıntılandırmamaktadır.

Bu çalışma, Yükseköğretim Kurulu tarafından yayımlanan 2016 tarihli Çocuk Gelişimi Ulusal Çekirdek Eğitim Programı’nı (ÇUÇEP; YÖK, 2016) ve 2025 tarihli Çocuk Gelişimi Lisans Ulusal Çekirdek Eğitim Programı’nı (ÇGL-UÇEP; YÖK, 2025) karşılaştırarak süreklilik ve dönüşümün metin düzeyinde nasıl ifade edildiğini ve düzenlendiğini incelemektedir. Bu doğrultuda söz konusu belgeler, ders listelerinin ötesinde mesleki bilginin nasıl meşrulaştırıldığını, pedagojik ve değerlendirmeye ilişkin hangi önceliklerin görünür kılındığını ve mezun kimliğinin nasıl tasarlandığını ortaya koyan politika metinleri olarak değerlendirilmiştir.

Yöntem

Araştırmada nitel ve yorumlayıcı bir anlayış benimsenmiştir. İki ulusal çekirdek program arasındaki süreklilik ve dönüşümü incelemek amacıyla temel strateji olarak karşılaştırmalı doküman analizi kullanılmıştır. Bu yaklaşım, politika metinlerinde zaman içinde ortaya çıkan

yapısal düzenlemeleri, kavramsal öncelikleri ve örgütleyici mantıkları sistematik biçimde incelemeye elverişlidir (Cleland vd., 2023). Araştırmının veri setini, Yükseköğretim Kurulunun kamuya açık resmî internet portalında yer alan ÇUÇEP (YÖK, 2016) ve ÇGL-UÇEP (YÖK, 2025) belgeleri oluşturmaktadır.

Veriler, Braun ve Clarke'ın (2022) refleksif tematik analiz yaklaşımı doğrultusunda çözümlenmiştir. Bu çalışmada refleksif tematik analiz, sınırlı ve odaklı bir belge kümesindeki açık ve örtük politika anlamlarını kuramsal çerçeveye ilişkili biçimde yorumlamak amacıyla kullanılmıştır. Karşılaştırmalı doküman analizi, iki metin arasında işlevsel olarak karşılaştırılabilir bölümlerin hizalanmasını sağlamıştır. Refleksif tematik analiz ise metin içi örüntülerin yakın, yinelemeli ve yorumlayıcı biçimde çözümlenmesine imkân vermiştir. Kodlama ve yorumlama sürecinde Bernstein'in (2000) yeniden bağlamsallaştırma kavramı ile Ball'ın (1994) politika metni yaklaşımından yararlanılmıştır. Bu kuramsal çerçeve, mesleki bilginin nasıl sınıflandırıldığını, pedagojik ve değerlendirmeye ilişkin beklentilerin nasıl görünür kılındığını ve uygulama sorumluluğunun nasıl konumlandırıldığını yorumlamak için kullanılmıştır.

Analizler yapısal tasarım ve organizasyon mantığı, mezun yeterlikleri ve mesleki profil, öğrenme alanları ve içerik düzeni, öğretim stratejileri ve değerlendirme yaklaşımları ile uygulama koşulları ve kurumsal gereksinimler olmak üzere beş tema ortaya çıkarmıştır. Araştırmının inandırıcılığını artırmak amacıyla akran değerlendirmesi, denetim izi ve bulguların metinsel kanıtlarla gerekçelendirilmesi stratejileri kullanılmıştır. Çalışma, kamuya açık resmî dokümanların analizine dayandığı için insan katılımcı ya da kişisel veri içermemektedir.

Bulgular

Bulgular, ÇUÇEP (YÖK, 2016) ile ÇGL-UÇEP (YÖK, 2025) arasındaki ilişkinin süreklilik ve metin düzeyinde dönüşüm örüntüsüyle açıklanabileceğini göstermektedir. Bu dönüşüm özellikle yeniden ifade, artan açıklık ve seçici yeniden yapılandırma yoluyla görünür hâle gelmektedir. Her iki belge de ulusal düzeyde asgari beklentiler oluşturma ve standartlaştırma amacına hizmet eden ortak bir çerçeve sunmaktadır. Bununla birlikte ÇGL-UÇEP (YÖK, 2025), yeterlik mantığını pedagojik yönelim, değerlendirme beklentileri, öğrenme kaynakları ve uygulama koşullarıyla daha bütüncül biçimde ilişkilendirmektedir.

Mezun profili açısından 2025 metninde görev ve teknik beceri vurgusunun yanı sıra yansıtıcı düşünme, etik sorumluluk, iletişim, dijital sorumluluk ve farklı hizmet bağlamlarına uyum gibi boyutların daha belirgin hâle geldiği görülmektedir. Bu değişim, yeterlik söyleminin soyutlama, bütünleşme ve bağlamsallaşma düzeyinde farklılaştığını düşündürmektedir. İçerik örgütlenmesinde parçalı ve liste temelli sunumun yerini, mesleki öğrenme alanları altında kurulan daha düzenli bir yapı almaktadır. Bu yönelim program metninde hizmet bağlamlarının ve mesleki odak alanlarının daha görünür ve sistematik hâle gelmesini sağlamaktadır.

Öğretim ve değerlendirme yaklaşımı bakımından ÇUÇEP (YÖK, 2016), öğrencinin aktif katılımını destekleyen yöntem ve araçları geniş bir repertuvar olarak sunmaktadır. Belge tamamlayıcı yaklaşımların birlikte kullanılmasını öneren esnek bir öğretim anlayışına dayanmaktadır. Buna karşılık ÇGL-UÇEP (YÖK, 2025), probleme dayalı öğrenmeyi (PDÖ) temel öğretim yönelimi olarak daha açık biçimde konumlandırmaktadır. Ayrıca değerlendirmeyi performansa dayalı ve biçimlendirici bir anlayışla yapılandırmakta ve ölçütlerin süreç boyunca görünür olmasını öne çıkarmaktadır.

Son olarak, ÇGL-UÇEP program revizyonunu fiziksel ve dijital altyapı, öğretim elemanı yeterlikleri, öğretim yönetim sistemi ve kalite güvencesi gibi koşullarla daha açık biçimde ilişkilendirmektedir. Bu durum, uygulama sorumluluğunun ders yürütücüsü düzeyini aşarak kurumsal kapasite, öğrenme ortamları ve kalite süreçleriyle birlikte tanımlandığını göstermektedir. Dolayısıyla 2025 metni, program dönüşümünü daha geniş bir kurumsal sorumluluk çerçevesi içinde konumlandırmaktadır.

Tartışma

Bulgular iki belge arasındaki dönüşümün içerik düzeyini aşarak yapısal yönelim, pedagojik çerçeve ve sorumluluk dağılımı bakımından çok katmanlı bir metinsel görünüm kazandığını göstermektedir. Bernstein'ın (2000) yeniden bağlamsallaştırma kavramı, program değişikliğinin mesleki bilgiyi ve yeterliği hangi ölçütlerle meşrulaştırdığını ve hangi pedagojik beklentileri belirginleştirdiğini açıklamada işlevsel bir çerçeve sunmaktadır. Ball'ın (1994) politika metni yaklaşımı ise program değişikliğinin metinde nasıl ifade edildiği ile uygulamada nasıl karşılık bulacağı arasındaki ayrımı hatırlatarak yorumların kapsamını ölçülü tutmayı sağlamaktadır. Bu nedenle bu çalışma, bulguları uygulamaya ilişkin kesin sonuçlar düzeyinde ele almamaktadır. Bulgular niyet edilen program değişikliğinin metin düzeyinde nasıl ifade edildiği ve düzenlendiği bağlamında tartışılmaktadır.

Önceki belgede daha dağınık biçimde görülen beklentilerin 2025 metninde daha sistematik bir standartlar bütününe bağlanması, program tutarlılığını artırma potansiyeli taşımaktadır. Ancak bu yönelim, artan merkezileşme ve azalan kurumsal esneklik riskini de beraberinde getirmektedir. Bu açıdan bulgular, yeterlik temelli yükseköğretim program değişikliklerinin içerik güncellemesinin ötesinde pedagojik yaklaşım, değerlendirme kültürü ve kurumsal kapasiteyle birlikte ele alınması gerektiğini savunan tartışmalarla ilişkilendirilebilir (Laivuori vd., 2026).

Bununla birlikte PDÖ gibi yaklaşımların işlevsel biçimde uygulanabilmesi; değerlendirme kültürü, dijital altyapı ve öğretim elemanı kapasitesi gibi koşullara bağlıdır (Awang vd., 2025; Eğitim Reformu Girişimi [ERG], 2015; Kusumatuty vd., 2018). Bu nedenle metinde tanımlanan tasarım beklentilerinin kurumsal düzeyde karşılık bulabilmesi, eşgüdüm ve sürdürülebilir destek mekanizmalarıyla yakından ilişkilidir. Başka bir deyişle program metninde görünür hâle gelen pedagojik niyetin uygulamada karşılık bulabilmesi, belge düzeyindeki düzenlemelerle birlikte bu düzenlemeleri taşıyacak kurumsal yapılara, kaynaklara ve mesleki kapasiteye bağlıdır.

Sonuç ve Öneriler

Karşılaştırmalı analiz, çocuk gelişimi lisans eğitiminde mesleki yeterliğin 2025 metninde süreklilik ve metin düzeyinde dönüşüm ilişkisi içinde daha bütünleşik, görünür ve sistematik biçimde ifade edildiğini göstermektedir. Bu bulgu, 2016 metnindeki beklentilerin tümüyle ortadan kalktığı ya da bütünüyle yeni bir mesleki model kurulduğu anlamına gelmemektedir. Bulgular, 2025 metninde pedagojik yönelimin ve politika düzeyindeki rehberliğin daha açık, düzenli ve kurumsal koşullarla ilişkili biçimde yeniden ifade edildiğini ortaya koymaktadır.

Çalışma, 2025 metninin çocuk gelişimi lisans eğitiminde mesleki yeterliği, mezunların edinmesi gereken bilgi ve beceriler, öğrenme ortamlarının niteliği, öğretim süreçlerinin yapısı ve değerlendirme uygulamalarının düzenlenişi olmak üzere dört temel ölçüt üzerinden tanımladığını göstermektedir. Bu yönüyle 2025 metni, yeterlik söylemini yalnızca bireysel bilgi

ve becerilerle sınırlamamakta, kurumsal sorumluluk, kalite güvencesi ve hesap verebilirlik boyutlarını da içeren daha geniş bir politika çerçevesi içinde ele almaktadır.

Kurumsal uygulamaların 2025 metniyle uyumunun sağlanması bakımından, politika metninde açık biçimde tanımlanan fiziksel ve eğitsel koşulların dikkate alınması önemli görünmektedir. ÇGL-UÇEP (YÖK, 2025), PDÖ ve performansa dayalı biçimlendirici değerlendirme gibi ilkeleri merkeze alırken uygulama sorumluluğunu yalnızca ders yürütücüsüne bırakmamakta, bu sorumluluğu öğrenme ortamları, dijital altyapı ve öğretim elemanı kapasitesi gibi kurumsal koşullarla ilişkilendirmektedir. Bu doğrultuda doküman temelli bulgular, öğretim elemanlarının öğrenmeyi kolaylaştırma, örnek olay tasarımı, geri bildirim verme ve performansa dayalı değerlendirme alanlarındaki kapasitelerinin güçlendirilmesi gerektiğine işaret etmektedir. Ayrıca grup çalışmasına uygun fiziksel ve dijital öğrenme ortamlarının oluşturulması, uyum sürecinde dikkat edilmesi gereken başlıca alanlardan biri olarak öne çıkmaktadır.

Bu çerçevede, bağlama duyarlı bazı uyarlama seçenekleri de tartışmaya açılabilir. Program düzeyinde yeterlik alanlarıyla uyumlu örnek olay ve görev havuzlarının geliştirilmesi, uygun kurumsal koşullar sağlandığında uygulamalı öğrenme fırsatlarının daha dengeli dağıtılmasına katkı sunabilir. Benzer biçimde öğrenme yönetim sistemlerinin çekirdek derslerde daha tutarlı kullanılması, değerlendirme ölçütlerinin görünür kılınması ve erişilebilir öğrenme kaynaklarının yapılandırılması yararlı olabilir. Bu öneriler, doküman çözümlemesinden türetilen çıkarımlara dayandığı için uygulama kanıtlarıyla ayrıca sınanmalıdır. Bu nedenle önerilerin geçerliği kurumsal kapasiteye, yerel önceliklere ve uygulama koşullarına bağlı olarak değişebilir.

Genel olarak bu çalışma, çocuk gelişimi lisans eğitimine ilişkin çekirdek programlarda süreklilik ve dönüşüm ilişkisini mesleki bilginin, pedagojik yönelimin ve kurumsal sorumluluğun yeniden düzenlenmesi bağlamında değerlendirmektedir. Bu çerçevede 2025 metni, çocuk gelişimi lisans eğitiminde yeterlik temelli yaklaşımın daha açık, bütüncül ve uygulama koşullarıyla ilişkili biçimde ifade edildiği bir politika metni olarak öne çıkmaktadır.

21st Century Skills in the National Curriculum in Türkiye: Digital Competencies, Artificial Intelligence, and Instructional Technologies*

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Abstract

This study examines the distribution and subject-based positioning of learning outcomes related to digital competencies, Artificial Intelligence (AI) literacy, and instructional technologies within the National Curriculum in Türkiye (NCT). Using qualitative document analysis of curricula published by the Ministry of National Education, learning outcomes were identified through a systematic keyword-based screening process employing concepts such as digital, technology, AI, data, literacy, online, and citizenship. The findings indicate that learning outcomes across subject areas and grade levels place particular emphasis on digital citizenship, ethics, online safety, and data literacy. Science and mathematics curricula predominantly highlight data use and digital tools, while social sciences foreground ethical considerations and digital rights. Language and literature curricula emphasise digital communication and AI-supported learning, whereas history and philosophy curricula address digitalisation in historical and social contexts. At the level of learning outcomes, the curricula show substantial alignment with UNESCO frameworks and the EU DigComp 2.2 framework, particularly in relation to ethics and data literacy. However, AI-related learning outcomes do not yet reflect a clearly articulated progressive structure across grade levels. As this analysis is limited to intended learning outcomes, further research is needed to examine how AI pedagogy, teacher competencies, and assessment practices are addressed beyond the curriculum texts. Overall, the findings suggest that while the learning outcomes provide a strong ethical and citizenship-oriented orientation for digital education, greater coherence in AI literacy and instructional technology-related outcomes may further support a comprehensive digital competency framework.

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Introduction

The quality of education is directly related to the quality, content, and applicability of the curriculum -the cornerstone of the educational process. The aim of this study is to examine how the learning outcomes in the NCT align with international digital competency and AI literacy frameworks. The study does not evaluate the NCT as a whole; it focuses exclusively on the learning-outcome dimension. Curricula provide a systematic structure designed to equip students with the necessary knowledge and skills while allowing the determination and monitoring of educational goals. Ülker and Kocakulah (2023), in their analysis of the curriculum implemented in Science and Art Centres (BILSEMs) for gifted students in Türkiye, emphasize that these programs aim to foster individual talents in accordance with the revised Bloom's Taxonomy. In this context, curricula not only serve as a means of knowledge transmission but also promote learner-centred instruction. For a curriculum to be effective, planning, content development, implementation, and evaluation processes must be carefully considered. Baş and Ercan (2023), through their descriptive analysis of the curricula used in Turkish Village Institutes, demonstrate how objectives, scope, and assessment practices were structured within instructional activities. Clearly defining objectives and scope in education enhances the effectiveness of curricula and determines the overall quality of the educational process. Similarly, Yiğit and Parlar (2025) emphasize that the decisions taken during the 20th National Education Council necessitate continuous reform and updating to improve the quality of education.

Digital competencies and curriculum development constitute a reciprocal process: while emerging digital technologies and generative AI require curricula to be redesigned, curriculum frameworks also shape how these technologies are pedagogically adopted; accordingly, international policy documents emphasize managing risks such as data privacy, reliability, and ethical use through regulatory safeguards, governance mechanisms, and human-centred design principles (Miao & Holmes, 2023; OECD, 2023a). UNESCO's Guidance for Generative AI in Education and Research recommends that countries design short-term actions and long-term policy frameworks simultaneously, grounded in a human-centred and ethically guided approach (Miao & Holmes, 2023). This guide draws attention to "guardrails" related to risk areas such as data privacy and reliability and provides a holistic framework extending to instructional design and assessment practices (Miao & Holmes, 2023). In this study, digital competence is not treated as a separate analytical theme; rather, it is conceptualized as an operational dimension of digital competencies, reflecting how competencies are manifested at the level of learning outcomes.

The OECD Digital Education Outlook 2023 differentiates between "digital transition" (the mere widespread use of digital tools) and "digital competencies" (the redesign of instructional design, assessment, and governance), underscoring the importance of systemic-level governance and data infrastructure for an effective ecosystem (OECD, 2023b). On the labour market side, the World Economic Forum's Future of Jobs Report 2023 highlights the growing importance of artificial intelligence, data literacy, and analytical thinking, demonstrating the need for education to strengthen basic, advanced, and domain-specific digital competencies (World Economic Forum, 2023).

Twenty-first-century skills, digital competencies, and Education 4.0 frame the core analytical perspective of this study. Twenty-first-century competencies such as digital literacy, information literacy, collaboration, communication, critical thinking, and creativity are positioned within both national and international frameworks, such as the 2023 Education

Vision of the Ministry of National Education (MoNE), NCT and international frameworks such as OECD, UNESCO, European Union. The analytical framework of this study is designed to interpret curriculum learning outcomes through three dimensions: digital competencies, AI literacy, and instructional technologies. The skills dimension of this study includes digital and information literacy, collaboration and communication, critical thinking and problem-solving, and creativity and production. The European Commission's DigComp 2.2 framework defines these domains across five areas-information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving-illustrated through more than 250 examples of knowledge, skills, and attitudes (Vuorikari, Kluzer, & Punie, 2022). These competencies are reflected in curriculum outcomes through indicators such as data-driven reasoning, safe and ethical use of technology, collaboration, and multimodal content creation.

Digital competencies in education are conceptualized within the Education 4.0 framework. This approach envisions a learning paradigm in which digitalization and automation reshape both educational content and learning experiences. The World Economic Forum's Schools of the Future report identifies eight critical shifts in educational content and experience (World Economic Forum, 2020). Similarly, the OECD (2023b) regards data governance, interoperability, and trust as key enablers of an effective digital education ecosystem. UNESCO's 2023 guide presents policy and practical principles for the human-centred, ethical, and inclusive use of generative AI in education (Miao & Holmes, 2023).

The 2023 Education Vision (MoNE, 2018) projected a phased implementation plan focusing on digital competencies through reforms in assessment, teacher professional development, and the strengthening of school ecosystems. The NCT, published in 2024, presents a holistic model grounded in a framework of competencies and values, aligning program learning outcomes with this structure (MoNE, 2024).

The international context of the study is informed by OECD, UNESCO, and the European Union frameworks. The OECD (2023) emphasizes alignment between governance, data, and infrastructure components within digital education ecosystems. UNESCO's AI Competency Framework for Students (2024a) defines 12 competencies across four dimensions: human-centred perspective, AI ethics, AI techniques and applications, and AI system design while the AI Competency Framework for Teachers (2024b) describes 15 competencies across five dimensions: human-centred perspective, AI ethics, AI foundations and applications, AI pedagogy, and AI for professional learning. The two recommendations published in the Official Journal of the European Union in 2024 call for the development of digital skills at all levels of education and emphasize strengthening enablers of successful digital education, such as infrastructure, connectivity, and institutional capacity (Council of the European Union, 2024a, 2024b).

Global policy frameworks position the integration of digital and AI competencies into curricula from early education as a strategic priority. The first council recommendation (2024a) advocates for a comprehensive and progressive national approach to improving the provision of digital skills in education and training. The second recommendation (2024b) complements this by focusing on key enablers-governance, teacher education, data, and monitoring- for successful digital competencies. This policy-practice bridge is equally critical for the implementation of NCT, making it essential to examine the alignment between NCT learning outcomes and global frameworks such as DigComp 2.2 and UNESCO AI Competency Frameworks in relation to 21st-century competencies like critical thinking, problem-solving, data literacy, and digital citizenship (OECD, 2023b; Miao & Cukurova, 2024; Miao, Shiohira, & Lao, 2024; Vuorikari et al., 2022).

The analytical framework of the study is structured around three main themes: (1) Digital Competencies, (2) Artificial Intelligence (AI) Literacy, and (3) Instructional Technologies. In this study, digital competencies are treated as a broader contextual concept, while digital competencies constitute the first analytical theme and are examined directly at the level of curriculum learning outcomes. These three analytical dimensions are not explicitly stated as formal themes in the NCT. Rather, they were inductively derived through a systematic review of all curriculum texts published by MoNE in 2024. Across multiple subjects, recurring patterns related to digital learning, technology integration, AI-related concepts, data use, and digital content development were identified. These recurring elements formed the conceptual basis for defining the analytical dimensions used in this study. Although NCT does not label these areas as named themes, the curriculum consistently incorporates learning outcomes that align with digital competencies, AI literacy, and instructional technologies; therefore, these dimensions represent analytically constructed categories that synthesize the digital elements embedded across the NCT. The Common Text of NCT, which forms the conceptual foundation for curriculum design, assessment, and learning environments, centres on the profile of a “competent and virtuous individual” (MoNE, 2024).

The study systematically maps where, how, and to what extent digital competencies are positioned within NCT, evaluating them in relation to the EU’s DigComp 2.2 (5 areas / 21 competencies) and UNESCO’s AI Competency Frameworks for students (12 competencies / 4 dimensions) and teachers (15 competencies / 5 dimensions) (Miao & Cukurova, 2024; Miao, Shiohira, & Lao, 2024; Vuorikari et al., 2022).

The study is guided by the following main research question:

How are learning outcomes related to 21st-century skills structured across the NCT in terms of digital competencies, Artificial Intelligence (AI) literacy, and instructional technologies?

To elaborate on this main question, the following sub-questions are addressed:

1. Which learning outcomes in the NCT emphasize digital competencies, Artificial Intelligence (AI) literacy, and instructional technologies?
2. How are these learning outcomes aligned with 21st-century skills and international frameworks such as DigComp 2.2 and the UNESCO AI Competency Frameworks?
3. How do learning outcomes related to digital competencies, AI literacy, and instructional technologies vary across subject-area curricula (science, social sciences, language, and arts)?
4. To what extent are digital competencies explicitly addressed across the NCT, and how do they vary by subject area and educational level?

Digital competencies are therefore examined within the scope of digital competencies and are not formulated as a separate research dimension.

Method

Research Design

This study was conducted using the document analysis. Document analysis is a research method that generates answers to research questions through the systematic examination of written materials (Bowen, 2009). In this study, content analysis was specifically employed to descriptively classify the learning outcomes related to digital competencies, artificial intelligence, and instructional technologies in the NCT.

Data Sources

The data for this study were obtained through a systematic review of national curriculum documents published by the Ministry of National Education in 2024. The analysis focused exclusively on the student learning outcomes articulated in these curricula. All documents were accessed via the Ministry's official digital education portal. The dataset comprised 33 subject-area curricula spanning preschool, primary, lower secondary, and upper secondary education. These curricula represented a wide range of disciplines, including science, mathematics, social sciences, languages, arts, philosophy, and physical education. The breadth of subject areas enabled a comprehensive examination of how digital competencies, AI literacy, and instructional technologies are embedded across different curricular contexts.

Data Collection

A structured data collection form was used to systematically document learning outcomes related to digital competencies, Artificial Intelligence (AI) literacy, and instructional technologies across the analysed curriculum documents. The form was designed to capture both the content of learning outcomes and their contextual information, including subject area, educational level, and page references. The data collection process was guided by predefined analytical categories derived from international digital competency frameworks, specifically DigComp 2.2 and the UNESCO AI Competency Frameworks. These categories ensured a systematic and consistent identification and recording of relevant learning outcomes across all curriculum documents. Table 1 presents the complete list of analytical categories and subcategories used in the qualitative content analysis. All learning outcomes were recorded and subsequently coded according to this framework.

Table 1

Analytical Categories Used in the Content Analysis

<i>Main Theme</i>	<i>Category</i>	<i>Subcategory</i>
Digital Competencies	Information and Data Literacy	Data access
		Data evaluation
		Data management
	Communication and Collaboration	Online interaction Collaborative practices
AI Literacy	Digital Content Creation	Content production
		Content editing
	Safety	Privacy
		Security
		Responsible use
	Problem Solving	Technical troubleshooting Adaptive use of digital tools
	AI Foundations	Basic concepts of AI
		Understanding AI systems
	AI Applications	Use of AI-based tools
		Practical applications
	AI Ethics	Fairness
		Bias
	Computational Thinking	Accountability
		Algorithmic reasoning Logical structuring

Table 1 (Continued)

<i>Main Theme</i>	<i>Category</i>	<i>Subcategory</i>
Instructional Technologies	EdTech Tools	Digital platforms Learning management
	Teaching Strategies	Instructional design Technology integration
	Assessment	Digital assessment methods Analytics-based feedback
	Learning Environment	Infrastructure
		Technology-supported

Table 1 illustrates the hierarchical structure of the analytical framework used in this study. The categories and subcategories provided the basis for organising the collected data and enabled a systematic comparison of learning outcomes across subject areas and educational levels.

Data Analysis

The data analysis was conducted using a theory-driven content analysis approach grounded in international digital education frameworks, specifically DigComp 2.2 and the UNESCO AI Competency Frameworks. The analysis followed a hierarchical structure consisting of themes, categories, and codes. A three-stage coding procedure was employed. In the first stage, curriculum learning outcomes were screened using predefined digital-technology-related keywords (e.g., digital, technology, artificial intelligence, data, online, ethics, safety) to identify content relevant to the three analytical themes: digital competencies, AI literacy, and instructional technologies. In the second stage, identified learning outcomes were assigned to one of these themes. In the final stage, learning outcomes were coded at the category level based on conceptual indicators derived from the referenced frameworks. To ensure analytical consistency and transparency, the coding framework employed in this study is presented in Table 2. This framework includes the main themes, categories, subcategories, operational descriptions, and representative indicators used in the analysis.

Table 2

Analytical Categories and Coding Framework

<i>Main Theme</i>	<i>Category</i>	<i>Subcategory</i>	<i>Operational Description</i>	<i>Example Indicator (from curricula)</i>
Digital Competencies	Information and Data Literacy	Data access, evaluation, storage	Ability to access, evaluate, and manage data in digital contexts	Use of datasets, data interpretation tasks
Digital Competencies	Communication and Collaboration	Online interaction, sharing	Effective communication in digital environments	Online collaboration tools
Digital Competencies	Digital Content Creation	Production, modification	Creating and editing digital content	Multimedia production tasks
Digital Competencies	Safety	Privacy, security	Safe and responsible technology use	Cyber safety, privacy awareness
Digital Competencies	Problem Solving	Technical problem-solving	Using digital tools to solve problems	Algorithmic problem solving
AI Literacy	AI Foundations	Basic concepts	Understanding how AI works	AI concepts in math/science

Table 2 (Continued)

<i>Main Theme</i>	<i>Category</i>	<i>Subcategory</i>	<i>Operational Description</i>	<i>Example Indicator (from curricula)</i>
AI Literacy	AI Applications	Practical use	Use of AI-supported tools	AI-assisted learning
AI Literacy	AI Ethics	Fairness, bias	Ethical awareness in AI use	Ethical discussions on AI
AI Literacy	Computational Thinking	Algorithms	Logical structuring	Coding, algorithms
Instructional Technologies	EdTech Tools	Platforms	Use of digital tools in instruction	Learning management systems
Instructional Technologies	Teaching Strategies	Pedagogical design	Instructional integration	Digital lesson design
Instructional Technologies	Assessment	Digital evaluation	Tech-based assessment	Online tests, portfolios
Instructional Technologies	Learning Environment	Infrastructure	Technology-supported settings	Digital classrooms

Table 2 presents the full coding framework used in the analysis. All learning outcomes were coded according to these themes and their corresponding categories and subcategories, ensuring analytical consistency and transparency. All coding procedures were carried out manually using structured coding sheets. The analysis was conducted by a single researcher and involved iterative coding cycles to enhance internal consistency. Coding decisions were continuously checked against the definitions provided in the codebook and the referenced international frameworks. Although inter-rater reliability was not established, this limitation is acknowledged in the Discussion section. To support comparative analysis, category-level frequency distributions were calculated across subject areas and educational levels. The analysis focused exclusively on student learning outcomes and did not include other curriculum components such as implementation processes, instructional materials, assessment practices, or teacher competencies.

Findings

The findings are presented in accordance with the hierarchical analytical structure of the study. Each learning outcome was assigned to one of the three themes (Digital Competencies, AI Literacy, and Instructional Technologies) and subsequently coded within the relevant analytical categories. The tables in this section report results at the category level and should not be interpreted as theme-level or code-level distributions. Detailed definitions of all themes, categories, and codes are provided in Supplementary Material (Codebook S1). To enhance clarity, the analytical categories associated with each theme are summarised in Table 3 prior to the presentation of the detailed findings.

Table 3*Analytical Categories Used Under Each Theme*

<i>Theme</i>	<i>Analytical Categories</i>
Theme 1: Digital Competencies	• Digital Literacy • Data Literacy • Digital Communication • Digital Safety and Ethics • Digital Content Creation • Digital Collaboration • Simulation and Modelling
Theme 2: AI Literacy	• AI Concepts and Foundations • AI Applications in Learning • Algorithmic Thinking • AI Ethics and Responsible Use • Automation and Robotics
Theme 3: Instructional Technologies	• Educational Technology Tools • Digital Assessment and Feedback • Learning Management and Digital Platforms • Multimedia and Content Design • Augmented and Virtual Reality • Technology-Enhanced Learning Environments

The categorization presented above constitutes the analytical framework used to interpret the NCT learning outcomes. In the following sections, the distribution of these categories across grade levels and subject areas is reported. The results should therefore be read with the understanding that each finding reflects category-level interpretations situated within the broader thematic structure described in Table 3.

This section presents the findings derived from the analysis of student learning outcomes in the national curricula published by the MoNE in 2024, focusing on three analytical dimensions: digital competencies, Artificial Intelligence (AI) literacy, and instructional technologies. The findings are reported at the category level and reflect how learning outcomes across subject areas align with international digital competency frameworks.

To support comparative interpretation, Table 4 summarises the distribution of the three analytical dimensions across curricula and their correspondence with established international reference frameworks, including DigComp 2.2 and the UNESCO AI Competency Frameworks.

Table 4*Comparison of Study Dimensions with International Frameworks*

<i>Dimension</i>	<i>DigComp 2.2 Framework</i>	<i>UNESCO AI (Student/Teacher)</i>	<i>Policy / Ecosystem</i>
Digital/Data Literacy	Information and data literacy;	AI techniques and applications; Fundamentals of AI	OECD data governance; EU recommendation on digital skills
Collaboration and Communication	Problem solving and collaboration	Human-centred perspective (subject and ethics)	OECD interoperability; EU ecosystem enablers
Security and Ethics	Safety	AI ethics; human rights and responsibility	UNESCO GenAI guidance; EU safe and inclusive digital education
Creativity/Production	Digital content creation	AI system design; AI pedagogy	WEF Education 4.0 content/experience shifts

Based on the data presented in Table 4, the distribution of digital competencies, AI literacy, and instructional technology dimensions was examined in relation to major international reference frameworks, including DigComp 2.2, the UNESCO AI Competency Frameworks, OECD policy reports, EU recommendations, and the World Economic Forum's Education 4.0 framework. At the category level, strong alignment is observed in areas related to digital and data literacy, particularly in learning outcomes emphasising data collection, analysis, and verification. These findings correspond closely with the OECD's focus on data governance and the EU's emphasis on foundational digital skills. Competencies related to communication and collaboration in digital environments are also evident across curricula, reflecting UNESCO's human-centred perspective on digital transformation and the OECD's emphasis on interoperability within digital education ecosystems. Learning outcomes addressing digital safety and ethical use demonstrate a high degree of correspondence with international principles on safe, inclusive, and responsible digital education, as articulated by UNESCO and the European Union. In contrast, dimensions related to creativity, AI-supported production, and AI pedagogy appear less consistently represented. When evaluated against UNESCO's emphasis on AI pedagogy and system design and the World Economic Forum's focus on learning experience transformation, these areas indicate potential for further development.

Overall, the findings suggest that curriculum learning outcomes show strong alignment with international standards in digital safety, ethics, and data literacy, while AI pedagogy and advanced AI-supported learning practices remain areas for continued enhancement.

The first set of findings addresses Theme 1: Digital Competencies, which encompasses learning outcomes related to digital and data literacy, communication and collaboration, digital safety and ethics, and digital content creation. The following tables present the category-level distribution of these learning outcomes across subject areas and educational levels, illustrating how digital competencies are embedded within curriculum learning outcomes.

Table 5 presents the distribution of learning outcomes related to digital competencies at the primary education level.

Table 5

Category-Level Distribution of Digital Competencies, AI Literacy, and Instructional Technologies Across Preschool and Grades 1–4 Curricula

<i>Course Title</i>	<i>Level</i>	<i>Number of Learning Outcomes</i>	<i>Categories</i>
Preschool	Preschool	6	Digital Competence, Instructional Technology
Life Studies	Grades 1–3	8	Digital Competence, Digital Citizenship
Turkish	Grades 1–4	9	Digital Competence, Digital Literacy, Instructional Technology
Mathematics	Grades 1–4	10	Digital Competence, Data Literacy, Simulation
Music	Grades 1–4	4	Digital Competence, Digital Content
Visual Arts	Preparatory–Grade 4	5	Digital Competence, Instructional Technology
Physical Education and Play	Grades 1–4	12	Digital Competence, Instructional Technology
Preschool (Repetition)	Preschool	6	Digital Competence, Instructional Technology

Based on the data presented in Table 5, learning outcomes related to digital competencies are observed across all courses, although their emphasis varies by subject area. Physical Education and Play includes the highest number of relevant learning outcomes, highlighting the integration of digital tools into movement-, play-, and interaction-based learning processes. Mathematics learning outcomes emphasise data literacy and simulation, reflecting the analytical dimension of digital competencies, while Turkish and Life Studies focus on digital literacy, citizenship, and ethical use, supporting safe and responsible engagement in digital environments.

At the category level, digital competencies function as a common axis across courses, indicating their broad integration within curriculum learning outcomes. Instructional technologies are particularly prominent in preschool, physical education, arts, and language-related courses, suggesting a focus on technology-enhanced learning environments. In contrast, categories such as digital citizenship and data literacy appear in a more limited number of subject areas, indicating that these dimensions are not yet uniformly embedded across disciplines. Table 5 presents the category-level distribution of learning outcomes related to digital competencies, AI literacy, and instructional technologies across preschool and Grades 1–4 curricula. To illustrate how these categories are reflected in curriculum documents, representative learning outcomes are provided below.

Example 1 – Preschool Curriculum

"Resimli öykü kitabı, dijital araçlar, afiş, broşür gibi görsel materyalleri seçebilme."

(Author's translation: "Being able to select visual materials such as picture storybooks, digital tools, posters, and brochures.")

Example 2 – Preschool Curriculum

"Teknolojik araçları yetişkin rehberliğinde, amacına uygun ve güvenli biçimde kullanır."

(Author's translation: "Uses technological tools in a purposeful and safe manner under adult guidance.")

Example 3 – Grades 1–4 (Life Studies Curriculum)

"Teknolojik araçları güvenli ve amacına uygun kullanır."

(Author's translation: "Uses technological tools safely and appropriately.")

The second set of findings addresses Theme 2: AI Literacy, which encompasses learning outcomes related to foundational AI concepts, algorithmic thinking, automation, robotics, and ethical considerations. The following tables present the category-level distribution of AI literacy-related learning outcomes across subject areas and grade levels, with selected examples presented in Table 6.

Table 6

Category-Level Distribution of Digital Competencies, AI Literacy, and Instructional Technologies Across Grades 2–8 Curricula

<i>Course Title</i>	<i>Level</i>	<i>Number of Learning Outcomes</i>	<i>Categories</i>
Traffic Safety	Grade 4	7	Digital Competence, Artificial Intelligence, Instructional Technology
Turkish	Grades 5–8	12	Digital Competence, Digital Literacy, Instructional Technology
Mathematics	Grades 5–8	15	Digital Competence, Artificial Intelligence, Algorithmic Thinking
Science	Grades 5–8	12	Digital Competence, Data Literacy, Simulation
Social Studies	Grades 4–7	12	Digital Competence, Digital Citizenship, Digital Research
English	Grades 2–8	14	Digital Competence, Artificial Intelligence, Blended Learning
German	Grades 5–8	9	Digital Competence, Digital Research, Ethics

Based on the data presented in Table 6, learning outcomes related to digital competencies at the lower secondary education level demonstrate a more systematic and interdisciplinary integration compared to earlier stages. Advanced digital concepts, including Artificial Intelligence (AI), algorithmic thinking, data literacy, and blended learning, are more frequently represented across subject areas.

At the category level, mathematics exhibits the highest concentration of learning outcomes related to digital competencies, particularly in relation to AI, algorithmic thinking, and problem-solving. Language curricula, including English and German, illustrate technology integration through AI-supported learning, blended learning practices, and digital communication, highlighting the role of digital competencies in language education. Science, Social Studies, and Turkish curricula address both cognitive and value-oriented dimensions through categories such as data literacy, digital research, and ethical technology use.

Digital competencies function as a central category across all courses, while AI-related categories are more explicitly represented in mathematics, science, and foreign language curricula. Categories associated with algorithmic thinking and data literacy are particularly prominent in mathematics and science, supporting the development of computational thinking. In addition, categories such as digital research, ethics, and blended learning contribute to students' awareness of responsible and reflective engagement with digital technologies.

The table reports findings at the category level. To illustrate how these categories are reflected in the NCT, the following learning outcomes are provided as representative examples from Grades 2–8:

Example 1 – Grades 2–4 (Life Studies Curriculum)

"Teknolojik araçları güvenli ve amacına uygun kullanır."

(Author's translation: *"Uses technological tools safely and appropriately."*)

Example 2 – Grades 5–8 (Information Technologies and Software Curriculum)

"Dijital ortamlardan elde edilen bilgilerin doğruluğunu ve güvenilirliğini değerlendirir."

(Author's translation: *"Evaluates the accuracy and reliability of information obtained from digital environments."*)

Example 3 – Grades 5–8 (Science Curriculum)

"Deney ve gözlemlerden elde edilen verileri dijital araçlarla kaydeder."

(Author's translation: *"Records data obtained from experiments and observations using digital tools."*)

The third set of findings addresses Theme 3: Instructional Technologies, which includes categories related to technology-enhanced learning environments, digital assessment, digital platforms, multimedia design, and VR/AR-supported learning. The following tables present the category-level distribution of instructional technology-related learning outcomes across subject areas.

Table 7 summarises the distribution of these categories at the lower and upper secondary education levels. Based on the data presented in Table 7, learning outcomes related to instructional technologies at the upper secondary education level reflect an increasingly interdisciplinary and practice-oriented integration. Advanced concepts such as Artificial Intelligence (AI), programming, digital culture, ethics, and technology-enhanced learning environments are more consistently represented across subject areas.

At the category level, information technologies and mathematics curricula demonstrate a strong emphasis on computational thinking, data analysis, modelling, and simulation, highlighting the productive and analytical dimensions of instructional technologies. Other subject areas, including religious culture, physical education, music, history, and language and literature, incorporate instructional technologies through categories such as digital ethics, digital content creation, digital research, and technology-supported performance and observation.

Table 7

Category-Level Distribution of Digital Competency, AI Literacy, and Instructional Technology Indicators Across Grades 1–12 Courses

<i>Course Title</i>	<i>Level</i>	<i>Number of Learning Outcomes</i>	<i>Categories</i>
Religious Culture and Moral Knowledge	Grades 4–8	8	Digital Competence, Instructional Technology
Music (TEGM)	Grades 1–8	8	Digital Competence, Digital Culture, Sound Technology
Information Technologies and Software	Grades 5–6	10	Digital Competence, Artificial Intelligence, Programming
Physical Education and Sports	Grades 5–8	8	Digital Competence, Artificial Intelligence, Motion Analysis
Revolution History (History of the Turkish Republic)	Grade 8	6	Digital Competence, Digital Content, Digital Research
Turkish Language and Literature	Grades 9–12	8	Digital Competence, Digital Literacy, Digital Ethics
Mathematics	Grades 9–12	10	Digital Competence, Instructional Technology

Overall, the findings indicate that instructional technologies at the upper secondary level are embedded not only as technical tools but also as pedagogical resources supporting analytical, cultural, and ethical dimensions of learning.

The table reports findings at the category level. To illustrate how these indicators are reflected across different grade levels and subject areas, the following learning outcomes from the NCT are provided as representative examples.

Example 1 – Grades 1–4 (Life Studies Curriculum)

"Teknolojik araçları güvenli ve amacına uygun kullanır."

(Author's translation: *"Uses technological tools safely and appropriately."*)

Example 2 – Grades 5–8 (Information Technologies and Software Curriculum)

"Bir problemin çözümü için algoritma oluşturur."

(Author's translation: *"Creates an algorithm to solve a problem."*)

Example 3 – Grades 9–12 (Information Technologies and Software Curriculum)

"Yapay zekâ kavramını ve temel çalışma mantığını açıklar."

(Author's translation: *"Explains the concept of artificial intelligence and its basic working principles."*)

At the category level, digital competencies emerge as a common component across all courses, while AI-related categories are primarily reflected in information technology and physical education through technology-supported practices. Categories such as digital culture, ethics, and research are associated with higher-order thinking and value-oriented learning, whereas instructional technologies appear across diverse disciplines, indicating the widespread use of digital tools to support learning environments.

Table 8 presents the distribution of learning outcomes across courses at the upper secondary education level.

Table 8

Category-Level Distribution of Digital Competencies, AI Literacy, and Instructional Technologies Across Grades 9–12 Curricula

<i>Course Title</i>	<i>Level</i>	<i>Number of Learning Outcomes</i>	<i>Categories</i>
Physics	Grades 9–12	8	Digital Competence, Simulation, Artificial Intelligence
Chemistry	Grades 9–12	8	Digital Competence, Artificial Intelligence, Simulation
Biology	Grades 9–12	9	Digital Competence, Artificial Intelligence, Instructional Technology
Geography	Grades 9–12	7	Digital Competence, Instructional Technology
Philosophy	Grades 9–12	6	Digital Competence, Instructional Technology
History	Grades 9–12	9	Digital Competence, Artificial Intelligence, Digital Content
Revolution History	Grade 12	6	Digital Competence, Digital Ethics, Digital Content

Based on the data presented in Table 8, learning outcomes related to digital competencies at the upper secondary education level show increased depth across both cognitive and practical dimensions. In science-related curricula, categories associated with artificial intelligence and simulation are more prominently represented, whereas social science curricula emphasise digital ethics and digital content creation.

At the category level, biology and history curricula demonstrate a relatively high concentration of digital learning outcomes, reflecting the integration of instructional technologies into experimental learning and digital content production. Physics and chemistry curricula highlight simulation and AI-supported modelling, indicating the use of technology to support the understanding of abstract concepts. In geography and philosophy, digital competencies are reflected through categories related to digital mapping, information visualisation, and digital reasoning. Overall, these findings suggest that digital competencies and instructional technologies at the upper secondary level are embedded across disciplines in diverse pedagogical forms.

The table reports findings at the category level. To illustrate how these categories are reflected in upper secondary education curricula, the following learning outcomes from the NCT are provided as representative examples.

Example 1 – Grades 9–12 (Information Technologies and Software Curriculum)

"Yapay zekâ kavramını ve temel çalışma mantığını açıklar."

(Author's translation: *"Explains the concept of artificial intelligence and its basic working principles."*)

Example 2 – Grades 9–12 (Physics Curriculum)

"Fiziksel olayları dijital simülasyonlarla modeller."

(Author's translation: *"Models physical phenomena using digital simulations."*)

Example 3 – Grades 9–12 (Philosophy Curriculum)

"Dijital teknolojilerin etik sonuçlarını tartışır."

(Author's translation: *"Discusses the ethical implications of digital technologies."*)

At the category level, digital competencies emerge as a common axis across courses at the upper secondary education level, reflecting their interdisciplinary integration. AI-related categories are most prominently represented in science subjects, where AI supports data analysis, modelling, and simulation-based learning. In social science subjects, categories related to digital content and digital ethics are more visible, highlighting responsible and accurate engagement in digital content creation. Instructional technologies are integrated across disciplines in varied ways, indicating increasingly interactive and technology-enhanced learning environments.

Table 9 presents the distribution of learning outcomes across courses at the upper secondary education level.

Table 9

Category-Level Distribution of Digital Competencies, AI Literacy, and Instructional Technologies Across Upper Secondary Education Curricula

<i>Course Title</i>	<i>Level</i>	<i>Number of Learning Outcomes</i>	<i>Categories</i>
English	Grades 9–12	8	Digital Competence, Artificial Intelligence, Content Creation
Visual Arts	Grades 9–12	8	Digital Competence, Artificial Intelligence, Augmented Reality
Music	Grades 9–12	8	Digital Competence, Artificial Intelligence, Digital Culture
Religious Culture and Moral Knowledge	Grades 9–12	6	Digital Competence, Digital Content, Ethics
Physical Education and Sports	Grades 9–12	8	Digital Competence, Artificial Intelligence, Sports Technologies

Based on the data presented in Table 9, learning outcomes related to digital competencies and AI literacy at the upper secondary level extend beyond science and informatics to include arts, culture, ethics, and sports. In language and arts curricula, digital competencies and AI-related categories are integrated with creative production and cultural expression, reflecting the use of digital tools to support content creation and creative practices.

Categories associated with digital ethics and digital content are particularly visible in social and values-oriented subjects, highlighting responsible and value-based engagement in digital environments. In physical education, AI-supported measurement, performance analysis, and the use of digital data illustrate the application of instructional technologies to technology-enhanced physical learning. Overall, these findings indicate that digital competencies and instructional technologies at the upper secondary level are embedded across diverse disciplines in pedagogically varied forms.

The table reports findings at the category level. To illustrate how these categories are reflected in upper secondary education curricula, the following learning outcomes from the NCT are provided as representative examples.

Example 1 – Upper Secondary (Information Technologies and Software Curriculum)

"Dijital öğrenme ortamlarını ve platformları kullanarak öğrenme sürecini yönetir."

(Author's translation: *"Manages the learning process by using digital learning environments and platforms."*)

Example 2 – Upper Secondary (Physics Curriculum)

"Fiziksel olayları dijital simülasyonlarla modeller."

(Author's translation: *"Models physical phenomena using digital simulations."*)

Example 3 – Upper Secondary (Philosophy Curriculum)

"Yapay zekâ ve dijital teknolojilerin insan ve toplum üzerindeki etik etkilerini tartışır."

(Author's translation: *"Discusses the ethical impacts of artificial intelligence and digital technologies on individuals and society."*)

From a thematic perspective, Digital Competencies emerge as a core analytical theme represented across all courses, demonstrating that NCT sustains an interdisciplinary approach to digital learning. The Artificial Intelligence theme is strongly represented in traditionally non-technical fields such as art, music, and physical education, indicating that AI is assuming new

pedagogical roles in creative and embodied learning processes. Innovative domains such as Augmented Reality (AR) and sports technologies provide evidence that the curriculum integrates digital competencies with experiential and practice-based learning. The categories of Digital Ethics and Digital Culture further reinforce the model's aim to cultivate students as responsible and reflective digital citizens in both productive and consumptive digital contexts.

Discussion

Before discussing the implications of the findings, it is important to clarify the scope of this study. The analysis does not evaluate the NCT as a whole; rather, it focuses exclusively on the alignment of the learning objectives with international framework dimensions such as DigComp 2.2 and the UNESCO AI Competency Frameworks. Therefore, the findings and interpretations presented here should be understood as referring specifically to the learning-outcome dimension of the NCT. It is essential to clarify that this study analysed only the learning outcomes of the NCT, not teacher education curricula. Therefore, teacher competencies are discussed solely in the context of how they may influence the implementation of digitally oriented learning outcomes, not as an examined data source.

The findings of this study indicate that learning outcomes in the national curricula published in 2024 reflect a structured emphasis on digital competencies, Artificial Intelligence (AI) literacy, and instructional technologies. Across educational levels, these learning outcomes demonstrate a developmental pattern in which digital competencies progress from basic awareness in early education to more application- and production-oriented forms in upper secondary education. This pattern corresponds with international principles of inclusive, ethical, and productive digital competencies articulated by UNESCO (2023) and OECD (2023).

The distribution of digital competency-related learning outcomes across subject areas shows strong correspondence with the European Union's DigComp 2.2 Framework (Vuorikari, Kluzer, & Punie, 2022), particularly in terms of data literacy, digital safety, and ethical use. Importantly, these competencies are reflected in learning outcomes not only through the use of digital tools but also through expectations related to learning design, problem-solving, and responsible digital engagement. This distinction supports the OECD's (2023) conceptual differentiation between digital transition (tool adoption) and digital competence (the transformation of learning and assessment processes).

In science and mathematics curricula, learning outcomes related to data literacy, algorithmic thinking, and simulation align with computational thinking processes identified in the international literature as core components of AI-supported learning (Holmes et al., 2022; Luckin et al., 2023). However, the analysis of learning outcomes suggests that AI literacy is not yet organised through a clearly articulated pedagogical progression across grade levels, which contrasts with UNESCO's (2024a, 2024b) emphasis on the gradual development of AI competencies.

Learning outcomes in social sciences, philosophy, and religious education frequently emphasise digital ethics, digital citizenship, and digital research. This pattern indicates that digital competencies are framed not solely as technical skills but also as value-oriented learning outcomes, consistent with UNESCO's human-centred approach to AI and digital education (Miao & Holmes, 2023). Nevertheless, as these themes are often embedded implicitly within learning outcomes, their systematic assessment may present challenges.

In arts, music, and physical education curricula, learning outcomes associated with augmented reality, sound technologies, and sports technologies illustrate the extension of digital competencies into creative, cultural, and embodied learning contexts. These findings

resonate with the Education 4.0 perspective proposed by the World Economic Forum (2020), which highlights creativity, experiential learning, and immersive digital environments. As this study is limited to analysing learning outcomes, further research is needed to examine how such practices are implemented in instructional contexts.

Overall, the findings suggest that the learning outcomes articulated in the national curricula demonstrate a structured integration of digital competencies alongside cognitive, ethical, and cultural dimensions. At the same time, the analysis of learning outcomes highlights several areas where further development may be required.

First, the distribution of AI-related learning outcomes indicates the need for a more clearly articulated pedagogical progression in AI literacy, moving from foundational awareness toward application- and production-oriented competencies. Second, while this study does not examine teacher education or instructional implementation, the alignment of curriculum learning outcomes with international frameworks implies that professional development in AI-supported pedagogy and ethical awareness may be an important area for future research. Finally, as the present analysis is limited to learning outcomes, further studies could explore how digital competencies are reflected in assessment practices and whether emerging digital or AI-supported assessment approaches align with the intended curriculum outcomes.

In conclusion, the analysis of curriculum learning outcomes indicates substantial alignment with international digital competency and AI literacy frameworks, particularly in categories related to digital ethics, safety, accessibility, responsible digital citizenship, and foundational AI understanding. These patterns suggest that human-centred and inclusive digital learning principles are reflected at the level of intended learning outcomes.

At the same time, as this study is limited to the analysis of learning outcomes, further research is needed to examine how these competencies are enacted through pedagogy, teacher professional development, and assessment practices across grade levels. Accordingly, the conclusions presented here should be interpreted as pertaining solely to the learning-outcome dimension and not as an evaluation of the curriculum framework as a whole.

Conclusion and Implications

This study examined curriculum learning outcomes in relation to digital competencies, artificial intelligence (AI) literacy, and instructional technologies, with a focus on their correspondence to key dimensions of 21st-century skills. The findings indicate that learning outcomes reflect a developmental pattern from early childhood to upper secondary education, emphasising digital citizenship, data literacy, ethical awareness, and the use of instructional technologies across subject areas. As the analysis is limited to learning outcomes, the conclusions should be interpreted within this scope and should not be regarded as an evaluation of the curriculum framework as a whole.

The analysis indicates substantial alignment between curriculum learning outcomes and the EU DigComp 2.2 Framework (Vuorikari, Kluzer, & Punie, 2022) as well as UNESCO's AI Competency Frameworks (Miao, Shiohira, & Lao, 2024; Miao & Cukurova, 2024), particularly in categories related to digital safety, ethical technology use, and data literacy. In line with the OECD Digital Education Outlook 2023's distinction between digital transition and digital competencies (OECD, 2023), these findings suggest an emphasis on competency-oriented learning outcomes rather than tool-focused adaptation. However, as the analysis is limited to learning outcomes, further research is needed to examine how AI pedagogy, teacher competencies, and assessment practices are articulated and implemented beyond the intended curriculum.

International literature highlights that the development of digital competencies in education extends beyond the mere adoption of technological tools to include learning culture, pedagogical design, and ethical considerations (Holmes et al., 2022; Luckin et al., 2023). In this context, the analysis of curriculum learning outcomes indicates alignment with UNESCO's (2023) principles of human-centred, ethical, and inclusive digital transformation, particularly through outcomes related to digital ethics, safety, responsible digital citizenship, and accessibility. However, as these findings are limited to the learning-outcome dimension, further research is required to examine how such principles are sustained and operationalised across pedagogical and implementation practices.

In summary, the analysis of curriculum learning outcomes indicates substantial alignment with international trends in digital competencies and AI literacy. At the same time, as this study is limited to the learning-outcome dimension, further research is needed to examine how these competencies are coherently supported through pedagogy, teacher development, and assessment practices. Accordingly, the conclusions should be interpreted as pertaining solely to intended learning outcomes and not as an evaluation of the curriculum framework as a whole.

Recommendations

Based on the analysis of learning outcomes, three recommendations are proposed:

- Gradual integration of AI literacy. AI-related learning outcomes should be structured progressively across levels of awareness, application, and production, with clear distinctions across educational stages to support developmental continuity.
- Support for teacher competencies. Although teacher education was beyond the scope of this study, alignment with UNESCO's AI Competency Framework for Teachers (Miao & Cukurova, 2024) suggests the need for professional-development initiatives focusing on AI pedagogy, digital assessment, and ethical awareness.
- Alignment of assessment practices with digital competencies. To ensure coherence between intended learning outcomes and evaluation, assessment approaches should increasingly reflect digital competencies, including data use, creativity, and ethical reasoning, through performance-oriented and technology-supported methods.

Declarations

Conflict of Interest

There is no potential conflict of interest related to the conduct or publication of this study.

Disclosure of Artificial Intelligence (AI) Use

The author used artificial intelligence (AI)-based tools (e.g., ChatGPT) for language editing and improving the clarity of the manuscript. All conceptualization, analysis, and interpretation of the data were conducted by the author.

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Ethics Committee Approval

There are no human subjects in this article, and informed consent is not applicable. Ethical approval is not applicable to this study. This study used publicly available documents.

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TÜRKÇE GENİŞ ÖZET

Türkiye Ulusal Öğretim Programlarında 21. Yüzyıl Becerileri: Dijital Yeterlik, Yapay Zekâ ve Öğretim Teknolojileri

Giriş

Eğitim sistemleri, yirmi birinci yüzyılın dijital ekosistemi içinde yeniden yapılandırılmaktadır. Dijital yeterliklerin, yapay zekâ (YZ) okuryazarlığının ve teknoloji destekli öğrenme süreçlerinin öğretim programlarına bütüncül biçimde entegre edilmesi giderek daha kritik hâle gelmiştir. UNESCO (2023) ve OECD (2023), dijital dönüşümün insan merkezli, etik ve kapsayıcı bir çerçevede ele alınması gerektiğini vurgulamaktadır. Türkiye Cumhuriyeti Millî Eğitim Bakanlığı tarafından 2024 yılında yayımlanan öğretim programları, beceri ve değer temelli bir yaklaşımla yeniden düzenlenmekte; öğrenme çıktıları dijital yeterliklere, veri okuryazarlığına, etik farkındalığa ve YZ okuryazarlığına yer vermektedir. Bu yönelim, Avrupa Birliği'nin DigComp 2.2 Dijital Yeterlik Çerçevesi (Vuorikari, Kluzer & Punie, 2022) ve UNESCO'nun YZ Yeterlik Çerçeveleri (Miao, Shiohira & Lao, 2024; Miao & Cukurova, 2024) ile önemli ölçüde örtüşmektedir.

Bu çalışmanın amacı, öğretim programlarında yer alan öğrenme çıktılarının dijital yeterlikler, yapay zekâ (YZ) okuryazarlığı ve öğretim teknolojileri boyutlarında nasıl yapılandırıldığını ortaya koymaktır. Türkiye bağlamında, öğretim programlarındaki öğrenme çıktılarının uluslararası dijital yeterlik çerçeveleriyle (DigComp 2.2 ve UNESCO AI Frameworks) hizalanma düzeyi henüz sistematik olarak incelenmemiştir. Bu nedenle, bu araştırma şu sorulara yanıt aramaktadır:

1. Türkiye ulusal öğretim programlarında dijital yeterlikler, YZ okuryazarlığı ve öğretim teknolojileriyle ilişkili hangi öğrenme çıktıları öne çıkmaktadır?
2. Bu öğrenme çıktıları uluslararası dijital yeterlik ve YZ çerçeveleriyle nasıl hizalanmaktadır?
3. Dijital yeterliklerin dağılımı farklı disiplinlerde nasıl çeşitlenmektedir?
4. Dijital yeterlikler öğretim programlarında ne ölçüde açık biçimde yer almakta ve dersler ile eğitim kademelerine göre nasıl farklılaşmaktadır?

Bu çalışma, Türkiye ulusal öğretim programlarının öğrenme çıktıları boyutunu temel alarak, Türkiye'nin eğitimde dijital dönüşüm yönelimine ilişkin karşılaştırmalı ve analitik bir bakış sunmaktadır.

Yöntem

Bu araştırmanın veri toplama ve inceleme sürecinde doküman analizi tekniği kullanılmıştır. Doküman analizi, yazılı materyallerin sistematik olarak incelenmesi yoluyla araştırma sorularının yanıtlanmasını amaçlayan bir tekniktir (Bowen, 2009). Çalışmanın amacı, Türkiye ulusal öğretim programlarında yer alan öğrenme çıktılarının dijital yeterlikler, yapay zekâ (YZ) okuryazarlığı ve öğretim teknolojileri bağlamında nasıl yapılandırıldığını incelemektir.

Araştırmanın veri kaynağı, Millî Eğitim Bakanlığı tarafından 2024 yılında yayımlanan ulusal öğretim programlarıdır. Bu doğrultuda, okul öncesi, ilkököl, ortaokul ve lise düzeylerinde yer alan 33 öğretim programı incelenmiştir. Programlar; fen bilimleri, matematik, sosyal bilimler, dil ve edebiyat, sanat, beden eğitimi, din kültürü ve felsefe gibi farklı disiplinleri kapsamaktadır. Tüm dokümanlar, Bakanlığın resmi dijital portalında yayımlanan PDF formatındaki metinlerden elde edilmiştir.

Veri toplama sürecinde, öğretim programlarındaki öğrenme çıktıları anahtar kelime temelli tarama yoluyla belirlenmiştir. Tarama sürecinde "dijital", "teknoloji", "yapay zekâ", "veri", "bilgi okuryazarlığı", "çevrim içi", "dijital vatandaşlık", "etik" ve "güvenlik" gibi kavramlar kullanılmıştır. Belirlenen öğrenme çıktıları, bağlamları dikkate alınarak dijital yeterlikler, YZ okuryazarlığı ve öğretim teknolojileri olmak üzere üç ana tema altında kodlanmıştır. Kodlama süreci üç aşamada gerçekleştirilmiştir:

- (i) dijital teknolojiyle ilişkili öğrenme çıktılarının belirlenmesi,
- (ii) bu çıktıların ilgili temalar altında sınıflandırılması,
- (iii) kodlanan verilerin ders ve eğitim kademelerine göre tablolştırılması.

Elde edilen bulgular, Avrupa Birliği'nin DigComp 2.2 Dijital Yeterlik Çerçevesi (Vuorikari, Kluzer & Punie, 2022) ve UNESCO Yapay Zekâ Yeterlik Çerçeveleri (Miao, Shiohira & Lao, 2024; Miao & Cukurova, 2024) temel alınarak karşılaştırmalı biçimde yorumlanmıştır. Çalışmanın güvenilirliği, kodlama sürecinin yinelemeli biçimde yürütülmesi ve kodların uluslararası çerçevelerle sürekli karşılaştırılması yoluyla desteklenmiştir. Kavramsal geçerlik, kullanılan tema ve kategorilerin DigComp 2.2 ve UNESCO YZ çerçevelerine dayandırılmasıyla sağlanmıştır. Araştırmada yalnızca kamuya açık ve serbest erişimli dokümanlar kullanıldığı için etik kurul izni gerekmemektedir. Araştırma sürecinde bilimsel dürüstlük ve atıf etiği ilkelerine uyulmuştur.

Bu çalışma, yalnızca Türkiye ulusal öğretim programlarında yer alan öğrenme çıktıları ile sınırlıdır. Öğretmen uygulamaları, ders materyalleri ve ölçme-değerlendirme süreçleri kapsam dışındadır. Dolayısıyla bulgular, öğretim programlarının uygulamaya dönük etkilerine değil, öngörülen öğrenme çıktılarının yapısal özelliklerine ilişkindir.

Bulgular

Araştırma bulguları, Türkiye ulusal öğretim programlarında yer alan öğrenme çıktılarını içeren dijital yeterlikler, yapay zekâ (YZ) okuryazarlığı ve öğretim teknolojileriyle ilişkili unsurların tüm eğitim kademelerinde bulunduğunu göstermektedir. Bulgular, dijital yeterliklerle ilişkili öğrenme çıktılarının okul öncesinden lise seviyesine doğru kademeli bir gelişim gösterdiğini; bu süreçte dijital farkındalık, veri okuryazarlığı, etik davranış ve öğretim teknolojilerinin kullanımına yapılan vurgunun giderek arttığını ortaya koymaktadır.

İlkokul düzeyinde, dijital yeterliklerle ilişkili öğrenme çıktılarının temel farkındalık ve güvenli kullanım odaklı yapıldığı görülmektedir. Özellikle Türkçe, Hayat bilgisi ve matematik

derslerinde dijital vatandaşlık, dijital okuryazarlık ve etik kullanım temalarının öne çıktığı belirlenmiştir. Beden eğitimi ve oyun derslerinde ise dijital araçların etkileşim, oyun ve hareket temelli öğrenme süreçlerini destekleyici biçimde kullanıldığına ilişkin öğrenme çıktılarına yer verilmiştir.

Ortaokul düzeyinde, dijital yeterlik bileşenlerinin daha sistematik ve disiplinlerarası bir yapıya kavuştuğu görülmektedir. Matematik, Fen Bilimleri ve İngilizce derslerinde yapay zekâ (YZ), algoritmik düşünme, veri analizi ve karma öğrenme uygulamalarına yönelik öğrenme çıktıları dikkat çekmektedir. Sosyal bilgiler ve Türkçe derslerinde ise dijital araştırma, medya okuryazarlığı ve etik davranış temalarının öne çıktığı belirlenmiştir. Bu bulgular, ortaokul düzeyinde öğrencilerin dijital üretim ve problem çözme süreçlerine daha etkin biçimde katılmalarını hedefleyen öğrenme çıktılarının arttığını göstermektedir.

Ortaöğretim düzeyinde, dijital yeterliklerle ilişkili öğrenme çıktılarının bilişsel ve uygulamalı boyutlarının derinleştiği görülmektedir. Bilişim Teknolojileri ve Yazılım, Matematik, Fen Bilimleri (Fizik, Kimya, Biyoloji) ve Tarih derslerinde YZ, programlama, modelleme ve simülasyon temalarının daha belirgin biçimde yer aldığı tespit edilmiştir. Coğrafya ve felsefe derslerinde dijital haritalama, veri görselleştirme ve dijital düşünme becerilerine yönelik öğrenme çıktıları öne çıkarken, T.C. İnkılap Tarihi ve Atatürkçülük dersinde dijital içerik üretimi ve dijital etik temaları dikkat çekmektedir.

Sanat, dil, din ve spor derslerinde ise dijital yeterliliklerle ilişkili öğrenme çıktıların yaratıcı üretim ve kültürel ifade boyutlarıyla ilişkilendirildiği görülmektedir. İngilizce, müzik ve görsel sanatlar derslerinde yapay zekâ destekli öğrenme, artırılmış gerçeklik (AR) uygulamaları ve ses teknolojileri gibi öğretim yaklaşımlarına işaret eden öğrenme çıktılarına yer verilmektedir. Beden eğitimi ve spor dersinde dijital performans analizi ve spor teknolojilerinin kullanımına ilişkin çıktıların ön plana çıktığı görülürken, Din kültürü ve ahlak bilgisi dersinde dijital etik ve dijital vatandaşlık temaları vurgulanmaktadır.

Genel olarak bulgular, dijital yeterliklerle ilişkili öğrenme çıktıların tüm kademelerde yatay bir eksen oluşturduğunu; YZ okuryazarlığı ve öğretim teknolojileriyle ilişkili öğrenme çıktıların ise özellikle ortaokul ve lise düzeylerinde daha belirgin hâle geldiğini göstermektedir. Öğrenme çıktı düzeyinde yapılan karşılaştırmalar, öğretim programlarının UNESCO Yapay Zekâ Yeterlik Çerçevesi ve Avrupa Birliği DigComp 2.2 Çerçevesi ile özellikle veri okuryazarlığı, dijital güvenlik ve etik farkındalık boyutlarında anlamlı düzeyde örtüştüğünü ortaya koymaktadır.

Bu bulgular, Türkiye ulusal öğretim programlarındaki öğrenme çıktıların, dijital becerileri yalnızca teknolojik araç kullanımıyla sınırlı görmeyen, bilişsel ve değer temelli öğrenme süreçleriyle ilişkilendiren bir yaklaşıma işaret ettiğini göstermektedir.

Tartışma

Bu tartışma bölümü, Türkiye ulusal öğretim programlarında yer alan öğrenme çıktılarına dayanmaktadır; öğretmen eğitimi, materyaller ve uygulama süreçleri bu çalışmanın kapsamı dışındadır. Bulgular, öğretim programlarında dijital yeterlikler, yapay zekâ (YZ) okuryazarlığı ve öğretim teknolojileriyle ilişkili öğrenme çıktıların okul öncesinden lise düzeyine doğru kademeli bir gelişim örüntüsü sergilediğini göstermektedir. Bu durum, UNESCO (2023) ve OECD (2023) tarafından vurgulanan insan merkezli, etik ve kapsayıcı dijital dönüşüm ilkeleriyle öğrenme çıktıları düzeyinde anlamlı bir örtüşmeye işaret etmektedir.

Dijital yeterliklerle ilişkili öğrenme çıktıların farklı disiplinlere yatay biçimde dağıldığı bulgusu, Avrupa Birliği'nin DigComp 2.2 Dijital Yeterlik Çerçevesi (Vuorikari, Kluzer ve Punie,

2022) ile uyumludur. Bu uyum, OECD'nin (2023) dijital geçiş ile dijital yeterlikler arasında yaptığı kavramsal ayırım çerçevesinde değerlendirildiğinde, ulusal öğretim programlarının öğrenme çıktılarına yönelik yetkinlik temelli bir yaklaşım sergilediğini göstermektedir.

Fen ve matematik derslerinde öne çıkan veri okuryazarlığı, algoritmik düşünme ve simülasyon temaları, YZ destekli öğrenmenin temel bileşenleri olarak tanımlanan bilişimsel düşünme süreçleriyle (Holmes ve ark., 2022) örtüşmektedir. Sosyal bilimler ve değer eğitimi derslerinde dijital etik, dijital vatandaşlık ve dijital araştırma temalarının öne çıkması ise dijital yeterliklerin yalnızca teknik becerilerle sınırlı görülmediğini, değer temelli bir öğrenme yaklaşımıyla ilişkilendirildiğini göstermektedir. Bu bulgu, UNESCO'nun insan merkezli YZ yaklaşımıyla (Miao ve Holmes, 2023) tutarlıdır.

Bununla birlikte, YZ okuryazarlığına ilişkin öğrenme çıktılarının pedagojik açıdan açık ve aşamalı bir yapı sunmadığı görülmektedir. Bu durum, UNESCO'nun (2024a, 2024b) YZ yeterliklerinin aşamalı gelişimine ilişkin önerileriyle karşılaştırıldığında, öğrenme çıktıları düzeyinde daha belirgin bir yapılandırma ihtiyacına işaret etmektedir. Öğretmen yeterlikleri ve ölçme-değerlendirme süreçleri bu çalışmanın kapsamı dışında olmakla birlikte, bu alanların öğrenme çıktılarıyla nasıl ilişkilendirildiğinin gelecekteki çalışmalarla ele alınması gerekmektedir.

Genel olarak bulgular, Türkiye ulusal öğretim programlarında yer alan öğrenme çıktılarının uluslararası dijital eğitim çerçeveleriyle önemli ölçüde örtüştüğünü; ancak bu uyumun uygulama ve değerlendirme boyutlarında nasıl karşılık bulduğunun ayrı araştırmalarla incelenmesi gerektiğini göstermektedir.

Sonuç ve Öneriler

Bu araştırma, Türkiye ulusal öğretim programlarında yer alan öğrenme çıktılarının dijital yeterlikler, yapay zekâ (YZ) okuryazarlığı ve öğretim teknolojileriyle nasıl yapılandırıldığını ortaya koymuştur. Bulgular, dijital yeterliklerle ilişkili öğrenme çıktılarının okul öncesinden lise düzeyine doğru kademeli bir gelişim örüntüsü sergilediğini; erken yaşlarda farkındalık düzeyinde başlayan dijital becerilerin üst kademelerde uygulama ve üretim boyutlarına yöneldiğini göstermektedir. Bu bulgular, UNESCO (2023) ve OECD (2023) tarafından vurgulanan etik, kapsayıcı ve üretken dijital dönüşüm ilkeleriyle öğrenme çıktıları düzeyinde tutarlılık göstermektedir.

Dijital yeterliklerin farklı disiplinlere yatay biçimde dağıldığına ilişkin bulgular, Avrupa Birliği'nin DigComp 2.2 Dijital Yeterlik Çerçevesi (Vuorikari, Kluzer ve Punie, 2022) ile uyumlu bir yapı sergilemektedir. Öğrenme çıktıları incelendiğinde, dijital güvenlik, veri okuryazarlığı ve etik teknoloji kullanımına yönelik vurguların öne çıktığı görülmektedir. Bununla birlikte, UNESCO'nun Yapay Zekâ Yeterlik Çerçevesi (Miao ve Cukurova, 2024) perspektifinden değerlendirildiğinde, Yapay Zekâ okuryazarlığına ilişkin öğrenme çıktılarının açık biçimde aşamalı bir pedagojik yapı sunmadığı anlaşılmaktadır.

Araştırmanın genel sonuçları, Türkiye ulusal öğretim programlarında yer alan öğrenme çıktılarının dijital becerileri yalnızca teknolojik araç kullanımıyla sınırlı görmeyen, pedagojik, etik ve kültürel boyutlarla ilişkilendiren bir yaklaşıma işaret ettiğini göstermektedir. Bu durum, dijital yeterliklerin bilişsel, duyuşsal ve değer temelli öğrenme alanlarıyla bağlantılı biçimde ele alındığını ortaya koymaktadır.

Bu doğrultuda, çalışmanın öğrenme çıktılarından elde edilen bulgulara dayalı olarak üç temel öneri sunulmaktadır:

(i) YZ okuryazarlığının aşamalı yapılandırılması: YZ ile ilişkili öğrenme çıktılarının farkındalık, uygulama ve üretim düzeylerini açık biçimde ayırt edecek şekilde düzenlenmesi;

(ii) Öğretmen yeterlikleriyle ilişkilendirme: Öğretmen eğitimi bu çalışmanın kapsamı dışında olmakla birlikte, UNESCO'nun Öğretmenler için YZ Yeterlik Çerçevesi (Miao ve Cukurova, 2024) doğrultusunda, öğrenme çıktılarının öğretmen yeterlikleriyle nasıl ilişkilendirilebileceğinin gelecekteki araştırmalarla ele alınması;

(iii) Değerlendirme süreçleriyle uyum: Öğrenme çıktılarında öngörülen dijital yeterliklerin ölçme ve değerlendirme süreçleriyle nasıl ilişkilendirildiğinin incelenmesi.

Sonuç olarak, bu çalışma Türkiye ulusal öğretim programlarının öğrenme çıktıları düzeyinde uluslararası dijital yeterlik ve YZ okuryazarlığı çerçeveleriyle önemli ölçüde örtüştüğünü göstermektedir. Bununla birlikte, ulaşılan sonuçlar yalnızca öğretim programlarında yer alan öğrenme çıktılarına ilişkin verilere dayanmaktadır ve öğretim programlarının öğretmen eğitimi, uygulama süreçleri veya değerlendirme sistemleri dahil olmak üzere bütünsel bir değerlendirmesi olarak yorumlanmamalıdır.

Appendix

This codebook supports the qualitative analysis of learning outcomes in the 2024 national curricula published by the Ministry of National Education. The analysis focuses exclusively on the learning outcomes dimension and examines their alignment with international digital competency and AI literacy frameworks.

Analytical Framework:

The analysis follows a hierarchical structure of themes, categories, and codes. Themes and categories were defined deductively based on DigComp 2.2 and the UNESCO AI Competency Frameworks, while codes were refined inductively through iterative examination of curriculum learning outcomes.

Themes and Categories:

Theme 1: Digital Competencies

Students' ability to access, evaluate, create, and communicate information using digital technologies in a safe and ethical manner.

Categories: Information and data literacy; communication and collaboration; digital safety and ethics; digital content creation.

Theme 2: AI Literacy

Understanding core AI concepts, applications, limitations, and ethical implications.

Categories: AI concepts and foundations; AI applications; AI ethics and social impact.

Theme 3: Instructional Technologies

Pedagogical use of digital tools to support teaching, learning, and assessment processes.

Categories: Technology-enhanced learning; blended and digital learning environments; assessment and feedback technologies.

Coding Procedure and Scope:

Learning outcomes were identified using technology-related keywords, grouped into one theme, and coded at both the category and code levels. Coding decisions were verified through alignment with DigComp 2.2 and UNESCO frameworks. The codebook specifically applies to student learning outcomes; teacher competencies were not analyzed.

A Comparative Analysis of Primary School Social Studies Curriculum in Türkiye and Spain

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Abstract

The purpose of this study is to analyze the 2018 social studies curriculum in Türkiye and the 2022 social sciences* curriculum in Spain in terms of objectives, contents, learning-teaching situations and assessment processes. The study was conducted using the document analysis approach within qualitative research. The analytical framework is based on Bereday's Model, which is commonly used in comparative research. The data were obtained from official sources and analyzed through content analysis. The results revealed that a social studies curriculum in Türkiye centers on national-spiritual values and Atatürk's reforms under a centralized administration, while Spain, with its more flexible curriculum that aims to adapt to regional diversity and universal principles, strives to equip students with the necessary competencies to meet the challenges of the 21st century.

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* Given that Türkiye's 2018 social studies curriculum and Spain's 2022 social sciences curriculum are similar in terms of the content they offer, the term "social studies" is used for both curriculum in the study in order to maintain conceptual integrity.

Introduction

Comparative educational studies enable individuals to develop a critical perspective on their own national systems (Alexander, 2001) while examining and drawing meaningful conclusions from practices implemented in different social contexts (Phillips & Schweisfurth, 2014). In this respect, a comparative perspective plays an indispensable role in understanding individual–society relations, deepening conceptual thinking skills, and interpreting differences (Arnone et al., 2012). Throughout the history of education, many thinkers have examined the educational systems of other countries to shape reform efforts within their own contexts (Mallinson, 1981) and have developed new models inspired by these systems (Ergün, 1985).

The critical perspective provided by comparative education offers significant benefits for both teachers and students (Marshall, 2019). Comparing different educational systems enables future teachers to develop conceptual richness, while supporting students in gaining awareness of their own societies as well as diverse cultural and pedagogical contexts (Crossley, 1999). This process contributes to more informed, coherent, and holistic decision-making across various domains, including educational planning, teaching methods, assessment approaches, and curriculum design (Kubow & Fossum, 2007). It further promotes cross-cultural pedagogical interaction by facilitating the transfer of educational practices beyond national boundaries. Through comparative education, individuals are able to recognize the limitations of their own systems more clearly and to examine alternative solutions developed in response to similar challenges (Halls, 1990; Kandel, 1933; Tretheway, 1976).

However, comparative educational research encompasses a wide range of possibilities, while at the same time presenting significant challenges. Among these, uncertainties related to the methodological framework stand out as a major concern. When the data obtained are decontextualized or incomplete, they may lead to inaccurate generalizations, thereby weakening the scientific credibility of the research (Noah, 1984). In addition, an ethnocentric perspective may lead researchers to interpret data through their own cultural frameworks, which can undermine the objectivity and validity of comparative analyses. In this context, the rapid and multidimensional nature of globalization produces a dynamic environment in which variables such as cultural conflicts, social ruptures, and economic fluctuations are continuously reproduced, making it necessary to approach comparative studies through a multi-focused perspective (Crossley, 1999).

The main objective of the present study is to analyze the primary social studies curricula in Türkiye and Spain from a comparative perspective, as countries located at opposite ends of southern Europe. Although these countries have been shaped by similar historical experiences, multicultural structures, and processes of democratization, they differ significantly in terms of their socio-cultural configurations, political systems, and pedagogical priorities. In this context, the central research problem focuses on examining how these two countries approach the formation of effective and responsible citizens through primary-level social studies education, while also exploring the structural, cultural, and ideological dynamics underlying these approaches.

A review of the existing literature indicates that comparative studies on social studies curricula have been conducted using examples from various countries (Altay, 2021; Aşçı, 1999; Durna, 2007; Osmanoğlu, 2012; Öztürk & Öztürk, 2015; Pamuk, 2021; Taş, 2019; Tatan, 2021; Yaşar, 2007; Yüceer, 2011; Zabun, 2018). However, no study has been identified that directly

compares the social studies curricula of Türkiye and Spain while comprehensively addressing their pedagogical, cultural, and ideological foundations. In this respect, considering the historical trajectories, educational traditions, and social structures of both countries, such a comparison is expected to contribute to the literature by addressing a significant gap.

To this end, starting from the objectives, contents, learning and teaching situations and assessment processes of the social studies curricula were analyzed in detail, and a systematic and comparative structure was constructed based on Bereday's analytical method (Bereday, 1964). The analysis process in question aimed to reveal the similarities and differences between the two countries, and to conceptualize the historical and social contexts from which these differences derive.

The study is based on Türkiye's 2018 social studies curriculum (MEB, 2018) and Spain's 2022 social sciences curriculum (BOE, 2022). However, to ensure terminological integrity, the term "social studies" is used for curricula throughout the study. The study focused on the question:

"What are the similarities and differences between the primary social studies curricula in Türkiye and Spain in terms of objectives, content, learning and teaching situations, and assessment processes?"

The specific research questions:

- 1: What similar and different aspects have shaped the objectives of the social studies curricula in primary schools in Türkiye and Spain?
- 2: What is the profile of the content structures and learning areas of social studies curricula in Türkiye and Spain?
- 3: How are learning-teaching situations in social studies curricula in Türkiye and Spain organized in line with pedagogical principles?
- 4: What are the fundamental characteristics of the assessment processes in social studies curricula in Türkiye and Spain?

Background

Overview of the Turkish Education System

Türkiye's education system is organized into formal and non-formal education on constitutional foundations. Formal education extends from preschool to higher education, whereas non-formal education addresses learning needs outside the formal structure. Primary education is compulsory for eight years, secondary education includes general and vocational pathways, and higher education is coordinated by the Higher Education Board (MEB, 2024). The system aims to raise individuals committed to Atatürk's principles within a secular and democratic framework, with an emphasis on equal opportunity (MEB, 2024). Despite ongoing reforms, regional disparities, migration, and infrastructural limitations continue to pose challenges for equitable implementation.

A Brief History of Teaching of Social Studies for Primary Schools in Türkiye

Social studies in Türkiye developed in line with broader educational policies. Courses such as history and geography, which were integrated during the late Ottoman and early Republican periods, were restructured within a secular and national framework under the name "Civic Knowledge" (Akyüz, 2014) and formally defined as social studies in 1968 (Günden, 1995). Although fragmentation in the 1980s weakened disciplinary unity, the 1997 reform brought the course back into an integrated structure (Sözer, 1998). Curriculum revisions in 2005 and

2017 adopted a constructivist and student-centered approach aligned with contemporary life (Baysal, 2005; Sönmez, 2005), thereby reinforcing its role in academic learning and value transmission.

General Overview of the Spanish Educational System

Spain's education system is constitutionally grounded in democratic and participatory principles. The 1978 Constitution (BOE, 1978) defines education as a fundamental right, guaranteeing equality and freedom of education. Subsequent reforms—LOE (BOE, 2006), LOMCE (BOE, 2013), and LOMLOE (BOE, 2020)—have reshaped the system in response to social transformation. Shared governance between the central state and 17 autonomous regions creates a balance between national standards and regional diversity (BOE, 1978). The system includes preschool, basic education, compulsory secondary education, post-secondary pathways, and higher education, along with specialized programs. Although it is grounded in inclusion and social justice, frequent legal reforms and regional disparities occasionally lead to variations in educational quality (BOE, 2020).

A Brief History of Teaching of Social Studies for Primary School in Spain

Social studies in Spain originated with the Moyano Law of 1857 (BOE, 1857), which introduced geography and history into the curriculum through predominantly theoretical instruction. In subsequent years, the Institución Libre de Enseñanza promoted experiential and child-centered methods (Domínguez Garrido, 2013). The General Education Law of 1970 (BOE, 1970) integrated history, geography, and civic education (Lagares & Muñoz, 2018), while LOGSE (BOE, 1990) further expanded interdisciplinarity. Later reforms—LOE (BOE, 2006) and LOMCE (BOE, 2013)—reasserted social studies as a core subject (Ortiz, 1997). Today, shaped by democratization and European integration, the field emphasizes ethical values, environmental awareness, democratic citizenship, and cultural inclusion (BOE, 2022).

Bereday Model

Bereday's (1964) analytical model provides a structured four-stage framework for conducting comparative studies, consisting of description, interpretation, juxtaposition, and comparison. In this study, these stages guided the curriculum-level analysis of the primary social studies programs in Türkiye and Spain (see Figure 1).

Figure 1

Adaptation of Bereday's (1964) Model for Curriculum-Level Analysis.

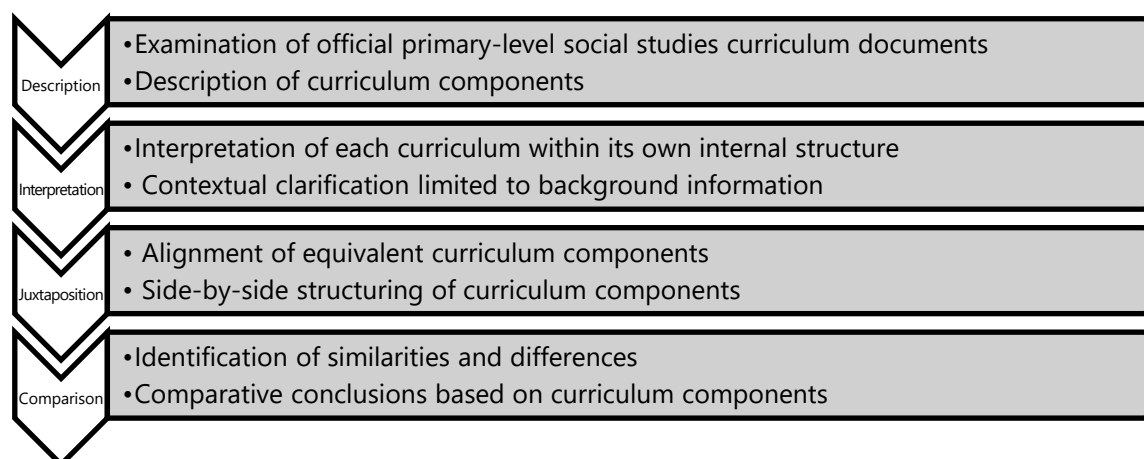


Figure 1 illustrates how Bereday's four-stage analytical structure—description, interpretation, juxtaposition, and comparison—was implemented in this study at the level of curriculum analysis. Each stage was applied specifically to the examination of primary-level social studies curricula in Türkiye and Spain, focusing on objectives, content, teaching–learning situations, and assessment processes rather than broader educational system structure.

Method

Research Design

The study was conducted using a qualitative document analysis method. Document analysis is defined as a method that enables the systematic examination of existing written materials, the classification of data under conceptual categories, and the interpretation of these data in a meaningful manner (Bowen, 2009).

Data Collection

The data were obtained from official sources. In the case of Türkiye, the Basic National Education Law No. 1739 (MEB, 2024), the Regulations of Primary Education Institutions (MEB, 2014), the current weekly course schedule (MEB, 2023), and the social studies curriculum dated 2023 (MEB, 2018) were taken as the basis. For Spain, Royal Decree 157/2022 (BOE, 2022) and the Primary Education Regulation based on the LOMLOE (BOE, 2020) were considered as the main documents.

Data Analysis

The data were analyzed through a content analysis approach and organized within a thematic structure. The analytical process was guided by Bereday's comparative method (Bereday, 1964) and implemented exclusively at the curriculum level. Accordingly, the comparison focused solely on the primary-level social studies curricula of Türkiye and Spain. Official curriculum documents were collected and described in the first stage. Although brief contextual information was provided for clarity, no systematic comparison was conducted at the level of educational systems or historical structures, as this fell outside the scope of the study.

In the subsequent stages, the curricula were interpreted within their own structural frameworks and organized according to equivalent variables—objectives, content, teaching–learning situations, and assessment processes—before being systematically juxtaposed. Similarities and differences were then identified through direct curriculum-based comparison. Throughout the analysis, attention was given to the internal coherence of curriculum components, and official legislation and program texts were examined directly without the use of a formal review form. The comparison was structured in a way that preserved thematic integrity and minimized subjective bias.

Validity and Reliability

The study ensured validity by relying exclusively on official legislation texts, curricula, and regulatory documents published by the competent authorities of Türkiye and Spain, thereby grounding the analysis in primary sources without sampling and strengthening the representativeness of the comparison. Reliability was maintained through a systematic, consistent, and transparent analytical process, in which documents from both countries were

examined according to equivalent criteria, themes were preserved in their contextual integrity, and data were interpreted within the same comparative framework. Using official sources, analytical continuity, and transparent procedures, the findings were established as scientifically coherent and internally consistent.

Results

In line with the first two stages of Bereday's (1964) analytical model—description and interpretation—the primary-level social studies curricula of Türkiye and Spain were examined, focusing on the core curriculum components, namely objectives, content, teaching–learning situations, and assessment processes.

Description and Interpretation of the Core Curriculum Components in Türkiye

Objectives of the Social Studies Curriculum

The main objective of the Turkish social studies curriculum is to support the development of individuals within the framework of both national and universal values and to train individuals endowed with multifaceted competencies such as democratic citizenship, historical awareness, cultural awareness, and environmental sensitivity. In this regard, the curriculum focuses on the internalization of Atatürk's principles and reforms, understanding of constitutional values, the rule of law, and respect for human rights. At the same time, individuals are expected to actively participate in social life, approach problems in a critical and solution-oriented manner, and use communication technologies in a conscientious manner (MEB, 2018).

Students' ability to analyze historical events in multiple ways, acquire geographic literacy skills, and develop awareness of natural resource protection are also among the program's top priorities (MEB, 2018).

Contents of the Social Studies Curriculum

The Turkish social studies curriculum presents the knowledge, skills, and values that enable individuals to participate effectively and responsibly in social life through a multidisciplinary approach. The program is structured around seven basic learning areas: "Individual and Society; Culture and Heritage; People, Places and Environments; Science, Technology and Society; Production, Distribution and Consumption; Active Citizenship and Global Connections." These learning areas aim to elevate the individual in relation to his or her community and in connection with global developments (MEB, 2018).

The content is shaped by multidimensional topics such as the Kemalist system of thought, democratic values, legal awareness, cultural diversity, and environmental sustainability, and is prepared within an interdisciplinary context. It aims for students to acquire competencies such as critical thinking, problem solving, decision making, communication, and collaborative work (MEB, 2018).

Teaching-Learning Situations in the Social Studies Curriculum

Teaching-learning situations in the social studies curriculum aim to create an integrated learning environment based on interdisciplinary knowledge transfer, critical thinking, and social context. In this process, students' multidimensional thinking skills are developed through content informed by social studies disciplines such as history, geography, economics, law,

sociology, and political science. Teaching practices are shaped by principles such as reflective inquiry, topicality, collaboration, and contextual learning, with learner-centered pedagogical methods taking precedence (MEB, 2018).

The integration of out-of-school learning environments (museums, historical sites, public institutions, etc.) into the course content helps to concretize students' learning and enhances their historical-spatial awareness. In addition, the use of literary works and audiovisual materials contributes to the development of different perspectives (MEB, 2018).

Assessment Processes in the Social Studies Curriculum

Assessment in the social studies curriculum is designed to observe academic performance, value orientations, social sensitivities, and competencies of students in a holistic manner. Students' awareness of rights and freedoms, environmental responsibilities, cultural awareness, and levels of democratic participation are among the key indicators considered in the assessment processes (MEB, 2018).

Assessment tools include diversified techniques such as project work, performance tasks, observation forms, student product sheets, and self-assessment forms; these tools guide teachers and enable students to monitor their own learning processes. However, differences in teachers' assessment skills may hinder the consistent application of these tools in practice (MEB, 2018).

Description and Interpretation of the Core Curriculum Components in Spain

Objectives of the Social Studies Curriculum

The social studies curriculum in Spain is structured so that students understand society and the world in which they live through a holistic, critical, and value-based approach. The main objective of the program is to ensure that individuals grow as active and responsible citizens who are sensitive to human rights, constitutional values, principles of sustainable development, and cultural diversity. Accordingly, students are expected to evaluate historical events in a chronological context, analyze geographical spaces, and develop critical thinking skills in response to social phenomena (BOE, 2022).

The program emphasizes objectives such as developing sensitivity to contemporary world problems, prioritizing social equality, and fostering democratic participation; it aims for students to become individuals who are respectful of cultural heritage, environmentally conscious, and committed to ethical values. At the same time, social skills such as peaceful communication, social integration, and entrepreneurship are included among the teaching objectives; it is intended to equip the individual with knowledge as well as values and attitudes (BOE, 2022).

Contents of the Social Studies Curriculum

The Spanish social studies curriculum has an interdisciplinary content structure that aims to provide a multidimensional understanding of the relationship of the individual with social life from historical, geographical, cultural, and political perspectives. The curriculum is structured under the heading of "Knowledge of the Natural, Social and Cultural Environment" and aims to help students develop a deep understanding of geographical awareness, historical continuity, and cultural heritage, particularly through the learning area "Societies and Territories." This content structure is presented with a design that prioritizes the transfer of academic knowledge together with value-oriented education (BOE-A-2022-3296).

The main content blocks of the program include "Challenges of Today's World, Societies in Time, Civic Literacy and Ecosocial Awareness"; under these headings, topics such as multiperspective analysis of historical events, the functioning of democratic institutions, social equality, environmental issues, and cultural pluralism are addressed. Students are encouraged to develop national and global awareness through topics such as map reading, climate change, gender roles, economic justice, migration, and digital citizenship. This content is presented with interdisciplinary integrity and is intended to support the internalization of basic social studies concepts at an early age (BOE, 2022).

Teaching-Learning Situations in the Spanish Social Studies Curriculum

The teaching-learning situations in the social studies curriculum in Spain are structured with student-centered, inquiry-based, and participatory pedagogical approaches. In this process, the basic principle is to ensure interdisciplinary integrity and to introduce students to social studies research methods. While students acquire skills such as historical thinking, geographical analysis, social analysis, and critical evaluation, contemporary competencies such as social responsibility, cooperation, and digital awareness are also developed. Learning activities extend beyond classroom instruction, and extracurricular learning environments such as trips to museums, visits to historical sites, and interaction with local government units are integrated into the program (BOE-A-2022-3296).

Students are encouraged to develop different perspectives through methods such as literary works, documentaries, analysis based on historical documents, and digital storytelling; in this way, they are expected to acquire the ability to evaluate historical events at the level of knowledge as well as within an emotional and ethical context. In addition, bringing current issues such as the climate crisis, gender equality, immigration, and human rights into the classroom through pedagogical scenarios increases students' sensitivity to contemporary social issues (BOE, 2022).

Assessment Processes in the Social Studies Curriculum

In the social studies curriculum, assessment processes aim to evaluate students' academic knowledge levels together with their ethical orientations, social sensitivity, and critical thinking skills in a holistic manner. In this context, the assessment processes focus on students' ability to analyze historical events, develop awareness of environmental and cultural issues, conduct human rights-based inquiries, and propose solutions to social problems. The program positions assessment as a tool focused on learning outcomes, while also treating it as an integral part of the learning process (BOE, 2022).

Assessment tools include individual and group projects, performance tasks, thematic portfolios, self-assessment forms, and rubrics based on teacher observations, allowing the monitoring of students' multidimensional development and supporting pedagogical guidance. In the third learning cycle, more structured assessment tools are introduced; in this phase, indicators such as students' civic literacy, ethical decision-making skills, and level of alignment with democratic values are included in the assessment (BOE-A-2022-3296).

Juxtaposition and Comparison of Curriculum

The "juxtaposition" and "comparison" stages of Bereday's (1964) analytical approach constitute a systematic evaluation framework that increases the conceptual depth of comparative educational research. In this context, the cases of Türkiye and Spain were

structured in three-column tables according to the identified thematic axes; the first column of these tables lists the factors that form the basis of the comparison, and the following two columns express the projections of these factors in both countries.

Table 1

Comparison of the Objectives of the Social Studies Curriculum of Türkiye and Spain

<i>Factors</i>	<i>Türkiye</i>	<i>Spain</i>
Basic Education Objective	To educate people endowed with democratic, secular, and historical values.	To form active and ethical citizens, committed to democratic values.
Citizenship Awareness	To educate citizens who are loyal to Atatürk's principles and reforms and who know their rights and responsibilities.	To develop an understanding of citizenship based on human rights, constitutional principles, and European citizenship.
Historical Awareness	Target individuals who approach historical events based on evidence and develop historical awareness.	Acquire versatile thinking skills by understanding historical events in context.
Cultural Awareness	People who recognize Turkish culture and develop a sense of national identity are at the forefront.	People who recognize different cultures and respect multiculturalism and cultural heritage are envisioned.
Environment and Sustainability	Aim to educate people who are protective of natural resources and environmentally conscious.	To develop people who are environmentally conscious and sensitive to the goals of sustainable development.
Critical Thinking and Participation	Individuals who develop critical thinking, communication, and cooperation skills are envisioned.	Foster critical citizenship, peaceful conflict resolution, and social responsibility.

Although the objectives set in the social studies curriculum of Türkiye and Spain are shaped by the historical background, political structure, and social priorities of both countries, they also incorporate common universal values in line with contemporary educational approaches. Türkiye's social studies curriculum is based on an understanding of citizenship grounded in Atatürk's principles and reforms and aims to help individuals develop a sense of historical awareness, national belonging, and democratic responsibility. Spain, on the other hand, aims to educate active and ethically responsible individuals based on human rights, constitutional principles, and European citizenship. This difference reflects the ideological and cultural foundations of how both countries conceptualize civic education.

In terms of historical awareness, both countries aim to connect students to the past. In Türkiye, national identity and historical continuity are prioritized, together with an evidence-based approach to historical events, whereas in Spain, multifaceted thinking about historical events in context, the development of historical empathy, and the consideration of different narratives are encouraged. In this sense, while Türkiye maintains the theme of unity and integrity in the narrative of history, Spain prioritizes the convergence of different historical identities and cultures within a common narrative. Although both approaches follow different pedagogical paths in building historical awareness, they share overlapping goals in terms of critical historical literacy.

In terms of environmental awareness and sustainability, both countries have integrated contemporary global issues into their teaching objectives to raise students' awareness in line with the goals of natural resource conservation, environmental sensitivity, and sustainable development. In Türkiye, these objectives are mainly configured around environmental awareness, whereas in Spain, sustainability is addressed alongside social justice and economic awareness and is positioned at the center of social studies education.

As for cultural awareness, Türkiye adopts an approach based on the recognition of national culture and the construction of national identity, while Spain aims to enable students to understand and empathize with differences through the principles of cultural diversity, multiculturalism, and respect for heritage. This clearly demonstrates the importance Türkiye attaches to cultural integrity and Spain to cultural plurality. However, both countries share a common orientation in recognizing cultural awareness as an integral component of building democratic citizenship.

Finally, critical thinking, communication, and social participation skills are among the main objectives of social studies education in both Türkiye and Spain, aiming to train students as knowledgeable individuals who develop solutions, express their ideas, and demonstrate sensitivity to social problems. Türkiye promotes cooperation and active learning, while Spain emphasizes peaceful conflict resolution, social responsibility, and ethical awareness. In this context, the social studies curricula of both countries, although shaped by different historical and political contexts, share a common vision of forming individuals who contribute to the development of democratic societies.

Table 2

Comparison of the Contents of the Social Studies Curriculum of Türkiye and Spain

<i>Factors</i>	<i>Türkiye</i>	<i>Spain</i>
Areas of Learning	Seven learning areas: Individual and Society; Culture and Heritage; People, Places and Environments; Science, Technology and Society; Production, Distribution and Consumption; Active Citizenship and Global Connections.	Four learning areas: Challenges of Today's World, Societies in Time, Civic Literacy, and Ecosocial Awareness.
Interdisciplinary Structure	It has a structure that integrates knowledge of history, geography, economics, and citizenship.	Geography, history, economics, and sociology are integrated.
Concepts and Themes	Topics such as democracy, human rights, production, consumption, environment, and technology are covered.	Topics such as climate change, equality, historical analysis, or democratic structure come to the fore.
National and Universal Values	Values such as Kemalism, national culture, and secularism take center stage.	European values, cultural diversity, tolerance, and human rights take center stage.
Local and Global Dimension	National identity and global awareness are balanced.	Local community structures and global issues are addressed together.

The contents of the social studies curriculum in Türkiye and Spain differ according to the historical and cultural context of both countries; however, they also include common values and areas of competence in line with contemporary educational approaches. Türkiye has adopted a multifaceted content model by structuring its curriculum around seven main

learning areas: individual–society relationship, historical continuity, geographical awareness, and democratic values. Spain, on the other hand, has organized its content under four main headings, incorporating themes such as contemporary issues, civic literacy, historical analysis, and environmental awareness within an interdisciplinary and holistic approach. This difference indicates that Türkiye prefers a more modular and structured content design, whereas Spain develops a more condensed content framework along the axis of thematic integrity and connection to everyday life.

Both programs have a structure that integrates social studies fields such as history, geography, economics, and citizenship. However, in Türkiye, the content of these areas is reinforced with elements such as national history, national culture, and Kemalism, whereas in Spain, the content is integrated with universal themes such as European values, cultural diversity, and human rights. This situation reflects that, in Türkiye, the contents are configured in line with the objective of national identity and social unity, while in Spain, they are shaped through an inclusive and critical perspective compatible with a multicultural structure. In this sense, both countries position the didactics of social studies as a process of identity construction, taking into account the dynamics of their own societies.

In terms of concepts and themes, Türkiye addresses content such as production, environment, technology, and human rights within the framework of democratic citizenship and historical awareness. In contrast, Spain emphasizes contemporary issues such as the climate crisis, equality, digital citizenship, and social justice, and develops students' critical thinking skills around these topics. While historical continuity and cultural belonging predominate in the Turkish content, current social issues and active participation are emphasized in the Spanish content. However, both programs reflect a common orientation in establishing connections between the local and global levels and in fostering individuals who act responsibly toward society and the wider world. In conclusion, although the Turkish and Spanish social studies programs are structured with different reference points, they share the common objective of equipping students with comprehensive, critical, and responsible citizenship competencies.

Table 3

Comparison of Teaching-Learning Situations in the Social Studies Curriculum of Türkiye and Spain

<i>Factors</i>	<i>Türkiye</i>	<i>Spain</i>
Learning Approach	A constructivist, learner-centered, and holistic learning approach is adopted.	Active learning, based on research and social responsibility, occupies a prominent place.
Interdisciplinary Practice	Interdisciplinary links such as history, geography, law, and economics are established.	Fields such as history, geography, sociology, or political science are dealt with interactively.
Methods and Techniques	Methods such as problem solving, debate, theater, brainstorming, or role-playing are used.	Project-based learning, discussion, digital applications, and group work come to the fore.
Out-of-School Learning	Learning is encouraged in outdoor spaces such as museums, monuments, public institutions, and historical sites.	Learning is supported by institutions such as community centers, natural spaces, or local authorities.
Creativity and Expression	Learning is supported through literary genres and the establishment of cultural links through artistic activities.	Creative expression and cultural context are reinforced through art, media, and digital tools.

The teaching-learning situations adopted by Türkiye and Spain in the didactics of social studies are configured for pedagogical reasons and in line with social objectives, and they present a dynamic structure that places the learner at the center in accordance with contemporary educational approaches. In Türkiye, a model based on the constructivist approach and encouraging students' active participation in knowledge stands out, whereas in Spain, an active learning approach based on inquiry and closely connected with social responsibility and democratic values has prevailed. This situation indicates that both countries conceive the teaching of social studies as a process that reinforces the social participation of the individual rather than a mere transmission of knowledge.

In terms of interdisciplinary structures, Türkiye seeks to establish integrative transitions rather than artificial boundaries between history, geography, economics, and citizenship, whereas Spain offers a broader integrated structure that allows greater interaction between these disciplines and includes fields such as sociology and political science in the learning process. In terms of methods and techniques, Türkiye employs tools that emphasize student interaction, such as role-playing, drama, debate, and problem solving, whereas Spain focuses on developing students' capacity for individual and collaborative learning through project-based learning, digital tools, and group work.

Out-of-school learning environments play an important role in social studies education in both countries. While Türkiye aims to make learning tangible through museums, public institutions, and historical sites, Spain brings learning into real-life contexts through collaborations with community centers, natural environments, and local governments. Both approaches are based on the idea that knowledge must be constructed in the classroom and in relation to the broader social context.

In terms of supporting creativity and diversifying forms of expression, Türkiye prioritizes establishing cultural connections through literary genres and supporting the individual's emotional development through arts and activities, whereas Spain enriches this process through media, art, and digital tools, aiming to develop students' individual and social awareness. Türkiye's effort to synthesize traditional content with modern pedagogical techniques and Spain's innovative approach to addressing contemporary social issues at the pedagogical level demonstrate the different yet complementary orientations of the two countries. In this context, the pedagogical approaches adopted in the social studies curricula of both countries provide a solid framework for the development of contemporary citizenship competencies; however, there is a need to develop supportive policies to ensure the consistent and inclusive implementation of these objectives in practice.

Table 4

Comparison of Assessment Processes in the Social Studies Curriculum of Türkiye and Spain

<i>Factors</i>	<i>Türkiye</i>	<i>Spain</i>
Assessment Approach	A multidimensional assessment based on cognitive, affective, and skill-based criteria is carried out.	A competency-based, holistic, and process-oriented assessment approach is adopted.
Scope and Dimensions	Indicators such as value orientations, social participation, and environmental awareness are considered.	Historical thinking, environmental awareness, ethical attitudes, and social skills are evaluated.

Table 4 (Continued)

Tools and Methods	Projects, performance tasks, exams, observation, and activity assessment tools are used.	Project work, observation, individual assessment, and group analysis are used.
Individual Differences	Individualized applications are implemented for students with special needs.	Flexibility is provided by taking into account multilingualism and different learning profiles.
Teacher Role	The teacher takes on the task of monitoring and guiding the student's development.	The teacher analyses the student's development process and provides feedback on the teaching process.
Monitoring and Feedback	Transparency is ensured through e-School, and qualitative feedback is provided.	Monitoring is carried out through level-based reporting, and regular information is provided to parents.

The assessment processes adopted in the Turkish and Spanish social studies curricula go beyond traditional performance-based approaches and offer a contemporary framework for monitoring and supporting students' multifaceted development. In Türkiye, the assessment process is constructed through a multidimensional approach encompassing cognitive, affective, and psychomotor dimensions, whereas Spain aims to analyze students' knowledge, skills, and attitudes as a whole through a competency-based, holistic, and process-oriented assessment model. These differences in approach are shaped by the pedagogical priorities of both countries; however, both systems converge in evaluating students' development through academic achievement, together with social and ethical responsibilities.

In terms of scope, Türkiye includes students' social sensitivity, environmental responsibility, and value orientations in the assessment process; similarly, Spain incorporates historical thinking, environmental awareness, democratic attitudes, and social skills as measurable indicators. In this sense, both countries establish a direct relationship between educational objectives and outcomes by integrating the active citizen profile pursued in social studies education into the assessment process.

In terms of the tools and methods used, Türkiye adopts multifaceted assessment techniques such as projects, performance tasks, written tests, observation forms, and activity evaluations, whereas Spain seeks to assess students' individual and social development through individual and group project work, observation, and process evaluation forms. Spain's emphasis on process orientation and group interaction in its assessment tools encourages learning to take place within a collective and social context.

Consideration of individual differences is regarded as a fundamental component of inclusive education in both systems. Türkiye supports individualized assessment practices for individuals with special needs, whereas Spain develops flexible arrangements based on multilingualism and diverse learning profiles. These differences in approach serve as important indicators of how the two countries conceptualize student diversity and equal opportunities in education.

The position of teachers in the evaluation process is also defined through a guiding and directive role in both countries. While teachers in Türkiye observe students' progress and adjust their teaching processes accordingly, in Spain they are positioned as actors who measure, monitor, analyze, and redesign teaching practices. In terms of monitoring and feedback mechanisms, Türkiye offers transparency and traceability through the e-School system,

whereas Spain provides detailed information to both parents and students regarding the development process through level-based reports.

In this context, both Türkiye and Spain redefine assessment processes in social studies education in a way that extends beyond academic performance and encompasses the social, environmental, and ethical responsibilities of the individual. Both systems aim to enhance the quality of students' learning processes through assessment models that support contemporary citizenship competencies and prioritize process and individual development; in this respect, they contribute to the transformation of social studies education.

Discussion

This comparative study, which focuses on the social studies curricula at the primary education level in Türkiye and Spain, was conducted in accordance with Bereday's (1964) stages of description–interpretation–juxtaposition–comparison. The findings obtained within this framework show that the ideal of raising “active and responsible citizens” is at the core of social studies curricula in both countries and that this ideal offers a common orientation (MEB, 2018; BOE, 2022). However, it was understood that this ideal is reflected differently in terms of objectives, content design, learning-teaching situations, and assessment processes. Indeed, comparative education studies have confirmed the necessity of evaluating curricula within their own structural logic and contextual framework (Phillips & Schweisfurth, 2014).

The first fundamental issue revealed by the study concerns the way citizenship goals are operationalized within curriculum components. In Türkiye, the social studies curriculum emphasizes national identity, constitutional values, and Atatürk's principles and reforms (MEB, 2018; Türkmenoğlu, 2007). In Spain, the curriculum establishes a broader normative field that includes human rights, sustainable development goals, and democratic participation within its constitutional framework (BOE, 2022; Soler Gracia, 1994). However, research shows that structural barriers exist in both countries to the equal reflection of these goals in the field; teacher competencies, resource inequalities, and issues of continuity in implementation create gaps between goals and implementation (Karagözoğlu, 2025; Sicilia & Simancas, 2018). Therefore, instead of a reductive reading that concludes that “one country is successful, the other is deficient,” a more balanced approach should be adopted, recognizing that both countries have strong normative goals but face different types of implementation risks.

The second issue revealed by the study is the distinction between “modular structure” and “thematic concentration” that emerges in the content design. In Türkiye, it was found that the content structure based on seven learning areas highlights interdisciplinary transitions; themes of historical continuity, cultural heritage, and geographical literacy are addressed within a systematic hierarchy (MEB, 2018). In Spain, on the other hand, the content structure is designed around an axis that focuses on the problems facing the contemporary world, structures civic awareness based on a literacy-based understanding. It highlights eco-social sensitivity, establishing a direct and holistic relationship with current issues such as the climate crisis, equality, migration, digital citizenship, and social justice (BOE, 2022). However, studies also show that autonomous adaptations in Spain provide diversity in content but can sometimes weaken standardization (Fraga-Varela et al., 2024), and in Türkiye, despite a strong modular design, they can make it difficult to experience the content with equal depth (Metin Göksu &

Taşyürek, 2023). This situation confirms the warnings in the comparative education literature about the risk of "context-disconnected generalization" (Noah, 1984).

The third issue is shaped by divergent patterns of application alongside common principles in learning-teaching processes. In Türkiye, the curriculum explicitly defines a constructivist, student-centered, interdisciplinary, and out-of-school learning-based approach; museums, historical sites, public institutions, literary genres, and audiovisual resources are recommended as part of the teaching process (MEB, 2018). In Spain, a pedagogical design grounded in the social context stands out, utilizing tools such as research-based active learning, project-based work, digital applications, collaborations with local government and community centers, and documentary and digital storytelling (BOE, 2022). However, it is observed that in Türkiye, out-of-school learning proposals can sometimes remain symbolic and activity-based, depending on the opportunities available (Çepni & Aydın, 2015), while in Spain, the lack of digital equipment, class size, and differences in teachers' level of adaptation to new approaches can limit the diversity of applications (Cabrera et al., 2021; Serrano et al., 2025). In this context, it is understood that both countries aim for contemporary citizenship competencies at the pedagogical intent level, but methodological diversity cannot be produced equitably without strengthening teacher training and resources.

The fourth issue concerns how the balance between multidimensionality and process-orientation is established in assessment processes. In Türkiye, assessment and evaluation provide a framework covering cognitive, affective, and skill dimensions through projects, performance tasks, observation forms, product portfolios, and self-assessment tools; traceability and transparency are aimed for through systems such as e-School (MEB, 2018). In Spain, a competency-based, process-oriented, and feedback-centered approach aims to monitor the holistic development of students through rubrics, portfolios, and level-based reporting (BOE, 2022). However, findings indicate that the effectiveness of alternative assessment tools in Türkiye may be limited by teacher competence and field conditions (Çelikkaya et al., 2010), and in Spain, differences in teacher practices and the use of digital tools can weaken standardization and, especially in disadvantaged areas, undermine the principle of equality (García-Sampedro et al., 2024; Cotec, 2024; Fundación Alternativas, 2024). Therefore, in the field of assessment, instead of reductionist comparisons, it should be stated that a contemporary measurement framework has been established in both countries; however, process-orientation and feedback need to be made sustainable through institutional capacity as a common requirement.

In terms of relating to the literature, the findings of this study suggest that Türkiye's emphasis on content centered on national identity and value transfer is consistent with previous comparisons (Aşçı, 1999; Durna, 2007; Pamuk, 2021) and that the need for pedagogical diversification is once again apparent through the examples of Denmark and the United Kingdom (Taş, 2007; Yüceer, 2011). On the other hand, Spain's goals centered on pluralism, eco-social sensitivity, and democratic participation appear to be in line with the universal values reported in the Estonian and South Korean examples (Altay, 2021; Tatan, 2021) and the multiculturalism dimension emphasized in comparisons with Canada (Öztürk & Öztürk, 2015). However, regional inequalities and issues of reform continuity reveal that the Spanish example should not be read as a flawless model; in Türkiye, the decisive factor is capacity building for the equitable implementation of a strong program design in the field. In the context of international comparison of social studies, Zhao et al. (2007) note that while social

studies programs in the US, China, and South Korea share similar citizenship goals, there are gaps in implementation due to exam pressure and teaching practices. Within this framework, the study presents a comparison that evaluates each country within its own structural logic and highlights areas for mutual learning, rather than positioning the two countries in a hierarchical opposition.

Ultimately, the study shows that social studies programs at the primary education level in Türkiye and Spain offer a strong normative framework around contemporary citizenship goals; however, this framework can produce different contextual ambiguities in practice. These ambiguities are associated with implementation conditions, teacher capacity, and resource distribution rather than with the formal design of the curricula themselves.

Conclusions and Implications

This comparative study has revealed that the social studies curricula at the primary education level in Türkiye and Spain offer a common normative framework centered on the goal of fostering “active and responsible citizens.” However, it has been understood that this goal is realized through program architectures that vary in both countries according to different governance structures, historical backgrounds, and institutional arrangements. The findings show that in Türkiye, a centralized and strong program integrity provides standardization and coordination; however, it can produce limitations in terms of sensitivity to local contexts. In Spain, it has been determined that autonomous adaptations allow for pedagogical diversity, but this flexibility also carries the risk of interregional inequality.

The study also revealed that both countries have adopted a contemporary and competency-based approach in terms of the objectives, content, learning-teaching processes, and assessment-evaluation dimensions of social studies education; however, structural factors such as teacher competencies, resource distribution, and continuity of implementation are decisive in ensuring that this approach is reflected equally in the field. In this context, the findings show that institutional capacity enabling program implementation is as decisive as the quality of program design. Therefore, rather than evaluating the two countries in terms of a hierarchical superiority relationship, the study draws attention to areas where the balance between central standardization and local flexibility has become fragile in both contexts.

Based on the findings of this study, the following recommendations can be developed:

- For the highly centralized program structure in Türkiye to be implemented more functionally in local contexts, it is recommended that structural mechanisms supporting pedagogical adaptations at the school and regional levels be strengthened.
- In Spain, in order to balance autonomous program implementation with common quality assurance, it is recommended that monitoring and evaluation frameworks be developed to increase interregional coordination.
- In both countries, in order to reflect the contemporary learning-teaching and assessment-evaluation approaches envisaged in social studies curricula, it is recommended that teacher professional development processes be more directly linked to program objectives.
- In program evaluation studies, it is considered necessary to adopt holistic approaches that address not only content and objective analyses, but also implementation conditions, resource ecology, and teacher competencies.

Declarations

Author Contributions

Murat Yüksel: Conceptualization, methodology, data collection, data analysis, writing-original draft.

Erdem Yavuz: Literature review, data analysis, writing-review and editing, validation and interpretation.

Conflict of Interest

The author/s declare no competing interests with other person(s), organization(s), or institution(s).

Disclosure of Artificial Intelligence (AI) Use

We used AI (DeepL AI platform) for the translation of documents in English. Also, ChatGPT was used for final linguistic and editorial revisions.

Availability of Data and Materials

The datasets generated and analyzed during the current study are available in [Ministry of National Education for Turkey and Ministry of Education, Vocational Training and Sport for Spain], [Links are given in References section].

Prior Dissemination

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Ethics Committee Approval

Ethics Committee Approval was not required for this study because it did not involve human participants, personal data, or animal subjects.

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TÜRKÇE GENİŞ ÖZET

İlköğretim Sosyal Bilgiler Öğretim Programlarına Karşılaştırmalı Bir Bakış: Türkiye ve İspanya

Karşılaştırmalı eğitim, farklı ülkelerin eğitim sistemlerini anlamak, benzerlik ve farklılıklarını ortaya koymak ve elde edilen bulgulardan hareketle etkili politika önerileri geliştirme noktasında önemli bir araştırma alanıdır (Altbach, 1991; Bray, 2003). Bu anlamda karşılaştırmalı yaklaşımlar, eğitim sistemlerinin yapısal analizine farklı bakış açıları geliştirmenin ötesinde; öğretmenlere, öğrencilere ve politika yapıcılara farklı eğitim kültürlerini tanıma, değerlendirme ve kendi sistemleriyle ilişkilendirme imkânı sağlamaktadır (Kubow & Fossum, 2007). Ancak bu alanda yürütülen araştırmalar, yöntemsel güçlükler, etnosentrik bakış açıları ve küreselleşmenin yarattığı hızlı değişimlerin etkisiyle çeşitli sınırlılıklar da barındırmaktadır (Crossley, 1999; Noah, 1984).

Bu doğrultuda mevcut çalışma, Güney Avrupa'nın iki farklı kültürel ve tarihsel ekseninde konumlanan Türkiye ile İspanya'nın ilköğretim düzeyindeki sosyal bilgiler öğretim programlarını Bereday (1968) modeli ile karşılaştırmayı amaçlamaktadır. Nitekim her iki ülke de demokratik vatandaşlık, kültürel çeşitlilik ve toplumsal katılım değerlerine belirli seviyelerde vurgu yapmakla birlikte, tarihsel deneyimleri ve pedagojik gelenekleri bakımından farklılaşmaktadır. Bu yönüyle çalışmanın amacı, karşılaştırmalı eğitim literatüründe Türkiye-İspanya eksenindeki literatür boşluğunu doldurmaktır.

Yöntem

Araştırma, nitel araştırma yöntemlerinden doküman analizi yöntemi ile yürütülmüştür. Diğer yandan karşılaştırmalı eğitim bağlamında ise Bereday'ın (1968) analitik modeli çalışmaya uyarlanmıştır. Bu model, betimleme, yorumlama, yan yana koyma ve karşılaştırma olmak üzere dört aşamadan oluşmaktadır. Çalışmada öncelikle Türkiye ve İspanya'nın sosyal bilgiler öğretim programlarına ilişkin resmî dokümanlar elde edilmiştir. Türkiye için Millî Eğitim Bakanlığının 2018 tarihli sosyal bilgiler deri öğretim programı ile Temel Eğitim Kanunu, İspanya için ise LOMLOE yasası çerçevesinde yayımlanan 2022 tarihli "Real Decreto 157/2022" esas alınmıştır. Veriler içerik analiz yöntemiyle çözümlenmiştir. Analiz sürecinde programların hedef, içerik, öğretim-öğrenme durumları ve ölçme-değerlendirme boyutları tematik olarak yapılandırılmış; benzer ve farklı yönler karşılaştırılmıştır. Verilerin doğrudan resmî kaynaklardan elde edilmesi, çalışmanın geçerlik ve güvenilirliğini artıran önemli bir unsur olmuştur.

Bulgular

Karşılaştırmalı analizler, ilk olarak Türkiye'de sosyal bilgiler öğretim programının, Atatürk ilkeleri ve millî değerler çerçevesinde seküler, demokratik ve ulusal kimlik inşasına

odaklandığını; İspanya’da ise demokratik katılım, kültürel çoğulculuk, insan hakları ve sürdürülebilirlik ilkeleri ekseninde evrensel yurttaşlık bilincinin geliştirilmesini hedeflediğini ortaya koymaktadır.

İçerik bağlamında Türkiye programı “Birey ve Toplum”, “Kültür ve Miras”, İnsanlar, Yerler ve Çevreler”, “Bilim, Teknoloji ve Toplum”, “Üretim, Dağıtım ve Tüketim”, “Etkin Vatandaşlık”, “Küresel Bağlantılar” başlıkları ile öne çıkan yedi öğrenme alanı üzerine kuruludur. Buna karşılık İspanya programı, “Toplumlar ve Bölgeler”, “Günümüz Dünyasının Sorunları”, “Vatandaşlık Okuryazarlığı” ve “Eko-sosyal Farkındalık” temaları etrafında disiplinler arası bir yaklaşımla karşımıza çıkmaktadır. Bu bağlamda Türkiye’de tarihsel süreklilik ve ulusal kimlik ön plana çıkarken, İspanya’da toplumsal eşitlik, çevre bilinci ve dijital vatandaşlık temaları öne çıkmaktadır.

Öğrenme-öğretme durumları bağlamında Türkiye, yapılandırmacı ve öğrenci merkezli bir anlayışı benimsemekte, okul dışı öğrenme ortamlarını (müze, tarihî mekân, kamu kurumları) öğretim sürecine dâhil etmeye çalışılmaktadır. İspanya’da ise araştırma-sorgulamaya dayalı, dijital araçlarla desteklenen, toplumsal sorumluluk temelli etkinlikler dikkat çekmektedir. Her iki ülke de öğrencilerin eleştirel düşünme, iletişim, iş birliği ve demokratik katılım becerilerini geliştirmeyi hedeflemektedir.

Ölçme-değerlendirme süreçleri bağlamında Türkiye, bilişsel, duyuşsal ve psikomotor becerileri kapsayan çok boyutlu bir yaklaşım benimsemekte; performans ödevleri, projeler ve öz değerlendirme formları kullanmaktadır. İspanya ise süreç odaklı, yetkinlik temelli ve bütüncül bir değerlendirme modeli uygulamakta; öğrencilerin etik tutumlarını, çevresel duyarlılıklarını ve demokratik davranışlarını izlemektedir. Her iki ülke de değerlendirmeyi yalnızca başarı ölçümü değil, öğrenme sürecinin yönlendirici bir parçası olarak ele almaktadır.

Tartışma

Çalışma, Türkiye ve İspanya’nın ilköğretim düzeyindeki sosyal bilgiler programını Bereday’in (1964) betimleme, yorumlama, yan yana getirme ve karşılaştırma aşamalarına bağlı kalarak incelemiştir; her iki ülkede de sosyal bilgiler öğretiminin temelinde “etkin ve sorumlu yurttaş” yetiştirme idealinin yer aldığını ortaya koymuştur (BOE, 2022; MEB, 2018). Bununla birlikte söz konusu idealin, kurumsal yapılanma, içerik kurgusu, öğrenme-öğretme durumları ve ölçme-değerlendirme süreçlerinde farklı tarihsel ve siyasal referanslar üzerinden biçimlendiği anlaşılmıştır. Nitekim eğitim sistemlerinin yalnızca yapısal özellikleriyle değil, onları üreten toplumsal bağlamla birlikte ele alınması gereği (Phillips & Schweisfurth, 2014), bu çalışma kapsamında da doğrulanmıştır.

Türkiye’de sosyal bilgiler programının, Cumhuriyet’in ulus-inşa süreciyle bağlantılı biçimde değer aktarımı ve yurttaşlık eğitimi işlevi üstlendiği; 2005 sonrası reformlarla yapılandırmacı ve öğrenci merkezli bir çizgiye yöneldiği görülmektedir (Akyüz, 2014; Baysal, 2005). İspanya’da ise demokratikleşme süreci ve Avrupa Birliği yönelimiyle birlikte insan hakları, katılım, kültürel çoğulluk ve ekososyal duyarlılık vurgularının güçlendiği anlaşılmıştır (BOE, 2022). Bununla birlikte her iki ülkede de öğretmen yeterlikleri ve kaynak eşitsizliklerinin, hedeflerin sahaya eşit biçimde yansımaları zorlaştırdığı bulgulanmıştır (Karagözoğlu, 2025; Sicilia & Simancas, 2018). Diğer yandan Türkiye’de modüler ve öğrenme alanlarına dayalı yapı, disiplinler arası geçişleri sistematik biçimde kurarken (MEB, 2018); İspanya’da içeriklerin güncel toplumsal sorunlar, ekososyal duyarlılık ve dijital yurttaşlık ekseninde yapılandırıldığı görülmüştür (BOE, 2022).

Ancak özerk uyarlamaların İspanya’da standartlaşmayı, Türkiye’de ise içeriklerin eşit derinlikte deneyimlenmesini zorlaştırabildiği saptanmıştır (Fraga-Varela et al., 2024; Metin Göksu & Taşyürek, 2023).

Öğrenme-öğretme durumları ve ölçme-değerlendirme süreçlerinde her iki ülkede de yapılandırmacı, süreç odaklı ve yeterlik temelli anlayış benimsenmiş olsa da uygulamada öğretmen eğitimi, dijital altyapı ve saha koşullarına bağlı sınırlılıklar dikkat çekmiştir (Çelikkaya et al., 2010; García-Sampedro et al., 2024). Bu durum, genel anlamda çağdaş bir çerçevenin kurulduğunu, ancak sürdürülebilirliğin kurumsal kapasiteyle doğrudan ilişkili olduğunu göstermektedir.

Netice itibarıyla çalışma, Türkiye ve İspanya’da sosyal bilgiler programlarının güçlü bir normatif çerçeve sunduğunu, ancak bu çerçevenin uygulamada farklı bağlamsal açıklıklar üretebildiğini ortaya koymuştur. Türkiye’de merkezî ve tutarlı program yapısı yerel bağlamla yeterince derinleşemediğinde eşit deneyimlenme sorunu belirginleşirken, İspanya’da özerkliğe dayalı esnek yapı eşgüdüm mekanizmalarıyla dengelenmediğinde bölgesel farklılıkları görünür kılmaktadır. Bu bağlamda sosyal bilgiler öğretiminde belirleyici olanın, programın içeriğinden ziyade, programın işlediği yönetim ve uygulama koşulları olduğu anlaşılmıştır.

Sonuç ve Öneriler

Araştırma sonucunda Türkiye ve İspanya’nın ilköğretim düzeyindeki sosyal bilgiler öğretim programlarının “etkin ve sorumlu vatandaş” yetiştirme hedefi etrafında benzer bir yaklaşım benimsediği anlaşılmıştır. Ancak bu ortak hedefin, farklı yönetim yapıları ve kurumsal düzenlemeler doğrultusunda farklı program yapıları üzerinden uygulamaya yansıdığı görülmüştür. Türkiye’de merkezî program yapısının standartlaşma ve eşgüdüm sağladığı, buna karşılık yerel bağlamlara uyarlama konusunda sınırlılıklar oluşturabildiği; İspanya’da ise özerk uygulamaların pedagojik çeşitlenmeye imkân tanırken bölgeler arası farklılık riskini artırabildiği belirlenmiştir.

Çalışma ayrıca her iki ülkede sosyal bilgiler öğretiminin yetkinlik temelli bir yaklaşıma dayandığını, ancak bu yaklaşımın uygulamaya yansıtılmasında öğretmen yeterlikleri, kaynak dağılımı ve kurumsal kapasitenin belirleyici olduğunu göstermiştir. Bu doğrultuda Türkiye’de yerel pedagojik uyarlamaların desteklenmesi, İspanya’da ise özerk uygulamaların kalite güvencesi ve izleme mekanizmalarıyla dengelenmesi önerilmiştir. Ayrıca her iki ülkede öğretmenlerin mesleki gelişim süreçlerinin program hedefleriyle daha güçlü ilişkilendirilmesi gerektiği sonucuna ulaşılmıştır.

Mathematical Literacy in Middle School Textbooks: An Evaluation of the Data Processing Learning Domain *

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Abstract

The purpose of this study is to evaluate the data processing learning domain in middle school mathematics textbooks from a mathematics literacy perspective. Within the scope of the research, a total of four mathematics textbooks for four different middle school grade levels approved by the Council of Education in the 2022-2023 academic year were examined. Quantitative document analysis method, was employed, and questions in the data processing learning domain were evaluated according to the Mathematical Literacy Analysis Framework developed by Gatabi, Stacey and Gooya and revised for this study. According to this framework, the questions were analyzed according to the components of context, mathematical problem solving, formulation, interpretation or verification. In addition, the levels of mathematical competency that should be included in the questions were examined using the "Mathematical Competency Level Classification" created by Turner, Blum and Niss. The findings showed that the data processing learning domain was mostly addressed in non-mathematical contexts in the textbooks examined, but that the mathematical problem-solving and formulation components were present at a low level. It was also found that the mathematical competency levels in the questions were mostly concentrated at Level 0 and Level 1, rarely represented at higher levels. As a result of the analyses, it was determined that the eighth-grade textbook was more effective in supporting mathematical literacy and addressed higher levels of competency compared to other grades in terms of the criteria mentioned in the findings section (non-mathematical context ratio, problem-solving strategies, mathematical competency levels, etc.).

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* This study is derived from the first author's master's thesis, conducted under the supervision of the second author.

Introduction

Mathematics has been a fundamental discipline throughout history, providing solutions to societal problems. Its close connection to real life underscores that the primary aim of mathematics education is to enable students to apply mathematical knowledge (Kabael, 2021) and to structure instruction in ways that encourage them to formulate their own solutions and justify their ideas (Altun & Bozkurt, 2017; Organisation for Economic Co-operation and Development [OECD], 2013). However, the fact that most pure mathematicians ignore that important mathematical concepts emerged in the process of solving societal problems (Marciniak, 2015) has led to mathematics education in schools being structured in a way that is contrary to its nature. For many years, knowing mathematics in schools was thought to mean memorizing certain rules and giving the single correct answer to questions, and this understanding led to a disconnect between school mathematics and real life (Altun, 2006, 2020).

This situation has led to the adoption of a test-focused teaching approach in mathematics education that emphasizes specific rules. Additionally, issues have arisen, such as teachers lacking sufficient knowledge about the dynamics of mathematics teaching and mathematics being perceived solely as a toolbox (Burkhardt, 2008; OECD, 2018). The failure to sufficiently establish the connection between mathematics and real life has hindered students' development of mathematical skills and led them to perceive mathematics as a difficult and abstract subject (Lim, 1999; Uçar et al., 2010). This disconnect has adversely affected students' attitudes toward mathematics, reduced their interest outside of class, and caused them to view mathematics as simply a necessary subject within the school context (Akdemir, 2006). The most concrete reflection of this is seen in the question students often ask: "Why should I solve this problem? How will this be useful to me?" Such questioning highlights the inadequacy of textbook tasks and classroom activities in fostering meaningful connections with real-life situations.

In response to these concerns, mathematical literacy has been positioned as a central objective of contemporary mathematics education. Mathematical literacy is commonly defined as individuals' capacity to formulate, employ, and interpret mathematics in a variety of real-world contexts (Ministry of National Education [MoNE], 2005; OECD, 2013 Steen et al., 2007). Within international large-scale assessments such as the Programme for International Student Assessment (PISA), mathematical literacy is conceptualized through both process dimensions and content domains, namely quantity, change and relationships, space and shape, and uncertainty and data (OECD, 2018). Among these domains, uncertainty and data-corresponding to the data processing learning area in both the 2018 Mathematics Curriculum, which was in effect during the period of this study, and the examined textbooks-play a particularly critical role, as they are directly associated with interpreting information, analyzing data, making predictions, and supporting informed decision-making in real life.

Türkiye's consistently low performance in PISA mathematics literacy assessments provides a concrete indicator that mathematics education has not yet been structured in a manner consistent with these aims. Ranking 33rd among 41 OECD countries in 2003 and 50th among 72 OECD countries in 2015 (Kabael, 2021) and continuing to perform below the OECD average by ranking 31st out of 36 OECD countries in 2018 and 32nd out of 37 OECD countries in 2022 (MoNE, 2019, 2024) underscores the persistent need to adopt a literacy-based approach to mathematics education. This situation is particularly critical given that data-related

competencies require students to interpret information, reason under uncertainty, and make evidence-based judgments-skills that lie at the core of mathematical literacy and everyday decision-making. Accordingly, this underperformance highlights the need to examine how mathematical literacy, especially data-related competencies, is conceptualized and operationalized in school mathematics, particularly through textbook questions that shape classroom practice.

One of the significant reforms aimed at addressing this issue was the revision of the mathematics curriculum in 2018. This change aimed to enable students to apply the mathematical knowledge acquired at school in real-life contexts, apply problem-solving processes, and develop their mathematical literacy skills (MoNE, 2018). However, research shows that these revisions have not fully achieved the expected impact. Merely designating mathematical literacy as an objective in the curriculum is not sufficient; it must also be reflected in textbooks and classroom practices (Efriani et al., 2019). Textbooks, which are considered a critical element in achieving curriculum objectives (Güzel, 2017), are regarded as a central resource in mathematics education (Frejd, 2014). Therefore, the extent to which the questions in textbooks support mathematical literacy and whether the changes in the 2018 curriculum are sufficiently reflected in these materials have become important research topics. In addition, whether the content of textbooks is effective in Türkiye's low performance in PISA is also an issue that needs to be evaluated.

A review of the literature reveals that various studies have been conducted on mathematical literacy, but textbooks have not been sufficiently examined in the context of mathematical literacy. The studies conducted generally examine the mathematical literacy levels of students and teacher candidates (Altun et al., 2018; Duran, 2016; Sönmez, 2024), teachers' perceptions of self-efficacy (Dinçer et al., 2016; Özgen et al., 2019; Wardat & Alali, 2024), or the evaluation of teaching programs from a mathematical literacy perspective (Güzel, 2017; Konukoğlu et al., 2019; Sumliyah et al., 2025). The suitability of textbooks within the PISA framework has been studied relatively less, and existing research generally focuses on analyzing questions in textbooks according to PISA competency levels (Şahin & Aksu, 2023; Şirin & Yıldız, 2020; Tarım & Köksal, 2024; Tarım & Tarku, 2022). The limited number of studies examining the suitability of questions in textbooks for mathematical literacy (Bayraktar, 2019; Gatabi et al., 2012) indicates that more research is needed in this area. Bayraktar (2019) conducted a PISA 2012 based analysis of a Grade 9 mathematics textbook in Türkiye and found that most questions focused on application and formulation at lower competency levels and were largely non-contextualized. Similarly, Gatabi et al. (2012) developed an analytical framework through a comparative analysis of Iranian and Australian grade nine textbooks, showing that Australian textbooks offered a greater number and diversity of contextualized tasks, providing more opportunities for mathematical modelling.

This study aims to evaluate the extent to which mathematics textbooks in Türkiye align with the principles of mathematical literacy. Given Türkiye's poor mathematics literacy scores in PISA assessments, it is important to examine the impact of textbook content on these results. Considering the central role of data literacy in both real-life and international large-scale assessments, the data processing learning domain was identified as a particularly appropriate context for examining mathematical literacy in textbooks. One of the original contributions of this study is that it is the first time in the national literature that the framework developed by Gatabi et al. (2012), which compares the textbooks of two countries, has been applied to the domain of data processing learning. Following the data collection process of the study,

Türkiye's mathematics teaching program was comprehensively restructured in 2024, and this change aimed to place competencies critical for mathematical literacy in a more prominent and central position. Therefore, the findings of this study are considered valuable in providing guidance for researchers who wish to examine the implications of the new curriculum. In this regard, the main objective of the study is to examine the suitability of questions in the data processing learning domain in fifth, sixth, seventh, and eighth grade middle school mathematics textbooks to mathematical literacy criteria and to assess the status of mathematical literacy in these textbooks. The following research questions were determined in line with this objective:

1. To what extent do questions in middle school mathematics textbooks in the data processing learning domain align with mathematical literacy criteria? How does this alignment vary across grade levels?
2. What are the expected levels of mathematical competency necessary to solve questions in the data processing learning domain? How do these competency levels vary across grade levels?

Method

Research Design

In this study, a quantitative document analysis approach was employed to systematically examine the extent to which middle school mathematics textbooks support mathematical literacy in the data processing learning domain. Quantitative document analysis is utilized to conduct an objective, systematic, and numerical examination of printed or digital materials to quantify specific manifest phenomena (Neuendorf, 2017).

The main objective of the research was to determine the suitability of textbook questions for mathematical literacy and to reveal the underlying mathematical competency levels. To ensure a systematic investigation, this objective was operationalized through a quantitative content analysis approach conducted in three sequential stages (Krippendorff, 2018; Neuendorf, 2017; Sallan Gül & Kahya Nizam, 2021). First, the selected textbooks and the targeted learning domain were explicitly defined. Second, a standardized coding scheme was developed by operationalizing the categories within the Mathematical Literacy Framework to align with the specific requirements of the study. Finally, all question content within the learning domain was subjected to a rigorous deductive categorization process to identify the cognitive demands and reasoning processes involved.

In this context, mathematics textbooks were treated as official curriculum documents that reflect how learning objectives are operationalized in instructional materials, and the analysis was focused on quantifying how questions support distinct components of mathematical literacy. Consequently, the coded data were analyzed using descriptive statistics, specifically frequencies and percentages. Through this quantification, the structural distribution of mathematical literacy components across grade levels and textbook sections was explicitly delineated. The systematic transformation of textual observations into a statistical summary facilitated a rigorous evaluation of the results, ultimately providing a data-driven overview of the extent to which textbook questions align with mathematical literacy components.

Mathematics Textbooks Reviewed

The study reviewed four mathematics textbooks approved by the MoNE's Council of Education for the 2022-2023 academic year and used within the framework of the 2018

Mathematics Curriculum. To delimit the scope of the study and ensure a manageable analysis process, only one textbook was selected from each grade level. The selection of textbooks was based on the fundamental criterion that they reflect the national curriculum in Türkiye and serve as the most widely used resources; therefore, MoNE publications were selected. Detailed information about the four selected textbooks and the codes assigned to facilitate the analysis process are shown in Table 1.

Table 1

Textbooks Reviewed

<i>Grade level</i>	<i>Publisher house</i>	<i>Code</i>
Fifth grade	MoNE	M-5
Sixth grade	MoNE	M-6
Seventh grade	MoNE	M-7
Eighth grade	MoNE	M-8

In evaluating textbooks in terms of mathematical literacy, the learning domain of data processing was identified as a suitable focus of study. The rationale for this choice can be outlined as follows:

- With increasing amounts of data, students' abilities to analyze and interpret data and make informed decisions have gained prominence.
- Data processing is becoming increasingly important in daily life and in various professional fields.
- It fosters students' development of evidence-based thinking habits in their decision-making processes.

In line with these criteria, data processing was selected as the learning domain to be analyzed in this study. This topic has been regarded as a significant area of investigation because it allows for various real-life applications that include students' own experiences.

Data Analysis

Data obtained from the mathematics textbooks were analyzed through quantitative content analysis. In accordance with the quantitative paradigm, this process aimed to transform textual content into standardized numerical data through a systematic coding procedure. Unlike qualitative interpretive methods, the analysis was performed within a standardized coding scheme developed to ensure objectivity and reproducibility (Neuendorf, 2017). The Mathematical Literacy Framework and the Mathematical Competency Level Classification Framework served as the primary analytical frameworks in the categorization process.

The analysis evaluated the extent to which textbooks support mathematical literacy through the learning domain of data processing, analyzing not only problems but all content (introduction, let's do it together, your turn, activities, and unit assessment). Evaluating textbooks as if they were test books consisting only of problems would be misleading. This comprehensive approach is based on the premise that when elements such as content, questions, examples, activities, and introductory questions are prepared as a whole, they contribute to students' mathematical literacy. Therefore, in this study, the term "question" is used to refer not only to problems but also to all of the above content.

To ensure comparability across grade levels, instructional segments with similar pedagogical functions were grouped and assigned to standardized categories reflecting their purpose. In this process, common headings for the sections were determined by utilizing the explanations in the introductory part of the textbooks (Table 2).

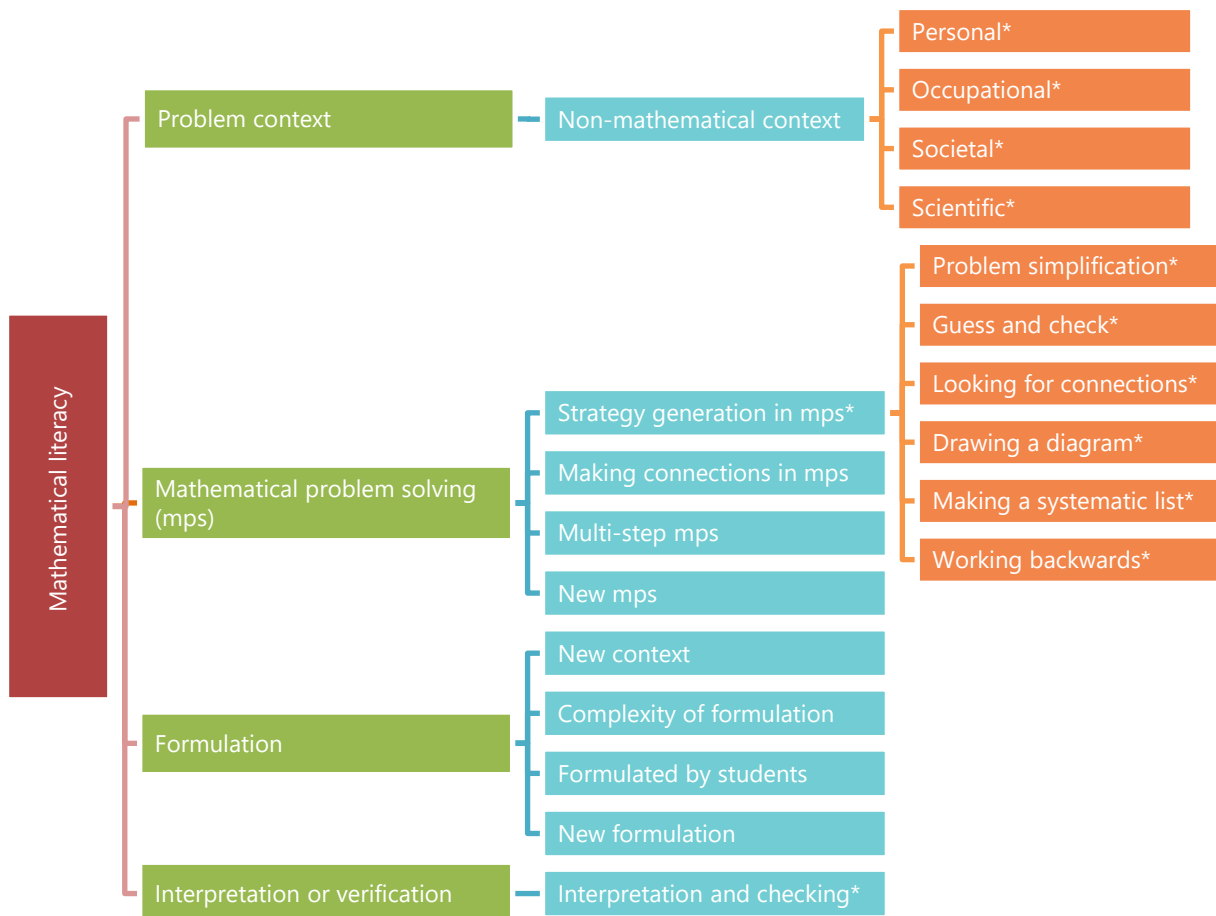
Table 2*Common Section Headings in Textbooks*

	<i>Preparatory work</i>	<i>Activities</i>	<i>Worked examples</i>	<i>Problems</i>	<i>End-of-unit assessment</i>
<i>Fifth grade</i>	Are we ready? Introduction	Let's try this	Let's do it together	Now it's your turn	End-of-unit assessment
<i>Sixth grade</i>	Are we ready?	-	Learning together	Now it's your turn Topic review	End-of-unit assessment
<i>Seventh grade</i>	Introduction Inquiry	Activity	Let's solve together	Your turn to solve	End-of-unit assessment
<i>Eighth grade</i>	Introduction	Activity	Example	Problem	End-of-unit assessment

The sections, which differ by grade level, are classified under five main categories: preparatory work, activities, worked examples, problems, and end-of-unit assessment questions. However, since the sixth-grade textbook does not include an activity or a comparable section in the data processing learning domain, the activity section for the sixth-grade textbook has been left empty in Table 2.

Data Analysis Framework***Characteristics of Mathematical Literacy Questions***

The "Mathematics Literacy Framework" developed by Gatabi et al. (2012) to assess the mathematics literacy status of textbooks was used for this study, revised based on expert opinions and relevant literature (Figure 1). This framework consists of fundamental components such as questions that provide context, the correct use of mathematical expressions, the selection and application of appropriate problem-solving strategies, and the interpretation of results.

Figure 1*Mathematical Literacy Framework*

Source: Adapted from Gatabi et al. (2012, p. 409)

* New components added to the framework

Two important additions were made to the framework within the scope of this study. First, the “Problem Context” component was expanded by incorporating the four context types defined in the PISA mathematical literacy framework (personal, societal, occupational, and scientific) (OECD, 2013). This enabled an examination of the contextual diversity of the questions. Second, the “Strategy Generation” subcomponent was incorporated into the “Mathematical Problem Solving” component. This addition was supported by the emphasis on problem-solving strategies in the MoNE (2018) curriculum and by research showing the contribution of these strategies to success (e.g., Gök & Silay, 2008; Yazgan & Bintaş, 2005). Thus, the analysis examined how questions in the data processing learning domain encourage problem-solving strategies. Table 3 presents the components of the mathematical literacy framework and provides examples of the analysis of textbook questions according to this framework.

Table 3*Framework Components and Question Analysis Examples*

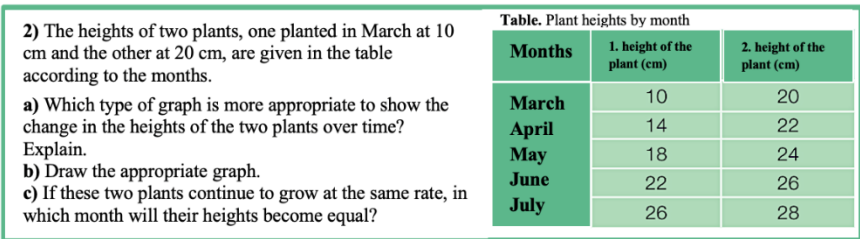
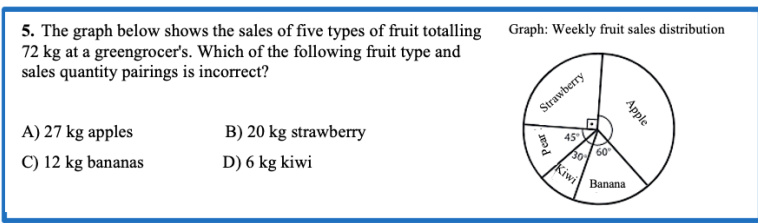
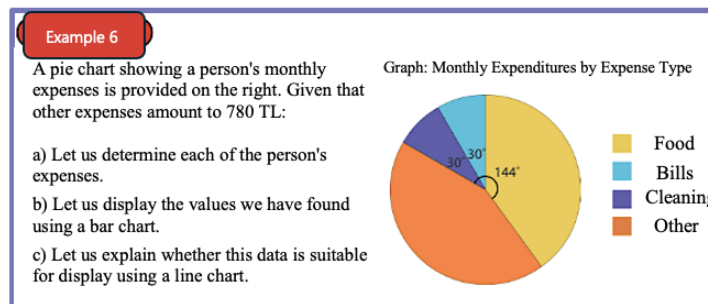
Analysis component	Analysis process	Example of analysis
Problem context	The extent to which the questions were purely mathematical or connected to real-life contexts was examined.	 Since the question is purely mathematical in nature and does not involve a non-mathematical context, it was coded as “no” for the “non-mathematical context” component.
Mathematical problem solving (MPS)	In analyzing questions according to the the <i>strategy generation in MPS</i> subcomponent, they are analyzed based on whether solving the problem requires the use of a problem-solving strategy and, if so, which type of strategy is involved.	 Since the student was expected to use the connection-seeking strategy to solve the question, “yes” was coded under the “generating MPS strategies” category.
	In analyzing questions according to the <i>looking for connections</i> subcomponent in the MPS, it was examined whether mathematical concepts from multiple domains were necessary to solve the problem.	 To solve the problem, students must apply concepts such as percentages, circles, ratios, and learned outside the data processing learning domain. Therefore, since this problem making connections to other mathematical topics, this component was coded as “yes” for this question.

Table 3 (Continued)

Mathematical problem solving (MPS)

In analyzing questions according to the *multi-step MPS* subcomponent, the analysis focuses on whether the result of a process performed on the way to solving the problem is used in another process performed to solve the problem.



To determine the monthly expenses in the question, students must use the center angle representing the other expenses. Since the center angle of the other expenses is applied to calculate food, bills, and cleaning expenses, this question was coded as "yes" for the multi-step MPS subcomponent.

In analyzing questions according to the *new MPS* subcomponent, the status of different types of mathematical problem solving encountered by students in their textbooks was examined.

2. Aslı scored 75 and 90 in the first two exams of her mathematics course. What mark must she achieve in the third exam for her average to be 85?

- A) 90 B) 85 C) 80 D) 75

The question is repetitive in mathematical problem solving because it shares at least the same mathematical solution process as the previous question. Students had also been asked to calculate the arithmetic mean in the previous questions. Therefore, this component was coded as "no" for this question.

Table 3 (Continued)**Formulation**

In analyzing questions according to the *new context* subcomponent, it was examined whether the context was the same as or different from that of previous questions.

Example 5

The table below shows the water volumes for two dams.

Table: Water volumes by month (million m³)

Baraj \ Ay	March	April	May	June	July
A Dam	42	54	52	48	43
B Dam	46	50	50	48	41

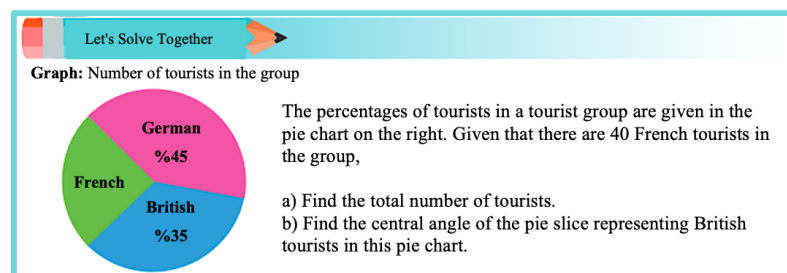
Let us display these data with an appropriate graph.

The new subcategory for the question was coded as “no” as at least one question in the section addresses environmental science.

In analyzing questions according to the *complexity of formulation* subcomponent, the presence of unnecessary or missing information for the solution, the need for multiple formulations, and the difficulty of converting the context into a mathematical situation were taken into account.

It was determined that none of the questions in the data processing learning domain of the examined textbooks fell under the formulation complexity subcomponent.

In analyzing questions according to the *to the subcomponent of student formulation*, it was analyzed whether students solved the problem using predefined formulas or by developing their own formulations.



The question was coded as a student-formulated problem. In the question, the student was expected to solve the problem by forming the equation $20.a = 100 \times 40$.

Table 3 (Continued)**Formulation**

The study analyzed the questions according to the *new formulation* subcomponent to assess the range of formulas students are expected to use.

Learning Together

Hydroelectric power stations convert the energy of water collected through channels or pipes into electrical energy using turbines, enabling energy production without causing environmental pollution.

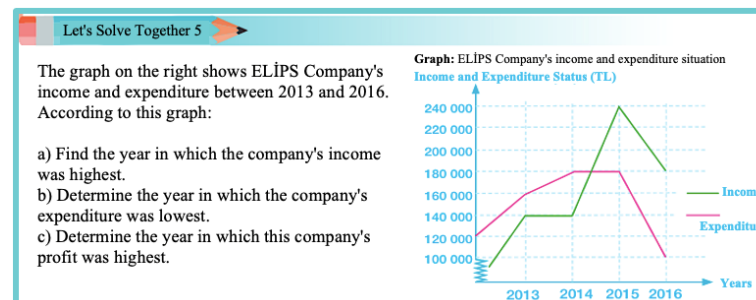
In a hydroelectric power plant, 300 tonnes, 180 tonnes, 240 tonnes, 120 tonnes and 360 tonnes of water arrive at the sources per minute. When the water arriving at the sources is distributed equally among 5 turbines, let us find out how many tonnes of water will arrive at 1 turbine per minute.



The analysis indicated that the question requires students to discover the formula for arithmetic mean for the first time. Therefore, as students are expected to derive the formula based on the question, this question was coded as “yes” for this category.

Interpretation or verification

It has been examined whether the results obtained from the solutions to the questions based on this component need to be interpreted and verified according to the context of the question.



In determining the profit and loss for 2013 in the question, students calculate $140,000 - 160,000 = -20,000$. Students are expected to interpret the negative result as a loss in a real-life context. Therefore, as this question requires interpretation or verification, this category was coded as “yes” for this question.

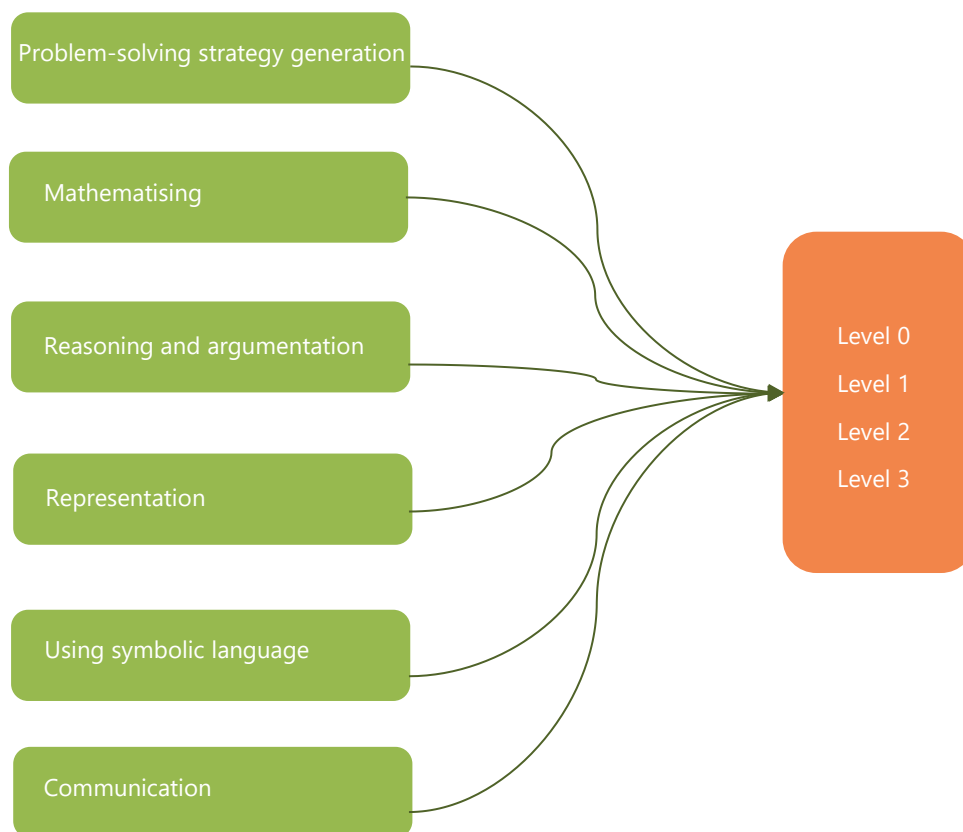
Note: In the formulation component, only questions containing non-mathematical contexts were considered. Questions lacking such contexts were not evaluated in this or subsequent components.

Mathematical Competency Levels

The questions in middle school mathematics textbooks were analyzed according to the mathematical competency level classification developed by Turner et al. (2015) based on PISA. Competencies other than “using mathematical tools” (generating problem-solving strategies, mathematizing, reasoning and argumentation, representation, communication, and using symbolic language) were graded from Level 0 to Level 3 (Figure 2).

Figure 2

Mathematical Competency Levels



Source: Turner et al. (2015)

Table 4 presents how the questions found in textbooks were analyzed according to mathematical competency levels.

Table 4*Mathematical Competency Level Analysis*

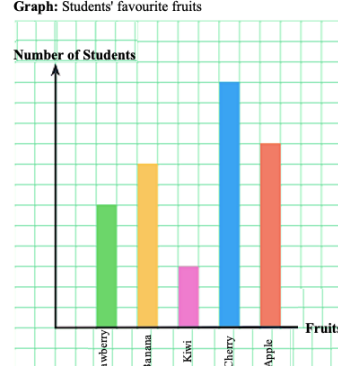
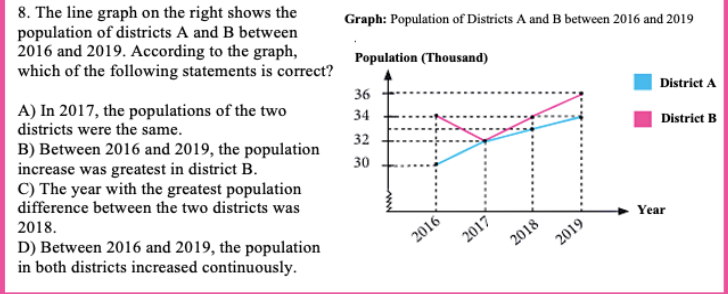
<i>Analysis component</i>	<i>Analysis process</i>	<i>Example of analysis</i>
Problem-solving strategy generation	Level 0: The solution path is straightforward, and the result can be obtained directly. Level 1: The information necessary for the solution is selected, and a simple, single-step strategy is usually determined. Level 2: The solution process is multi-stage and requires the repetition of a specific strategy. Level 3: Complex solution processes involving the comparison or combination of different strategies are applied.	1. In a family consisting of a mother, father and three children, the combined weight of the mother and father is 140 kilograms, and the average weight of the children is 40 kilograms. What is the average weight of this family? Since the solution requires linking the information provided in the question and applying a simple, single-step strategy, it is classified as Level 1.
Mathematizing	Level 0: The problem is entirely mathematical, with no direct connection between real-life situations and the mathematical model. Level 1: Students identify the given assumptions, relationships, and constraints and create a model that incorporates them or draw conclusions directly from an existing model. Level 2: Students develop a model that defines the problem, adapt an existing model to changing conditions, or interpret the problem situation. Level 3: Students validate, evaluate, compare, or integrate different models.	The graph on the graph paper provided shows the answers given by Grade 5 students at a school to the question ‘What is your favourite fruit?’ Given that the difference between the number of most and least frequent answers is 36, how many pupils were asked this question?  Since the solution was obtained by directly interpreting the column graph provided in the question, the student's mathematical competency was classified as Level 1.

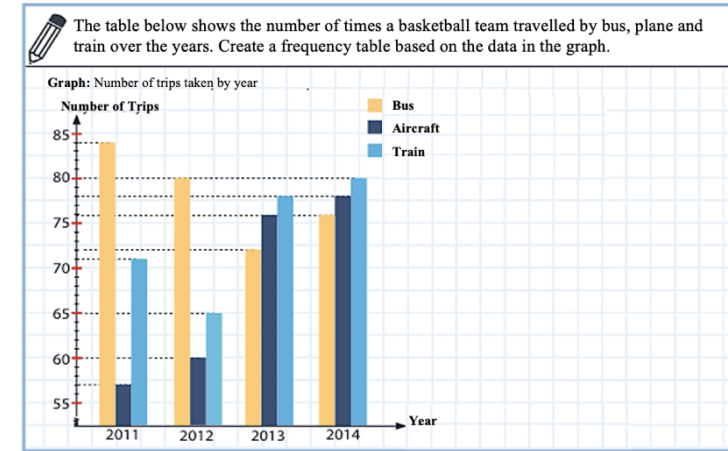
Table 4 (Continued)

Reasoning and argumentation	Level 0: Questions require simple inferences based on directly provided information.
	Level 1: Questions require linking multiple pieces of information to arrive at a solution.
	Level 2: Questions require analyzing the available data to establish connections between different variables.
	Level 3: Questions require synthesizing and evaluating information to establish new relationships



The question requires reading a graph, but since the conclusion can be directly inferred from the provided information, it was coded as Level 0 for reasoning and argumentation.

Representation	Level 0: Involves no representations or requires only basic skills in using simple representations (e.g., reading or plotting values).
	Level 1: Involves the use of simple and standard representations (e.g., extracting data from a table or interpreting changes in a graph).
	Level 2: Requires working with complex representations and converting between different simple representations of mathematical situations.
	Level 3: Requires understanding, using, connecting, and converting multiple complex representations. Designing or comparing representations of complex mathematical entities also falls under this level.



Since the question involves reading data presented in a bar chart and converting it into a frequency table, the representation level for this question was coded as Level 2.

Table 4 (Continued)

Using symbolic language

- Level 0: Questions can be solved using basic mathematical knowledge and simple calculations.
- Level 1: Questions require simple relationships with variables or repetitive calculations.
- Level 2: Questions require multiple components and variables, manipulation of formulas, or combining multiple rules.
- Level 3: Questions require complex mathematical operations, flexible use of variables, and selection of the appropriate algebraic form.

5. The graph below shows the sales of five types of fruit totalling 72 kg at a greengrocer's. Which of the following fruit type and sales quantity pairings is incorrect?

A) 27 kg apples B) 20 kg strawberry
C) 12 kg bananas D) 6 kg kiwi

Graph: Weekly fruit sales distribution

The solution requires knowledge of the exact angle in degrees. Furthermore, since the solution involves repeated arithmetic operations to determine the weight of each fruit in kilograms, the question was coded as Level 1 for requiring competency in symbolic language operations.

Communication

- Level 0: All information provided in the question is directly necessary for the solution and is presented in short, clear sentences.
- Level 1: The problem may contain unnecessary information and requires communication competency, including identifying and relating information.
- Level 2: Requires relating multiple mathematical tasks, with short explanations or calculations.
- Level 3: Involves complex conditional statements, nested contexts, or multiple components.

Let's Do It Together 2

A restaurant owner has indicated the number of portions of each type of food sold in the restaurant during the day, as shown in the table. Using the frequency table, let's draw a bar chart.

Table: Number of portions of food sold in the restaurant

Types of Food	Number of portions
Soup	50
Pilaf	90
Desert	40
Main course	60

Since the question contains short, clear sentences and all the provided information is necessary for the solution, it was coded as Level 0 for communication competency.

Validity and Reliability of the Study

The validity and reliability of this study were established based on the quantitative research standards proposed for systematic content analysis (Neuendorf, 2017). Within the quantitative paradigm, validity refers to the extent to which the coding scheme accurately represents the intended constructs, while reliability focuses on inter-coder agreement and procedural reproducibility. Table 5 summarizes the specific measures taken to ensure the rigorous standards of this quantitative analysis.

In this study, inter-coder reliability was assessed using percent agreement, resulting in an agreement rate of 86.00%. While chance-corrected coefficients are often preferred in simpler coding tasks, percent agreement was deemed appropriate here due to the complex and multi-layered nature of the coding units within the Mathematical Literacy Framework. According to Neuendorf (2017), a percent agreement of 80.00% or greater is considered acceptable for most research contexts, especially when dealing with nuanced categorical data. To further enhance reliability, coding discrepancies were resolved through a final consensus-building stage, ensuring 100.00% agreement before the descriptive statistical analysis.

Table 5

Measures to Ensure Validity and Reliability

<i>Validity and reliability</i>	<i>Measures taken</i>
Content validity	- The suitability of the coding scheme was evaluated by two independent subject matter experts specialized in mathematics education. - Categories were refined based on expert feedback to ensure theoretical alignment with the framework.
Objectivity	- The research design and coding procedures were described with high transparency to ensure reproducibility. - All analysis stages followed a standardized protocol (Neuendorf, 2017).
Inter-coder reliability	- Analyses were independently conducted by two researchers. - Percent agreement was calculated as 86.00%. Given the complexity of the coding units, this rate exceeds the acceptable threshold for exploratory research (Neuendorf, 2017). - Discrepancies were resolved through consensus to reach 100.00% final agreement.

Findings

This section presents the findings derived from the analysis for each research question.

Changes in Data Processing Questions by Mathematical Literacy and Class Levels

Table 6 shows the number of questions examined in the study.

Table 6*Number of Questions Examined in the Study*

	<i>Fifth grade</i>		<i>Sixth grade</i>		<i>Seventh grade</i>		<i>Eighth grade</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Questions	26	100.00	65	100.00	58	100.00	24	100.00

According to Table 6, 26 questions were examined in grade five, 65 in grade six, 58 in grade seven, and 24 in grade eight.

Table 7 presents the overall findings regarding the presence of context in the questions examined in the textbooks.

Table 7*Findings Related to the Context Category*

	<i>Fifth grade</i>		<i>Sixth grade</i>		<i>Seventh grade</i>		<i>Eighth grade</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Questions examined	26	100.00	65	100.00	58	100.00	24	100.00
Non-mathematical context	18	69.23	45	69.23	48	82.76	24	100.00

According to Table 7, the percentage of questions in the data processing learning domain that include a non-mathematical context is 69.23% in grades five and six, 82.76% in grade seven, and 100.00% in grade eight. While all questions in the grade eight textbook include non-mathematical contexts, this percentage exceeds 69.23% in all years. No consistent increase or decrease has been observed across grade levels.

The contextual types of the non-mathematical questions were examined, and the findings are presented in Table 8.

Table 8*Findings Regarding Context Types*

	<i>Fifth grade</i>		<i>Sixth grade</i>		<i>Seventh grade</i>		<i>Eighth grade</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Personal	13	72.22	28	62.22	31	64.58	10	41.67
Occupational	2	11.11	10	22.22	5	10.42	2	8.33
Societal	1	5.56	5	11.11	6	12.50	5	20.83
Scientific	2	11.11	2	4.44	6	12.50	7	29.17
Total	18	100.00	45	100.00	48	100.00	24	100.00

According to Table 8, the types of context (personal, occupational, societal, scientific) in questions related to data processing learning are not evenly distributed, with personal context being predominant in all grades. Personal context is highest in grade five (72.22%), occupational context in grade six (22.22%), and scientific context in grade eight (29.17%). As grade level increases, personal context decreases while societal context increases. Additionally, Table 8 is presented visually in Figure 3 for greater clarity.

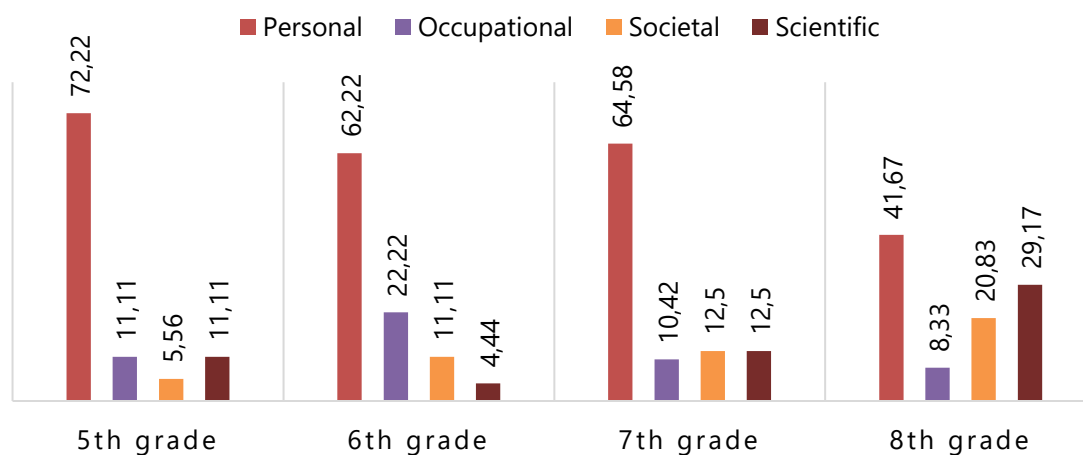
Figure 3*Data on Context Types*

Table 9 presents mathematical problem-solving situations that illustrate students' mathematical literacy.

Table 9*Findings Related to the Mathematical Problem-Solving Category*

	Fifth grade		Sixth grade		Seventh grade		Eighth grade	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Questions examined	26	100.00	65	100.00	58	100.00	24	100.00
Strategy generation in MPS	2	7.69	15	23.08	19	32.76	14	60.87
Multi-step MPS	-	-	-	-	1	1.72	1	4.35
Making connections in MPS	1	3.85	-	-	16	27.59	8	34.78
New MPS	7	26.92	16	24.62	9	15.52	12	52.17

Note: *MPS: Mathematical problem solving

According to Table 9, the grade eight textbook has the highest percentage (60.87%) in the subcategory of strategy generation in mathematical problem solving, and the percentage of questions in this category increases as the grade level increases. In the multi-step problem-solving category, questions were only found in grade seven (1.72%) and eight (4.35%). In the making connections category, there were no questions in the sixth grade, while the highest rate (34.78%) was observed in the eighth-grade. In the new problem-solving category, the eighth-grade textbook (52.17%) stood out.

Table 10 presents findings on the mathematical problem-solving strategies used.

Table 10*Findings Regarding the Type of Strategy Generation in Mathematical Problem Solving*

	<i>Fifth grade</i>		<i>Sixth grade</i>		<i>Seventh grade</i>		<i>Eighth grade</i>		<i>Total</i>
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>
Making a systematic list	-	-	1	1.54	-	-	1	4.17	2
Guess and check	2	7.69	8	12.31	6	10.34	-	-	16
Looking for connections	-	-	-	-	3	5.17	-	-	3
Working backwards	-	-	6	9.23	6	10.34	-	-	12
Drawing diagram	-	-	-	-	9	15.52	14	58.33	23
Problem simplification	-	-	1	1.54	-	-	-	-	1
Total	2	7.69	16	24.62	24	41.37	16	62.50	50

According to Table 10, questions in the data processing learning domain most frequently require the drawing strategy ($f: 23$), with this ratio being 58.33% in grade eight. As the grade level increases, the proportion of questions requiring problem-solving strategies increases (with grade eight having the highest at 62.50%), while grade five has the lowest proportion (7.69%). While more varied strategies are used in grades six and seven, some questions require multiple strategies.

Table 11 presents findings regarding the extent to which questions are connected to different mathematical topics.

Table 11*Findings Regarding Related Mathematical Problem Solving*

	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Questions examined	26	100.00	65	100.00	58	100.00	24	100.00
Percentage	-	-	-	-	10	17.24	7	29.17
Ratio-proportion	-	-	-	-	11	18.97	8	33.33
Number pattern	-	-	-	-	1	1.72	-	-
Circle	-	-	-	-	11	18.97	7	29.17
Decimal notation	1	3.85	-	-	1	1.72	-	-
Equations	-	-	-	-	11	18.97	8	33.33
Right angle	-	-	-	-	1	1.72	-	-

According to Table 11, no other mathematical topics are used in solving data processing questions in grade six, while in grade five, only one question relates to decimal notation. In grade seven, percentages (17.24%), ratios and proportions (18.97%), circles (18.97%) and equations (18.97%) were prominent; in grade eight, ratios and proportions (33.33%), equations (33.33%), percentages (29.17%) and circles (29.17%) were the most frequently used topics.

Table 12 presents the findings obtained by examining the questions under the formulation category.

Table 12*Findings Related to the Formulation Category*

	<i>Fifth grade</i>		<i>Sixth grade</i>		<i>Seventh grade</i>		<i>Eighth grade</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Questions examined	18	69.23	45	68.75	48	82.76	24	100.00
New context*	10	55.56	13	28.89	19	39.58	15	62.50
Complexity of formulation*	-	-	-	-	-	-	-	-
Formulated by students*	-	-	13	28.89	12	25.00	7	29.17
New formulation*	-	-	3	6.67	1	2.08	2	8.33

Note: * This was applied only to questions containing a non-mathematical context.

According to Table 12, none of the questions fall under the subcategory of formulation complexity, and simple formulas have been used in all classes. In the new context category, the eighth-grade textbook (62.50%) stands out, while in the formulation by students category, grade eight has the highest proportion (29.17%). In the new formulation category, the eighth-grade (8.33%) showed superiority over other grades.

In the final stage of the process of evaluating questions related to the data processing learning domain in middle school mathematics textbooks in terms of mathematical literacy, it was analyzed whether the questions required interpretation or verification, and these findings are presented in Table 13.

Table 13*Findings Related to the Interpretation or Verification Requirement Category*

	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Questions examined	18	69.23	45	68.75	48	82.76	24	100.00
Requirement for interpretation or control*	-	-	-	-	1	2.08	-	-

Note: * This was applied only to questions containing a non-mathematical context.

According to Table 13, there are almost no questions in the data processing learning domain aimed at the interpretation or control category, while only 2.08% of questions were identified in the grade seven textbook.

Changes in Mathematical Competency Levels and Class Levels in Questions in the Data Processing Domain

Table 14 presents findings regarding the mathematical competency levels required to solve the questions in the data processing learning domain of the fifth grade textbook.

Table 14

Findings on the Mathematical Competency Levels of Questions in the Data Processing Domain for Fifth Grade

<i>Mathematical competency</i>	<i>Level 0</i>		<i>Level 1</i>		<i>Level 2</i>		<i>Level 3</i>		<i>Total</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Problem-solving strategy generation	24	92.31	1	3.85	-	-	-	-	25	96.15
Mathematizing	10	38.46	7	26.92	-	-	-	-	17	65.38
Reasoning and argumentation	18	69.23	2	7.69	-	-	-	-	20	76.92
Representation	14	53.85	4	15.38	-	-	-	-	18	69.23
Using symbolic language	16	61.54	1	3.85	-	-	-	-	17	65.38
Communication	26	100.00	-	-	-	-	-	-	26	100.00

According to Table 14, communication competency (100.00%) and generating problem-solving strategies competency (96.15%) were most frequently observed in solving data processing questions in the fifth-grade textbook, with competency levels generally concentrated in the Level 0 and Level 1 range; there were no questions belonging to Level 2 and Level 3.

Table 15 presents findings regarding the levels of mathematical competencies used in solving questions at the sixth-grade level.

Table 15

Findings on the Mathematical Competency Levels of Questions in the Data Processing Domain for Sixth Grade

<i>Mathematical competency</i>	<i>Level 0</i>		<i>Level 1</i>		<i>Level 2</i>		<i>Level 3</i>		<i>Total</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Problem-solving strategy generation	44	67.69	15	23.08	2	3.08	-	-	61	93.85
Mathematizing	10	15.38	48	73.85	-	-	-	-	58	89.23
Reasoning and argumentation	44	67.69	8	12.31	2	3.08	-	-	54	83.08
Representation	46	70.77	2	3.08	1	1.54	-	-	49	75.38
Using symbolic language	27	41.54	28	43.08	-	-	-	-	55	84.62
Communication	65	100.00	-	-	-	-	-	-	65	100.00

According to Table 15, communication competency appeared in all questions (100.00%) in the solutions to data processing questions in the sixth-grade textbook, while the other most frequently observed competencies were generating problem-solving strategies (93.85%) and mathematization (89.23%). Competency levels were mainly concentrated at Level 0 and Level 1, with very few questions included at Level 2 and none at Level 3. The competency of using symbolic language and operations showed a balanced distribution between Level 0 (41.54%) and Level 1 (43.08%).

Table 16 presents the levels of mathematical competencies required to solve questions in the data processing learning area in the seventh-grade textbook.

Table 16

Findings on the Mathematical Competency Levels of Questions in the Data Processing Domain for Seventh Grade

<i>Mathematical competency</i>	<i>Level 0</i>		<i>Level 1</i>		<i>Level 2</i>		<i>Level 3</i>		<i>Total</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Problem-solving strategy generation	36	62.07	17	29.31	4	6.90	-	-	57	98.28
Mathematizing	8	13.79	34	58.62	-	-	-	-	42	72.41
Reasoning and argumentation	14	24.14	19	32.76	7	12.07	-	-	40	68.97
Representation	16	27.59	11	18.97	10	17.24	-	-	37	63.79
Using symbolic language	33	56.90	17	29.31	-	-	-	-	50	86.21
Communication	58	100.00	-	-	-	-	-	-	58	100.00

According to Table 16, communication competency appears in all questions (100.00%) in the seventh-grade data processing learning domain, while the other most frequently observed competencies are generating problem-solving strategies (98.28%) and using symbolic language and operations (86.21%). Competency levels were mainly concentrated at Level 0 and Level 1, with no questions included at Level 3. The competencies of reasoning, argumentation and representation showed a balanced distribution between Levels 1 and 2.

Table 17 presents the levels of mathematical competencies required to solve questions in the eighth-grade data processing learning domain.

Table 17

Findings on the Mathematical Competency Levels of Questions in the Data Processing Domain for Eighth Grade

<i>Mathematical competency</i>	<i>Level 0</i>		<i>Level 1</i>		<i>Level 2</i>		<i>Level 3</i>		<i>Total</i>	
	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>	<i>f</i>	<i>%</i>
Problem-solving strategy generation	10	41.67	8	33.33	6	25.00	-	-	24	100.00
Mathematizing	-	-	24	100.00	-	-	-	-	24	100.00
Reasoning and argumentation	9	37.50	11	45.83	-	-	-	-	20	83.33
Representation	2	8.33	10	41.67	5	20.83	-	-	17	70.83
Using symbolic language	15	62.50	8	33.33	-	-	-	-	23	95.83
Communication	24	100.00	-	-	-	-	-	-	24	100.00

According to Table 17, generating problem-solving strategies, mathematizing and communication competencies appear in all questions (100.00%) in the eighth-grade data processing learning domain, while the use of symbolic language and operations (95.83%), reasoning and argumentation (83.33%), and representation (70.83%) are also required at high rates. Competency levels are mainly distributed across Levels 0, 1, and 2, with no questions

included at Level 3. Mathematizing competency is entirely concentrated at Level 1 (100.00%), while communication competency is entirely concentrated at Level 0 (100.00%).

Discussion

This study aimed to examine the state of mathematical literacy in middle school mathematics textbooks, specifically in the domain of data processing learning. The findings obtained were discussed in detail in light of the literature and are presented in this section.

Evaluation of Questions in the Data Processing Learning Domain in Terms of Mathematical Literacy

It has been determined that the vast majority of questions in middle school textbooks in the field of data processing learning domain contain non-mathematical contexts, with all questions in Grade eight exhibiting this characteristic. This situation can be regarded as an expected and positive outcome, given that the data processing domain is related to real-life data (MoNE, 2018; OECD, 2013). Furthermore, when the questions were examined according to the context types specified within the PISA mathematical literacy framework (personal, occupational, societal, and scientific), it was found that the personal context was more prevalent than the others. This prevalence of personal context may be attributed to the intention of relating questions more directly to students' immediate experiences, making problems more accessible and easier to understand. However, supporting a balanced exposure to all context types remains important, as studies such as Tarım and Köksal's (2024) analysis of the Grade eight LGS workbook highlight an uneven distribution, with societal context questions being particularly limited. In Öz d in er's (2021) study examining the mathematical relevance of activities in textbooks, it was stated that the eighth-grade textbook had the least context. This difference is thought to stem from Öz d in er examining a different textbook and conducting the assessment without learning area restrictions. The findings of the study indicate that non-mathematical contexts used in data processing play an important role in developing students' mathematical literacy. Studies such as those by Gravemeijer and Doorman (1999) also emphasize that contextual questions support mathematical reasoning and that the use of various contexts in mathematics education is important.

When examining the use of problem-solving strategies in questions related to data processing learning, it was determined that these strategies were used more frequently at the eighth-grade level but were relatively low at other grade levels. This situation may be attributed to the fact that students at this grade level are preparing for the High School Entrance Examination, which places a strong emphasis on problem-solving skills. However, considering the positive effect of problem-solving strategies on students' mathematical thinking processes (Altun & Arslan, 2006; Yılmaz & Köse, 2015), other grade levels should also include a greater number of questions that support the development of such strategies. Furthermore, Temel (2021) has demonstrated that problem-solving strategies are an important determinant of mathematical literacy success.

The high rate of use of problem-solving strategies at the eighth-grade has been linked to the graph drawing and transformation learning outcomes included in the curriculum (MoNE, 2018) with drawing diagrams identified as the most frequently used strategy, consistent with Hatay (2020); however, this prominence appears to be curriculum-driven rather than systematically embedded, and the dominance of a single strategy may limit students' flexibility

in adapting strategies across different problem contexts. However, the scarcity of problems requiring multi-step procedures in textbooks consistent with Bütüner's (2019) findings regarding textbook deficiencies suggests that textbooks primarily address lower-level cognitive demands focused on procedural execution; given that PISA tasks require multi-step problem solving and integrated reasoning (Nohara, 2001). This limitation may partially explain students' difficulties in international assessments and reveal a structural misalignment between textbook content and targeted competencies. Recent national reports also indicate that Türkiye's performance in mathematical literacy remains below the OECD average, particularly in tasks requiring higher-order reasoning and data interpretation (MoNE, 2019, 2024), reinforcing the importance of examining textbook content as a potential contributing factor.

When examining the extent to which questions connect to other mathematical topics, it was determined that such questions only appear at the seventh and eighth-grade levels. However, their overall proportion is low, suggesting that intra-mathematical connections are not systematically embedded across grade levels and that mathematical topics may be presented in a fragmented manner. Gatabi et al. (2012) emphasized that mathematical literacy requires the ability to make connections between different mathematical topics, while the National Council of Teachers of Mathematics (NCTM) (2000) stated that this skill should be explicitly taught to students. In this context, the limited presence of such questions may restrict students' opportunities to develop integrated mathematical thinking, indicating that textbooks should be supported with a greater number of questions that contain more intra-mathematical connections. Similar limitations have also been reported in other learning domains, such as geometry, where textbook questions tend to remain concentrated at lower PISA proficiency levels (Şahin & Aksu, 2023).

It was examined whether the questions were repetitive or offered opportunities for solving new problems, and it was found that questions were generally repetitive at levels other than Grade 8, suggesting that textbooks tend to prioritize procedural practice over conceptual understanding and adaptive problem solving, which may be related to the emphasis on exam-oriented preparation at the Grade 8 level. It is thought that textbooks should contain different types of questions that develop students' mathematical thinking skills rather than merely reinforcing topics (MoNE, 2018), as repetitive question structures may limit students' opportunities to engage in higher-order reasoning, strategy development, and flexible thinking.

When examining questions in the data processing learning domain in terms of their formulation, assessments were made based on contextual diversity, formulation complexity, students' ability to formulate (formulated by students' subcomponent), and the use of different formulations. It was found that contextual questions generally show diverse contexts, which may contribute to students' opportunities to engage with mathematics in varied real-life situations. While the OECD (2013) emphasizes the importance of various context types in mathematical literacy, Gatabi et al. (2012) state that students' use of mathematics in different contexts supports their development in this area. However, previous research (Karakuzu, 2017) shows that contextual questions are limited in some textbooks, indicating that such diversity is not a common characteristic across all learning domains. The relatively high contextual diversity in the data processing learning domain suggests that this field may offer advantages in supporting mathematical literacy, particularly in terms of interpreting data, making sense of information, and connecting mathematics to everyday decision-making.

The study also examined the complexity of the formulation process in solving questions and found that no situation required complex formulation at any grade level. However, it is recommended that students be guided towards processes such as eliminating unnecessary data or selecting appropriate data to develop critical thinking and problem-solving skills. The absence of such practices suggests that textbooks may be inadequate in preparing students for problems they will encounter in real life.

Situations where students are required to formulate a formula or equation to solve questions were also evaluated. While no such questions were found at the fifth-grade level, questions that allow for this to a limited extent were encountered in the sixth, seventh and eighth grades. Considering that PISA questions generally require students to create their own formulas, it is suggested that such questions should be increased in textbooks. However, it was determined that the questions in textbooks mostly require solutions using the same formulas or equations, and that questions encouraging the use of different formulas are limited. Cihan & Akkoç (2022) report that a similar situation is observed in the teaching of the concept of radians, arguing that a uniform presentation may limit conceptual understanding. In this context, it is concluded that textbooks should be diversified to improve the development of students' mathematical thinking skills.

When examining whether the solutions to data processing questions in textbooks are contextualized, the findings indicate that the questions generally contain context but do not guide students to evaluate their results within a real-life framework. Gün (2021) found that questions in Grade 8 textbooks do not encourage students to question the alignment of their solutions with reality. Similarly, Palm (2008) argued that students often struggle to relate mathematical solutions to everyday life and that this stems from the expectation that school mathematics should not correspond directly to real life. Therefore, rather than merely presenting questions with context, it is considered important to include questions that require examining solutions in a real-life context to develop students' mathematical thinking skills. Such an approach will both strengthen students' mathematical literacy and contribute to the development of more positive attitudes towards mathematics (MoNE, 2018).

Evaluation of the Mathematical Competency Levels of Questions in Textbooks in the Domain of Data Processing

When evaluating the mathematical competency levels of questions in textbooks in the domain of data processing learning, the study indicates that the questions generally aim to develop communication and problem-solving strategy generation competency, but other mathematical competencies are not utilized to the same extent, which may lead to an unbalanced development of mathematical literacy. Although it was determined that questions at the eighth-grade level require higher mathematical competency compared to other grade levels, it was found that the vast majority of these questions are concentrated at Levels 0 and 1, with no questions at Level 3, suggesting that students are provided with limited opportunities to engage in higher-order competencies such as reasoning, modeling, and reflection. This concentration at lower competency levels may indicate a focus on procedural or surface-level skills rather than the development of advanced mathematical thinking.

Ayyıldız and Cansız Aktaş (2022) examined Grade eight textbooks and high-school entrance exam mathematics questions in terms of representational adequacy and found that data processing questions were predominantly at Level 1, although some were also at Levels 2 and 3. Similarly, Şirin and Yıldız (2020) reported that questions in the Grade eight mathematics

textbook were mostly concentrated at Levels 0 and 1, but that questions in the data processing domain were at higher competency levels compared to other learning domains. These findings are consistent with those of the present study. Although questions in the field of data processing tend to be at higher levels of mathematical competency compared to other domains, it can be concluded that, overall, textbooks still have limited potential to support mathematical literacy. This conclusion is consistent with findings indicating that middle school students' mathematical literacy levels remain at moderate or low levels, particularly in higher grades (Sönmez, 2024). This situation may reflect a misalignment between the competencies emphasized in the mathematics curriculum and the extent to which these competencies are operationalized in textbook questions, suggesting that curricular expectations regarding higher-level mathematical literacy are not fully translated into instructional materials.

Conclusions and Implications

This study evaluates the extent to which textbooks support mathematical literacy in the domain of data processing learning. The analyses revealed that, although questions frequently include non-mathematical contexts, textbooks fall short in supporting skills critical to mathematical literacy, such as developing problem-solving strategies, solving multi-step problems, establishing connections between different mathematical topics, and solving complex problems. This pattern indicates that the presence of context alone is not sufficient to support mathematical literacy, and that textbooks remain limited in fostering higher-level mathematical competence.

Furthermore, the reviews demonstrate that the level of support for mathematical literacy was not the same across all grade levels; the Grade eight textbook was found to meet more criteria and be more advanced in terms of mathematical competency compared to other grades. This indicates that the Year 8 textbook is more advantageous than other grade levels in achieving the objectives of the mathematics curriculum. This situation may reflect a misalignment between curricular expectations and how these expectations are operationalized in instructional materials. Evidence from comparative curriculum studies indicates that even when mathematical literacy is emphasized at the curriculum level, this emphasis is not always consistently reflected in textbooks and classroom materials (Sumliyah et al., 2025).

These conclusions present critical implications for educational practice and policy. The findings suggest that one reason for Türkiye's poor performance in international assessments such as PISA may be the current content and structural limitations of textbooks. To address this, it is imperative that future textbook designs systematically include more multi-step problems that develop students' mathematical literacy and questions that enable them to make intra-mathematical connections. In terms of pedagogical implications, providing teachers with targeted professional development on how to effectively select, adapt, and use such higher-order questions is essential for translating textbook potential into actual mathematical thinking skills in the classroom.

Despite the insights gained, this study has several limitations that should be acknowledged. First, the analysis was limited to the data processing learning domain in middle school mathematics textbooks. Second, due to the implementation of the Century of Türkiye Education Model, the data processing learning domain is not explicitly defined as a separate domain in the current Grade five and Grade six curricula; therefore, findings related to these grade levels should be interpreted with caution.

Moving forward, it is recommended to conduct comparative studies examining the extent to which new materials developed under the updated curriculum address higher-level competencies such as strategy generation, reasoning, and mathematical modeling. Future studies applying this analytical framework to different mathematical learning domains will allow for a broader evaluation of systemic textbook quality. In addition, re-examining textbook content in relation to the specific objectives of the mathematics curriculum implemented in 2024 will be valuable for continuously tracing and improving the development of mathematical literacy in Türkiye.

Declarations

Author Contributions

Esra Erdoğan Kayalı: Conceptualization, literature review, research design, data collection, analysis and interpretation, writing and editing the article.

Çiğdem Arslan: Conceptualization, research design, data analysis, writing-review and editing, validation and interpretation.

Conflict of Interest

The authors declare no conflict of interest.

Disclosure of Artificial Intelligence (AI) Use

DeepL and Grammarly were used solely for language editing to improve clarity and readability. No AI tools were used in data analysis, interpretation, or the generation of scientific content.

Availability of Data and Materials

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Committee Approval

Ethical approval is not applicable for this study, as it exclusively involves the document analysis of publicly available textbooks and does not involve human or animal subjects.

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TÜRKÇE GENİŞ ÖZET

Ortaokul Ders Kitaplarında Matematik Okuryazarlığı: Veri İşleme Öğrenme Alanının Değerlendirilmesi

Giriş

Matematik okuryazarlığı, bireyin çeşitli gerçek dünya bağlamlarında matematiği formüle etme, kullanma ve yorumlama kapasitesi olarak tanımlanmakta ve modern matematik eğitiminin temel hedefleri arasında yer almaktadır. PISA sonuçları, Türkiye'deki öğrencilerin matematik okuryazarlığı performanslarının istenen düzeyde olmadığını göstermektedir. Bu durum, 2018 Matematik Dersi Öğretim Programı'nda yapılan ve matematik okuryazarlığını temel alan revizyonların, sınıf içi uygulamalara yansımada kilit rol oynayan ders kitaplarına yeterince yansımadağı düşüncesini doğurmaktadır. Ders kitapları, öğretim programlarının somutlaşmış hâli ve öğretmen-öğrenci etkileşiminin ana materyali olarak, matematik okuryazarlığını destekleyici nitelikteki soruları barındırmalıdır. Bu çalışma, özellikle gerçek hayatla doğrudan ilişkisi nedeniyle matematik okuryazarlığını geliştirmeye elverişli olduğı düşünülen "Veri İşleme" öğrenme alanından hareketle, ortaokul matematik ders kitaplarındaki soruların matematik okuryazarlığı durumunu ortaya koymayı amaçlamaktadır. Bu kapsamda çalışmanın temel problemi, "beşinci, altıncı, yedinci ve sekizinci sınıf ortaokul matematik ders kitaplarının veri işleme öğrenme alanındaki sorularının matematik okuryazarlığı kriterlerini ve matematiksel yeterlik düzeylerini karşılama durumu nedir?" şeklinde belirlenmiştir.

Yöntem

Araştırma, nicel doküman analizi yaklaşımı kullanılarak yürütülmüştür. İncelenen dokümanlar, MEB Talim Terbiye Kurulu Başkanlığı kararı ile 2022-2023 eğitim öğretim yılında ortaokullarda okutulması onaylanan dört farklı sınıf seviyesine ait toplam dört matematik ders kitabıdır (beşinci, altıncı, yedinci ve sekizinci sınıflar). Bu kitapların veri işleme öğrenme alanında yer alan bölümleri inceleme nesnesi olarak belirlenmiştir. Verilerin çözümlenmesinde nicel içerik analizi kullanılmış ve sorular, iki farklı analiz çerçevesi ile değerlendirilmiştir. Kullanılan analiz çerçeveleri aşağıdaki ilgili başlıklar altında sunulmuştur.

Matematik Okuryazarlığı Analiz Çerçevesi

Gatabi vd. (2012) tarafından geliştirilen ve bu çalışma için revize edilen bu çerçeve, soruları dört ana bileşen ve alt bileşenleri açısından analiz etmektedir.

Bağlam; sorunun kişisel, mesleki, toplumsal veya bilimsel bir gerçek hayat bağlamı içerip içermediği. Matematiksel Problem Çözme (MPÇ); strateji üretme, bağlantı kurma, çok adımlı olma gibi özellikler. Formülleştirme; problemin öğrenci tarafından matematiksel modele

dönüştürülmesinin gerekliliğidir. Yorumlama/Kontrol; çözümün yorumlanması veya geçerliliğinin kontrol edilmesidir.

Matematiksel Yeterlik Düzeyleri Analiz Çerçevesi

Turner vd. (2015) tarafından geliştirilen bu çerçeve, soruların çözümünde kullanılması beklenen matematiksel yeterliklerin (problem çözme stratejisi üretme, matematikleştirme, muhakeme ve argüman üretme, temsil ile gösterme, iletişim, sembolik-teknik dil ve işlemleri kullanma) düzeylerini (sıfırdan üçe) belirlemek için kullanılmıştır. Analiz sürecinde güvenilirliği sağlamak amacıyla, soruların kodlaması bir araştırmacı ve bir alan uzmanı tarafından bağımsız olarak yapılmış ve tutarlılık sağlanmıştır.

Bulgular

Veri İşleme öğrenme alanında toplam 173 soru incelenmiştir (beşinci sınıf: 26, altıncı sınıf: 65, yedinci sınıf: 58, sekizinci sınıf: 24).

Matematik Okuryazarlığı Kriterlerine İlişkin Bulgular

İncelenen ders kitaplarında, Veri İşleme öğrenme alanındaki soruların büyük çoğunluğu (%69,23 ile %96,00 arasında) matematik dışı bağlam içermektedir. En yüksek oran sekizinci sınıf ders kitabında (%100,00) tespit edilmiştir. Bağlam türleri arasında ise tüm sınıf seviyelerinde en çok kişisel bağlam türündeki sorular (%41,67 ile %72,22 arasında) yer almaktadır. Ders kitaplarında yer alan soruların MPÇ bileşeni altında yer alan MPÇ'de Strateji Üretme alt kategorisine dâhil olma oranı sınıf seviyesi arttıkça artmaktadır. En yüksek oran sekizinci sınıf ders kitabında (%60,87) belirlenmiştir. En sık kullanılan strateji şekil çizme stratejisi olmuştur. Çok adımlı problem çözme gerektiren soru sayısı oldukça azdır (yedinci sınıf: %1,72; sekizinci sınıf: %4,35), beş ve altıncı sınıfta ise hiç bulunmamaktadır. MPÇ'de Bağlantı Kurma alt kategorisinde ise farklı matematiksel konularla bağlantı kurma gerektiren soru oranı altıncı sınıfta hiç yokken, beşinci sınıfta çok az (%3,85), yedinci sınıfta %27,59 ve sekizinci sınıfta %34,78 olarak tespit edilmiştir. Yeni MPÇ alt kategorisinde sekizinci sınıf ders kitabındaki soruların yarıdan fazlası (%52,17) yeni MPÇ gerektirirken, beş ve altıncı sınıflarda oranlar daha düşüktür (%26,92 ve %24,62). Formüleleştirme bileşeni açısından soruların hiçbirinin formülasyonun karmaşıklığı alt kategorisine dâhil olmadığı belirlenmiştir. Öğrenciler tarafından formüle etme alt kategorisine yönelik sorular beşinci sınıfta hiç yokken, altı, yedi ve sekizinci sınıflarda benzer oranlarda (yaklaşık %25,00-29,00) yer almaktadır. Yorumlama veya Kontrol Etme bileşeninde ise çözümlerin gerçek yaşam bağlamında yorumlanmasını veya kontrol edilmesini gerektiren soruların neredeyse hiç olmadığı (sadece yedinci sınıfta %2,08) tespit edilmiştir.

Matematiksel Yeterlik Düzeylerine İlişkin Bulgular

İncelenen tüm soruların çözümünde iletişim yeterliğinin (%100,00) kullanılması gerektiği belirlenmiştir. Sorularda işe koşulması gereken matematiksel yeterliklerin çoğunlukla Düzey 0 ve Düzey 1'de yoğunlaştığı, Düzey 2'ye ait kısıtlı sayıda soru bulunduğu ve Düzey 3'e ait hiçbir sorunun olmadığı belirlenmiştir. sekizinci sınıf ders kitabındaki soruların matematiksel yeterlik düzeyleri, diğer sınıf düzeylerindeki ders kitaplarına göre daha üst düzeyde (Düzey 1 ve 2) yoğunlaşmıştır.

Tartışma ve Sonuç

Ortaokul matematik ders kitaplarındaki Veri İşleme öğrenme alanının Matematik Okuryazarlığı bağlamında incelenmesi, ders kitaplarının bu alandaki sorularının büyük ölçüde

matematik dışı bağlamlar içerdiğini ortaya koymuştur. Bu bulgu, veri işleme alanının doğası gereği gerçek yaşam verilerine odaklanmasından beklenen bir sonuçtur ve matematik dersi öğretim programının öğrencilerin kavramları günlük hayatta kullanma amacını desteklemektedir. Ancak ders kitapları matematik okuryazarlığının diğer önemli kriterlerini desteklemede zayıf kalmıştır. Soruların çözümünde genellikle basit stratejiler kullanılması yeterli olmuş, karmaşık formülasyonlar veya çok adımlı problem çözme görevleri çok az yer almıştır. Bu, Türkiye'deki ders kitaplarında çok adımlı problem sayısının az olduğunu belirten Bütüner'in (2019) bulgularıyla örtüşmektedir. Ayrıca, beş ve altıncı sınıf düzeylerinde diğer matematik konularıyla bağlantı kurmayı gerektiren sorular neredeyse hiç bulunmazken, yedi ve sekizinci sınıflarda bu oran düşüktür. Oysa matematik okuryazarlığı, farklı matematiksel fikirlerin bir arada kullanılmasını gerektirir.

Matematiksel yeterlik düzeyleri açısından bakıldığında, tüm sınıf seviyelerinde sorular çoğunlukla Düzey 0 ve Düzey 1'de yoğunlaşmış, Düzey 3'e ait hiçbir soruya rastlanmamıştır. Bu durum, ders kitaplarının matematik okuryazarlığı hedeflerini yeterince desteklemediğini göstermektedir. Ancak sekizinci sınıf ders kitabının matematiksel yeterlik düzeylerinin diğer sınıflara göre daha üst düzeyde (Düzey 1 ve Düzey 2) yoğunlaşması, Şirin ve Yıldız'ın (2020) veri işleme alanındaki soruların diğer konulara göre daha yüksek düzeyde olduğunu gösteren bulgularıyla uyumludur. Sonuç olarak, incelenen ders kitapları matematik okuryazarlığını tam anlamıyla desteklememekle birlikte, sekizinci sınıf kitabının bu alandaki performansı nispeten daha yüksektir. Bu eksiklik, PISA sonuçlarındaki düşük puanların nedenlerinden biri olabilir.

Öneriler

Elde edilen sonuçlar doğrultusunda, akademik çalışmalara ve ders kitabı hazırlayıcılarına yönelik öneriler sunulmaktadır.

Akademik Çalışmalara Yönelik Öneriler

- Çalışmada kullanılan analiz çerçeveleri ile diğer öğrenme alanlarının da (Sayılar ve İşlemler, Cebir, Geometri ve Ölçme, Olasılık) analiz edilmesi, ders kitaplarının matematik okuryazarlığı durumunun daha bütüncül bir bakış açısıyla ele alınmasını sağlayacaktır.
- Matematik okuryazarlığı sorularının değerlendirilmesi için yeni ölçme araçlarının geliştirilmesi, literatüre önemli katkılar sağlayacaktır.
- 2024 yılında ortaya konulan Türkiye Yüzyılı Maarif Modeli kapsamında hazırlanan ders kitaplarının çalışmada ortaya konulan analiz çerçeveleri ile analiz edilmesi önerilmektedir.

Ders Kitabı Hazırlayıcılarına Yönelik Öneriler

- Ders kitaplarındaki soruların, problem çözme stratejilerini kullanmaya, diğer matematiksel konularla bağlantı kurmaya ve çözümlerin gerçek yaşam bağlamında yorumlanmasına imkân veren bir yapıda olacak şekilde tasarlanması önerilmektedir.
- Öğrencilerin üstbilişsel bilgi ve becerilerini geliştirebilmesi için tekrarlı sorular yerine farklı türde sorulara daha fazla yer verilmesi önerilmektedir.
- Soruların, matematiksel yeterlik düzeylerinin arttırılacak şekilde (özellikle Düzey 2 ve Düzey 3'e yönelik) düzenlenmesi, ders kitaplarının matematik okuryazarlığını destekleme potansiyelini arttıracaktır.

Elementary Mathematics Teachers' Perceptions and Lived Experiences Regarding the 2018 Revision of the 7th Grade Mathematics Curriculum*

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Abstract

This study investigates the perceptions and experiences of Elementary Mathematics Teachers (EMTs) regarding the 2018 update to the 7th grade mathematics curriculum (7-MC). Using a qualitative, phenomenological approach, the study involved 24 EMTs with master's and/or doctoral degrees in mathematics education and/or curriculum and instruction. Data were gathered via semi-structured interviews with EMTs in middle schools in Afyonkarahisar, Türkiye and underwent content analysis alongside the 2018 7-MC analysis. The findings suggest that, although the 7-MC objectives are structurally sound, they lack pedagogical depth. While the content of the 7-MC is adequate, it also presents certain limitations, highlighting a discrepancy between curriculum ideals and the teaching and learning process in the classroom. There is a divergence between curriculum expectations and assessment practices. The lesson planning process incorporates ready-made plans that are tailored to students' levels, and teaching approaches are influenced by context. Instructional materials present both opportunities and constraints. EMTs face three main challenges when implementing the 7-MC: duration, content and learners. EMTs have proposed various actions to bridge the gap between the 7-MC and classroom reality. These include adjusting class duration, modifying 7-MC objectives, redesigning content and advocating for greater pedagogical freedom.

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Introduction

Curriculum development is an ongoing process that requires continuous evaluation and improvement (Varış, 1985). The mathematics curriculum is a prime example of this, guided by the standards of the National Council of Teachers of Mathematics (NCTM) (n.d.), which focus on equality, the curriculum, teaching, learning, assessment and technology. Failure to adhere to these standards can result in learning loss, hindering effective learning and ultimately leading to student failure.

Students' mathematics achievement in Türkiye has not met national and international standards, prompting updates to the elementary, middle, and high school mathematics curricula since 2005 (Kırnap Dönmez & Dede, 2020). Research indicated that the 2005-updated 7th grade mathematics curriculum (7-MC) posed significant challenges with topics such as equations, permutations, interest and percentage calculations, and the volume of a right circular cylinder, attributed to abstract concepts, irrelevant information, time constraints, teacher- and student-related issues (Evirgen & Yıldız İkikardeş, 2019). Consequently, the Ministry of National Education (MoNE) revised the mathematics curriculum for grades 1-8 in 2018 (MoNE, 2018). While developing the curriculum, working groups analyzed various countries' curricula and relevant academic studies (MoNE, 2018). The 2018 elementary and middle school mathematics curriculum in Türkiye aligns with NCTM standards in mathematics. Key areas such as number and operations, algebra, geometry, measurement, data analysis, and probability (NCTM, n.d.) were incorporated as outlined in the 2018 middle school mathematics curriculum (MoNE, 2018). In the 2018 elementary and middle school mathematics curriculum (grades 1–8), the process standards of problem solving, reasoning and proof, communication, connections, and representations (NCTM, n.d.) are evident. Key aims include enabling students to articulate their thoughts during problem-solving, accurately use mathematical terminology, comprehend relationships through mathematical language, express concepts via various representations, and recognize the links between mathematics, art, and aesthetics (MoNE, 2018).

Since the mathematics curriculum changed in 2018, numerous studies have been undertaken. Altun Yaşar (2024) analyzed mathematics curriculum research from 2017 to 2023, highlighting a focus on curriculum analysis mainly within Turkish publications. The studies predominantly utilized qualitative methods, particularly document analysis, which was the most common data collection tool. Content analysis emerged as the leading technique for data analysis, although most studies lacked specified sample sizes, with teachers typically forming the study group. During the period from 2000 to 2019, Ajao and Awofala (2022) found that mathematics curriculum evaluation research was more common than curriculum development research. The studies favored teacher and student perspectives and primarily employed qualitative research methods. Byrne and Prendergast (2020) examined the effects of curriculum reform on secondary school teachers, highlighting that early implementation concerns shaped significant decisions made by educators using limited information. Their study suggested that these concerns can persist for years post-implementation, and if not resolved, could adversely impact the successful adoption of changes. Following the renewal of the elementary (MoNE, 2024a) and middle school (MoNE, 2024b) mathematics curricula in Türkiye in 2024, as part of the Century of Türkiye Education Model (CTEM), limited studies have been conducted on the middle school mathematics curriculum. Yılmaz et al. (2025) found that elementary mathematics teachers (EMTs) had a generally positive perception of

the 2024 middle school mathematics curriculum, viewing it as value-oriented and focused on contemporary teaching methods. Nevertheless, many teachers faced structural and practical challenges related to class size, time management, guidance and adaptation during its implementation. Yüzüak Aydın (2025) analyzed the 2024 middle school mathematics curriculum, focusing on fifth grade geometry themes from EMTs' perspectives. The student-centered, activity-based design of the CTEM curriculum was positively received, yet teachers faced challenges in implementing it, including time management, physical environment, assessment tools, and teacher support. Kalaç and Konyalıoğlu (2025) investigated EMTs' perspectives on the 2024 middle school mathematics curriculum, finding it generally suitable for fostering 21st-century skills. EMTs appreciated its student-centered focus, emphasis on problem-solving and technological support, simplification, and active participation, but criticized issues like content sequencing, neglect of specific students and schools, and the absence of a pilot study. They also highlighted implementation challenges such as activity length, student preparedness, systemic infrastructure issues, and class sizes, while requesting in-service training for technology use, implementation, and assessment strategies. Güneş et al. (2025) analyzed the 2024 middle school mathematics curriculum's measurement and assessment approach, finding it student-centered and accommodating individual learning differences. They noted the extensive use of performance tasks, formative tests, and open-ended questions, emphasizing that these processes should facilitate learning and offer feedback by identifying learning gaps. Taş and Buran (2025) analyzed test items in 5th and 6th grade mathematics textbooks developed under the CTEM, categorizing them by the MATH taxonomy. They observed an even distribution of items across Groups A, B, and C, but noted that certain themes lacked items from Group C. Most research following the 2024 curricular changes has focused on the 5th grade mathematics curriculum, with limited studies on the renewed 7th grade curriculum, expected to be implemented in the 2026/27 academic year. This research aims to inform future studies and is based on the premise that curriculum research can aid curriculum development. Its effectiveness will become clearer through implementation, contributing to understanding whether the strengths of the 2018 middle school mathematics curriculum are preserved and its weaknesses addressed in the 2024 revision. As middle school students struggled to achieve the objectives of the 2018 sixth and seventh grade mathematics curricula (Taş, 2020), examining the 7-MC through the lens of EMTs is crucial to determine whether the mathematics curriculum reform addresses needs or exacerbates teacher anxiety. The research aims to shed light on the shared lived experience of the 7-MC update among EMTs, facilitating a comprehensive analysis, guided by a formulated research question aligned with existing literature (Moustakas, 1994):

How is the 2018 update to the 7-MC being experienced by EMTs?

It is also worth noting that the objective of this study was not to evaluate the updated 7-MC. The study aimed to apply a program evaluation model while incorporating interview and observational data. Observations were authorized by the Afyonkarahisar Provincial Directorate of National Education on 12 March 2020, but were impacted by the COVID-19 pandemic; schools in Türkiye closed on 16 March 2020, leading to a shift to distance learning starting 23 March 2020 (MoNE, 2020a). Due to intense pandemic activity during the data collection period, planned observations could not be conducted, leading to a significant limitation as no program evaluation model could be utilized without observational data.

Literature Review

Perspectives on the Mathematics Curriculum Change at International Level

The findings of international studies indicate that mathematics teachers predominantly express their perspectives on the renewal of the mathematics curriculum. Kilpatrick (2009) highlighted the important role of mathematics teachers in the changes to mathematics curricula, emphasizing the necessity of analyzing and discussing their opinions to determine effective methods of change. Johnson and Fitzmaurice (2025) studied the implementation of mathematics curricula through document analysis and interviews with teachers, revealing a gap between the intended and actual curricula. Although many teachers support the reform goals, their ability to achieve these aims is hindered by insufficient teaching time and political incentives. The study highlights that effective curriculum implementation depends on both teacher intentions and systemic constraints, suggesting that policymakers need to tackle contextual barriers that impede teachers' ability to enact practical changes in education. Janko and Pešková (2017) reviewed teachers' perceptions of curriculum changes, revealing attitudes that varied from acceptance to resistance. Key influencing factors included teachers' demographic characteristics and perceived implementation constraints. Textbooks were viewed as essential instructional tools, while a lack of pedagogical content knowledge emerged as a significant barrier to effective textbook use during curriculum implementation. A study by Manouchehri (1998) indicated that teachers' perceptions, evaluations and use of reform-based materials were influenced by their experience, curriculum and instructional knowledge, and the contexts in which they operated. Handal and Herrington (2003) analyzed the impact of mathematics teachers' beliefs on curriculum reform, asserting that these beliefs significantly affect the reform's pace. They found that many teachers depend on their own beliefs when implementing new curricula, with a notable prevalence of behavioristic beliefs that hinder the success of constructivist reforms. Consequently, the study highlights the complexity of curriculum reform, noting that many past attempts have failed. Lai (2024) analyzed the failure of Taiwan's mathematics curriculum Westernization, identifying context, rationale, and guiding philosophy as the key reasons. Wang et al. (2017) analyzed the recent mathematics curriculum reform in China, focusing on its content, implementation, and classroom practices. The research highlighted the establishment of a special committee by the ministry to oversee the development of curriculum and textbooks, stressing the importance of the development plan (2010–2020) and standards for curriculum and teacher qualifications. Key points included the necessity for smaller class sizes, reduced homework for younger students, adjusted textbook content and curriculum difficulty according to grade levels, revised assessment systems, and systems to promote critical thinking, problem solving, and moral guidance in student development. Li and Ni (2012) analyzed key debates regarding the mathematics curriculum reform in China, highlighting challenges for teachers. They identified vital issues such as knowledge transmission, the connection between life experiences and learning, the relationship of mathematics to the curriculum, and the balance between inquiry-based learning and teacher guidance. These debates are expected to influence international curriculum reform over the long term.

Fan et al. (2025) conducted a review on mathematics textbooks, highlighting their crucial role in supporting teachers' instructional practices and the implementation of new curricula. The study noted that the effectiveness of textbooks depends on their design, alignment with curriculum changes and pedagogical approaches, and teachers' perceptions. Furthermore, it

revealed that curriculum development influences teachers' choice of textbooks and that research on textbooks can affect future curriculum reforms. Rezat et al. (2021) examined the role of mathematics textbooks and curriculum resources in influencing instructional goals and learning practices. They contended that while these materials are significant, they cannot independently transform teaching or learning amidst curriculum changes. The authors emphasized the necessity for additional research to identify the characteristics of curriculum resources that support successful change implementation, highlighting that curriculum innovations are more likely to succeed when teachers and students collaborate in redesigning resources to align with reform efforts and individual needs.

Studies on the 2018 Mathematics Curriculum in Türkiye

In Türkiye, the analysis of the renewed mathematics curriculum predominantly involved document examination using various taxonomies, with a primary emphasis on the curriculum's objectives. Literature includes studies assessing the 2018 mathematics curriculum through singular taxonomies like the revised Bloom's Taxonomy (RBT) (Çelik et al., 2018; Kuzu et al., 2019) or the SOLO Taxonomy (Acar & Peker, 2023), as well as multiple taxonomies including RBT and Haladyna's Taxonomy (Pinar & Ocak, 2025). Çelik et al. (2018) analyzed the updated 2017 middle school mathematics curriculum's 215 objectives within a three-stage cycle, focusing on the RBT. They found that most objectives fell under understanding and applying levels, along with conceptual and procedural knowledge. While there were some similarities in objectives across grade levels and learning areas regarding the cognitive process dimension, differences were noted in the knowledge dimension. Kuzu et al. (2019) assessed 444 mathematics curriculum objectives for grades 1-8, as updated in 2018, focusing on cognitive process and knowledge dimensions of the RBT. The findings indicated a scarcity of objectives in the analyzing, evaluating, and creating stages, with no objectives addressing meta-cognitive knowledge. Additionally, some objectives included multiple action verbs and lacked clarity or an appropriate progression from simple to complex. In their study, Acar and Peker (2023) analyzed the 2018 mathematics curriculum for grades 5-8 using the SOLO taxonomy. They found that most objectives were categorized as unistructural and multistructural, with a scarcity of extended abstract objectives. Unistructural objectives were predominant across all grades, while relational-level objectives were the least common. The study noted an increase in unistructural objectives from Grade 5 to Grade 8, alongside a decrease in extended abstract objectives. In their study, Pinar and Ocak (2025) evaluated the 2018 5th grade mathematics curriculum objectives through the lenses of the RBT and Haladyna's taxonomy, emphasizing 21st-century skills. They found that 58% of the objectives corresponded with the RBT while 67% linked with Haladyna's taxonomy, concluding that Haladyna's taxonomy had a stronger connection to 21st-century skills in this context.

Studies have focused on the objectives of the 2018 mathematics curriculum, as well as high school entrance exam test items (Aydoğdu, 2024); and textbooks (Erbaş, 2021), all grounded in a specific taxonomy. Aydoğdu (2024) examined the 2018 mathematics curriculum for Grade 8 and the related high school entrance exam items from 2018 to 2022. Utilizing the RBT, the study found that 95% of the test items were procedural, 3% metacognitive, and 2% conceptual. Cognitive processes showed that 64% of items were at the analyzing level, 35% at applying, and 1% at remembering. Additionally, some items were linked to multiple objectives, and 44% of items exceeded the cognitive level of their

corresponding objectives. Overall, the objectives were mainly at the applying level, while the items skewed towards the analyzing level. Erbaş (2021) examined the 2018 mathematics curriculum objectives for grades 5–8 and the assessment items in textbooks using the SOLO taxonomy. The study found a predominance of multistructural-level objectives and items, while extended abstract-level ones were the least common. Contrary to the hypothesis that higher grade levels would correlate with more relational and extended abstract structures, results indicated non-linear increases with fluctuations.

Studies have analyzed the objectives of the 2018 mathematics curriculum through various lenses, including learning trajectories (Asil Güzel et al., 2023), thinking skills (Aydın & Şakar, 2020), and TIMSS 2019 cognitive domains (Yılmaz et al., 2021). Asil Güzel et al. (2023) analyzed the length measurement objectives in the 2018 mathematics curriculum for grades 1–8 via learning trajectories. They observed that most objectives pertained to length measurement, particularly at the abstract level for grades 6–8. Some objectives were identified at the basic level, likely covered in kindergarten, while others were positioned at more advanced stages, with certain levels lacking objectives altogether. In their study, Aydın and Şakar (2020) analyzed the objectives of geometry and measurement learning domains regarding thinking skills, revealing that objectives focused on applying and understanding were the most prevalent, whereas those aimed at creating were the least common. Yılmaz et al. (2021) analyzed mathematics textbooks and curriculum objectives for grades 4–8 in the “Data” learning domain based on TIMSS 2019 cognitive domains. They found that the tasks were predominantly in the applying domain, with some in the knowing and reasoning domains, whereas objectives were mainly focused on the reasoning domain across all grade levels.

Studies exist in the literature that examine the middle school mathematics curriculum as a document. The study by Beyendi (2018) compared the 2013 and 2018 revisions of the middle school mathematics curriculum, revealing a decrease in the number of objectives and an increase in the number of units, with the latter rising from five to six. Additionally, the number of subjects varied across grades: Grade 5 saw a reduction from 15 to 12 subjects, Grade 6 increased from 14 to 15, Grade 7 decreased from 13 to 12, and Grade 8 declined from 14 to 12. Erdoğan and Elmas (2018) qualitatively analyzed the 2018 middle school mathematics curriculum, finding insufficient mention of mathematical models, although they were more prevalent in curriculum explanations. Discussions on mathematical modeling occurred primarily in Grade 8 and least in Grades 6 and 7, focusing on data processing in Grades 5, 7, and 8, and on geometry and measurement in Grade 6.

The evaluation of the 2018 middle school mathematics curriculum using a specific model is supported by a limited number of studies. Şen and Peker Ünal (2021) assessed the 2018 middle school mathematics curriculum using Eisner’s educational connoisseurship model through a qualitative case study. They conducted individual interviews with 13 EMTs and four school principals, as well as focus group interviews with 248 students. The findings revealed that teachers noted reductions and reordering of curriculum objectives, while principals and students highlighted new-generation questions. Additionally, principals showed insufficient knowledge of the curriculum’s structure and content, although they acknowledged that students could apply mathematics in everyday situations.

Studies have uncovered limited but noteworthy insights into teachers' perspectives regarding the middle school mathematics curriculum. Karakoç (2019) explored teachers' perspectives on the 2018 revised middle school mathematics curriculum using a qualitative approach, gathering data from 32 EMTs through semi-structured interviews. Findings indicated that teachers held positive views on the curriculum's reduced objectives and were familiar with its recommended teaching and assessment methods. However, challenges such as large class sizes and limited lesson time hindered some teachers' ability to implement these techniques. While some issues stemmed from the curriculum itself and others from various external factors, there was a consensus among certain teachers that updated curricula are generally advantageous. In a study by Berkant and İncecik (2018), the 5th grade mathematics curriculum was evaluated through a survey of 126 EMTs. The findings revealed mixed opinions about the curriculum, with female teachers generally expressing more positive views than male teachers. Teachers believed that parents lacked awareness of the curriculum's features and that students were inadequately prepared for its implementation. The study concluded by recommending in-service training for teachers to better understand the curriculum.

Significance

As limited research exists on the 7-MC concerning EMTs' perceptions, this study aims to enrich the literature. It is anticipated that the involved EMTs, possessing master's and/or doctoral degrees in mathematics education and/or curriculum and instruction, will exhibit high levels of mathematical and/or curriculum literacy. Song and Lee (2024) analyzed how teachers engage with competency-oriented national mathematics curriculum documents and the impact on their interpretation of reform messages. They found that reading with clarification fostered a dialogic relationship, enhancing acceptance of competency-oriented messages. In contrast, reading focused on identification without clarification led to a monologic relationship, resulting in only superficial assimilation of these messages. Research involving teachers with advanced degrees enhances originality and depth, contributing valuable experiences. It also offers essential feedback on curriculum development, evaluating the effectiveness of the curriculum based on EMTs' perceptions. This research is crucial for stakeholders to understand the curriculum's strengths and weaknesses. Consequently, monitoring and evaluation can facilitate updates and revisions to the current mathematics curriculum, initiated in the 2018–19 academic year, for future improvements. Yenilmez and Sölpük (2014) identified that from 2004 to 2013, the quantitative method was the predominant approach in mathematics curriculum-related theses. Yavuzkan and Tannrıseven (2024) conducted a systematic review of mathematics curriculum evaluation research in Türkiye from 2005 to 2023, finding that survey design was the predominant approach. They noted that interviews, surveys, and scales were commonly used for data collection, with descriptive statistics frequently applied in data analysis. This qualitative research is also considered original in methodological terms.

Method

Research Design

This qualitative research employs a phenomenological approach to explore participants' experiences of a phenomenon, emphasizing their personal views (Creswell et al., 2007). Such designs are applied to familiar phenomena that remain poorly understood (Yıldırım &

Şimşek, 2016). The research focused on the 7-MC update as the unit of analysis rather than individual EMTs or their respective schools.

Sampling

Twenty-four EMTs with master's and/or doctoral degrees in mathematics education and/or curriculum and instruction were selected as the study group through criterion sampling. Criterion sampling involves selecting all cases that satisfy a specified set of criteria (Yıldırım & Şimşek, 2016). The selection criterion for EMTs included holding a graduate degree in mathematics education and/or curriculum and instruction. They were employed in public middle schools in Afyonkarahisar, Türkiye. In this research, EMTs from various schools were studied not for comparative analysis, but to achieve a deeper experiential understanding of their experiences within a specific context, which served merely as the setting for the phenomenon being examined. There was an equal distribution of female and male teachers. Nineteen teachers were aged 30-35, four were aged 25-30, and one was 35-40. Half of the teachers had 0-5 years of experience, while the other half had 5-10 years, all working at their current schools for 1-5 years. Participants were equally divided between studying curriculum and instruction and mathematics education, with more than half holding a master's degree in these fields.

Data Collection Tools

Data were collected through semi-structured interviews with EMTs, following an examination of relevant literature and the 2018 middle school mathematics curriculum. Interview questions were developed in alignment with the research problem and validated through feedback from five experts, including two professors and two associate professors in curriculum and instruction, and one professor in elementary education. The interview form, comprising 13 questions, underwent revisions based on expert input and pilot study findings. Specifically, the questions ask EMTs how they plan their lessons, the methods they use during lessons, and their reasons for choosing or not choosing certain teaching strategies and materials. Additionally, EMTs are asked how they assess and measure student learning in their lessons. Another question addresses potential problems encountered during the implementation of the curriculum, prompting EMTs to detail any issues faced, solutions applied, and suggestions for improvement. Document analysis employed Anderson and Krathwohl's (2001) matrix concerning knowledge and cognitive process dimensions to supplement interview findings and assess whether the objectives aligned with predetermined aims. Data for this analysis were sourced from the 7-MC (MoNE, 2018). The curriculum objectives were reviewed in light of the RBT, accessible at <https://mufredat.meb.gov.tr>.

Data Collection

Data collection involved obtaining permits from Afyon Kocatepe University Board of Scientific Research and Publication Ethics (Date: February 6, 2020, Number: 2020/14) and the Afyonkarahisar Provincial Directorate of National Education. Written informed consent was obtained from the participants for their participation as well as anonymized information to be published in this article. Participants were informed of the research purpose, and interviews were conducted voluntarily. All interviews were conducted via phone from April 2020 to June 2021 due to the COVID-19 pandemic, which may have limited the depth of data collected. Voice recordings were made with participants' permission, and their anonymity was protected through coded identifiers (e.g., M for teachers with a graduate degree in

mathematics education, C for those with a graduate degree in curriculum and instruction) in data reporting. No physical or psychological harm occurred to participants. A limitation of the research was that planned observations could not be conducted due to the pandemic, as schools transitioned to remote learning. Had observation been possible, it would have allowed for triangulation with data from interviews and document analysis. The interviews with EMTs totaled 8 hours and 48 minutes, averaging 22 minutes each, producing accurate and representative data regarding the phenomenon studied.

Data Analysis

Content analysis and descriptive analysis were conducted on the interview data and the 2018-updated 7-MC data, respectively. Content analysis examines concepts and their interrelations to clarify the data obtained (Yıldırım & Şimşek, 2016). The audio-recorded data were transcribed verbatim into 177 pages. The raw data were thoroughly reviewed and coded, with all codes subsequently listed. Data were analyzed by grouping similar codes into themes (Creswell, 2012). Three main themes were identified from the examined codes: (1) EMTs' perceptions of the national curriculum, (2) their experiences with the implemented curriculum, and (3) their suggestions to address the mismatch between the curriculum and classroom reality. Data from the 7-MC were analyzed using established themes, leveraging the RBT, through a preferred descriptive analysis technique. Descriptive analysis involves interpreting data based on predetermined themes (Yıldırım & Şimşek, 2016).

Trustworthiness

To ensure data credibility and transferability, the study employed strategies such as peer debriefing, triangulation, thick description, and purposive sampling (Erlandson et al., 1993), as well as conducting a dependability audit (Erlandson et al., 1993). Five experts reviewed the final interview questions, leading to necessary adjustments. Data were gathered primarily through in-depth interviews, supplemented by document analysis, with findings supported by direct quotations corresponding to codes, thus excluding the researcher's personal opinions. Voice recordings ensured data integrity, and interviews were conducted with attention to tone. The data collected by the first researcher were coded independently by both researchers, who achieved an 88.2% agreement on codes, suggesting high consistency (Miles & Huberman, 1994).

Role of the Researchers

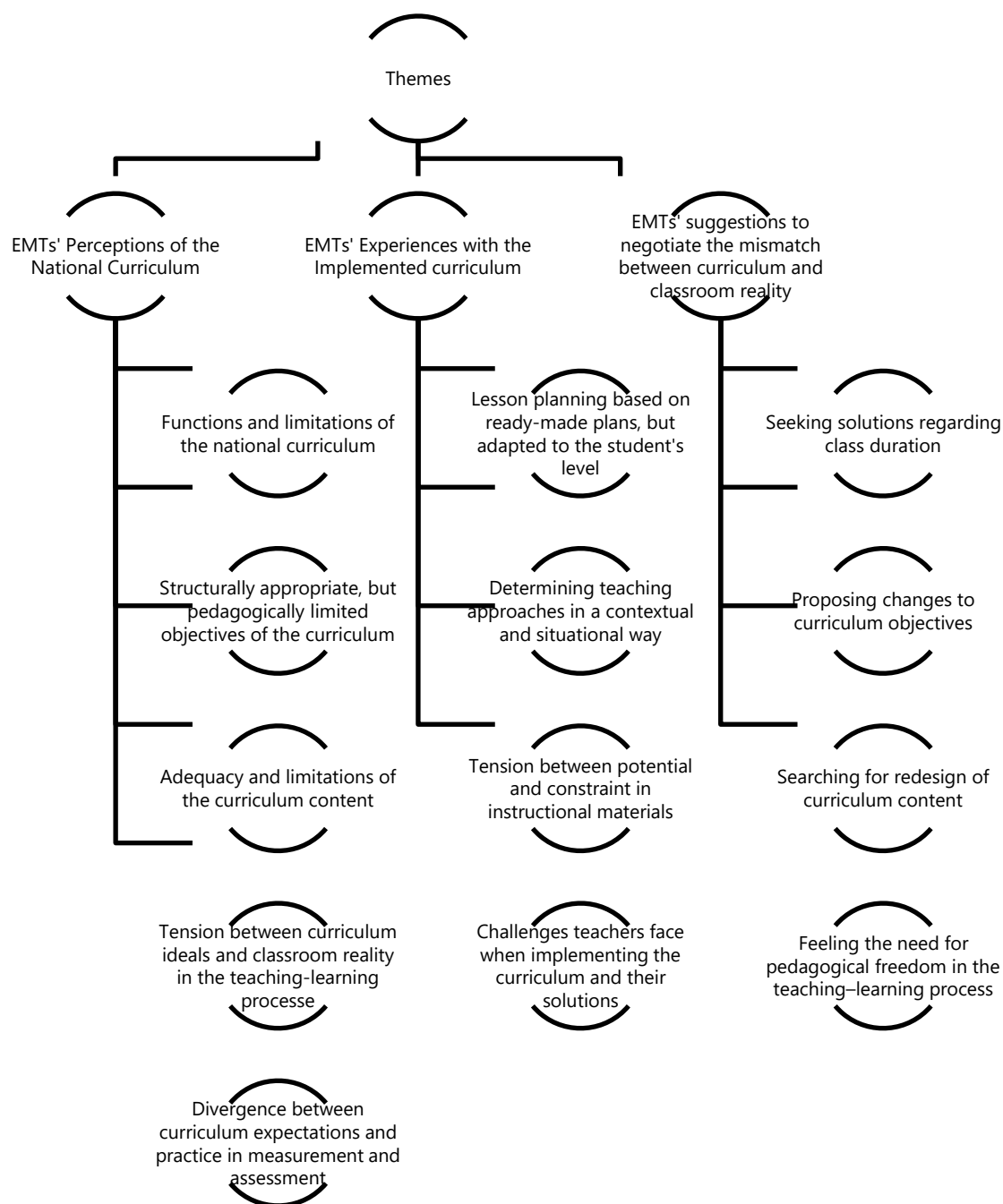
The first researcher, a graduate of the Department of Elementary Mathematics Education, was motivated to explore opinions on the implemented curriculum. Her dual interest in words and numbers as an elementary mathematics teacher directed her towards qualitative research. The first researcher transcribed the data verbatim, with no alterations made to the original data. Bracketing, as explained by Moustakas (1994), is a step in phenomenological reduction that involves setting aside everything to concentrate exclusively on the research question and topic. Researchers can concentrate on participants' experiences by setting aside their personal experiences related to the studied phenomenon (Creswell & Poth, 2018). In line with Yüksel and Yıldırım (2015), researchers analyzed data without allowing their own biases to influence their interpretation of EMTs' statements, setting aside their knowledge related to the 2018 7-MC update. Researchers' personal assumptions were excluded from the research data.

Findings

The research findings are organized around three main themes: "EMTs' perceptions of the national curriculum," "EMTs' experiences with the implemented curriculum," and "EMTs' suggestions to negotiate the mismatch between curriculum and classroom reality." These themes and their sub-themes are illustrated in Figure 1.

Figure 1

Themes by Which Findings Are Categorized

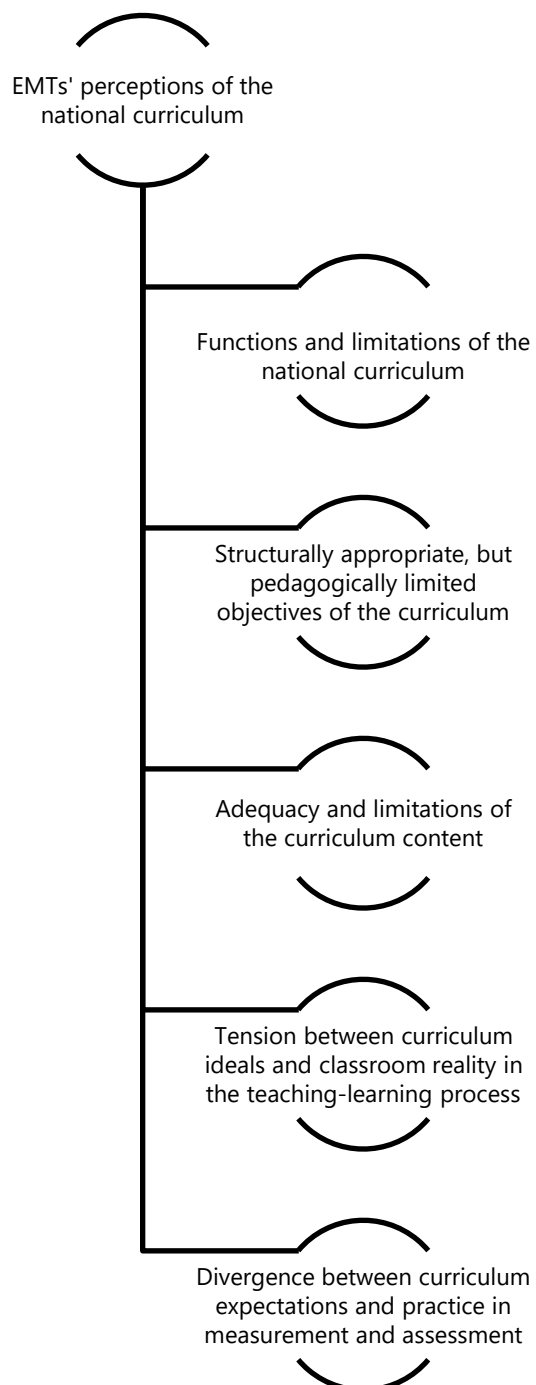


Elementary Mathematics Teachers' Perceptions of the National Curriculum

EMTs' perceptions of the national curriculum were analyzed through five key sub-themes: (1) functions and limitations of the national curriculum, (2) structurally appropriate, but pedagogically limited objectives of the curriculum, (3) adequacy and limitations of the curriculum content, (4) tension between curriculum ideals and classroom reality in the teaching-learning process, (5) divergence between curriculum expectations and practice in measurement and assessment. These themes are illustrated in Figure 2.

Figure 2

EMTs' Perceptions of the National Curriculum



Functions and Limitations of the National Curriculum

Functions and limitations of the national curriculum for EMTs were analyzed through six sub-themes: 'conditional adaptation to modernity: the implementer-dependent nature of the curriculum', 'a strong individual profile in the document, but weak in practice', 'an unclear philosophy: implicit pragmatism', 'goal attainment questioned through student behaviors and values', 'structural limitations of teaching values in mathematics' and 'competencies presented in isolation from the objectives and implementation'.

Conditional adaptation to modernity: The implementer-dependent nature of the curriculum

There was no consensus among EMTs about the curriculum's compliance with contemporary developments. Opinions varied: some believed it complied, others thought it depended on the teacher/student profile and process, while some felt it did not comply. Factors associated with compliance included instructional technologies, improved international assessment results, and modern mathematics teaching approaches. One of the EMTs stated the following:

"International approaches to mathematics teaching are closely monitored in terms of the objectives. When we look at the activities covered, we find that the statistics in the worldwide PISA examinations were quite low, and we were lagging as a country, but as recently revealed, our country's level has grown significantly..." (C12)

A strong individual profile in the document, but weak in practice

An analysis of the middle school mathematics curriculum highlights its goal of fostering entrepreneurs who positively impact society and culture, emphasizing qualities such as determination, empathy, critical thinking, effective communication, knowledge generation, problem-solving skills, and the ability to apply practical knowledge in everyday situations (MoNE, 2018). However, many teachers felt the curriculum was ineffective in achieving these aims due to various issues, including student and teacher factors, material quality, objectives, content, implementation, national exams, and overcrowded classrooms. One of the EMTs drew attention to the following:

"Our students are focused on the upcoming high school entrance exam next year. In this instance, the teacher is required to address more questions during the class. The actuality of the exam overshadows the growth of these skills. I cannot say they are not developing at all, but I do not believe they are at the ideal level..." (C11)

Raising the desired individual also hinges on the teacher's attitude and respect for the student's opinions.

An unclear philosophy: Implicit pragmatism

EMTs emphasized the need to examine both the curriculum philosophy and the curriculum itself, noting that a pragmatic approach has been adopted, even though the philosophy was not clearly articulated in the 7-MC. One teacher critically discussed the mathematics curriculum philosophy pragmatically as follows:

"In the present system, let me consider ... the perspectives of my pupils. When executing a task, peers adopt a pragmatic approach to see what they may benefit from it. When we look at the books, we can see that the ... pragmatic approach is from [the United States of] America. Thus, we cannot claim that our curriculum is

highly national since the theory underlying it is not based on our national and moral principles. Even if we wanted to do the contrary, the outcome is exactly the opposite of what we desired..." (C4).

Goal attainment questioned through student behaviors and values

There was a lack of consensus among EMTs regarding the curriculum's effectiveness. While some believed the goals were clear and attainable, others felt it was ineffective due to students displaying undesirable behaviors that conflicted with national and moral values. Additionally, some teachers contended that curriculum success should be assessed through students' behaviors and values, suggesting that goal achievement was contingent on these factors. One EMT articulated this as follows:

"Now ... the curriculum aims that pupils should accept national and moral values. First and foremost, it is vital to examine students' behaviors. The breaking of soap dispensers in the toilet, the taps running in vain, and the students leaving the lamps on after the lesson demonstrate that their behaviors are not consistent with our national and moral values because each of these wastes has a detrimental influence on the country's economy..." (C4).

EMTs expressed mixed opinions on the curriculum's effectiveness in achieving its aims. While some noted its success in developing skills like mathematical language and problem-solving, as well as connecting with daily life and interdisciplinary relationships, others believed it fell short in transferring learning to real-life contexts due to its abstract content. The effectiveness was also seen as dependent on student profiles and teacher competence, highlighting a lack of resources for teachers on how to effectively guide students towards the curriculum's aims. One of the EMTs portrayed this as follows: "...*The teacher, not the objective, is responsible for reaching the aims. However, teachers must have a resource to help them do so. The objective is clear, but teachers have no idea what to do...*" (M9). Teachers predominantly focused on cognitive skills in relation to the curriculum's aims, with minimal attention to affective and psychomotor skills. Analysis of the updated 7-MC (MoNE, 2018) indicated 13 aims, primarily targeting cognitive and affective development, while neglecting psychomotor skills. Despite findings by Repuya et al. (2025) that technology-based learning effectively teaches cognitive and psychomotor skills in mathematics, the 7-MC (MoNE, 2018) fails to adequately promote students' digital literacy.

Structural limitations of teaching values in mathematics

EMTs reached a consensus that the curriculum was ineffective in imparting root values, criticizing the mathematical structure as unsuitable and advocating for a values education context. The values included in the middle school mathematics curriculum, revised in 2018, were identified as "justice, friendship, honesty, self-control, patience, respect, love, responsibility, patriotism, and helpfulness" (MoNE, 2018, p. 5); however, the curriculum lacked guidance on teaching these values. One EMT expressed this as follows: "*To be honest, I have not seen anything in the mathematics curriculum that addresses [teaching of] the root values. Of course, we are attempting to teach them. But, ... I believe this is ineffective.*" (M6). Despite its aim to instill root values, the curriculum failed to effectively link these values to its objectives or provide adequate teaching resources. The failure was attributed to the abstract nature of the mathematics, its ineffectiveness in teaching root values, the necessity to complete the curriculum, and the reliance on values education to convey the specified values.

Competencies presented in isolation from the objectives and implementation

Some EMTs indicated that the acquisition of competencies is not directly tied to the curriculum, citing the impact of primary education and educational inequalities. Despite time constraints, irrelevant content and unequal opportunities resulting in an ineffective curriculum for developing competencies such as learning to learn and foreign language communication, some teachers noted its effectiveness in enhancing language, digital, mathematical, scientific and technological competence. However, issues arose due to poorly defined competencies and a lack of interdisciplinary connections. One of the EMTs depicted this as follows:

"Unfortunately, most of these are beyond our reach. For example, we primarily focus on mathematical competence, or we prioritize science and technology in the classes. For example, when we come across a research article, I instantly attempt to make it relevant to the science lesson, but it is nearly impossible for us to reconcile it with a foreign language. As a result, youngsters already have a strong predisposition toward foreign languages. They are already biased against mathematics, and ... they are far behind; we are unable to supply them most of the time, and our classes proceed based on mathematical competence..." (C10).

It was found that the curriculum competencies lacked sufficient connection to the objectives and did not offer teachers guidance on teaching these competencies.

Structurally Appropriate, but Pedagogically Limited Objectives of the Curriculum

EMTs noted that the 7-MC objectives were clear, feasible, and relevant for learners, though the teaching methods for these objectives were not detailed. One of the EMTs articulated this as follows:

"The number of objectives has been reduced compared to prior curricula. I do not see an issue with the quantity of objectives. However, the fact that there are fewer objectives does not imply that there are fewer subjects to be taught. On the contrary, the 7-MC objectives are critical since they appear to be intensive. Although the number of objectives appears to be relatively limited, the knowledge that students will gain is vast and acts as the basis for the key topics..." (C11)

It was revealed that the updated 7-MC (MoNE, 2018) contained the fewest objectives, focusing primarily on procedural knowledge and applying, without any objectives related to affective or psychomotor domains. This limitation in the curriculum objectives may hinder the achievement of pre-determined aims.

Adequacy and Limitations of the Curriculum Content

EMTs reported that the content structure was suitable and well-organized in a spiral manner for the students. They recognized the foundational importance of the 7-MC content, despite its complexity. Further simplification and greater class participation were recommended, while teachers faced challenges in allocating enough time to complete the curriculum effectively. One of the EMTs recounted this as follows:

"... [Its content] would be a little more simplified. Actually, it was. [Its content] was included in the 6th grade curriculum, some included in the 8th grade curriculum, and some was excluded from the 6th grade curriculum and included in the 7-MC. But, I

think it is still a bit intensive. That is why I was progressing fast. I am also going to move quickly again" (M8)

EMTs argued that the spiral approach led to a disconnect among subjects in the 7-MC, indicating students did not achieve mastery. The learning areas, which included algebra, geometry and measurement, and data processing, lacked coherence and were ill-suited for this approach. One EMT specifically noted that the topic of 'appearance of objects from different sides' in geometry and measurement was inappropriate for the current grade level and suggested it could be taught earlier or removed from the curriculum altogether.

Tension between Curriculum Ideals and Classroom Reality in the Teaching-Learning Process

The analysis of the 7-MC emphasizes that the teaching-learning process must account for individual and cultural differences, assess learners' prior knowledge, construct new concepts based on existing ones, utilize concrete materials, and offer teachers flexibility in the sequence and timing of objectives (MoNE, 2018). EMTs indicated that the effectiveness of the teaching and learning process is influenced by factors such as learner characteristics, curriculum implementation by teachers, the duration of mathematics lessons, curriculum content, and the pressure of national examinations on teachers. EMTs highlighted that students' readiness, interest, and ability in mathematics significantly affect the teaching-learning process, underscoring the importance of a student-centered curriculum. They noted that effective planning, teaching, and assessment should be grounded in students' academic performance, recommending diverse methods and materials in instruction. EMTs experienced time constraints for lesson delivery, primarily teaching mathematics in a two-hour elective. The rigorous curriculum and demands of the national transition exam restricted the use of the constructivist approach, compelling EMTs to prioritize practical instruction. One of the EMTs narrated the following:

"...I miss out on the opportunity to practice when I choose to do an activity. I explain the major principles, but I need to emphasize them because I will be preparing students for the high school entrance exam, which will be taken in eighth grade. I am unable to practice since the concepts covered in the seventh grade curriculum serve as the foundation for the eighth grade curriculum. In reality, I took a two-hour elective mathematics applications course. So far, new generation questions have emerged. As previously indicated, there are too many objectives, so I will either conduct an activity or practice..." (M8)

Divergence between Curriculum Expectations and Practice in Measurement and Assessment

The analysis of the measurement-assessment element of the updated 7-MC indicated a need for assessing processes alongside products (MoNE, 2018). However, EMTs reported a predominance of product-oriented assessments and a reliance on traditional tools, such as paper-and-pencil tests, primarily due to the requirements of national transition exams. One of the EMTs portrayed this as follows:

"...Assessment of individual differences and multifaceted assessment are not feasible. In other words, we prefer prioritizing traditional assessment in order to make it objective. Of course, traditional approaches do not allow for multifaceted assessment.

Well, the high school entrance exam is a multiple-choice test that is not multifaceted. We measure and assess in the same way that the high school entrance exam is administered throughout the country. We do not measure and assess individual differences among students" (C7).

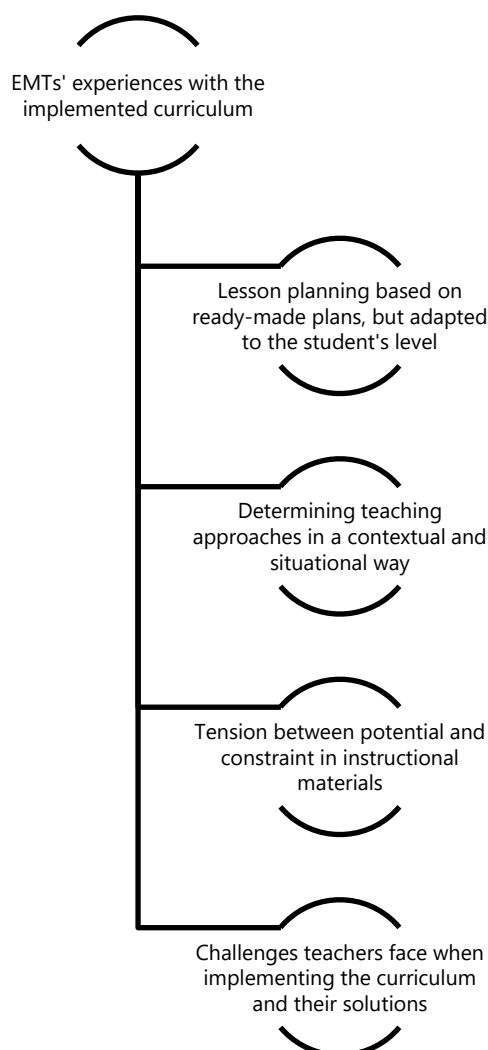
Analysis indicated that individual differences in measurement and assessment should be acknowledged (MoNE, 2018); however, EMTs noted that standardized tests were uniformly applied to all students. The curriculum aims to evaluate cognitive, affective, and psychomotor objectives (MoNE, 2018), yet teachers reported a lack of experience in assessing students' affective traits and psychomotor skills.

Elementary Mathematics Teachers' Experiences with the Implemented Curriculum

EMTs' experiences with the implemented curriculum were analyzed through four sub-themes: 'lesson planning based on ready-made plans, but adapted to the student's level', 'determining teaching approaches in a contextual and situational way', 'tension between potential and constraint in instructional materials', and 'challenges teachers face when implementing the curriculum and their solutions'. These themes are visually represented in Figure 3.

Figure 3

EMTs' Experiences with the Implemented Curriculum



Lesson Planning based on Ready-Made Plans, but Adapted to the Student's Level

EMTs utilized pre-prepared annual and daily plans, drawing from a range of resources such as the curriculum, annual plan, textbooks, supplementary materials, social media group plans, and interactive tools, while also considering student levels in their lesson planning. One of the EMTs spoke of the lesson planning process as follows:

"When planning my lessons, I first assess the students' level of readiness. Knowledge from the previous year may have been forgotten, or gaps in instruction may have occurred. First, I measure what kind of knowledge they possess and how prepared they are for new knowledge. After filling in any gaps, I review and rehearse anything that needs to be covered. Then, I plan the lesson so that new knowledge can be integrated" (C9).

Determining Teaching Approaches in a Contextual and Situational Way

Some teachers adopted contemporary/learner-centered teaching methods while others favored traditional/teacher-centered approaches. EMTs indicated that instructional strategies varied based on factors like subject matter, school conditions, class size, lesson length, student readiness, and curriculum approach, which influenced the preference for either teaching approach. One of the EMTs drew attention the following:

"I use a variety of methods and techniques. The classic, straightforward lecture method is, of course, always used. Beyond that, depending on the subject matter and the school environment, I use methods such as discovery and lecture methods. The size of the classroom also influences how we use these methods — whether it's large or small. We also sometimes do demonstration-based activities. I use these kinds of activities" (M7).

Tension between Potential and Constraint in Instructional Materials

EMTs highlighted the advantages of using concrete materials, smart boards, and interactive software in teaching, noting that students designed some materials themselves. However, they struggled with access to necessary instructional materials, often having to share resources and create visual aids to support the teaching-learning process. One of the EMTs reflected on this as follows: *"... I use the smart board frequently. I use geometric shapes, but there are not many materials at our school. We only use what is accessible after consulting with my colleagues..."* (C11).

Challenges Teachers Face When Implementing the Curriculum and Their Solutions

EMTs reported issues stemming from students' inadequate readiness and insufficient completion of homework and study. One of the EMTs expressed this as follows: *"... Some of my students struggle because they do not comprehend or cannot think in abstract terms..."* (C5).

EMTs expressed that the mathematics lessons in 7th grade lacked sufficient time due to the dense content. They noted a disconnect among subjects in the 7-MC, students struggled with transitioning between topics, teachers had limited time to relate lessons to real life, and there was a call for the removal of geometry from the curriculum. One of the EMTs spoke of this as follows:

"As previously said, there is a separation between the subjects, and there is a problem with that gap. However, students can manage it if we give them enough time. It is difficult for students to transfer from algebra to geometry. That is why I feel the lecture should be divided into two parts: mathematics and geometry. Alternatively, geometry should be taught independently. This is where the trouble arises" (C4).

Teachers faced challenges in connecting mathematics to daily life due to the dense curriculum content, which may have felt overwhelming due to students' low readiness levels. They often had to revisit prior knowledge. Although there was a suggestion to remove geometry from the curriculum, it was confirmed that geometry topics such as angles, area measurement, circles, geometric objects, and volume measurement for the 6th grade mathematics curriculum, as well as lines and angles, polygons, circles and circular regions, and the appearance of objects from different sides for the 7-MC, were already included (MoNE, 2018). Thus, the proposed solutions to curriculum issues have been acknowledged.

EMTs addressed challenges with lesson length, content, and student needs by not adhering to the recommended curriculum time. To compensate, they conducted extra classes, provided mathematics instruction during elective courses, and offered training and support beyond regular hours. One of the EMTs articulated the following:

"... Due to time constraints, ...we strive to complete the subjects in the mathematics applications lesson if provided as an elective rather than the mathematics lesson. We may claim that we provide extra lessons, conduct studies outside of regular class hours, and organize a course if we can gather enough students. We are striving to resolve it by offering more assistance in this manner..." (M7)

EMTs recommended increasing lesson duration for more practice and refining content distribution across grades. They suggested revisiting geometry topics in more detail during the 7th grade and emphasized that mastery of one subject must precede moving to another. Additionally, they highlighted the importance of fostering a love for mathematics, raising family awareness about reading habits, and creating clubs in science, drama, and effective speaking to cater to learners' needs. One of the EMTs proposed the following:

'... I feel that parents should encourage their children to form the habit of regularly reading books. Although mathematics appears to be a quantitative subject, students who struggle to understand what they read or express themselves find it difficult to learn mathematics. Test results show that mathematics is the most difficult subject for them, so I feel they should be encouraged to read and write more. This would be especially beneficial if scientific groups were established... If only young children could learn through inquiry there... One of the skills children must acquire is technological literacy. It would be ideal if they obtained this skill too. Other skills include oratory and self-expression. If we involved children in theatre groups or effective speaking courses, they would be able to express themselves, their views and their concerns more effectively" (C10).

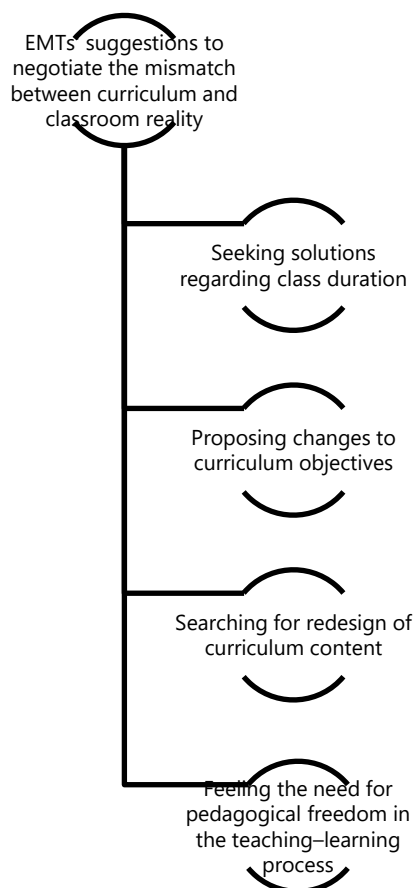
Elementary Mathematics Teachers' Suggestions to Negotiate the Mismatch between Curriculum and Classroom Reality

EMTs' suggestions to address the 2018 7-MC mismatch with classroom reality revolved around four sub-themes: 'seeking solutions regarding class duration', 'proposing changes to

curriculum objectives', 'searching for redesign of curriculum content' and 'feeling the need for pedagogical freedom in the teaching–learning process'. Figure 4 displays these four sub-themes.

Figure 4

EMTs' Suggestions to Negotiate the Mismatch between Curriculum and Classroom Reality



Seeking Solutions Regarding Class Duration

EMTs expressed concerns that the current lesson duration is inadequate to align with students' readiness levels, leading to time pressure and anxiety during topic review. They believe that extending lesson time is essential for timely curriculum completion. One of the EMTs reflected on the following:

"... I would simplify it a little since it is five hours of mathematics in most schools. Some schools combine a two-hour mathematics applications lesson with a five-hour mathematics lesson. [But, some do not]. These disparities across schools are really bothersome. So, in my view, if all schools had seven hours, everything would be perfect, and if only one teacher taught for 7 hours, it would be fantastic; this program would be completed on time ..." (M3).

Proposing Changes to Curriculum Objectives

EMTs identified that certain mathematical objectives were unsuitable for 7th graders since they could be achieved in the 6th grade. Consequently, they sought to align the curriculum with students' readiness levels by suggesting solutions such as shifting these objectives to the 6th grade, teaching them at the beginning of the term, or eliminating them from the

curriculum entirely. One of the EMTs suggested the following: “... *Because the appearance of objects from different sides is not appropriate for the 7th grade level, we may move it to lower grades or remove it entirely from the curriculum. I would simplify [the curriculum]...*” (C3).

Searching for Redesign of Curriculum Content

EMTs explored modifications to the 7-MC content to better align with students’ readiness and learning needs. Proposed changes included integrating 8th grade square roots into the curriculum, prioritizing algebra over geometry, providing more detailed problem explanations, starting with triangles in geometry instead of quadrilaterals, and removing the data analysis topic entirely. One of the EMTs stated the following:

“If I were to alter it, I would start with the remainder of this algebra part. I would want to go into further depth regarding the mathematical problems. Within the geometry section, I would rather start with triangles than quadrilaterals. I would completely eliminate the data analysis part because there are three key components, each of which is separate from the others” (C4).

Some teachers advocated for curriculum changes, suggesting the reintroduction of removed content and a focus on experiential learning to enhance skills like logic and reasoning. The renewed 2024 7-MC emphasizes mathematical problem-solving, reasoning, and representation, while the use of mathematical tools and technology receives less focus. But, at the 7th grade level, the themes of Transformation, Geometric Shapes, and Probability from Data do not include any field skills (Kiryak et al., 2024).

Feeling the Need for Pedagogical Freedom in the Teaching–Learning Process

EMTs faced limitations in implementing the curriculum, which restricted teachers’ flexibility in adapting their teaching to students’ needs. This environment fostered a demand among teachers for a more flexible and free teaching-learning process to alleviate their sense of restriction. One of the EMTs shared the following:

“... It needs to give teachers more freedom. I feel that teaching should be left to the teachers. ‘You can teach rational numbers on a number line or integers with number stamps’. There is no reason to squeeze so many teachers into a single mould. I already know how to teach those students. I also design activities for my pupils. I use teaching strategies that are relevant to their understanding and learning styles. The curriculum is necessary, but it can make you feel restricted when it forces you to teach in a certain way. There should also be fewer obvious trends in the curriculum because our educational system, students and dynamics are all so diverse. I believe that teachers need a little more flexibility” (M9).

Discussion

Elementary Mathematics Teachers’ Perceptions of the National Curriculum

EMTs may view that modernizing the curriculum involves incorporating technology and contemporary teaching methods, alongside enhancing international assessment outcomes. EMTs may have been influenced by Türkiye’s ranking of 20th out of 39 countries in the 2019 TIMSS, with an average score of 496 for 8th grade mathematics, reflecting an improvement from previous years (MoNE, 2020b). The curriculum’s impact over time reflects its adherence

to contemporary changes, as indicated by future international assessment outcomes. Compliance is influenced by the employed strategies and student characteristics. Ultimately, the curriculum's misalignment with modern developments stems from insufficient school resources and a lack of skill-based focus, compounded by infrastructure issues like outdated technological support. As noted by Kızılışık Sambur (2021), mathematics teachers utilized smart boards to solve more questions efficiently, saving time and leveraging the Internet for resources. However, challenges in integrating technology into teaching arose from issues related to the Internet, school infrastructure, hardware capabilities, and a lack of technological proficiency among teachers. This raises questions about how to align the curriculum with contemporary changes and developments, considering the variability in school facilities, teacher competencies, and student characteristics.

In relation to the perception that the curriculum is ineffective in producing the desired individual, Susar Kırmızı and Yurdakal (2019) also found a similar result for the 2018 Turkish language curriculum. They determined that the curriculum was inadequate for preparing individuals to address contemporary demands. Some objectives of the 7-MC aim to raise individuals' capabilities for practical knowledge application. The curriculum outlines a robust desired profile, yet there are concerns that EMTs might misunderstand its objectives. The degree to which this ideal profile can be developed is debatable, influenced by various factors such as students, teachers, materials, objectives, content, implementation, national exams, and overcrowded classrooms. Consequently, the practical cultivation of this profile is considered weak, despite the strong description provided by the curriculum.

Şengül et al. (2021) found that the fundamental philosophy of the 2018 mathematics curriculum was not clearly defined, highlighting the unclear philosophy of the 7-MC. Clear articulation of the philosophy behind the mathematics curriculum is essential to guide stakeholders effectively. The study revealed that nearly all EMTs did not understand the 7-MC's philosophy, which was not explicitly stated.

EMTs find the curriculum's goals to be clear and achievable, yet they question whether these goals can be met through student behaviors and values. The curriculum aims focus on cognitive and affective skills, suggesting that teachers, students, and the curriculum can effectively meet these aims. However, any deficiencies in these areas may hinder overall achievement. This raises critical questions about incorporating psychomotor development into the curriculum to enhance students' overall growth. The CTEM philosophy, effective from the 2024–25 academic year, focuses on the 'holistic development' of students, encompassing their academic, social, emotional, and intellectual growth (Akbulut & Yavuz Mumcu, 2024).

Despite clearly stated root values in the 7-MC changed in 2018 (MoNE, 2018), its structural limitations in teaching these values indicate potential grey areas in their integration into mathematics teaching. To teach root values in mathematics, it is essential to address the hidden curriculum, which may not be fully internalized by teachers due to its unwritten nature. Consequently, teachers often seek a formal curriculum. Therefore, it is necessary to incorporate activities that merge values with objectives in the 7-MC framework. Bilgili (2021) identified that the challenges in teaching root values stem from insufficient guidance on integrating these values into activities, despite their inclusion in the curriculum. The perception among EMTs regarding the curriculum's ineffectiveness in teaching root values may be linked to the quality of teacher education. Yılmaz (2017) found that education

faculties lacked awareness of professional values and ethical principles, neglecting important values like 'love, peace, brotherhood, kindness, cooperation, diligence and honesty'. Consequently, newly qualified teachers may also overlook these foundational values as they were not emphasized during their education.

The research reveals that many competencies in the mathematics curriculum are not teachable due to a lack of guidance for teachers on their instruction. This finding aligns with Özdaş's (2019) study, which attributed issues in teaching curriculum competencies to factors including learners, teachers, families, the social environment, and the education system. Çelikel (2022) discovered that teachers identified low student readiness and motivation, along with the national transition exam, as challenges in enhancing students' mathematical competence, particularly in the adaptive reasoning aspect. In 2024, the mathematics curriculum adopts a skills-based approach that highlights both 'what' and 'how' of student learning, moving away from overly general competencies like 'mathematical competence' (Akbulut & Yavuz Mumcu, 2024).

The 7-MC objectives were considered structurally appropriate but pedagogically limited. Gülbay (2021) found that the middle school mathematics curriculum objectives were clear and understandable to almost all teachers. Karakoç (2019) found that most EMTs viewed the simplification of objectives favorably for student relevance and time management, despite some concerns about students being less well-equipped and learning less. The analysis of curriculum objectives using the RBT is supported by existing literature. Çelik et al. (2018) discovered that most objectives align with the conceptual and procedural knowledge dimensions, as well as the understanding and applying levels. The renewed 2024 7-MC includes learning outcomes such as 'being able to reason about proofs related to numbers and their properties' and 'being able to structure processes involving basic arithmetic and algebraic operations using algorithmic expression methods' (Kıryak et al., 2024). Yılmaz (2017) found that affective and psychomotor skills are overlooked in teacher education programs, leading to concerns about teachers' ability to teach these skills effectively. This neglect is likely to diminish teachers' competencies and ultimately impact their students.

Taking into account the perceived adequacy and limitations of the curriculum content, EMTs expressed that the 7-MC is important for future learning. They noted it remains dense despite simplification, requires further simplification, reduces class participation, and lacks sufficient time for them to keep pace with the curriculum. Correspondingly, Taş (2020) also revealed that the content related to more than half of the objectives in the 7-MC content was difficult. Kıryak et al. (2024) observed that the learning objective of identifying and applying number patterns to solve problems, part of the 2018 curriculum, has been retained in the revised 2024 mathematics curriculum for 5th and 6th grades. They noted that 'conservation of equality', initially included in the 2018 'equality and equations' section of the 7-MC, is now present in the 2024 5th grade curriculum. However, objectives concerning properties of regular polygons were excluded from the revised 2024 7-MC. The 2024 CTEM has restructured the 2018 middle school mathematics curriculum from five 'learning areas' into seven detailed 'themes' (Akbulut & Yavuz Mumcu, 2024).

This research indicates that the gap between official and implemented curricula is intensified by classroom realities. Tensions arise from student characteristics, teachers' implementation strategies, time allocated for mathematics, curriculum content, and national

exam pressures. The findings suggest that the teaching-learning process is influenced by factors relating to students, teachers, the curriculum, and the education system.

The study investigates the gap between curriculum expectations and actual practices in measurement and assessment, revealing that EMTs prefer traditional methods, as corroborated by Gülbay (2021). Karagöz (2021) found that EMTs believed that the measurement and assessment activities in the 6th grade mathematics curriculum aligned with the objectives, noting that traditional assessment tools were applicable, whereas contemporary tools were not suitable due to regional differences and overcrowded classrooms. Özcan and Delil (2018) determined that revisions to mathematics curricula were not evident in teachers' assessments, and teachers failed to evaluate the curricula at the expected depth. EMTs reported that the updated curriculum's emphasis on accounting for individual differences in measurement and assessment was not reflected in practice. They noted a reliance on paper-and-pencil tests for all students and indicated that only cognitive aspects were measured, neglecting students' affective characteristics and psychomotor skills.

Elementary Mathematics Teachers' Experiences with the Implemented Curriculum

EMTs adjusted their lesson plans to accommodate students' levels by utilizing a range of printed and technological resources, indicating their intention to incorporate variety. This approach aligns with existing literature, as demonstrated by Yiğit Koyunkaya and Tataroğlu Taşdan (2019), who noted that prospective mathematics teachers also considered diverse technologies and tools in their lesson planning.

EMTs adapt their teaching methods based on contextual and situational factors that affect the teaching and learning process. Gülbay (2021) found that EMTs primarily employed traditional, teacher-centered methods like expository teaching and lectures in middle school mathematics, largely influenced by class size and the national transition exam. Anılan and Sarier (2008) found that teachers favored cooperative learning, discovery teaching, lecture, and problem-solving methods when implementing the 6th-grade mathematics curriculum. EMTs should evaluate the subject matter, school and classroom environment, class size, lesson length, student readiness, and curriculum approach to determine the most effective teaching method.

Tension exists between potential and constraint in instructional materials, highlighting the need for material support in middle school mathematics curriculum implementation, as emphasized by Uşun and Karagöz (2009). Inadequate access to instructional materials for mathematics is a significant issue in the current curriculum implementation, varying by school facilities. To ensure effective curriculum delivery, equitable access to these materials is essential.

EMTs experienced challenges due to their students' poor level of preparation and insufficient study and homework. Gülbay (2021) found that most EMTs viewed 'students' as the primary source of challenges in curriculum implementation, attributing issues to factors like parents, prejudices, opportunities, the national transition exam, the curriculum, and teachers. Dağdelen and Ünal (2017) compared middle school students' and teachers' perspectives on challenges in mathematics teaching and learning. Both groups identified the teachers, students, instructional materials, learning environment, and curriculum as sources of problems. The study indicated that tensions primarily originated from students, who exhibited high prejudice and low readiness levels. Students' readiness levels should be

assessed beforehand, and a remedial curriculum should be applied to address learning gaps and enhance prior knowledge.

Karakoç (2019) identified limited time as a significant challenge faced during 7th grade mathematics lessons. Dağdelen and Ünal (2017) identified that EMTs suggest aligning the curriculum with class hours as a solution, a stance supported by literature addressing curriculum-related challenges. Karakoç (2019) reported that most EMTs attributed issues to the curriculum, while Gülbay (2021) highlighted that the objectives in the 7-MC did not align with learner needs or the national transition exam. Despite EMTs' misperceptions about the geometry and measurement learning area, Erdoğan and Elmas (2018) found that students struggled to learn geometric structures and concepts meaningfully. The significance of using mathematical models in the objectives and explanations of the geometry learning area was emphasized in the 7-MC. A review of literature indicates that difficulties in teaching geometry stem from both the curriculum and teachers' perceptions, potentially affecting students' learning experiences. Notably, the renewed 2024 7-MC introduces geometric transformations and solids, which were absent in the 2018 7-MC. Additionally, the identification of the median, angle bisector, and altitude of a triangle has shifted from an 8th grade to a 7th grade learning objective, while the relationship between the central angle and arc length has been removed from the 2018 curriculum and included in the 2024 version. Learning objectives for geometric solids and rectangular prisms, including surface area, volume, and unit volume, have been consolidated into the 2024 7-MC, previously spread across Grades 5 and 6 (Kiryak et al., 2024).

Elementary Mathematics Teachers' Suggestions to Negotiate the Mismatch between Curriculum and Classroom Reality

Current research indicates that EMTs seek longer class durations to enhance student learning. Gülbay (2021) indicated that EMTs recommended increasing lesson hours from five to seven per week for greater appropriateness. Responding to teachers' requests for a redesign of the 7-MC content, Gülbay (2021) reported that EMTs suggested updating the middle school mathematics curriculum to simplify its objectives. The study found that EMTs recommend changes to the curriculum objectives. Karakoç (2019) indicated that EMTs preferred a simpler middle school mathematics curriculum with deeper objectives. The renewed 2024 7-MC increased learning objectives from 48 to 139, while reducing lesson hours per objective from four to one, indicating a denser curriculum that requires faster implementation (Akbulut & Yavuz Mumcu, 2024). EMTs acknowledged the importance of pedagogical freedom in teaching but did not seek to reconcile the measurement and assessment aspects of both ideal and actual curricula.

Conclusion and Implications

The study identified three key themes from qualitative data: (1) "EMTs' perceptions of the national curriculum", (2) "EMTs' experiences with the implemented curriculum", and (3) "EMTs' suggestions to negotiate the mismatch between curriculum and classroom reality". The study found that the 7-MC's adaptation to modernity relies heavily on the teacher's implementation. While it has a strong individual profile, its practical cultivation is weak. Philosophically, it appears unclear and pragmatically focused. Student behaviors and values question goal attainment, and the teaching of values in mathematics faces structural limitations. Competencies are isolated from objectives, and although the 7-MC's objectives

are structurally suitable, they are pedagogically limited. The 7-MC content is deemed adequate, though it has certain limitations. There is a noticeable divergence between curriculum ideals and the realities of classroom teaching, alongside discrepancies between curriculum expectations and assessment practices. The lesson planning process entails adapting pre-existing plans to fit students' readiness levels, necessitating context-sensitive teaching methodologies. It highlights the tension between the innovation potential of instructional materials and their constraints, as well as the challenges faced by EMTs in curriculum implementation and their devised solutions. EMTs are negotiating issues between the 7-MC framework and classroom realities, focusing on class duration, curriculum objectives, content redesign, and the importance of pedagogical freedom.

In light of the findings, implications for practice are presented.

1. The curriculum objectives should be qualitatively simplified and refined, with more detailed explanations provided.
2. The 7-MC curriculum can be improved by moving some content to the 6th grade mathematics curriculum, which would enable EMTs to connect topics to everyday life and conduct activities.
3. EMTs should be encouraged to develop lesson plans utilizing diverse resources rather than relying on pre-made plans. Mathematics lessons should be extended for practice using constructivist methods, simplifying content, and avoiding test-centric instruction. Schools should ensure equitable access to instructional materials and provide EMTs flexibility in curriculum implementation. A positive approach towards students is essential, respecting their opinions while guiding them to meet curriculum aims. EMTs can choose suitable teaching strategies based on various factors including subject matter, curriculum approach, classroom conditions, class size, lesson duration, and student readiness.
4. EMTs should engage in product- and process-based assessment alongside measurement-assessment tools that cater to individual differences, evaluating cognitive, affective, and psychomotor objectives rather than solely relying on result- and test-oriented assessments.

Curriculum development should be research-based as it leads to (a) more effective materials, (b) deeper insights into students' mathematical thinking, and (c) informed changes to the mathematics curriculum (Clements et al., 1997 cited in Clements, 2008; Schoenfeld, 1999 cited in Clements, 2008). Hence, the following implications are made for further research:

1. Research on the 7th grade mathematics curriculum could be extended to include 5th, 6th, and 8th grade curricula.
2. Research could not assess the implementation of the 7-MC curriculum in middle schools due to pandemic-related data collection constraints. Future studies should utilize a curriculum evaluation model to accurately judge its educational value.
3. Data were collected from EMTs who implemented the 7-MC, and future studies may also involve middle school students.

This research aims to enhance the curriculum literacy of in-service and pre-service EMTs by highlighting the strengths and weaknesses of the 2018 7-MC, facilitating its effective

implementation. The impact of these findings will rely on their integration into in-service training for EMTs and the elementary mathematics teacher education program.

Declarations

Author Contributions

Derya Uyar: Conceptualization, methodology, data collection, data analysis, interpretation, writing the draft.

Koray Kasapoğlu: Conceptualization, methodology, data analysis, interpretation, writing and editing the final version.

Conflict of Interest

The authors declare no competing interests with other person(s), organization(s), or institution(s).

Disclosure of Artificial Intelligence (AI) Use

We did not use AI or GenAI in writing/preparing any part of the manuscript such as the literature review, data analysis, or interpretation of results.

Availability of Data and Materials

The datasets generated and/or analyzed during the current study are not publicly available due to ethical and confidentiality restrictions but are available from the corresponding author upon reasonable request.

Prior Dissemination

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Ethics Committee Approval

This study was approved by Afyon Kocatepe University Board of Scientific Research and Publication Ethics (Date: February 6, 2020, Number: 2020/14). All procedures in this study were conducted in accordance with Afyon Kocatepe University Institutional Review Board's approved protocols. Written informed consent was obtained from the participants for their participation as well as anonymized information to be published in this article.

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TÜRKÇE GENİŞ ÖZET

7. Sınıf Matematik Dersi Öğretim Programının 2018 Güncellemesine İlişkin İlköğretim Matematik Öğretmenlerinin Algıları ve Yaşadıkları Deneyimler

Giriş

Türkiye'deki öğrencilerin matematik başarılarının ulusal ve uluslararası değerlendirme çalışmalarında belirlenen standartlara ulaşamaması nedeniyle ilköğretim, ortaokul ve lise matematik öğretim programları 2005 yılından itibaren güncellenmektedir (Kırnap Dönmez ve Dede, 2020). Evirgen ve Yıldız İkikardeş (2019) 2005'te güncellenen 7. sınıf matematik dersi öğretim programında öğrencilerin en çok zorlandıkları konuların denklemler, permütasyonlar, faiz ve yüzde hesaplamaları ve dik dairesel silindirin hacmi olduğunu tespit etmiştir. Bu konular, soyut yapıları, konuyla ilgisi olmayan materyaller, zaman kısıtlamaları, öğrencilerin düşük düzeydeki hazırbulunuşlukları, öğretmen ve kullanılan öğretim stratejileri nedeniyle zor olarak değerlendirilmiştir. Bu nedenle 2018 yılında ilköğretim ve ortaokul (1-8. sınıflar) matematik dersi öğretim programında Milli Eğitim Bakanlığı (MEB) tarafından değişiklikler gerçekleştirilmiştir (MEB, 2018). 2018 yılındaki matematik dersi öğretim programı değişikliğinden bu yana çok sayıda çalışma (Ajao ve Awofala, 2022; Altun Yaşar, 2024; Byrne ve Prendergast, 2020) yapılmıştır.

Bu açıdan söz konusu matematik programı reformunun talepleri karşılayıp karşılamadığını veya konuyla ilgili öğretmenlerin kaygısını giderip gidermediğini belirlemek için 7. sınıf matematik dersi öğretim programını ilköğretim matematik öğretmenlerinin bakış açısıyla incelenmiştir. Bu çalışmanın amacı, ilköğretim matematik öğretmenlerinin 7. sınıf matematik dersi öğretim programının 2018 yılında yapılan güncellemesine ilişkin algılarını ve deneyimlerini incelemektir. İlgili literatüre (Moustakas, 1994) uygun olarak formüle edilen bu çalışmanın araştırma sorusu, "2018 7. sınıf matematik dersi öğretim programı güncellemesi, ilköğretim matematik öğretmenlerinin bakış açısından nasıl deneyimlenmektedir?" şeklindedir.

Yöntem

Nitel araştırma yöntemiyle tasarlanan bu araştırma, fenomenoloji (olgubilim) desenine sahiptir. Olgubilim çalışmalarında, katılımcıların görüşleri alınır ve bir olguya ilişkin deneyimleri ortaya çıkarılmaya çalışılır (Creswell vd., 2007). Ölçüt örnekleme yöntemi kullanılarak seçilen çalışma grubu, matematik eğitimi ve/veya eğitim programları ve öğretim alanlarında yüksek lisans ve/veya doktora yapmış, Afyonkarahisar ilindeki ortaokullarda görev yapan 24 ilköğretim matematik öğretmeninden oluşmaktadır.

Veriler, ilköğretim matematik öğretmenleri ile yapılan yarı yapılandırılmış bireysel görüşmeler yoluyla toplanmıştır. Doküman analizi için <https://mufredat.meb.gov.tr> adresinden erişilebilen 7. sınıf matematik dersi öğretim programı (MEB, 2018) kullanılmıştır. Programın amaçları revize edilmiş Bloom taksonomisi (RBT) çerçevesinde incelenmiştir. Verilerin toplanması için Afyon Kocatepe Üniversitesi Bilimsel Araştırma ve Yayın Etiği Kurulu'ndan (Tarih: 06.02.2020, Sayı: 2020/14) ve Afyonkarahisar İl Milli Eğitim Müdürlüğü'nden gerekli izinler alınmıştır. COVID-19 pandemisi nedeniyle tüm görüşmeler, Nisan 2020 ile Haziran 2021 tarihleri arasında telefonla gerçekleştirilmiştir. İlköğretim matematik öğretmenleriyle yapılan görüşmeler ortalama 22 dakika sürmüştür. Görüşme verileri içerik analizine tabi tutulurken 2018 yılında güncellenen 7. sınıf matematik dersi öğretim programından elde edilen veriler betimsel analiz tekniği ile incelenmiştir.

Bulgular

Araştırmada toplanan nitel verilerden üç tema ortaya çıkmıştır: (1) öğretmenlerin resmî programa ilişkin algıları, (2) öğretmenlerin uygulamadaki program ile ilgili deneyimleri ve (3) öğretmenlerin program ile sınıf gerçekliği arasındaki uyumsuzluğu gidermeye yönelik önerileri.

Öğretmenler, 2018 yılında güncellenen 7. sınıf matematik dersi öğretim programının kazanımlarını yapısal olarak uygun fakat pedagojik olarak sınırlı şeklinde değerlendirmişlerdir. Programın içeriğini de belirli sınırlamalarla birlikte yeterli görmüşlerdir. Programın idealleri ile sınıftaki öğretme-öğrenme sürecinin gerçekliği arasında bir uyumsuzluk olduğunu, program beklentileri ile ölçme ve değerlendirme uygulamaları arasında bir farklılık olduğunu deneyimlemiştir.

İlköğretim matematik öğretmenlerinin ders planlama süreci, öğrencilerin düzeyine uyarlanmış hazır planların kullanımını içermektedir. Öğretim yaklaşımları bağlamsal ve durumsal bir şekilde belirlenmektedir. Öğretim materyallerinin potansiyeli ve kısıtlamaları arasında bir gerilim mevcuttur. İlköğretim matematik öğretmenleri, programı uygularken süre, içerik ve öğrencilerden kaynaklanan üç ana zorlukla karşılaşmaktadır. Öğretmenler, öğretim programı ile sınıf gerçekliği arasındaki uyumsuzluğu gidermeye yönelik ders süresinin artırılması, programın kazanımlarında düzenleme yapılması, programın içeriğinin yeniden tasarlanması ve öğretimde pedagojik özgürlüğe duyulan ihtiyacın karşılanması gibi bir dizi deneyimsel öneride bulunmuşlardır.

Tartışma, Sonuç ve Öneriler

Araştırma sonuçları; öğretmenlerin 7. sınıf matematik dersi öğretim programına ilişkin algılarının programın genel perspektifi ile temel öğeleri (hedef, içerik, süreç ve değerlendirme) üzerinde yoğunlaştığını göstermektedir. Buna karşın uygulamadaki programa dair deneyimlerin ders planlama, öğretme-öğrenme süreci, materyal kullanımı ve uygulama sürecinde yaşanan sorunlar ile çözüm yollarına odaklandığı saptanmıştır. Program ile sınıf gerçekliği arasındaki uyumsuzluğun giderilmesine yönelik öğretmen önerilerinin ise ders süresi, hedefler, içerik ve öğrenme-öğretme süreci ekseninde şekillendiği söylenebilir.

Araştırmanın sonuçlarından hareketle programın kazanımları niteliksel açıdan sadeleştirilebilir ve hafifletilebilir. Ayrıca, kazanımlar ile ilgili açıklamalar daha fazla detaylandırılabilir. Yedinci sınıf matematik dersi öğretim programının içeriği, özellikle 6. sınıfa aktararak sadeleştirilebilir ve hafifletilebilir. Programın eğitim durumlarının etkinliği için ders

süresinin uygulama odaklı bir yaklaşımla artırılması gerektiği düşünülmektedir. Ayrıca, oluşturma yaklaşımının işlevsel kılınabilmesi amacıyla program içeriğinin sadeleştirilmesi ve öğretim sürecinin sınav (test) odaklı yapıdan arındırılarak süreç temelli bir niteliğe kavuşturulması önerilmektedir. Öğretim programının ölçme-değerlendirme boyutuna yönelik olarak öğretmenlerin sonuç odaklı (ürün) ve süreç temelli değerlendirme yaklaşımlarını eşgüdümlü kullanmaları teşvik edilmelidir. Bu kapsamda bireysel farklılıkları gözetken tamamlayıcı ölçme araçlarının sürece dahil edilmesi, değerlendirmenin yalnızca bilişsel alanla sınırlı kalmayıp duyuşsal ve psikomotor kazanımları da kapsayacak şekilde çok boyutlu bir yapıya kavuşturulması önem arz etmektedir.

Benzer bir araştırma, 5, 6 ve 8. sınıf matematik dersi öğretim programları için tekrarlanabilir. Gelecek araştırmalarda söz konusu öğretim programı, bir program değerlendirme modeli kullanılarak değerlendirilebilir, programın eğitsel değeri hakkında daha sağlıklı bir yargıya varılabilir. Bu araştırmada veriler, öğretim programının uygulanmasına yönelik deneyimlerini elde edebilmek adına 7. sınıf matematik dersi öğretim programını uygulayan ilköğretim matematik öğretmenlerinden toplanmıştır. Gelecek araştırmalarda veriler, ortaokul öğrencilerinden de toplanabilir.

Inclusive Online Learning for Students with Disabilities in Higher Education: A Needs Assessment

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Abstract

The COVID-19 pandemic accelerated the adoption of online education, highlighting its essential role in learning continuity. However, insufficient integration of information and communication technology (ICT) skills into pre-service and in-service teacher training programs left many educators underprepared for the transition to online teaching. This lack of readiness, coupled with insufficient attention to inclusive education, created a snowball effect during the pandemic, affecting overburdened teachers and students with disabilities. To this end, this study aims to better understand the unique needs of preparatory school instructors and inform the development of targeted training programs that will prepare instructors to address the challenges of online instruction with a focus on students with disabilities. Using a qualitative descriptive research design, we conducted individual, in-depth, semi-structured interviews with two key informants and six academics who were instructors at the Foreign Language School of two foundation universities in Ankara. Based on the data collected, we explored the instructors' perceptions and needs utilizing thematic analysis across three main themes: conceptions of inclusive education, identifying students' disability status and needs, and adjustments in teaching and learning. Finally, implications and suggestions regarding higher education policies and professional development of instructors and future research are discussed.

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Introduction

The COVID-19 pandemic marked a significant shift in education by accelerating the adoption of online education and emphasizing its critical role in maintaining learning continuity on a large scale. While this transition highlighted the advantages of technology, it also exposed ongoing challenges in online learning environments such as the inclusion of students with disabilities in higher education. Inclusion is a key outcome of the broader human rights movement, which seeks equality for all, regardless of color, gender, socioeconomic status, or disability (Paseka & Schwab, 2020).

As at other educational levels, higher education worldwide has seen an increase in the number of university students with various disabilities, prompting significant changes to support inclusive educational practices (Moriña & Perera, 2020; UNESCO & Right to Education Initiative, 2022). For example, in the United Kingdom, the number of students with disabilities enrolled in higher education increased by 47% between 2014-2019, while in the United States, the estimated proportion of college students reporting a disability increased from 11% in 2004 to 21% in 2020 (UNESCO & Right to Education Initiative, 2022; U.S. Government Accountability Office, 2024). Access to higher education is essential for students with disabilities to develop their talents, socio-emotional skills, and educational opportunities (Fuller et al., 2004; Hurst, 1996). Accordingly, universities are gradually adopting inclusive practices to make higher education more accessible (Barnes, 2007; Riddell & Weedon, 2014). Besides, online education has expanded access by removing time and location barriers, though challenges such as limited access to tools persist (Altunoğlu, 2020).

Individuals' right to education is perceived as sacred and universal, and it is protected by both national and international legislations including the 1948 Universal Declaration of Human Rights and the 2006 UN Convention on the Rights of Persons with Disabilities (CRPD), which Türkiye also ratified. These agreements emphasize non-discrimination and obligate signatory countries to secure the right to education and equal access to education. Moreover, they highlight the necessity of educational programs that raise awareness of disability rights (Kurt et al., 2016; Sart et al., 2016). Türkiye's legislative framework, the 2005 *Engelliler Hakkında Kanun* (Disability Act, Law No. 5378), aligns with these international standards to support inclusive education (Sart et al., 2016).

Although these legal frameworks recognize education as a fundamental right, they do not adequately address the practical emergence of barriers to participation in higher education. In this regard, the social model of disability provides a framework for analyzing the influence of institutional structures and learning environments on access and inclusion. This study is informed by Oliver's (1990) social model of disability, which states that disability primarily arises from environmental, institutional, and social barriers rather than from individual limitations. We use this model as a lens for identifying and reducing barriers embedded in institutional arrangements and learning design, rather than as a claim that impairment effects or differences in students' opportunities to participate are irrelevant as mentioned by Oliver (2013) and Terzi (2004). In accordance with Shakespeare (2013), we recognize that participation in online learning is shaped by the interaction between individual support needs and environmental conditions, while still foregrounding the removal of socially produced barriers. In online higher education, barriers commonly arise through the accessibility of e-learning materials and resources and the practices of multiple stakeholders, including lecturers, learning technologists, and support services, with

implications for teaching and assessment arrangements (Seale, 2013). Consistent with this framing, we consider inclusion as participation in regular learning settings with adequate support (Saloviita, 2020), and we view curriculum and instruction as requiring proactive attention to learner diversity and awareness-building among educators and peers (Morgan & Houghton, 2011; Stentiford & Koutsouris, 2022). This perspective supports our needs assessment focus on identifying the conditions that hinder or support participation, and on translating these into professional learning and institutional support needs (see Bunbury, 2020).

Disability and Inclusion Practices in Türkiye

As in the rest of the world, disability in Türkiye emerges as a significant social issue that impacts individuals' lives in various ways. In Türkiye's education system, the promotion of inclusive education and the enhancement of awareness regarding the needs of individuals with disabilities are becoming increasingly important (Yazıcıoğlu, 2020). Despite the current endeavors, significant challenges persist for students with disabilities. These include insufficient vocational guidance, inadequate support during university admissions, and limited physical and digital accessibility on campuses (Mutanga & Walker, 2015; Piştav-Akmeşe, 2018; Sart et al., 2016). These challenges are not unique to Türkiye, but they reflect a broader global pattern that has encouraged international stakeholders to intervene at a systemic level. In this regard, the United Nations' digital inclusion strategy of 2020 provides a critical framework by emphasizing equitable access to digital technologies as a fundamental component of full and meaningful participation in education and broader society for individuals with disabilities (United Nations, 2020).

Although digital accessibility has gained importance, as highlighted in the United Nations' (2020) Disability Inclusion Strategy and UNESCO's (2021) Global Education Monitoring Report, online education may present challenges for students with disabilities, including inaccessible course materials, difficulties with navigation, and a lack of personalized support (Kent, 2015). Thus, limitations of accessibility tools like sign language interpretation and subtitles, as well as the inadequacy in modifying assessment procedures hinder online learning progress and prevent equal access to education (Council of Higher Education [CoHE], 2020a, 2020b; Dumitru, 2023), particularly for students who are already marginalized within traditional education systems. Nevertheless, Altunoğlu (2020) points out that the growth of online learning has created new opportunities to enhance accessibility without restrictions.

The pandemic underscored the critical role of internet accessibility in education. CoHE released recommendations on online accessibility in response to the World Bank's 2021 Report on Disability-Inclusive Education Post-COVID-19, which urged academic institutions to modify their digital platforms to accommodate students with disabilities (CoHE, 2020a, 2020b; World Bank, 2021). Furthermore, institutions are encouraged to give priority to digital, instructional, and physical accessibility through the CoHE's Barrier-Free University Awards (CoHE, 2025). While Türkiye has established legal frameworks aligned with international standards for accessible education, struggles continue to exist. Key obstacles (e.g., limited availability of assistive technologies and the absence of proactive, inclusive policies) still prevent students with disabilities from having fair access to higher education, especially in the areas of inclusive practices and digital education.

Studies reveal such persistent challenges (Bindhani & Gopinath, 2024) as inadequate resources, systemic barriers, and societal attitudes in addressing inclusivity issues in social and

academic contexts, as emphasis tends to be on physical rather than educational or socio-cultural aspects, attributed to insufficient consideration in program design (e.g., Koçak Tufan, 2021). The Association for the Visually Impaired in Education (Eğitimde Görme Engelliler Derneği, [EGED])¹ (2020) identifies challenges such as limited access to synchronous courses, course materials, and online exams, recommending accessible online platforms, instructional materials, and assessment procedures, as well as surveys to monitor the experiences of students with disabilities and inform academics.

Moreover, the CoHE's Students with Disabilities Commission² surveyed 195 universities, representing 48,159 students with disabilities. This survey aimed to assess support measures during the pandemic. Findings revealed limited adjustments in teaching and assessment, but over half of the universities implemented measures such as additional online meetings, accessibility training for lecturers, and psychosocial support through workshops and interviews (Koçak Tufan, 2021).

Although the pandemic has been declared over and educational institutions have returned to face-to-face learning, online education has solidified its place in the educational landscape, offering flexibility and diverse learning tools that continue to shape higher education. However, the challenges remain relevant, particularly for instructors and students with disabilities. In Türkiye, the lack of emphasis on ICT skills and the integration of technology teacher training programs left many teachers unprepared for a full transition to online teaching (OECD, 2020). This unpreparedness, as well as inadequate focus on inclusive education, triggered a snowball effect during the pandemic, placing a disproportionate burden on overworked instructors and students with disabilities who had already been marginalized by the system prior to entry to higher education.

In this context, instructors significantly influence how online education meets the needs of students with disabilities, and they are key to addressing the challenges of online education so that students with disabilities or learning difficulties are not excluded from the learning process and are effectively supported. This role becomes even more critical at the preparatory school level in Turkish universities, where instructors typically teach foundational English courses and are often among the first to engage with students upon their admission. To this end, they can identify learning needs early and implement inclusive practices at the very outset. Therefore, equipping these instructors with the necessary pedagogical and technological competencies is essential for fostering inclusive and accessible online education (Koçdar et al., 2018).

In spite of the recent emphasis on inclusive education and digital transformation in Türkiye, some important gaps still remain in the literature. First, while national and international studies have explored the general challenges of online education with foci on instruction (e.g., Akyol & Garrison, 2011), few have examined how preparatory school instructors in Turkish higher education institutions perceive and address the needs of students with disabilities (e.g., Moran, 2022). Second, existing research often focuses on either student experiences or institutional policies (EGED, 2020; Şahin İpek et al., 2020) leaving a critical gap in understanding instructors' preparedness, training needs, and perceptions, especially in the context of foreign language

¹The Association for the Visually Impaired in Education is officially abbreviated as EGED in Turkish which is the abbreviation used in the whole body of the document. Although this association focuses on one particular impairment group, their work and reports include university students from different disability groups, addressing the problems they experience in the distance education process and the solutions to these problems.

² The Commission has been called by different names throughout the years in Türkiye. This more globally used name is translated by the researchers thereof is used in the whole body of the document.

education. Moreover, although there have been recent efforts to promote accessible education through national initiatives, there is very limited empirical evidence to inform targeted professional development in this regard for preparatory school instructors. Finally, the intersection of online education, disability inclusion, and language teaching remains significantly under-researched in Türkiye.

With these gaps in mind, we conducted this study as part of a broader curriculum development. The study aimed to identify the specific needs of English preparatory school instructors working in online environments. More specifically, we sought to inform the design of targeted training programs that might support instructors in creating more inclusive, equitable, and effective learning experiences for all students, especially those with disabilities.

In this regard, we aimed to answer the following research questions:

1. What knowledge do English preparatory school instructors have of existing institutional policies and procedures related to supporting students with disabilities in online learning environments?
2. What do English preparatory school instructors need to enhance the online teaching, learning and evaluation procedures for students with disabilities?

Method

Needs assessments play a crucial role in curriculum design for identifying gaps and informing targeted interventions (Demirel, 2017; Peterson, 2003). This process requires instructional designers to determine the needs to be addressed through systematic and comprehensive information gathering (Peterson, 2003). As aforementioned, the primary aim of this study was to conduct a needs assessment to identify the specific needs of the preparatory school instructors.

Within this scope, the study was expected to inform the design of an online in-service training module for university-level instructors to optimize their online learning environments for students with disabilities. To achieve this aim, we employed a qualitative descriptive research design to explore the professional development needs of preparatory school instructors in supporting students with disabilities. The design was preferred because it enables a comprehensive description of participants' perspectives and experiences without imposing excessive interpretation (Cohen et al., 2018; Sandelowski, 2010). Individual, in-depth semi-structured interviews were conducted to explore instructors' awareness, knowledge, and practices related to supporting students with disabilities, as well as their perceived training needs.

Context of the Study

In Türkiye, students with disabilities form a visible part of the higher education student population. Yurdakul and Şahin-Demir (2024) report that in the 2023-2024 academic year, 57,921 students with disabilities are reported to be enrolled in higher education programs in Türkiye, including Associate, Bachelor, Master, and Doctorate levels. Given the increasing number of students with disabilities enrolled in Turkish higher education and the continuing need for more inclusive practices, this study focuses on preparatory school instructors, who are often among the first academic staff to work with these students.

Preparatory schools in Türkiye are standardized in curriculum and assessment. This standardization offers a unique opportunity to systematically identify and address the needs of

students with disabilities. The findings from this study aimed to inform the development of an online modular training program tailored to higher education-level English instructors, equipping them to create inclusive and effective online learning environments.

To situate this emphasis within the national framework of disability and inclusion, it is crucial to delineate the formal definitions of disability and accessibility within Türkiye's legislative context. In Türkiye, the term "person with disability" is defined in the Turkish Disability Act (Law No. 5378, 2005). This legislation outlines that an individual with a disability is one who encounters attitudes and environmental conditions limiting their active participation in social life, unlike those without disabilities. This condition is characterized by the loss of physical, mental, spiritual, and sensory abilities at varying levels (Law No. 5378, 2005). The same Act further defines "accessibility" as the condition whereby buildings, open spaces, transport, information services and information and communication technologies are designed so that persons with disabilities can use them safely and independently.

Participants

The needs assessment was carried out through interviews. Since in-depth interviews help identify the participants' perspectives on a phenomenon of interest (Patton, 1990), interviews were conducted with the potential audience of this program, namely, preparatory school instructors and key informants who have administrative roles in their institutions, to assess whether there is a need for such a training program. Therefore, a purposive sampling strategy was used to choose participants who could provide rich and pertinent information aligned with the aims of the needs assessment (Cohen et al., 2018).

This approach was regarded appropriate given the study's focus on exploring instructors' knowledge, practices, and training needs related to supporting students with disabilities. Participants were selected based on their professional roles as preparatory school instructors or as key informants with administrative responsibilities related to academic or student support services. This sampling strategy ensured alignment with the research questions, which aimed to identify both instructional practices and institutional perspectives relevant to the design of an in-service training program.

The participants of the study were recruited through direct contact by researchers via institutional email based on their roles. The potential participants were informed about the purpose of the study, and 8 returned a positive response to the emails sent. Thus, the sample consisted of two key informants who are supposed to provide information regarding the inclusive education policies and their application in departments of foreign languages in universities, namely academics with administrative duties and six academics who are preparatory school instructors at the Foreign Language School of two foundation universities in Ankara, Türkiye.

They have had between 4 and 16 years of experience in teaching. Among the participants, five held master's degree in English Language Teaching, Curriculum and Instruction, English Language and Literature, Human Resource Development in Education, and European Studies and International Relations. Three participants were still studying for their degrees in English Language Teaching or English Language and Literature at the time of the study.

Data Collection

As part of the needs assessment, a thorough literature review was conducted, and two separate semi-structured interview protocols were designed in an attempt to identify participants' knowledge and awareness of disability, regulations for students with disabilities, how to identify and report the needs of the students with disabilities, how to arrange/alter teaching-learning processes, and determine their further needs regarding these issues. The interview protocols were informed by the social model of disability, which foregrounds barriers embedded in institutional arrangements and learning design rather than locating difficulties solely within individuals. Accordingly, questions also prompted participants to describe conditions that hindered or supported students' participation in online learning and to reflect on institutional procedures and support for identifying needs and implementing adjustments.

The participants were informed via informed consent form addressing the purpose of the study and voluntary participation in the study. The interviews were carried out in June 2021 by two researchers using an online conference program (i.e., *Zoom*), and they were video recorded upon participants' consent. The interviews lasted between 20 and 38 minutes.

Data Analysis

All recordings were transcribed verbatim by the researchers, and the interview data were analyzed using thematic analysis (Patton, 1990). The social model of disability was used as a sensitizing lens during analysis to interpret patterns in terms of barriers and enabling conditions embedded in institutional arrangements and instructional design, particularly in relation to online teaching, learning, and assessment. The interviews were coded by the researchers. It consisted of several steps, namely the identification and reporting of patterns in a data set using codes and themes that aim to provide a systematic and justified interpretation of these observed patterns (Creswell, 2012).

At the initial stage of data analysis, three of the researchers got familiarized by reviewing the literature and reading the transcripts. The researchers generated initial codes with their operational definitions through peer discussions on potential codes and themes. They worked independently and coded all the transcripts. Then, they reviewed the coded transcripts section by section. In places where one researcher felt that the code could be revised or a new code could be introduced, the researchers discussed whether a new code was necessary or if an excerpt could be described by using the existing codes. Accordingly, some codes were added, redefined, and reworded through the process. Two researchers have examined all of the codes, the operational definitions and the notes taken by researchers during the coding process for later consideration, categorized them meaningfully and gathered the codes under the themes. After a peer debriefing on the final coding scheme, all researchers reached consensus on themes. Because all the discordant coding was resolved during the intercoder agreement process, no metrics were generated.

Trustworthiness

To ensure the trustworthiness of the qualitative findings, strategies addressing credibility, transferability, dependability, and confirmability were employed (Yıldırım & Şimşek, 2011). To ensure credibility, the researchers received expert opinions regarding the data collection instruments. Both instruments were sent to three experts, i.e., a research assistant working in the disability support office at a public university, a measurement and assessment specialist, and an academic specializing in the field of curriculum and instruction. The experts commented on the

clarity and content of the interview questions, and revisions were made by considering their suggestions and comments. Besides, peer debriefing was used during the data analysis process to enhance credibility by engaging in regular discussions to refine codes and themes and to reach consensus. Dependability was ensured through a systematic and transparent data analysis process. All interviews were transcribed verbatim, and multiple researchers independently took part in the coding process. Consensus was used to discuss and resolve discrepancies collaboratively (Guest et al., 2012). Confirmability was supported by maintaining detailed records of coding decisions, code definitions, and analytic memos throughout data analysis process. This allowed for an audit trail of methodological decisions. Finally, transferability was addressed by using a purposive sampling strategy and a thick description regarding the sampling, data collection, and data analysis procedures so that the applicability of the findings might be considered in similar contexts (Yıldırım & Şimşek, 2011).

Ethical Issues and Limitations

Ethical approval for the study was obtained from the Human Subjects Ethics Committee prior to data collection, under protocol number 266-ODTU-2021, dated 23.06.2021. Participants were informed about the details of the study including the purpose and the methodology, voluntary participation, and right to leave the interview without consequence through a written consent form. Confidentiality was ensured by anonymizing participants' identities. Any data obtained from participants were securely saved and accessed only by the researchers.

This study has several limitations that should be taken into consideration. Due to institutional constraints, limited sample representativeness, and time constraints, the generalizability of the findings is restricted to preparatory school instructors at the foreign language schools of two foundation universities in a single province. Therefore, the findings should be interpreted within the specific institutional and contextual boundaries of the study.

Second, the data were collected solely based on instructors' opinions and perceptions. As with most qualitative research, the findings may be influenced by individual biases, which may change over time and may be affected by subjective interpretations or social desirability bias. The absence of multiple data sources, such as student perspectives or observational data, may limit the transferability of the findings. Nevertheless, methodological rigor was ensured through systematic data analysis procedures, careful interpretation of the data, and transparent reporting of the research process. In line with the nature of qualitative research, these methodological constraints should be considered when interpreting the findings, as the study prioritizes depth of understanding and contextual insight over statistical generalization.

Third, the long-term applicability of the findings may be influenced by the rapidly evolving nature of online learning environments. Continuous changes in digital tools, instructional platforms, and institutional policies and practices may alter how inclusive online learning is implemented and experienced over time.

Results

The analysis of the semi-structured interviews with preparatory school instructors revealed that their perceptions and needs in meeting the needs of students with disabilities in their classes were categorized into three themes: *conceptions of inclusive education*, *identifying students' disability status and needs*, and *adjustments in teaching and learning* (see Figure 1).

Figure 1*Hierarchical Representation of Themes, Sub-themes, and Codes*

Theme 1 Conceptions of inclusive education		Theme 2 Identifying students' disability status and needs		Theme 3 Adjustments in teaching and learning		
<i>Inclusion</i>	<i>Disability</i>	<i>Policies and Practices</i>	<i>Support Services</i>	<i>Instructional considerations</i>	<i>Teacher attitudes</i>	<i>Assessment procedures</i>
Accessibility	Mental vs. physical limitation	Regulations	Psychological support	Instructional method	Positive attitudes	Individual assessment
Equal opportunity	Inborn vs. acquired	Institutional practices	Social support	Additional materials	Flexible attitudes	Enabling tool usage
Inclusive curriculum	Normal vs. abnormal	Needs assessment	Financial support	Technological aids/supports	Inflexible attitude	Adjusting the assessment materials
				Training students with disabilities for ICT		Providing additional time

Together, these themes capture both preparatory school instructors' understandings of disability and inclusion and the practical conditions that shaped their capacity to support students in online learning environments, including institutional procedures for identifying needs and course-level adjustments in teaching and assessment.

Conceptions of Inclusive Education

To begin with, conceptions of inclusive education, which were shaped by preparatory school instructors' knowledge background and preparedness of teaching students with disabilities, was one of the key themes. It consisted of two sub-themes, namely, inclusion and disability (see Table 1).

Table 1*Conceptions of Inclusive Education*

<i>Theme</i>	<i>Sub-theme</i>	<i>Codes</i>
Conceptions of inclusive education	Inclusion	Accessibility Equal opportunity Inclusive curriculum
	Disability	Mental vs. physical limitation Inborn vs. acquired Normal vs. abnormal

Regarding inclusion, the participants underlined the importance of providing equal opportunities for all students. However, some of the participants stated that inclusive education can only be appropriate for the students with disabilities who do not have mental disabilities. An excerpt from one of these participants is given below:

If the individual has a mental disability, it is a necessity that they have a different kind of education since they cannot have the same education and go through the same processes as others that we call normal individuals. However, people who have physical disabilities, such as visual and hearing impairments, can be in the same environment as those who do not have any disabilities. (P2)

On the other hand, it was evident that some participants felt some tension with the idea of an inclusive curriculum that addressed individual needs. This tension also reflects structural constraints that can limit the extent to which inclusive practices are feasible. As one participant put it: *"I think the program needs to be developed with the consideration of individual differences in mind. However, this seems to be rather utopian when we think of the classrooms of 25 to 30 students."* (P5)

One of the participants stated that he has difficulty in identifying the nature of disabilities and whether a situation can be characterized as a disability. In this regard, it was noted that mental or physical limitations, inborn or acquired, normal or abnormal were the terms that were highlighted in the attempts to define disability. To illustrate this, the interviewee expressed that: *"Disability is having a disability through inborn or acquired... is something a normal individual does but a disabled person cannot do."* (P1). On the other hand, another participant focused only on the physical disabilities or limitations, stating that: *"I see disability in a more physical sense, I can describe the state of being physically unable to perform certain activities within the integrity of the body."* (P4). In these accounts, disability was often described in individual terms, which left less attention to how teaching arrangements and institutional procedures might enable or restrict participation.

Identifying Students' Disability Status and Needs

Another theme that emerged was *identifying students' disability status and needs*, derived from instructors' responses about the challenges and advantages they encountered in their practices. This theme comprises two sub-themes: *policies and practices* and *support services* (see Table 2).

Table 2

Views on Identifying Students' Disability Status and Needs

<i>Theme</i>	<i>Sub-theme</i>	<i>Codes</i>
Identifying students' disability status and needs	Policies and Practices	Regulations Institutional practices Needs assessment
	Support Services	Psychological support Social support Financial support

The *policies and practices* sub-theme consists of three codes: regulations, institutional practices, and needs assessment. Regulations here refer to CoHE regulations, institutional regulations, and decisions regarding students with disabilities. It was found that some of the participants were not even aware of the presence of regulations, while others were aware of them but lacked knowledge of their content. While some of the participants expressed low self-efficacy regarding their knowledge of the regulations for students with disabilities, only one participant stated that they read the relevant CoHE regulations but had difficulty remembering the content (P1). In light of these findings, it appears that there is a need for instructors to receive information on all dimensions of the regulations.

The results also revealed that participants had limited information about institutional disability practices and were unsure where to access guidance. Some of the participants noted

that their main source of information was an email from the relevant unit, while others relied on what they had observed on campus. Overall, they described the process for identifying students with disabilities as unclear due to inconsistent communication regarding the roles and responsibilities across administrators, instructors, and support units. Therefore, several participants emphasized the need for training on disability types and on how to identify and respond to students' needs. One described the situation in their institution as follows: *"There is no specific training [on disability]. We do not have many things to identify their needs. We have found our way by trial and error and we move very slowly. We only take action on suspicions."* (P6)

In addition, participants reported that documentation of a student's disability status was largely handled through self-disclosure and, at times, teacher reporting. They described several barriers to identifying disability status and related needs such as unclear or inconsistently implemented institutional procedures, uncertainty about roles and responsibilities, and limited coordination between the institution and families. Participants also noted that stigma and shame surrounding disability could discourage disclosure and complicate communication with parents. Illustrating this point, one participant stated:

Rather than the students, the parents' attitude that has been developed over the years against this situation [documentation of disability status] is more important. Because parents have great concerns about this documentation, labeling and categorization can come back to haunt their children in their future professional lives after university. (P8, Key informant)

With regard to roles and responsibilities, it was observed that participants cannot provide clear definitions of their roles in the process of identifying students' disability status and needs. Therefore, they sometimes define their roles and responsibilities in smaller areas, such as mostly mentioning providing some tools and materials, or do not feel they have sufficient knowledge about the extent of their roles and responsibilities. However, all participants emphasized the importance of being informed about the students with disabilities and being in communication with administrators or other related units. Accordingly, some of the participants suggested some actions that need to be taken in order to improve institutional policies and practices, such as establishing a common understanding of disability practices, informing/guiding teachers about the needs of the students with disabilities and instructional procedures, and informing students to raise awareness about providing equal opportunities for students with disabilities.

Findings uncovered that needs assessment emerged as a recurring code in relation to identifying students' disability status through both administrative and teacher-led processes. Although participants highlighted needs assessment as an important step in addressing issues such as adjusting the teaching-learning environment and materials, limited examples of needs assessment methods were mentioned, such as questionnaires, surveys, and interviews.

Furthermore, under the theme of *identifying students' disability status and needs*, support services emerged as a sub-theme consisting of mentions for psychological support, social support, and financial support. It was found that the participants strongly emphasized the needs of the students with disabilities for additional support and individualized services considering the different types of disabilities. Even though the participants were able to give the general framework of the support, such as financial or social support, it was found that they

had difficulties, especially in the online learning process, to give specific examples of these kinds of support services that would be provided by institutions. For instance, one participant found it difficult to provide an example of social support for students with disabilities within the online teaching-learning process, explaining it with the following statements:

I mean, because it [the learning] is online, I do not know exactly what to do now in terms of the social aspect. If it were not online education, I would say orientation could be done to show the school. For now [during online learning], a special video can be presented related to the content of the course, but I do not know what to say. (P1)

Adjustments in Teaching and Learning

Adjustments in teaching and learning stood out as another major theme, consisting of three sub-themes: *instructional considerations*, *teacher attitudes*, and *assessment procedures* (see Table 3).

Table 3

Views on Adjustments in Teaching and Learning

Theme	Sub-theme	Codes
Adjustments in teaching and learning	Instructional considerations	Instructional method Additional materials Technological aids/supports Training students with disabilities for ICT
	Teacher attitudes	Positive attitudes Flexible attitudes Inflexible attitude
	Assessment procedures	Individual assessment Enabling tool usage Adjusting the assessment materials Providing additional time

In relation to the instructional considerations, it was seen that some of the participants were knowledgeable about how to address diverse needs in their practices (i.e., adjusting instructional methods, giving additional materials, providing technological aids/supports, and training students with disabilities for ICT), but in general, they expressed their low self-efficacy in terms of incorporating potential inclusive practices.

Most participants highlighted the need for providing additional materials and/or adjusting the materials used in teaching-learning processes and mentioned about their usage of some methods to make these changes depending on the type of disability. However, their mention of adjusting materials was limited to some common practices, such as using subtitles in videos for students with hearing impairments and using larger fonts for students with visual impairments. An excerpt from the interviews follows:

When I find out that there is a student with a disability in the classroom, I think the simplest and easiest thing to do is to organize the materials we use according to them. If it is a deaf student, it could be something like preparing a presentation and adding a subtitle or text to the same presentation. Or, if it is a visually impaired student, it may

be something like describing and explaining everything we reflect visually. This again depends on the type of disability. (P2)

One such participant also spelled out the importance of conducting needs analysis in order to identify these students' needs and to make adjustments accordingly: *"At the very beginning of the teaching-learning process, a needs analysis should be done in relation to the needs of all students."* (P3)

The findings also revealed that some of the participants were aware of some tools used by students with disabilities (e.g., screencast-o-matic and earphones) and believed that such students need technological aid/support. However, it was found that most of them could not name any specific tools that can be used in online teaching-learning processes. Moreover, there were incidents in which the participants were not even aware of the existence of such tools.

In addition to providing technological aids/support to the students with disabilities, one of the participants emphasized the importance and necessity of training the students with disabilities for ICT, stating that:

It may be necessary for universities to provide these programs for free, etc., but the most basic thing is their [students'] access and technical information on how to use them (...) Therefore, tutorials can be provided. Technical knowledge, maybe with applied lectures, small workshops, and so on, could be provided to increase their [students'] competence in this aspect and improve their self-confidence while using it. (P5)

In relation to the teacher attitudes sub-theme, it was accentuated that the responses were grouped under three codes, namely *positive attitudes*, *flexible attitudes*, and *inflexible attitudes*. The analysis revealed that some participants highlighted the significance of possessing positive attitudes towards students with disabilities. Similarly, some of the participants emphasized the need to have flexible attitudes towards students with disabilities so as to provide them with equal opportunities and ensure equal access. This mainly indicates providing some flexibility and space for their practices to satisfy the needs of students with disabilities. On the other hand, it was seen that some participants had inflexible attitudes towards students with disabilities, which indicates treating them in the same way as any other student. One of the participants explained the difficulty of meeting the needs of the students with disabilities in their teaching as follows:

In one of my classes, a student of mine was mentally disabled. Since there was no separate environment for the mentally handicapped in universities, I had to teach them together with other students without disabilities. (...) We had problems with participation in the class, we had problems with following the class rules (...). I wanted to apply the same rules to them, but neither they nor their family could make it possible. I couldn't create the environment that I wanted. (P2)

Moreover, the sub-theme of assessment procedures was grouped under four codes: individual assessment, allowing students to use tools, adjusting assessment materials, and providing extra time. In the interviews, the participants repeatedly expressed the significance of adjusting the assessment process. For instance, one participant emphasized the need for training on how to address different needs in assessment procedures, as seen in the following excerpt:

It seems to me that the type of disability actually shapes the learning methods and materials (...) Instead of entrusting the disabled to one of the instructors by saying you have 15 minutes of extra time, I think it is necessary to inform the instructor about the disability and what the students can and cannot do. (P7, Key informant)

In relation to the adjustments made in the assessment process, some participants indicated that they provide individual assessment opportunities, adjust the assessment materials, and give additional time. Some participants also emphasized that to equalize students with disabilities with other students, they may allow them to use certain assistive tools during exams. Additionally, technological tools emerged as a way to provide students with feedback. Although participants mentioned why and how to make adjustments to assessment procedures, they generally had incidental or limited knowledge of these adjustments, as can be seen in the following excerpt:

In these speaking exams and writing exams, things like giving extra time are already used. But what can be done other than that is something that I can realize through the training I said I really need. Frankly, I can't find very creative solutions. (P6)

In conclusion, findings revealed the needs of preparatory school instructors who teach students with disabilities in higher education. Notably, these needs include improvements in the areas of the conceptions of inclusive education, the identification of students' disability status and needs, and adjustments in the teaching and learning processes. These needs were reflected in the instructors' responses, which primarily highlighted the challenges and limitations they face in both individual and institutional preparation and practice with respect to ensuring inclusion of students with disabilities in online environments.

Discussion

The efforts to promote inclusion of students with disabilities have increased, as reflected in initiatives led by the Students with Disabilities Commission under CoHE (e.g., Barrier-Free University Awards). Yet, significant challenges persist and students with disabilities continue to face difficulties in higher education. The pandemic has intensified these challenges as teaching and learning shifted rapidly to online environments. This transition has been particularly challenging for preparatory schools, which serve as the gateway for students entering their departments. Learning a foreign language online requires diverse cognitive and interactive processes. Therefore, the challenge for English instructors at preparatory schools becomes two-fold: adapting their lessons to online pedagogies without losing the communicative nature of language learning and keeping it accessible to students with disabilities. In this study, instructors' accounts highlighted two interconnected areas shaping inclusion: institutional arrangements, including regulations, role clarity, and pathways for identifying needs and coordinating support, and course-level practices, including accessible materials, assessment adjustments, and the use of assistive technologies in online teaching.

Several reports and literature (Koçak Tufan, 2021; Kunz et al., 2021; Sart et al., 2016) highlight the areas that need to be improved and significant steps to be taken regarding rising awareness of differences (Dignath et al., 2022), enabling support mechanisms to work effectively (Dignath et al., 2022), providing equal opportunities and access for students with disabilities (Alanazi & Gadelmawla, 2021) and adjusting teaching and learning processes (Papadopoulos et al., 2024). As foreign language instruction is a complex process with all these bodies embedded in it

relying heavily on interaction and sensory input, adopting an inclusive approach requires attention at every stage. Specifically, in the context of English Language Teaching (ELT), inclusion is mostly about active participation in communicative activities. As a result, this adaptation includes training instructors, encouraging collaboration among stakeholders, establishing and maintaining support units, and ensuring that inclusivity is all reflected in the teaching and assessment processes.

CoHE and institutional regulations constitute the basis for all efforts held in universities. However, according to the findings of the current study, most of the participants were unaware of these regulations, suggesting a communication and implementation gap in institutional arrangements. This lack of awareness underscores the need for systematic training to familiarize instructors with the content of these regulations and prepare pre-service teachers for such gaps. It appears that English instructors often focus on linguistic competence and CEFR standards, potentially overlooking the institutional regulations regarding disability. Moreover, it was seen that the participants were not informed or trained in a systematic way by their institutions, as they mostly stated that they have incidental familiarity with the institutional policies and practices about students with disabilities. These findings align with prior research (EGED, 2019, 2020; Toutain, 2019), which highlights the importance of structured systems to inform instructors about their roles, responsibilities, and available resources.

Many studies referred not only to instructors' lack of awareness but also that of students with disabilities about the availability of resources or the disability resources office (Eckes & Ochoa, 2005; Finn, 1999; Lyman et al., 2016; Salzer et al., 2008; Toutain, 2019). Similarly, the absence of a disability resources office in universities, or the lack of awareness among instructors even when such offices exist, was one of the issues highlighted in this study as well. There is not a reported structured effort to guide instructors on how to use these offices even in rare cases where they exist, nor institutional policies aimed at raising awareness on a practical level. As preparatory school instructors are often first academic stakeholders to interact with the students and facilitate their transition to university life, their lack of knowledge about support offices creates a "broken link" at the very beginning of the students' academic journey. If an English instructor cannot refer a student to the correct office during the preparatory year, the student may struggle silently throughout their entire undergraduate education, meaning this lack has its reflections on the rest of the academic experience for the students.

The results indicated that participants were aware of how significant it is to provide equal opportunities for all students in relation to inclusivity, broadly defined in the most general sense as celebrating and valuing diversity including disability (see Hornby, 2014). However, their understanding of inclusive education seemed to exclude students with mental disabilities, which is against the fundamental principles of inclusiveness. Furthermore, it was evident that participants' accounts often relied on impairment-focused language and binary distinctions (e.g., "normal" versus "abnormal"), indicating that disability was frequently understood in individual terms rather than in relation to barriers created by teaching arrangements and institutional processes. In this regard, participants mostly defined disability within the frame of the medical model, which Oliver (1990) critiques as being rooted in an understanding of disability as an individual problem to be fixed. Such views focusing on barriers within individuals rather than addressing the systemic challenges perpetuate exclusion (Bunbury, 2020; Sart et al., 2016). Thus, the findings highlight a limited understanding of what disability entails and a need for a training program covering a conceptual framework for inclusive

education, inclusive curriculum, and disability, moving beyond a perspective focused on individual impairment.

The report by the EGED (2019) emphasized the need for adaptations in online teaching and learning processes to eliminate the difficulties experienced by students in relation to accessing and following the lessons. Some examples of common academic accommodations include letting students work with note-taking assistants, providing them extra time during evaluations, enabling them to tape-record classes, and/or assign interpreters for students with disabilities in higher education (Leuchovius, 2004). However, in the context of online language learning, accommodations must go beyond these basics. For an English instructor, this means ensuring that Learning Management Systems (LMS) are screen-reader friendly, live sessions have captioning for listening comprehension, and speaking exams are modified to reduce anxiety for students with specific impairments (e.g., stuttering, speech impairments, anxiety). Considering the importance of providing all students with equal opportunities and access to quality education, such adaptations are highly essential. To achieve this, instructional methods must be adjusted in such a way that no one, especially the students with disabilities, feels left out. The findings of this needs assessment revealed that most participants were not fully knowledgeable about the need to adjust instructional methods based on students' disability status and lacked sufficient information about how to implement these digital modifications effectively in an online language class. Similarly, while participants acknowledged the necessity of adapting materials and assessment procedures to provide equal opportunities for the students with disabilities, they mainly referred to a narrow set of commonly used adjustments (e.g., subtitles, larger fonts, extra time) and reported limited access to practical guidance on how to implement a wider range of accessibility measures effectively in online teaching and assessment. Supporting this observation, previous research highlights that staff working with students with disabilities often face significant challenges, exacerbated by evidence suggesting that faculty members may not fully comprehend the importance of providing necessary accommodations or the methods for doing so, leading to hesitancy or resistance in making required adjustments to courses and assessments (Cook et al., 2009; Hong, 2015). So, instructors should be equipped with the skills to develop and adjust materials and assessment procedures based on the type of disabilities their students have or might have. EGED (2019; 2020) suggests specific strategies, such as adding subtitles to videos, using contrast colors in the texts, and including written descriptions to visual materials. Similarly, assessment procedures should ensure accessibility to students with disabilities, including the use of simple language and verbal expressions in questions, additional time for exams, and supportive environments. These adjustments should be carried out through the cooperation of support units, students, and academics to make sure their effective implementation.

The findings of the study indicated the importance of conducting a needs analysis to explore the needs of students with disabilities and adjust teaching-learning processes accordingly. In a similar manner, EGED (2020) suggested that surveys should be conducted to follow the experiences of the students with disabilities and academics should be informed about their students. Considering its significance, all academics should be informed about the necessity of needs assessments so that they can get to know the students and their needs and make suitable adjustments accordingly. These findings further support the need to train faculty in inclusive pedagogy, in parallel to the findings of Collins et al. (2019), Shine and Stefanou (2022),

and Sniatecki et al. (2015), which show the faculty members' desire for professional development regarding the creation of inclusive environments.

EGED (2019) also mentioned the importance of informing academics about the support technologies used by students in their academic life. Although some of the participants of the present study were knowledgeable about some technological tools used by the students with disabilities, it was seen that most of them were not knowledgeable about the specific tools that can be used in online teaching-learning processes. For instance, awareness of tools specifically useful for language acquisition, such as text-to-speech for pronunciation practice or accessible digital dictionaries, was notably absent. The finding that most academics need systematic training and lack sufficient knowledge of assistive technology, especially in online learning environments, is supported by a number of studies (Choi et al., 2021; Christodoulidou & Sidiropoulou, 2024). Choi et al. (2021) emphasize the necessity of comprehending how teaching and learning are evolving in a digital learning environment and make recommendations for a potential restructuring of the educational and training programs offered to educators in order to enhance their professional competency in the digital era. Christodoulidou and Sidiropoulou (2024) also emphasize the need for systemic support and teacher training to enhance inclusivity in online education because the teachers' lack of preparation for creating inclusive, student-centered digital activities and delivering online lessons may have had a detrimental impact on students' learning experiences. Similarly, Papadopoulos and colleagues (2024) stated that faculty members' limited knowledge and experience with assistive technology typically leave students with disabilities without sufficient support. For instance, many teachers were unfamiliar with essential tools such as screen readers, text-to-speech devices, and image magnification software. The findings of the present study align with these observations, emphasizing the importance of professional development for educators to effectively integrate modern technologies into their teaching practices, especially in online learning environments where students with disabilities might be even more disadvantaged. Effective use of technology can provide students with more accessible and flexible ways to engage with the curriculum and complete assignments (Cao, 2022). Therefore, instructors need training about these technologies to ensure all students can fully participate in educational activities.

According to the research conducted by CoHE, only 39% of the participating universities prioritized improving the digital literacy of students with disabilities during online learning (Koçak Tufan, 2021). Similarly, the present study highlights the importance and necessity of providing ICT training for students with disabilities. Given the growing emphasis on leveraging technology to ensure equal opportunities, there is a need to enhance such students' digital literacy while simultaneously raising instructors/academics' awareness of this particular need.

Finally, teacher attitudes are highly essential in terms of providing equal opportunities and access to students. Studies emphasize that faculty members' views and beliefs about inclusion have a big impact on how they interact with students with disabilities and how they teach (Dignath et al., 2022; Kunz et al., 2021; Lane & Nagchoudhuri, 2015). Similarly, teachers who have good attitudes about inclusion are more likely to use instructional practices that meet the requirements of different learners, improving every student's educational experience (Alanazi & Gadelmawla, 2021; Dignath et al., 2022). On the other hand, it is seen that not all participants of the present study were aware of the importance of positive attitudes, and some of them had inflexible attitudes towards students with disabilities. In this regard, there is also a need to train

individuals about how to approach students with disabilities during teaching-learning processes. Research in teacher education indicates that rigid or negative attitudes frequently stem from apprehension and a perceived lack of efficacy (Muhammad & Liu, 2025; Shi et al., 2025). As a result, providing preparatory school instructors with professional training in inclusive online pedagogy may help them view inclusion as an inseparable part of their profession rather than an additional responsibility. With time, this may support a more natural integration of inclusive practices into everyday teaching practices.

Conclusion and Implications

The findings of the study revealed the needs of preparatory school instructors in creating inclusive online learning environments for students with disabilities in higher education. Although instructors acknowledged the importance of equal access, teacher attitudes, and instructional adaptations, the study suggests that they need further support through institutional guidance, pedagogical knowledge, and practical strategies for promoting inclusion in online learning environments. The findings also point to the need for educational institutions to take greater responsibility for implementing systematic and practice-oriented professional development initiatives which equip instructors with necessary skills, knowledge, resources and support to address diverse learners' needs. Such initiatives should focus on inclusive instructional strategies, accessible digital resources, and pedagogical guidance that can be used in instructional practice. Professional development in this area needs to be more applied, enabling instructors work with concrete examples and context-sensitive strategies which can be easily utilized in their own teaching practices. In this regard, such approaches as flexible assessment practices, multimodal course design, clearer instructional support, and asynchronous learning opportunities may help reduce obstacles for students with disabilities in online courses. However, improving inclusivity for students with disability does not only depend on individual instructors' efforts or teaching practices; it also requires institutional awareness and a supportive academic culture in which inclusive practices are encouraged and positive faculty attitudes are supported.

As a result of study findings, the development of an online modular training program that is tailored by taking into consideration the needs of preparatory school instructors in promoting equal learning opportunities for all students in higher education. This study also provides valuable insights that can shape future research and practice. Thus, the findings emphasize the importance of embedding accessibility and inclusivity principles to ensure that online courses offer multiple means of engagement, representation, and expression, thereby addressing the diverse needs of learners.

The study aligns with the relevant literature pointing to the need for more structured professional training program on disability awareness and inclusive teaching in higher education and designing and implementing inclusive online learning environments. Many instructors still report feeling uncertain about how to support students with disabilities in online settings effectively. For this reason, professional development initiatives should be embedded within institutional professional development structures and closely connected to both curriculum and instructional practices. The data obtained from the needs analysis conducted here can serve as critical reference point for defining realistic learning outcomes and content that reflect instructors' actual classroom experiences.

The implementations of such future training programs should be piloted and systematically evaluated before broader dissemination or implementation. Moreover, institutions should revise their own professional development programs, carry out similar needs analyses within their own contexts, since the experiences of both instructors and students with disabilities may vary across settings. Instructors should be educated so that they can adapt materials, vary assessment methods, and improve online learning activities in online learning environment in higher education that are more inclusive, accessible, responsive and equitable.

While the study has some limitations, it still contributes to the existing literature on inclusive online learning by providing in-depth insights into preparatory school instructors' experiences and perspectives on supporting students with disabilities in online learning environments. Further research studies employing larger and more diverse samples, including multiple stakeholders perspective such as students with disabilities experiences, as well as adopting mixed-method research designs, could offer a more comprehensive understanding of effective inclusive practices in online learning environments. In addition, longitudinal research may also be useful in providing valuable insights into how inclusive practices evolve alongside pedagogical and technological developments.

Declarations

Author Contributions

Elif Tuğçe Gezer: Conceptualization, literature review, methodology, data collection, data analysis, writing and editing original draft, validation, interpretation, coordination and cooperation among the co-authors.

Hasan Şerif Baltacı: Conceptualization, literature review, methodology, data collection, data analysis, writing and editing original draft, validation and interpretation.

Funda Kelahmetoğlu Tunçer: Conceptualization, literature review, methodology, data collection, data analysis, writing and editing original draft, validation and interpretation.

Derya Şahin İpek: Conceptualization, literature review, methodology, data collection, data analysis, writing and editing original draft, validation and interpretation.

Dr. Begüm Erçakır Kozan: Conceptualization, literature review, methodology, data transcription, writing and editing original draft, validation and interpretation.

Prof. Dr. Cennet Engin: Validation, critical review of manuscript drafts, instruments, and overall content and structure.

Conflict of Interest

There is no personal or financial conflict of interest among the authors or participants of this study.

Disclosure of Artificial Intelligence (AI) Use

We used OpenAI's ChatGPT only for grammar and language editing.

Availability of Data and Materials

The dataset used during this study is not publicly available due to ethical and confidentiality restrictions related to participant privacy but are available from the corresponding author upon reasonable request.

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Ethics Committee Approval

The authors declare compliance with the Personal Data Protection Law and copyright regulations concerning intellectual and artistic works. All personal data used in this study have been processed in accordance with legal and ethical guidelines, with the written consent of its participants. This study was approved by the Human Subjects Ethics Committee at the Middle East Technical University with the 266-ODTU-2021 protocol number on 23.06.2021.

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TÜRKÇE GENİŞ ÖZET

Yükseköğretimde Engelli Öğrenciler için Kapsayıcı Çevrim İçi Öğrenme: Bir İhtiyaç Değerlendirmesi

Giriş

Dünya genelinde, diğer eğitim seviyelerinde olduğu gibi üniversitelerde de farklı engellere sahip öğrencilerin sayısı artmakta ve bu durum, kapsayıcı eğitim uygulamalarının yaygınlaşmasına önemli ölçüde katkı sağlamaktadır (Moriña ve Perera, 2020). Engelli öğrencilerin yüksek öğrenime erişimleri, eğitime yönelik beklentilerini, yeteneklerini ve sosyo-duygusal becerilerini geliştirmek için kritik önem taşımaktadır (Fuller ve ark., 2004; Hurst, 1996). Bu nedenle, üniversiteler yüksek öğretimde erişilebilirliği artırmak amacıyla kapsayıcı stratejiler uygulamaya başlamıştır (Barnes, 2007; Riddell ve Weedon, 2014). Ancak çevrim içi öğrenme, zaman ve mekân sınırlamalarını ortadan kaldırarak erişimi kolaylaştırır da erişilebilir kaynak eksikliği gibi sorunlar devam etmektedir (Altunoğlu, 2020).

COVID-19 pandemisi bu zorlukları daha da belirgin hale getirerek çevrim içi eğitime hızlı bir geçişi zorunlu kılmıştır. Bu dönüşüm, dijital öğrenmenin eğitimin sürekliliğini sağlamadaki kritik rolünü ortaya koyduğu gibi, aynı zamanda engelli öğrenciler için mevcut engelleri de gözler önüne sermiştir. Teknolojinin sağladığı avantajlara rağmen, ders materyallerine erişimde zorluk ve kişiye özel destek eksikliği çevrim içi öğrenme ortamlarındaki temel sorunlar arasında yer almaya devam etmektedir.

Türkiye'de engellilik, eğitim alanında önemli toplumsal etkileri olan ciddi bir sorun olmaya devam etmektedir. Kapsayıcı eğitim ve farkındalık çalışmaları giderek artsa da (Yazıcıoğlu, 2020), engelli öğrenciler mesleki rehberlik eksikliği, sınırlı üniversiteye giriş desteği ve yetersiz fiziksel koşullar ve dijital kampüs erişilebilirliği gibi sorunlarla karşı karşıya kalmaktadır (Mutanga ve Walker, 2015; Piştav-Akmeşe, 2018; Sart ve ark., 2016). Birleşmiş Milletler Engellilik Kapsayıcılık Stratejisi (2020) ve UNESCO Küresel Eğitim İzleme Raporu (2021) gibi uluslararası çerçeveler dijital erişimi vurgulasa da çevrim içi eğitimde engeller devam etmektedir. Erişilemez ders materyalleri ve yetersiz destek bu sorunlardan bazılarıdır. Ayrıca, işitme engelliler için işaret dili tercümesi ve altyazı desteğinin eksikliği ile ölçme ve değerlendirme süreçlerinde yeterli düzenlemelerin yapılmaması bu sorunları daha da derinleştirmektedir (Dumitru, 2023; Kent, 2015; Koçak Tufan, 2021).

Eğitmciler, bu sorunları ele alarak engelli öğrencilerin çevrim içi eğitime etkili bir şekilde entegre edilmesini sağlama konusunda yadsınamaz bir rol oynamaktadır. Bu durum, özellikle hazırlık okullarında İngilizce dersleri veren öğretim elemanları için çok önemlidir, çünkü bu öğretim elemanlarının, öğrencilerin ihtiyaçlarını erken safhada belirleyerek bunlara yanıt verme imkânları vardır. Ancak, Türkiye'deki öğretmen yetiştirme programlarında bilişim teknolojileri becerilerine ve teknoloji entegrasyonuna yeterince önem verilmemesi, çoğu öğretmenin çevrim

içi öğretime tam anlamıyla hazırlıklı olmamasına neden olmuştur (OECD, 2020). Bu durum, kapsayıcı eğitime yönelik ilgisizliğin de eklenmesiyle pandemi süresince hem öğretim elemanlarını hem de engelli öğrencileri olumsuz etkilemiştir.

Daha geniş çaplı bir çevrim içi hizmet içi eğitim programı geliştirme projesinin parçası olarak, hazırlık okullarında görev yapan öğretim elemanlarının karşılaştığı zorlukları daha iyi anlamak amacıyla gerçekleştirilen bu çalışma, engelliliği büyük ölçüde çevresel, kurumsal ve toplumsal engellerin ürettiğini vurgulayan sosyal modelden (Oliver, 1990) yararlanmaktadır. Çalışma, çevrim içi katılımın bireysel destek gereksinimleri ile öğrenme ortamının koşullarının etkileşimiyle şekillendiğini kabul etmektedir. Öte yandan, kapsayıcı eğitim, engelli öğrenciler de dahil olmak üzere tüm öğrencilerin uygun desteklerle normal sınıflarda eğitim almalarını sağlar (Saloviita, 2020). Kapsayıcı bir eğitim programı, öğrenci çeşitliliğini tanır ve hem öğretmenler hem de öğrenciler arasında farkındalık oluşturulmasını gerektirir (Morgan ve Houghton, 2011; Stentiford ve Koutsouris, 2022).

Bu bağlamda, mevcut çalışma aşağıdaki araştırma sorularına cevap aramıştır:

1. Hazırlık okullarında görev yapan öğretim elemanlarının, çevrim içi eğitimde engelli öğrencileri desteklemeye yönelik mevcut düzenlemeler ve uygulamalar hakkında sahip olduğu bilgiler nelerdir?
2. Hazırlık okullarında görev yapan öğretim elemanları engelli öğrenciler için çevrim içi öğretim, öğrenme ve öğretme durumları ve ölçme ve değerlendirme süreçlerini iyileştirmek için nelere ihtiyaç duymaktadır?

Yöntem

Bu çalışma, hazırlık okullarında görev yapan öğretim elemanlarının ihtiyaçlarını daha iyi anlamak ve engelli öğrenciler için çevrim içi öğretimin zorluklarıyla başa çıkmalarını sağlayacak hizmet içi eğitim programları oluşturmak amacıyla gerçekleştirilmiştir. Çalışmada, nitel bir yaklaşım benimsenmiş ve birincil yöntem olarak yarı yapılandırılmış görüşme protokolü kullanılmıştır. Yarı yapılandırılmış birebir görüşmeler, katılımcıların belirli bir olguya ilişkin bakış açılarını belirlemeye yardımcı olduğu için (Patton, 1990), bu programın potansiyel hedef kitlesi olan hazırlık okulu öğretim elemanları ve kurumlarında idari roller üstlenen anahtar kişilerle görüşmeler yapılmıştır. Bu görüşmeler, böyle bir eğitim programına ihtiyaç olup olmadığını değerlendirmek için gerçekleştirilmiştir.

Bu bağlamda, kapsamlı bir literatür taraması yapılmış ve hazırlık okulunda görev yapan öğretim elemanlarının engelli öğrencilere destek olma konusundaki farkındalığını, bilgisini ve uygulamalarını keşfetmek ve eğitim ihtiyaçlarını belirlemek için iki yarı yapılandırılmış mülakat protokolü hazırlanmıştır. Çalışmanın onayı, Orta Doğu Teknik Üniversitesi İnsan Araştırma Etik Kurulu'ndan 23.06.2021 tarih ve 266-ODTU-2021 protokol numarası ile alınmıştır.

Çalışmanın örneklemini, Ankara, Türkiye'de bulunan iki vakıf üniversitesinin Yabancı Diller Bölümlerinde yönetici pozisyonunda görev yapan iki akademisyen ile bu üniversitelerin hazırlık okullarında görevli altı öğretim elemanı oluşturmaktadır. Katılımcılar, öğretim alanında 4 ila 16 yıl arasında deneyime sahiptir. Beş katılımcı sırasıyla İngilizce Öğretmenliği, Eğitim Programları ve Öğretim, İngiliz Dili ve Edebiyatı, Eğitimde İnsan Kaynakları Gelişimi ve Avrupa Çalışmaları ve Uluslararası İlişkiler alanlarında yüksek lisans derecesine sahiptir ve üç katılımcı ise çalışmanın

yapıldığı sırada İngilizce Öğretmenliği veya İngiliz Dili ve Edebiyatı alanında yüksek lisans yapmaktaydı.

Bulgular

Verilerin analizi sonucunda üç tema ortaya çıkmıştır: kapsayıcı eğitim kavramları, öğrencilerin engellilik durumunu ve ihtiyaçlarını belirleme ve öğretim-öğrenme süreçlerinde uyarlamalar.

Kapsayıcı eğitim kavramları iki alt temadan oluşmaktadır: kapsayıcılık ve engellilik. Katılımcılar, tüm öğrencilere eşit fırsatlar sağlanmasının önemini vurgulamışlardır. Ancak bazıları, kapsayıcı eğitimin yalnızca zihinsel engeli olmayan öğrenciler için uygun olabileceğini belirtmiştir.

Ortaya çıkan bir diğer tema, öğrencilerin engellilik durumunu ve ihtiyaçlarını belirlemedir ve iki alt temadan oluşmaktadır: politikalar ve uygulamalar ile destek hizmetleri. Bulgular, katılımcıların kurumsal uygulamalara ilişkin bilgi ve aşinalıklarının yetersiz olduğunu ortaya koymuştur. Ayrıca, yöneticilerin, öğretmenlerin ve destek birimlerinin rollerinin ve sorumluluklarının net bir şekilde tanımlanmadığı düzensiz bir sistemin var olduğu ifade edilmiştir. Katılımcılar, genel destek çerçevesini belirleyebilmiş ancak özellikle çevrim içi öğrenme sürecinde kurumsal destek hizmetlerine ilişkin örnekler vermekte zorlanmışlardır.

Son olarak, öğretim ve öğrenme süreçlerinde yapılan uyarlamalar üç alt temadan oluşmaktadır: öğretim ile ilgili hususlar, öğretmen tutumları ve değerlendirme prosedürleri. Bazı katılımcılar, farklı öğrenci ihtiyaçlarına yönelik uygulamalarda nasıl hareket edileceği konusunda bilgi sahibi olsalar da kapsayıcı uygulamaları dahil etme konusunda düşük öz-yeterlik hissettiklerini belirtmişlerdir. Bazıları, engelli öğrencilerin eşit erişim ve fırsatlara sahip olmalarını sağlamak için esnekliğin gerekliliğini vurgulamış, değerlendirme uygulamalarına dair örnekler vermiştir. Fakat, bu uyarlamalar hakkındaki bilgilerinin sınırlı veya tesadüfi olduğu görülmüştür.

Tartışma

YÖK'ün Engelli Öğrenciler Komisyonu ve Engelsiz Üniversite Ödülleri gibi girişimleri, engelli öğrencilerin yükseköğretime dâhil edilmesine yönelik çabaların arttığını göstermektedir. Bununla birlikte, çevrim içi öğretime geçişle birlikte bu konudaki zorluklar daha da belirginleşmiştir. İyileştirme gereken temel alanlar arasında farkındalığın artırılması, destek mekanizmalarının güçlendirilmesi, eşit erişim ve öğretim uygulamalarının uyarlanması yer almaktadır (örn. Koçak Tufan, 2021; Sart ve ark., 2016; Dignath ve ark., 2022; Papadopoulos ve ark., 2024).

Mevcut düzenlemeler bir zemin sunsa da katılımcıların destek hizmetleri ve kurumsal düzenlemelere ilişkin farkındalığı sınırlı kalmıştır. Yöneticiler, öğretmenler ve destek birimleri arasındaki rol belirsizlikleri ile kurumsal desteğe ilişkin somut örneklerin sınırlı olması, ihtiyaçların belirlenmesi, yönlendirme ve destek koordinasyonu için daha açık ve yapılandırılmış mekanizmalara ihtiyaç olduğunu göstermektedir (EGED, 2019, 2020; Toutain, 2019). Bunun yanında, katılımcılar fırsat eşitliğinin önemini kabul etseler de kapsayıcılığı sınırlı biçimde yorumlamış, zaman zaman zihinsel engelli öğrencileri dışarıda bırakmış ve engelliliği daha çok bireysel yetersizlikler üzerinden ele almışlardır. Bu durum, engelliliği bireysel bir sorun olarak

gören tıbbi modelle örtüşmekte (Bunbury, 2020; Oliver, 1990) ve kapsayıcı eğitime ilişkin kavramsal çerçevenin daha güçlü biçimde ele alınmasına ihtiyaç olduğunu göstermektedir.

Ayrıca, katılımcıların çevrim içi öğretime ilişkin bilgi ve öz-yeterliklerinin de sınırlı kaldığı görülmüştür; düzenlemeler çoğunlukla altyazı, büyük punto ve ek süre gibi temel önlemlerle sınırlı kalmıştır. Bu bulgu, sınırlı bilginin uygulamadaki tereddütlerle ilişkili olduğunu gösteren araştırmalarla örtüşmektedir (Cook ve ark., 2009; Hong, 2015; Choi ve ark., 2021; Christodoulidou ve Sidiropoulou, 2024; Papadopoulos ve ark., 2024). Bulgular ayrıca, öğretim uyarlamalarına yön vermede ihtiyaç analizinin önemini ve kapsayıcı pedagoji konusunda öğretim elemanlarının mesleki eğitim ihtiyacını ortaya koymaktadır (örn. EGED, 2020; Shine ve Stefanou, 2022). Özellikle çevrimiçi yabancı dil öğretiminde materyal, ölçme-değerlendirme ve dijital araçların erişilebilir biçimde düzenlenmesi önemlidir.

Son olarak, öğretmen tutumları kritik öneme sahiptir. Olumlu tutumlar daha etkili kapsayıcı uygulamalarla ilişkilendirilirken, olumsuz ya da esnek olmayan bakış açıları kapsayıcılığı engelleyebilmektedir (örn. Dignath ve ark., 2022; Alanazi ve Gadelmawla, 2021; Muhammad ve Liu, 2025). Bu çalışmada da daha kapsayıcı yaklaşımlarla daha katı tutumlar bir arada görülmüştür. Bu nedenle, eşitlikçi öğrenme ortamlarını desteklemek için kapsayıcı çevrim içi pedagojiye yönelik hedefli eğitim temel bir gereklilik olarak öne çıkmaktadır.

Sonuç ve Öneriler

Bu çalışma, hazırlık okullarında görev yapan öğretim elemanlarının engelli öğrenciler için kapsayıcı öğrenme ortamları oluşturma konusundaki ihtiyaçlarını ortaya koymaktadır. Adil erişim, öğretmen tutumları ve uyarlama stratejileri önemli olarak kabul edilse de öğretim elemanlarının bilgi düzeyindeki eksiklikler, belgelendirme süreçlerindeki aksaklıklar ve öğretmen farkındalığındaki yetersizlikler devam etmektedir. Bu durum, kurumların kapsamlı mesleki gelişim programları oluşturmalarının aciliyetini vurgulamaktadır.

Assessment of Middle School Teachers' Curriculum Awareness and Instructional Planning Practices: A Mixed-Methods Study*

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Abstract

This study aims to assess middle school teachers' awareness of curriculum and instructional planning practices. The research was conducted during the 2021-2022 academic year in Elazığ, covering 50 middle schools. In the quantitative phase, data were collected from 239 teachers through convenience sampling, whereas the qualitative phase included 41 teachers, selected using maximum variation sampling to ensure diverse representation. A mixed-methods approach was adopted, integrating both quantitative and qualitative research designs. The quantitative dimension employed a descriptive survey model to gather teachers' perspectives, while the qualitative dimension utilized a case study design to analyze their in-depth experiences. Quantitative data were collected using the "Curriculum Awareness Scale," while qualitative data were obtained through semi-structured interviews. The qualitative data analysis was conducted using content analysis, where emerging themes and patterns were identified. To ensure data reliability, expert validation and structured coding techniques were implemented. The findings indicate that teachers' levels of curriculum awareness vary, influenced by factors such as individual experience, professional development, and institutional settings. Additionally, the qualitative results emphasize the role of collaborative planning in enhancing instructional effectiveness. The study suggests that while teachers generally have a good understanding of the curriculum, some challenges arise during practical implementation. Addressing these challenges through targeted professional development programs and structured instructional planning strategies could enhance curriculum awareness. The results highlight the significance of integrating both quantitative and qualitative methods to gain a comprehensive understanding of teachers' instructional practices.

* This study is based on the master's thesis of the first author, supervised by the second author.

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Introduction

A curriculum is a structured program consisting of predefined classifications of knowledge and skills, designed to be implemented in some schools to achieve educational goals in a systematic manner (Küçükahmet, 2007). An instructional plan, on the other hand, is a plan prepared by the teacher to determine the course content and ensure that the lesson proceeds effectively. An instructional plan includes elements such as learning objectives, key focal points, questions, resources, and assignments (Öncü, 2004). Teachers can prepare different types of instructional plans, such as annual, unit-based, and daily lesson plans, aligned with the curriculum (İşman & Eskicumalı, 2003).

The instructional process is one of the most complex Teacher activities. Without proper planning, the connections between activities weaken, making it more difficult to achieve the intended objectives. In the educational process, adopting an effective instructional approach that places the student at the center is a crucial starting point (Emmer et al., 2003). Although the terms educational program and curriculum are similar, they have different meanings. An educational program is a broader concept that encompasses all systematically conducted activities designed for a specific age group and environment. An educational program represents a broader framework that encompasses systematically organized learning activities and objectives designed for a specific learner group and context. In contrast, a curriculum denotes the structured and intentional organization of these activities within a particular field of study, including content, learning experiences, teaching methods, and evaluation processes (Akpınar, 2017; Ornstein & Hunkins, 2018; Print, 1993). Thus, while an educational program outlines the overall educational design, the curriculum provides the pedagogical roadmap that operationalizes it in instructional practice. Although curriculum and instruction are conceptually distinct constructs, their interrelationship is most clearly manifested during instructional planning, wherein teachers operationalize curricular intentions through concrete classroom practices.

Curricula contribute to standardizing educational activities nationwide. The implementation and evaluation of curricula play a significant role in shaping national education policies. In Türkiye, curricula are meticulously developed by the Ministry of National Education (MoNE/MEB) and the Board of Education (BoE/TTK), reflecting the country's educational philosophy and policies (MEB, 2018). A lack of planning can prevent teachers from using their time effectively. Constant decision-making during lessons can lead to time loss and increase the teacher's time-related stress (Efil, 2004). In education, learning objectives should be determined before the academic year begins, and the instructional process should be planned accordingly. Planned instruction is a fundamental element of effective classroom management (Gündoğdu, 2007).

Teachers' awareness levels result from deliberate experiences and interactions with their environment. Awareness encompasses an individual's sensory and cognitive processes (Dökmen, 2002). Flavell (1999) defines cognitive awareness as an individual's ability to be conscious of their thought processes. Affective awareness refers to the ability to recognize and interpret emotions (Lane & Schwartz, 1987). Psychomotor awareness involves the observable transformation of cognitive and affective awareness into behavior (Eski, 2010). Given the central role of curriculum implementation in educational quality, teachers' awareness of curriculum design and structure is a critical factor influencing classroom practices and learning outcomes.

Curriculum awareness refers to teachers' knowledge, understanding, and interpretation of the curriculum's objectives, content, pedagogical principles, and assessment methods (Marsh, 2009; Ornstein & Hunkins, 2018; Print, 1993). It encompasses not only familiarity with curricular documents but also the ability to translate curricular intentions into instructional decisions. Teachers with high curriculum awareness are more likely to align their teaching strategies with curriculum goals, ensure coherence between learning outcomes and assessment, and contribute effectively to curriculum development processes (Fullan, 2007; Pinar, 2012). Therefore, curriculum awareness serves as a bridge between curriculum theory and classroom practice, making it one of the key determinants of effective teaching.

The literature includes extensive research on curriculum development, implementation, and evaluation. However, studies that specifically investigate teachers' curriculum awareness remain relatively limited (Erman, 2016; Pektaş & Pesen, 2021; Sayın, 2019). This scarcity is critical because teachers' understanding and interpretation of the curriculum directly affect how educational goals are translated into classroom practices (Marsh, 2009; Print, 1993). Curriculum awareness serves as a mediating construct linking curriculum theory with instructional execution, and a lack of such awareness may lead to inconsistencies between intended and implemented curricula (Fullan, 2007; Ornstein & Hunkins, 2018). Likewise, instructional planning is closely tied to curriculum awareness since it requires teachers to make informed decisions regarding objectives, content sequencing, pedagogy, and assessment (Posner, 2004; Richards, 2013). Therefore, exploring teachers' curriculum and instructional planning awareness is not only about identifying informational gaps but also about understanding how teachers operationalize curriculum in real teaching contexts. From this perspective, the current study aims to contribute to both national and international literature by addressing a concept that remains underexplored yet crucial for educational effectiveness and reform efforts. Despite the central role of teachers in curriculum implementation, empirical evidence remains limited regarding how teachers' curriculum awareness is reflected in their instructional planning practices. While the literature has extensively addressed curriculum development, implementation, and evaluation, the relationship between teachers' multidimensional curriculum awareness (cognitive, affective, and psychomotor) and their instructional planning decisions remains underexplored. In particular, studies that integrate quantitative and qualitative approaches to examine how curriculum awareness is operationalized through instructional planning are scarce. This gap constrains a comprehensive understanding of how teachers translate curricular intentions into planned instructional actions in authentic classroom contexts. Accordingly, the present study aims to examine middle school teachers' curriculum awareness and explore how this awareness is reflected in their instructional planning practices, using a mixed-methods design.

In line with these objectives, the study seeks to answer the following questions:

1. What is the level of middle school teachers' curriculum awareness in terms of psychomotor, cognitive, and affective awareness sub-dimensions?
2. Do middle school teachers' curriculum awareness levels differ significantly based on gender, professional seniority, and educational background?
3. What are middle school teachers' perspectives on the pedagogical necessity of instructional planning?

4. What documents and variables do middle school teachers consider when preparing instructional plans?
5. Do middle school teachers engage in instructional planning individually or collaboratively (e.g., with subject departments or grade-level committees)?
6. What are middle school teachers' views on considering school and national conditions when preparing instructional plans?
7. What are middle school teachers' overall perspectives on instructional planning?

Method

Research Design

The research aims to examine teachers' curriculum awareness and their instructional planning practices at the senior middle school level through a mixed-methods design. This approach integrates quantitative and qualitative data to provide a more comprehensive understanding of how teachers interpret, plan, and implement the curriculum in their daily instructional practices.

Creswell (2014) states that the mixed approach is based on the strengths and weaknesses of both research methods. The research adopted a convergent-design via mixed-method (Creswell & Plano Clark, 2007; Tashakkori & Teddlie, 1998). We conducted the quantitative part of the research using survey research design to collect information. Such a method endeavors to provide perspectives, interests, skills, and needs of participants on a large scale by using questionnaires or interviews (Büyüköztürk et al., 2018; Christensen et al., 2015). In a convergent parallel mixed-methods design, quantitative and qualitative data are collected concurrently, analyzed separately, and then integrated to provide a comprehensive understanding of the research problem (Creswell & Plano Clark, 2018). In the integration phase of the convergent parallel mixed-methods design, the quantitative and qualitative findings were compared and interpreted together to identify points of convergence and divergence. Quantitative results related to teachers' levels of curriculum awareness were juxtaposed with qualitative themes derived from interview data on instructional planning practices. This integration enabled a comprehensive interpretation by illustrating how statistical trends corresponded with teachers' lived experiences and professional practices, thereby enhancing the interpretive validity of the findings.

The qualitative dimension of the study employed a case study design, widely used to gain an in-depth understanding of a bounded system in its real-life context (Yin, 2018; Stake, 1995). In this study, the "case" is defined as the instructional planning practices and curriculum awareness of middle school teachers working in public middle schools in Elazığ province during the 2021–2022 academic year. The case constitutes a bounded system, delimited by a specific geographical context, a clearly defined group of participants, and a particular time frame (Creswell & Poth, 2018; Yıldırım & Şimşek, 2016). Rather than focusing on a single school, the case encompasses a group of teachers operating within a shared institutional, curricular, and policy context. This approach allows for the exploration of common patterns, variations, and contextual influences shaping teachers' instructional planning practices. Data were collected through semi-structured interview forms developed by the researchers, enabling participants to express their experiences and perspectives freely while maintaining consistency across

interviews (Patton, 2015). Qualitative data were analyzed using content analysis, whereby participants' statements were systematically coded and organized into themes and subthemes to identify recurring patterns and divergences in teachers' perspectives (Miles, Huberman, & Saldaña, 2014). By examining the case within its natural educational setting, the case study design provides a holistic and context-sensitive understanding of how curriculum awareness is reflected in instructional planning practices.

Sample

The quantitative sample consisted of teachers at public middle schools in Elazığ during the 2021-2022 academic year. The sample, therefore, comprised 239 teachers selected by means of the convenience sampling method; in essence, this sampling method is to get access to information and data as easily and as cost-effectively as possible and without much time consumption toward research (Baltacı, 2018). The use of convenience sampling may limit the representativeness of the sample and, consequently, the generalizability of the findings. As the sample consists of teachers from a single province, the results primarily reflect a context-specific perspective. Nevertheless, convenience sampling is frequently employed in educational research, particularly in survey-based studies, where accessibility and feasibility are key considerations (Creswell, 2014; Etikan, Musa, & Alkassim, 2016).

Table 1 shows the demographic information of the participants in the quantitative dimension of the study.

Table 1

Demographic Information of Participants in the Quantitative Sample

		<i>n</i>	(%)
Gender	Male	112	46.90
	Female	127	53.10
Work Experience (years)	1-5	40	16.70
	6-10	70	29.30
	11-15	52	21.80
	16-20	33	13.80
	21 and above	44	18.40
Educational Degree	Bachelor's	193	80.80
	Graduate	46	19.20

Qualitative Study Group

In the qualitative phase of the study, maximum variation sampling was employed. This allows researchers to select participants strategically, ensuring easier access during data collection. It also enhances efficiency in terms of time management and enables the inclusion of a greater number of participants (Büyüköztürk et al., 2018).

The demographic details of the teachers who participated in the qualitative part are provided in Table 2 below.

Table 2*Demographic Information of the Participants in the Qualitative Study Group*

		<i>n</i>	(%)
Gender	Male	15	39.10
	Female	26	60.90
Work Experience (years)	1-5	6	14.60
	6-10	5	12.20
	11-15	9	22.00
	16-20	10	24.40
	21 and above	11	26.80
	Bachelor's	31	75.70
Educational Level	Graduate	10	24.30

An analysis of Table 2 shows that out of the 41 teachers who participated in the interviews, 15 (39.1%) are male, while 26 (60.9%) are female. The data indicate that the number of female teachers is higher than that of male teachers. Regarding professional experience, 6 (14.6%) have 1-5 years of experience, 5 (12.2%) have 6-10 years, 9 (22.0%) have 11-15 years, 10 (24.4%) have 16-20 years, and 11 (26.8%) have 21 years or more of experience. In this regard, the majority of participants are teachers with 21 or more years of experience. The majority of the participants had a bachelor's degree. An examination of the participants' educational background reveals that 31 (75.7%) hold a bachelor's degree, while 10 (24.3%) have completed graduate studies.

Data Collection Tools***Quantitative Data Collection Tools***

For this study, the quantitative data collection instrument was the Curriculum Awareness Scale, developed by Pektaş and Pesen (2021) to measure teachers' awareness of curricula. The construct validity of the scale was examined using factor analysis. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was .95, and Bartlett's test of sphericity was statistically significant ($\chi^2 = 6629.278$, $df = 300$), indicating that the data were suitable for factor analysis. The reliability of the instrument was assessed using Cronbach's Alpha coefficients. The scale consists of 25 items organized into three sub-dimensions—Cognitive Awareness, Affective Awareness, and Psychomotor Awareness—and is structured on a five-point Likert scale. Cronbach's alpha coefficients were .81 for Cognitive Awareness, .79 for Affective Awareness, and .85 for Psychomotor Awareness, indicating strong internal consistency (Pektaş & Pesen, 2021). Response options ranged from 1.00–1.79 (Strongly Disagree), 1.80–2.59 (Disagree), 2.60–3.39 (Somewhat Agree), 3.40–4.19 (Agree), to 4.20–5.00 (Strongly Agree).

To reinforce the reliability determination of the Curriculum Awareness Scale, further detailed assessments of the internal consistency and stability coefficients are displayed in Table 3.

Table 3*Cronbach's Alpha Reliability Analysis of the Curriculum Awareness Scale for Middle School Teachers*

<i>Sub-Dimensions</i>	<i>Reliability Analysis</i>	
	Cronbach's Alpha	Number of Items
Cognitive Awareness	.889	7
Affective Awareness	.910	6
Psychomotor Awareness	.935	12
Total	.959	25

Qualitative Data Collection Tools

In this study, a semi-structured interview technique was used as the qualitative data collection tool. The researcher prepared an interview protocol that included pre-determined questions and, based on the flow of the conversation, asked additional questions to explore the participants' responses in more detail (Ekiz, 2003). The interview form was developed through an extensive literature review and revised based on feedback from two field experts. The form consisted of seven open-ended questions, and some modifications were made following a pilot study. Middle school teachers participated in the study on a voluntary basis.

Data Analysis**Quantitative Data Analysis**

The levels of curriculum awareness regarding participants were studied in terms of independent variables such as gender, work experience and educational background. Data were analyzed using SPSS 22, and descriptive statistics, including arithmetic mean, standard deviation, percentage, and frequency, summarize demographic characteristics and important results. In order to explore conformity to normality, skewness and kurtosis values were assessed. As pointed out by Tabachnick and Fidell (2013), a dataset is declared normally distributed when those values are between -1.5 and +1.5. With reference to the criteria mentioned above, the curriculum awareness scale and its sub-dimensions were normally distributed, thus making it possible to conduct parametric tests for analysis. Therefore, parametric analyses such as the independent samples *t*-test and one-way ANOVA were employed to examine differences across variables. All quantitative analyses were conducted by the researchers. Data entry and statistical procedures were cross-checked to minimize potential errors. The selection of statistical tests and the interpretation of results were carried out in accordance with established methodological guidelines to ensure analytical rigor and reliability.

Qualitative Data Analysis

In this study, content analysis was used to analyze the interviews. This method allows for the emergence of previously unidentified themes and codes. The purpose of content analysis is to organize and interpret the collected data to provide a meaningful presentation for the reader (Yıldırım & Şimşek, 2016). In this study, the researcher identified themes and classified the findings according to these themes based on the participants' responses. Teachers' responses were categorized within a descriptive analysis framework and presented without any modifications. To enhance the credibility of the qualitative analysis, the coding process was conducted independently by two researchers. The coded data were compared, and discrepancies were discussed until consensus was reached. Inter-coder agreement was

calculated and found to be satisfactory, indicating consistency in the coding process. This procedure contributed to the trustworthiness of the qualitative findings. Some responses from the participants were quoted verbatim. To ensure compliance with ethical principles, the participants' names were not disclosed. Instead, each teacher was assigned a code number, and quotations in the study were labeled as P1, P2, P3, ..., P41.

Findings

Quantitative Findings

In this section, where the quantitative data analysis is presented, the findings related to the participants' Curriculum Awareness Scale and its sub-dimensions are displayed in Table 4. The findings obtained from the participants regarding the cognitive, affective, and psychomotor awareness subdimensions of the Curriculum Awareness Scale are presented in Table 4.

Table 4

Descriptive Statistics of Curriculum Awareness Scores in the Quantitative Study Group

	<i>n</i>	$\bar{X}$	<i>sd</i>
Cognitive Awareness	239	3.91	.64
Affective Awareness	239	4.03	.72
Psychomotor Awareness	239	3.91	.68

In Table 4, the overall mean score for the "Psychomotor Awareness" sub-dimension of the participants' curriculum awareness is $\bar{X} = 3.91$, which corresponds to the "Agree" level. This indicates that the participants have a high level of psychomotor awareness regarding the curriculum. Similarly, the overall mean score for the "Cognitive Awareness" sub-dimension is $\bar{X} = 3.91$, also at the "Agree" level. This suggests that the participants demonstrate a high level of cognitive awareness related to the curriculum. Based on the findings obtained from the participants participating in the study, the arithmetic mean score for the "Affective Awareness" sub-dimension is $\bar{X} = 4.03$, which falls under the "Agree" level. This result indicates that the participants exhibit a high level of affective awareness regarding the curriculum.

Participants' Perceptions of Curriculum Awareness Levels Based on Personal Variables

Gender

The results of the independent samples t-test conducted to examine the relationship between gender and the sub-dimensions of "Psychomotor Awareness," "Cognitive Awareness," and "Affective Awareness" in the participants are presented in Table 5.

Table 5*Comparison of Teachers' Curriculum Awareness Levels by Gender*

Sub dimension	Gender	n	$\bar{X}$	Sd	Levene Test		df	t	p
					F	P			
Psychomotor Awareness	Male	112	3.84	.74	3.921	.049	217.480	1.469	.143
	Female	127	3.97	.62					
Cognitive Awareness	Male	112	3.86	.66	.389	.533	237	.932	.352
	Female	127	3.94	.63					
Affective Awareness	Male	112	3.99	.70	1.572	.211	237	.970	.333
	Female	127	4.08	.75					
Total	Male	112	3.88	.65	.674	.413	237	1.327	.186
	Female	127	3.99	.59					

An examination of Table 5 reveals that the independent samples t-test, conducted to analyze gender differences, did not identify any statistically significant variation between male and female participants in the "Psychomotor Awareness" sub-dimension of the Curriculum Awareness Scale [$t(217.480) = 1.469$; $p > .05$]. Both female teachers ($\bar{X} = 3.97$) and male teachers ($\bar{X} = 3.84$) demonstrated agreement at the "Agree" level within this sub-dimension. Likewise, the data presented in Table 5 indicate that gender did not result in any statistically significant difference in the "Cognitive Awareness" sub-dimension [$t(237) = .932$; $p > .05$]. Female participants ($\bar{X} = 3.94$) and male participants ($\bar{X} = 3.86$) both expressed agreement at the "Agree" level. Additionally, the independent samples t-test confirmed no statistically significant gender-based difference in the "Affective Awareness" sub-dimension [$t(237) = .970$; $p > .05$], with female teachers scoring ($\bar{X} = 4.08$) and male teachers ($\bar{X} = 3.99$), both aligning at the "Agree" level. Lastly, the overall analysis of Table 5 highlights that no statistically significant gender difference was detected in the total Curriculum Awareness Scale score [$t(237) = 1.327$; $p > .05$]. Both female ($\bar{X} = 3.99$) and male ($\bar{X} = 3.88$) participants reported agreement at the "Agree" level regarding overall curriculum awareness.

Work Experience

The results of the ANOVA test conducted on middle school participants' attitudes toward the sub-dimensions of "Psychomotor Awareness," "Cognitive Awareness," and "Affective Awareness" based on the professional seniority variable are presented in Table 6.

As presented in Table 6, no statistically significant difference was detected in the participants' perspectives on the "Psychomotor Awareness" sub-dimension of the Curriculum Awareness Scale, based on years of experience [$F(4, 238) = 1.180$; $p > .05$]. A review of the arithmetic mean scores indicates that teachers with 6-10 years of experience had the lowest mean score ($\bar{X} = 3.80$), while those with 1-5 years of experience recorded the highest ($\bar{X} = 4.06$). The results suggest that teachers with 1-5 years of experience responded at the "Agree" level, whereas other experience groups had similar response patterns.

Table 6*Variance Analysis Results of the Participants' Awareness of the Curriculum Scale Based on Work Experience*

	Work Experience (Year)	n	$\bar{X}$	s.s	Variance Source	ANOVA				
						Sum of Squares	Sd	Mean of Squares	F	p
Psychomotor Awareness	1-5	40	4.06	.46	Between Groups	2.190	4			
	6-10	70	3.80	.77	Within Groups	108.634	234			
	11-15	52	3.96	.63	Total	110.824	238			
	16-20	33	3.82	.78				.548	1.180	.320
	21 and	44	3.93	.65						
	Total	239	3.91	.68						
Cognitive Awareness	1-5	40	3.95	.60	Between Groups	.580	4			
	6-10	70	3.86	.72	Within Groups	99.866	234			
	11-15	52	3.94	.54	Total	100.446	238			
	16-20	33	3.83	.76				.145	.340	.851
	21 and	44	3.95	.59						
	Total	239	3.91	.64						
Affective Awareness	1-5	40	4.14	.71	Between Groups	1.458	4			
	6-10	70	3.94	.83	Within Groups	124.747	234			
	11-15	52	4.12	.64	Total	126.206	238			
	16-20	33	3.99	.72				.365	.684	.604
	21 and	44	4.03	.65						
	Total	239	4.03	.72						
Total	1-5	40	4.05	.47	Between Groups	1.395	4			
	6-10	70	3.85	.71	Within Groups	90.802	234			
	11-15	52	3.99	.55	Total	92.198	238			
	16-20	33	3.87	.72				.349	.899	.465
	21 and	44	3.96	.57						
	Total	239	3.94	.62						

Furthermore, Table 6 results confirm that there was no statistically significant difference in participants' responses to the "Cognitive Awareness" sub-dimension by years of experience [$F(4, 238) = 0.340$; $p > .05$]. The lowest mean score ($\bar{X} = 3.83$) was noted among teachers with 16-20 years of experience, while the highest ($\bar{X} = 4.05$) was observed among those with 1-5 years of experience. The results indicated that teachers at all levels of experience generally tended to agree at the level of "Agree".

Likewise, no significant difference was found for the "Affective Awareness" sub-dimension according to years of experience [$F(4, 238) = 0.684$; $p > .05$]. An analysis of arithmetic mean scores shows that the lowest mean score ($\bar{X} = 3.84$) actually belonged to teachers within 6-10 years of experience, with the highest mean score ($\bar{X} = 4.14$) recorded among those within 1-5 years. This means that teachers within 1-5 years of experience responded similarly to those in other experience groups, all within the "Agree" range.

Finally, no statistically significant difference was recorded in the scores on the overall Curriculum Awareness Scale among the different groups of teachers by years of experience [$F(4, 238) = 0.899$; $p > .05$]. Mean scores were lowest for teachers with 6 to under 10 years of

experience ($\bar{X} = 3.85$) and highest ($\bar{X} = 4.05$) for those with 1-5 years of experience. This shows that irrespective of the levels of experience, teachers tended to agree at the "Agree" level.

Educational Level

The results of the independent samples t-test conducted to examine the relationship between educational background and the sub-dimensions of "Psychomotor Awareness," "Cognitive Awareness," and "Affective Awareness" among the participants are presented in Table 7.

Table 7

Comparison of Teachers' Curriculum Awareness Levels by Education Level

	Educational Level	n	$\bar{X}$	Sd	Levene's Test		df	t	p
					F	p			
Psychomotor Awareness	Bachelor's Degree	193	3.92	.65	2.979	.086	237	.711	.478
	Graduate Degree	46	3.84	.75					
Cognitive Awareness	Bachelor's Degree	193	3.93	.63	.610	.436	237	1.160	.247
	Graduate Degree	46	3.81	.70					
Affective Awareness	Bachelor's Degree	193	4.03	.71	.504	.478	237	-.151	.880
	Graduate Degree	46	4.05	.77					
Total	Bachelor's Degree	193	3.95	.59	2.835	.094	237	.670	.503
	Graduate Degree	46	3.88	.72					

As shown in Table 7, the results of the independent samples t-test reveal that there is no statistically significant difference in the participants' responses to the "Psychomotor Awareness" sub-dimension of the Curriculum Awareness Scale based on their educational background [$t(237) = 0.711$; $p > .05$]. The analysis indicates that both bachelor's degree holders ($\bar{X} = 3.92$) and graduate degree holders ($\bar{X} = 3.84$) expressed their views at the "Agree" level regarding psychomotor awareness.

Similarly, the independent samples t-test conducted for the "Cognitive Awareness" sub-dimension revealed no statistically significant difference concerning educational background [$t(237) = 1.16$; $p > .05$]. The findings indicate that both bachelor's degree holders ($\bar{X} = 3.93$) and graduate degree holders ($\bar{X} = 3.81$) demonstrated agreement at the "Agree" level regarding cognitive awareness.

Regarding the "Affective Awareness" sub-dimension, the independent samples t-test results also showed no statistically significant difference in the participants' responses based on their educational background [$t(237) = -0.151$; $p > .05$]. The results indicate that bachelor's degree holders ($\bar{X} = 4.03$) and graduate degree holders ($\bar{X} = 4.05$) expressed their opinions at the "Agree" level, with responses approaching "Strongly Agree."

Finally, the t-test results for the overall Curriculum Awareness Scale confirm that no statistically significant difference was found based on educational background [$t(237) = 0.670$; $p > .05$]. The analysis determined that both bachelor's degree holders ($\bar{X} = 3.95$) and graduate degree holders ($\bar{X} = 3.89$) responded at the "Agree" level regarding overall curriculum awareness.

Qualitative Findings

In this section, the findings and interpretations related to the participants' views on instructional planning are presented in tables. The participants' responses were carefully examined, coded, and free code lists were preferred. The obtained codes were systematically grouped. Additionally, direct quotations from the participants' responses were included to provide deeper insights into the findings.

Participants' Views on the Educational Necessity of Instructional Planning

Participants were asked, "Why is instructional planning necessary from an educational perspective?" The findings derived from their responses are presented in Table 8.

Table 8

Participants' Views on the Educational Necessity of Instructional Planning

<i>Theme</i>	<i>Code</i>	<i>f</i>
Student	Adaptation to student level	11
	Ensuring efficiency	9
	Achieving learning outcomes	5
Teacher	Guiding the teacher	11
	Facilitating the teacher's work	10
	Using time effectively	9
Instructional Environment	Organizing the instructional environment	3
	Making the instructional environment engaging	1
	Adding dynamism to the process	1

Table 8 shows that the participants' views on the educational necessity of instructional planning are categorized under three themes and nine codes. The most frequently mentioned aspect within the student theme is "Adaptation to student level" ($f = 11$), followed by "Ensuring efficiency" ($f = 9$) and "Achieving learning outcomes" ($f = 5$). Within the teacher theme, the most emphasized aspects are "Guiding the teacher" ($f = 11$), "Facilitating the teacher's work" ($f = 10$), and "Using time effectively" ($f = 9$). In the instructional environment theme, the most frequently mentioned aspect is "Organizing the instructional environment" ($f = 3$). Additionally, a small number of teachers expressed views related to "Making the instructional environment engaging" ($f = 1$) and "Adding dynamism to the process" ($f = 1$). Below are some direct responses from teachers regarding these themes:

"Yes, it is necessary. A well-structured plan allows for smoother progress, ensures continuity, and maintains the process without deficiencies. When instructional planning is in place, students learn more efficiently in a shorter time, making the learning experience more effective." P34

"Yes, it is necessary. Instructional planning must align with students' needs and pedagogical principles to ensure a well-structured and effective learning experience." P38

These findings indicate that teachers primarily conceptualize instructional planning as a means of adapting instruction to student characteristics and ensuring efficiency in the teaching-learning process. This emphasis suggests that teachers view planning not merely as an administrative requirement but as a pedagogical tool for aligning instruction with learners'

needs. Such interpretations are consistent with the literature highlighting the role of planning in student-centered teaching and instructional coherence (Emmer et al., 2003; Richards, 2013).

While most teachers emphasized student adaptation and efficiency, a smaller group highlighted the role of instructional planning in organizing and enriching the instructional environment. Although less frequently mentioned, these views reflect a more holistic understanding of planning as a dynamic process that shapes learning environments. This divergence suggests variability in teachers' pedagogical orientations and professional experiences, indicating that not all teachers attribute the same instructional value to planning.

Participants' Views on Documents/Variables Considered in Instructional Planning

Participants were asked, "What documents/variables do you consider when preparing an instructional plan?" The findings derived from their responses are presented in Table 9.

Table 9

Participants' Views on Documents/Variables Considered in Instructional Planning

<i>Theme</i>	<i>Code</i>	<i>f</i>
Learner-Oriented and Experience-Based Factors	Student characteristics	29
	Internet resources	11
	Personal experiences	3
Structural and Institutional Factors	Physical conditions	19
	Written resources	17
	Departmental meetings	3

Table 9 reveals that the participants' views on the documents/variables considered in instructional planning fall under two themes and six codes. Rather than being classified according to educational philosophies, the themes were reorganized based on the functional roles of the variables identified in the responses. Within the learner-oriented and experience-based factors theme, the most frequently mentioned factor was "Student characteristics" ($f = 29$), followed by "Internet resources" ($f = 11$) and "Personal experiences" ($f = 3$). Within the structural and institutional factors theme, responses were concentrated around "Physical conditions" ($f = 19$) and "Written resources" ($f = 17$). A small number of teachers mentioned "Departmental meetings" ($f = 3$). Below are some direct responses from teachers regarding these themes:

"I base my planning on the most recent curriculum published by the Ministry of National Education. Additionally, I refer to lesson plans I have prepared in previous years. I also take into account the instructional environment (such as the availability of ICT classrooms, number of computers, smart boards, projectors) and student profiles (prior knowledge, access to technological tools, age, learning needs, etc.)." P3

"Factors such as students' grade levels, age groups, cognitive abilities, interests, and needs are essential. I also consider the coursebook, the subject matter, and the annual plan issued by the Ministry of National Education." P30

The findings suggest that the participants predominantly rely on learner-oriented and experiential factors, particularly student characteristics, when preparing instructional plans. This tendency reflects a pragmatic approach in which teachers prioritize immediate classroom

realities over formal institutional documents. Such an orientation aligns with constructivist perspectives emphasizing responsiveness to learners' needs (Marsh, 2009).

However, the relatively lower emphasis on departmental meetings and written resources indicates that collaborative and institutional planning mechanisms may be underutilized. This finding may be attributed to time constraints, workload, or a preference for individual professional judgment. The diversity in responses highlights tensions between individual autonomy and institutional expectations in instructional planning.

Participants' Views on Collaborative vs. Individual Instructional Planning

Participants were asked, "Do you plan your lessons individually or collaboratively (e.g., with a department or grade-level committee)?" The findings derived from their responses are presented in Table 10.

Table 10

Participants' Views on Collaborative vs. Individual Instructional Planning

<i>Code</i>	<i>f</i>
Departmental collaboration	20
Individual planning	12
Both departmental collaboration & individual planning	9

According to Table 10, the participants' responses regarding whether they plan their lessons individually or collaboratively fall into three categories. The most frequently reported approach was "Departmental collaboration" ($f = 20$), followed by "Individual planning" ($f = 12$) and "Both departmental collaboration and individual planning" ($f = 9$). Below are some direct responses from teachers regarding these approaches:

"Since I am the only teacher of my subject at my school, I primarily plan my lessons individually. However, at the district level, I also participate in departmental meetings at the beginning, middle, and end of the academic year, which allows for some collaborative planning." P6

"We determine the general aspects of lesson planning as a department, but when it comes to specific teaching methods and techniques, I make individual decisions." P8

The preference for departmental collaboration indicates that teachers value shared decision-making and collective coherence in instructional planning. Collaborative planning appears to function as a mechanism for ensuring consistency across classes and aligning instructional practices within subject areas. Conversely, the participants who emphasized individual planning often justified this preference by referring to contextual constraints, such as being the sole subject teacher in a school or the need for instructional flexibility. These contrasting views reveal that instructional planning practices are shaped not only by pedagogical beliefs but also by structural and organizational conditions.

Participants' Views on Considering Environmental Conditions in Instructional Planning

Participants were asked, "Why is it necessary to consider school and national conditions when planning instruction?" The findings from their responses are presented in Table 11.

Table 11*Participants' Views on Considering Environmental Conditions in Instructional Planning*

<i>Theme</i>	<i>Code</i>	<i>f</i>
Fundamental Principles of National Education	Ensuring equal opportunities and resources	26
	Addressing individual and societal needs	8
	Generality and equality	1
Principles of Instruction	Cost-effectiveness	13
	Student-centered approach	9
	Relevance to real-life situations	4
	Timeliness	2
	Goal alignment	2
	Proximity-based learning approach	1

Table 11 shows that the participants' views on whether environmental conditions should be considered in instructional planning fall into two themes and nine codes. The most emphasized aspect under the Fundamental Principles of National Education theme is "Ensuring equal opportunities and resources" ($f = 26$), followed by "Addressing individual and societal needs" ($f = 8$) and "Generality and equality" ($f = 1$). Under the Principles of Instruction theme, the most frequently mentioned aspects are "Cost-effectiveness" ($f = 13$) and "Student-centered approach" ($f = 9$), followed by "Relevance to real-life situations" ($f = 4$), "Timeliness" ($f = 2$), "Goal alignment" ($f = 2$), and "Proximity-based learning approach" ($f = 1$). Below are some direct quotations from teachers regarding these themes:

"Every student is different. Their environment, economic conditions, and living circumstances vary. The place where a student grows up directly impacts their education because people are not isolated like plants in a pot; external conditions always influence them. Therefore, these factors must be taken into account in instructional planning." P20

"Yes, environmental conditions should be considered. The school's location significantly influences students' perspectives, general knowledge, and moral values. Socioeconomic status also plays a crucial role in this regard. Therefore, instructional planning should take these factors into account." P41

The participants' emphasis on equal opportunities and resource distribution reflects an awareness of the social and contextual dimensions of education. This perspective suggests that instructional planning is perceived as a means of addressing educational inequalities and adapting instruction to diverse socioeconomic conditions. Although fewer participants referred to principles such as proximity-based learning or timeliness, these minority views demonstrate a more nuanced pedagogical sensitivity to instructional design principles. The coexistence of both dominant and marginal perspectives indicates that participants' understandings of environmental conditions vary in depth and scope.

Participants' General Evaluation of Instructional Planning

Participants were asked, "What are your general evaluations of instructional planning?" The findings from their responses are presented in Table 12.

Table 12*Participants' General Evaluation of Instructional Planning*

<i>Theme</i>	<i>Code</i>	<i>f</i>
Functionality	Ensuring effective instructional activities	6
	Keeping content up-to-date	6
	Supporting effective assessment and evaluation	5
	Addressing student needs	5
Flexibility	Allowing flexibility	5
	Being appropriate for student levels	4
	Making learning enjoyable	2
	Guiding the teacher	7
User-Friendliness	Maintaining classroom organization	5
	Helping achieve learning outcomes	4
	Being practice-oriented	1
Efficiency	Saving effort	9
	Helping manage time effectively	7
Alignment with State and Societal Expectations	Considering environmental conditions	5
Consistency and Universality	Ensuring equality	4

Table 12 shows that the participants' general views on instructional planning fall into six themes and seventeen codes. Within the Functionality theme, the most emphasized factors are "Ensuring effective instructional activities" ($f = 6$), "Keeping content up-to-date" ($f = 6$), and "Supporting effective assessment and evaluation" ($f = 5$). Within the Flexibility theme, the most frequently mentioned aspects are "Addressing student needs" ($f = 5$) and "Allowing flexibility" ($f = 5$), followed by "Being appropriate for student levels" ($f = 4$) and "Making learning enjoyable" ($f = 2$). Under the User-Friendliness theme, the most common responses are "Guiding the teacher" ($f = 7$) and "Maintaining classroom organization" ($f = 5$), while some teachers also mentioned "Helping achieve learning outcomes" ($f = 4$) and "Being practice-oriented" ($f = 1$). In the Efficiency theme, responses were concentrated around "Saving effort" ($f = 9$) and "Helping manage time effectively" ($f = 7$). Within the Alignment with State and Societal Expectations theme, the most frequently mentioned aspect was "Considering environmental conditions" ($f = 5$). Finally, in the Consistency and Universality theme, "Ensuring equality" ($f = 4$) was noted as a significant factor. Below are some direct responses from teachers regarding these themes:

"Instructional planning is essential for effective time management in the classroom, which is one of the most important aspects for teachers. However, many teachers tend to rely on pre-made plans, either due to their confidence in their own experience or because they find it too time-consuming to create a plan from scratch." P26

"In our country, we have a young and dynamic group of teachers who are capable of planning lessons effectively. However, planning on top of an unstable education system can be challenging and sometimes fails to produce the desired outcomes. A well-structured education system is essential for strong instructional planning, and for proper instructional planning, we need a solid and well-defined curriculum." P34

The participants' general evaluations of instructional planning reveal a multidimensional understanding that encompasses functionality, flexibility, efficiency, and alignment with societal expectations. The prominence of efficiency-related codes suggests that teachers perceive planning primarily as a tool for managing time and effort in demanding classroom environments. At the same time, the emergence of themes such as flexibility and user-friendliness indicate that teachers also associate planning with pedagogical adaptability and professional support. Minority views emphasizing consistency and equality highlight the normative and ethical dimensions of instructional planning, suggesting that some teachers frame planning as a mechanism for ensuring fairness and standardization in education.

Discussion

This study aimed to determine the levels of awareness among middle school teachers regarding the curriculum and instructional planning. During quantitative data collection, it was also found that teachers demonstrated high levels of cognitive, affective, and psychomotor awareness of the curriculum. These findings align with those obtained in previous studies, such as those conducted by Pektaş and Pesen (2021). However, some studies, such as those by Opoh and Awhien (2015), indicate that teachers' curriculum literacy levels are low. Similarly, Sayın (2019), in a study with mathematics teachers, and Türkoğlu (2016) in a study with physical education teachers, found that teachers' awareness levels regarding the curriculum were relatively low. This variation across studies may stem from differences in educational contexts, the quality of teacher training, and the extent of curriculum reform implementation. The higher awareness levels identified in this study might be attributed to recent professional development initiatives and curriculum updates that have enhanced teachers' understanding of instructional design and implementation. These findings underscore the importance of ongoing teacher training and reflective practice in improving curriculum awareness and promoting effective instructional planning.

In essence, these findings reveal that there were no significant differences among teachers regarding their curriculum awareness levels in relation to gender, years of professional experience, and educational qualifications. Some of the studies, such as those conducted by Pektaş and Pesen (2021), have found similar conclusions, while other studies differ regarding professional experience and gender. The high levels of psychomotor awareness reported in the quantitative findings appear inconsistent with the qualitative results, which indicate that some teachers rely on ready-made instructional plans and experience difficulties during curriculum implementation. However, this apparent inconsistency reflects a well-documented distinction between awareness and practice. High curriculum awareness suggests that teachers possess the knowledge and understanding required to plan and implement instruction effectively; nevertheless, the translation of such awareness into practice is often constrained by contextual and structural factors.

An additional consideration in interpreting the quantitative findings is the potential influence of social desirability bias. As the data were collected through self-report measures, teachers may have rated their curriculum awareness more positively in order to present themselves as competent professionals. Such tendencies have been widely documented in educational research, particularly in studies relying on self-assessment instruments (Podsakoff et al., 2003). The qualitative findings, however, provide a complementary perspective by revealing practical challenges and implementation difficulties, indicating that high awareness

scores do not necessarily translate into unproblematic practice. From a mixed-methods perspective, the integration of qualitative data helps mitigate the limitations associated with self-report bias and enables a more balanced interpretation of teachers' curriculum awareness.

The qualitative findings further suggest that time constraints, workload, insufficient resources, and institutional expectations may hinder teachers' ability to fully enact their curriculum knowledge in classroom practice. Similar discrepancies between teachers' reported competencies and their actual instructional practices have been reported in previous research, underscoring that awareness alone does not guarantee effective implementation (Fullan, 2007; Ornstein & Hunkins, 2018). From a mixed-methods perspective, the convergence of high quantitative awareness scores and qualitative implementation challenges points to an implementation gap rather than a methodological inconsistency. For instance, in a study, Erdamar (2020) found that male teachers had significantly different views in their favor, whereas another study conducted by Gömleksiz and Erdem (2018) found female teachers had significantly different views in their favor. Therefore, the lack of gender-related differences in this study may be due to some reasons, such as the teaching profession not requiring physical strength, mixed-gender enrollment in undergraduate teacher education, and in-service training programs that do not differentiate between genders. In the same way with professional experience, these studies argue that seniority has not played any major role in teachers' application of curriculum awareness. However, some studies indicate that greater exposure to teaching will enhance one's commitment to the curriculum (Karakuyu & Oğuz, 2021; Taylor, 2013). By contrast, Erman (2016) and, Aslan and Erden (2020) obtained data that yield no significant correlation between teachers' professional exposure to teaching and the teachers' commitment to the curriculum. Even though some other studies suggest the various ways in which professional experience may affect teachers' perception toward the curriculum, in contrast to Burul (2018), who found no significant connection between teachers' educational background and their curriculum commitment. On the contrary, Aslan and Erden (2020) found that teachers whose qualifications included postgraduate degrees showed a higher level of curriculum commitment than those with a bachelor's-only background. These mixed findings suggest that teachers' curriculum commitment may be influenced more by contextual and institutional factors than by individual characteristics such as years of experience or educational background. Therefore, understanding how professional contexts shape teachers' engagement with the curriculum could offer valuable insights for future professional development initiatives.

The qualitative part of the study explored middle school teachers' perspectives about instructional planning. Teachers asserted that planning is necessary in education since it allows the delivery of instruction that is fit for the students' levels, helps the teachers in their work, makes the work more efficient by saving time, and allows for easy assessment of any changes if needed. Hıdıroğlu (2018) further argues that teachers should have the competence to create an effective learning environment where students take responsibility for their own learning. Likewise, Senemoğlu (2018) asserts that the process of teaching is directly affected by the effectiveness of the instructional plans. Yıldırım and Yıldırım (2020) have also suggested that effective instruction and structured lesson planning are essential for a well-organized teaching process. Teachers in this study stated that in planning instruction, they consider student characteristics, physical conditions, written materials, and online resources. Borich (2014) with Kauchak and Eggen (2007) argue that, in short, the teacher is the most important variable for

instructional planning. The effectiveness of the instructional process and the achievement of learning objectives depend on teachers' planning skills. Aykaç (2014) underscores the importance of considering students' interests, desires, and abilities in instructional planning, while Nayman (2020) notes that teachers focus on moral and national values. The study found that most teachers collaborate with their subject-area colleagues when planning instruction. Acarbaş (2011) examined the effectiveness of subject-area teacher committees and found that geography teachers were well-informed about these committees and considered them important. Similarly, Göksoy and Yenipinar (2015) found that teachers believe that the effective functioning of subject-area groups plays a significant role in the success of educational activities. Teachers also highlighted the importance of considering school and national conditions when planning instruction. The reasons cited include ensuring equal opportunities, addressing students' needs, cost-effectiveness, and student-centered approaches. Karakuyu and Oğuz (2021) found that whether teachers work in urban or rural areas does not significantly affect their commitment to the curriculum. However, Bümen et al. (2014) state that the environmental and socio-economic conditions of a school influence teachers' adherence to the curriculum. Additionally, the study revealed that teachers perceive the curriculum as student-centered, effective, clear, and flexible, but also noted that time constraints pose a significant challenge. Yeşilyurt (2011) found that pre-service teachers preferred student-centered curricula that are developmentally appropriate and emphasize hands-on learning experiences. This finding aligns with the results of the present study, as many participating teachers also highlighted the importance of actively engaging learners and adapting instruction to students' needs. This consistency suggests that both pre-service and in-service teachers value experiential and learner-centered approaches, reflecting a broader shift toward constructivist orientations in curriculum implementation.

The study found that teachers' general views on the instructional planning process include alignment with student level, time and effort efficiency, teacher guidance, effective instructional activities, curriculum relevance, and effective assessment and evaluation. Oğuz and Bayındır (2009) found that teachers pay attention to student environment and curriculum relevance when designing instructional plans. Aykaç (2014) highlighted that instructional planning enhances teacher efficiency, contributes to meeting students' interests and needs, and fosters structured study habits. According to the findings, teachers generally agreed that the number of activities in textbooks is insufficient, but they acknowledged that these activities serve as examples and can be expanded upon. The study also revealed that teachers have high awareness of the curriculum and frequently use resources such as educational programs, annual plans, and textbooks. However, many teachers reported challenges in implementing the curriculum in practice, including time constraints, inadequate physical conditions, and a lack of materials for activities. This indicates that, while teachers theoretically demonstrate a positive attitude toward instructional planning, they face practical difficulties in its implementation. The study also found that environmental factors influence teachers' planning and commitment to the curriculum. Additionally, some teachers reported planning lessons individually without the involvement of school administration or subject-area groups. Furthermore, it was observed that many teachers rely on pre-prepared annual plans from the internet, indicating a lack of sufficient knowledge in this area. The study suggests that teachers continue their professional development and possess the fundamental skills required for their profession. Taken together, the findings indicate that although teachers possess high levels of curriculum awareness and a positive orientation toward instructional planning, they face significant challenges in applying

these competencies in real classroom contexts. Factors such as limited time, inadequate resources, and insufficient institutional support hinder effective curriculum implementation, pointing to a persistent gap between awareness and practice that warrants further attention.

Conclusion and Implications

This study examined middle school teachers' curriculum awareness and instructional planning practices using a mixed-methods approach. The quantitative findings revealed that teachers demonstrated high levels of cognitive, affective, and psychomotor curriculum awareness. Rather than merely indicating familiarity with curricular documents, these findings suggest that teachers conceptually value the curriculum and recognize its pedagogical significance. From an analytical perspective, such high awareness levels may be associated with recent curriculum reforms and professional development initiatives that emphasize curriculum literacy and instructional planning competencies.

However, the absence of significant differences in curriculum awareness across gender, professional experience, and educational background indicates that curriculum awareness may function as a shared professional attribute rather than an individual characteristic. This finding aligns with studies reporting similar patterns (e.g., Pektaş & Pesen, 2021), while diverging from research suggesting that demographic variables influence curriculum awareness (Sayın, 2019; Türkoğlu, 2016). These mixed results imply that contextual and institutional factors may exert a stronger influence on teachers' curriculum awareness than personal variables, particularly in systems where curricula are centrally developed and standardized.

From a mixed-methods perspective, the integration of qualitative findings provides critical insight into how curriculum awareness is enacted in practice. Although quantitative data indicate high levels of awareness, qualitative findings reveal that teachers frequently experience difficulties in translating this awareness into instructional planning and classroom implementation. This apparent discrepancy does not represent a contradiction; rather, it reflects a well-documented distinction between awareness and practice. Teachers may possess the necessary knowledge and attitudes toward the curriculum, yet face contextual constraints such as limited time, heavy workload, insufficient resources, and institutional expectations that restrict effective implementation.

The qualitative findings further illuminate the underlying causes of this implementation gap. Teachers emphasized instructional planning as a means of adapting instruction to student characteristics, improving efficiency, and managing instructional time. This emphasis suggests that planning is perceived not only as a pedagogical activity but also as a coping strategy for demanding teaching conditions. Such interpretations help explain why teachers with high psychomotor awareness may still rely on ready-made instructional plans or experience challenges during curriculum implementation. In this regard, the qualitative findings function as an explanatory mechanism that contextualizes and deepens the interpretation of the quantitative results.

Another important consideration in interpreting the quantitative findings is the potential influence of social desirability bias inherent in self-report measures. Teachers may have rated their curriculum awareness positively in order to present themselves as competent professionals. However, the qualitative data mitigate this limitation by revealing practical challenges and inconsistencies in instructional planning practices. From a mixed-methods

standpoint, the convergence of self-reported high awareness levels and qualitatively identified implementation difficulties strengthens the credibility of the findings and provides a more balanced understanding of teachers' curriculum awareness.

Qualitative findings related to instructional planning practices also demonstrate considerable diversity in teachers' perspectives. While most teachers reported collaborative planning with subject-area colleagues, some preferred individual planning due to contextual constraints, such as being the sole subject teacher or lacking institutional support. These contrasting views indicate that instructional planning practices are shaped not only by pedagogical beliefs but also by organizational structures and school culture. The presence of minority and opposing views highlights variability in how teachers conceptualize and enact instructional planning, thereby reinforcing the exploratory findings with greater interpretive depth.

Teachers' emphasis on student-centeredness, flexibility, and curriculum relevance in instructional planning aligns with constructivist orientations toward teaching and learning. At the same time, the recurrent mention of time constraints and insufficient resources underscores systemic challenges that limit the practical realization of these pedagogical ideals. The integration of quantitative evidence of high curriculum awareness with qualitative accounts of implementation barriers suggests that improving curriculum practice requires more than individual teacher competence; it also necessitates structural and administrative support within schools.

Overall, the mixed-methods integration in this study reveals that curriculum awareness and instructional planning are interconnected yet mediated by contextual factors. While teachers demonstrate strong awareness and positive orientations toward planning, environmental constraints hinder the effective translation of these competencies into practice. These findings carry several practical implications for educational policy and practice. Since teachers reported challenges related to limited time, lack of materials, and inadequate classroom environments, efforts should be made to improve school facilities and provide sufficient instructional resources. As many teachers indicated that they rely on pre-prepared annual plans and experience difficulties in adapting activities, in-service training programs should prioritize enhancing teachers' instructional planning and curriculum implementation skills. The findings also revealed that collaboration with colleagues and administrative support were limited; therefore, school leaders should foster professional learning communities and promote collaborative planning opportunities among teachers. Furthermore, since teachers demonstrated generally positive attitudes toward the curriculum, their feedback should be incorporated into future curriculum development and revision processes. Finally, because the effectiveness of a curriculum largely depends on teachers' understanding and application, monitoring and supporting teachers' curriculum literacy should remain a continuous priority in educational policy and practice. Future research may further explore how school culture and organizational conditions influence the relationship between curriculum awareness and instructional planning practices.

Declarations

Author Contributions

Coşkun Aygün: Conceptualization, literature review, methodology, data collection, data analysis, writing-original draft, validation and interpretation.

Ayşenur Kuloğlu: Conceptualization, literature review, methodology, data collection, data analysis, writing-review and editing, validation and interpretation.

Conflict of Interest

The authors declare no competing interests with other persons, organizations, or institutions.

Disclosure of Artificial Intelligence (AI) Use

ChatGPT 5.1 was used for language editing purposes (improving expressions, grammar, and punctuation corrections). All scientific content, data analysis, and interpretations in this study were developed entirely by the authors.

Availability of Data and Materials

The datasets generated and/or analyzed during the current study are not publicly available due to ethical and confidentiality restrictions but are available from the corresponding author upon reasonable request.

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Prior Dissemination

This study is based on the master's thesis of Coşkun Aygün and has not been published elsewhere in article form.

Ethics Committee Approval

Ethics approval for this study was obtained from the Social and Human Sciences Research Ethics Committee of Firat University (Decision No: 15, Date: 04.11.2021). All procedures were conducted in accordance with the approved ethical guidelines.

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TÜRKÇE GENİŞ ÖZET

Ortaokul Öğretmenlerinin Program Farkındalıklarının ve Öğretimi Planlama Uygulamalarının Değerlendirilmesi: Bir Karma Yöntem Çalışması

Giriş

Ortaokul öğretmenlerinin öğretim programı planlama sürecine ilişkin farkındalıkları, eğitim kalitesini doğrudan etkileyen önemli bir unsurdur. Öğretmenlerin programı nasıl algıladıkları, uygulama sürecinde benimsedikleri stratejiler ve karşılaştıkları güçlükler, eğitimde başarının artırılmasında belirleyici bir rol oynamaktadır. Öğretim programı, belirlenen bilgi ve becerilerin eğitim hedeflerine ulaşmak amacıyla planlı bir şekilde kazandırılmasını sağlayan bir yapı olarak tanımlanmaktadır (Küçükahmet, 2007). Öğretim planı ise öğretmenin dersin hedeflerini, içeriğini, öğrenme etkinliklerini ve değerlendirme süreçlerini düzenlediği bir araçtır (Öncü, 2004). Öğretmenler bu planları eğitim programına uygun olarak yıllık plan, günlük plan ya da ünite planı biçiminde hazırlayabilmektedir (İşman ve Eskicumalı, 2003).

Eğitim programı ve öğretim programı kavramları benzer görünse de farklı anlamlara sahiptir. Eğitim programı belirli bir yaş grubuna yönelik tüm sistematik faaliyetleri kapsarken, öğretim programı bu faaliyetlerin belirli bir disiplin ve plan doğrultusunda uygulanmasını ifade eder (Akpınar, 2017). Türkiye’de öğretim programları, Millî Eğitim Bakanlığı (MEB) ve Talim Terbiye Kurulu (TTK) tarafından hazırlanarak ülkenin eğitim felsefesini yansıtır (MEB, 2018). Planlama eksiklikleri, öğretmenin zamanını etkin kullanamamasına ve ders sürecinde stres yaşamasına neden olur (Efil, 2004).

Öğretim programı farkındalığı, öğretmenlerin programın hedefleri, içeriği ve değerlendirme yöntemleri hakkında bilgi ve bilinç düzeylerini ifade eder. Ancak bu konuda yapılan araştırmalar sınırlıdır (Erman, 2016; Sayın, 2019; Pektaş ve Pesen, 2021). Bu çalışma, öğretmenlerin öğretim programı ve öğretimi planlama konusundaki farkındalıklarını analiz etmeyi amaçlamaktadır.

Yöntem

Öğretmenlerin öğretim programı planlama sürecine ilişkin farkındalıklarını kapsamlı biçimde inceleyebilmek amacıyla 2021–2022 eğitim-öğretim yılında Elazığ ilinde 50 ortaokulda gerçekleştirilen çalışmada karma yöntem kullanılmıştır. Bu kapsamda nicel ve nitel veriler bir arada kullanılarak araştırma problemi farklı boyutlarıyla ele alınmıştır. Araştırmanın nicel boyutunda öğretmenlerin öğretim programına ilişkin farkındalık düzeylerini belirlemek amacıyla veriler 239 öğretmenden toplanmıştır. Nitel boyutta ise öğretmenlerin öğretim planlama sürecine ilişkin görüşlerini daha derinlemesine ortaya koymak amacıyla maksimum çeşitlilik örnekleme yöntemi kullanılarak 41 öğretmenle görüşmeler gerçekleştirilmiştir.

Nitel veriler öğretmenlerin öğretim programına ilişkin farkındalık düzeylerini belirlemek amacıyla Öğretim Programı Farkındalık Ölçeği kullanılarak toplanmıştır. Nitel veriler ise öğretmenlerin öğretim planlama sürecine ilişkin deneyimlerini ve görüşlerini daha ayrıntılı biçimde ortaya koymak amacıyla yarı yapılandırılmış görüşmeler aracılığıyla elde edilmiştir. Elde edilen nitel veriler içerik analizi yöntemi ile analiz edilmiş ve öğretmen görüşleri doğrultusunda temalar oluşturulmuştur. Araştırmada veri güvenilirliğini artırmak amacıyla uzman görüşlerine başvurulmuş ve yapılandırılmış kodlama süreci uygulanmıştır.

Bulgular

Nitel bulgularına göre öğretmenlerin öğretim programına yönelik bilişsel, duyuşsal ve psikomotor farkındalık düzeylerinin yüksek olduğu belirlenmiştir. Bununla birlikte cinsiyet, mesleki kıdem ve öğrenim durumu gibi değişkenler açısından öğretmenlerin farkındalık düzeyleri arasında anlamlı bir farklılık bulunmamıştır.

Nitel bulgular ise öğretmenlerin öğretimi planlarken öğrenci seviyesi, fiziksel koşullar ve yazılı kaynaklar gibi çeşitli faktörleri dikkate aldıklarını göstermektedir. Ayrıca öğretmenlerin öğretim planlaması sürecinde genellikle zümreleriyle birlikte çalıştıkları ve planlama sürecinde okul ve ülke koşullarını dikkate almanın önemini vurguladıkları görülmüştür. Bununla birlikte öğretmenler ders kitaplarında yer alan etkinliklerin sayıca sınırlı olduğunu ancak bu etkinliklerin geliştirilebileceğini ifade etmişlerdir. Nitel bulgular ayrıca öğretmenlerin öğretim programını uygulama sürecinde süre yetersizliği ve materyal eksikliği gibi çeşitli güçlüklerle karşılaştıklarını ortaya koymaktadır.

Tartışma ve Sonuç

Bu çalışmada, ortaokul öğretmenlerinin öğretim programına ve öğretimi planlamaya yönelik farkındalık düzeylerinin belirlenmesi amaçlanmıştır. Sonuçlar öğretmenlerin bilişsel, duyuşsal ve psikomotor farkındalık düzeylerinin yüksek olduğunu göstermektedir. Bu sonuçlar, Pektaş ve Pesen (2021) gibi önceki araştırmalarla tutarlıdır. Ancak, Opoh ve Awhen (2015) gibi bazı araştırmacılar öğretmenlerin program okuryazarlığının düşük olduğuna işaret etmektedir. Sayın (2019) ve Türkoğlu'nun (2016) çalışmaları, öğretmenlerin öğretim programına yönelik farkındalık düzeylerinin de düşük olduğunu göstermektedir. Araştırma sonuçlarına göre, öğretmenlerin farkındalık düzeyleriyle cinsiyet, mesleki kıdem ve öğrenim durumu gibi değişkenler arasında anlamlı bir fark bulunmamıştır. Pektaş ve Pesen (2021) benzer sonuçlar bulmuştur. Ancak, bazı araştırmalar cinsiyet ve mesleki kıdem gibi değişkenlerde farklı sonuçlar ortaya koymaktadır. Erdamar (2020) erkek öğretmenler lehine, Gömleksiz ve Erdem (2018) ise kadın öğretmenler lehine anlamlı farklar bulmuşlardır.

Mesleki kıdemle ilgili yapılan araştırmalar da benzer şekilde kıdemın öğretmenlerin öğretim programına yönelik farkındalıkları üzerinde anlamlı bir etkisi olmadığını göstermektedir. Ancak bazı araştırmalar mesleki kıdemın arttıkça öğretmenlerin öğretim programına olan bağlılıklarının arttığını belirtmektedir (Karakuyu ve Oğuz, 2021; Taylor, 2013). Mesleki kıdemın öğretmenlerin tutumları üzerindeki etkisi farklı araştırmalarla çeşitlenmektedir. Ancak, lisansüstü mezuniyetine sahip öğretmenlerin öğretim programına yönelik bağlılıklarının daha yüksek olduğu gözlemlenmiştir (Aslan ve Erden, 2020).

Araştırmanın nitel kısmında, öğretmenlerin öğretim planlamaya dair görüşleri incelenmiştir. Öğretmenler, planlamanın öğrenci seviyesini dikkate alması, öğretmenlere rehberlik etmesi, verimliliği artırması ve zaman tasarrufu sağlaması gibi önemli katkılar sağladığını belirtmişlerdir. Ayrıca, öğretim planlarının etkililiği öğretim sürecinin başarısını doğrudan etkilerken, öğretmenlerin öğrencilere uygun, etkili bir öğrenme ortamı oluşturması gerektiği vurgulanmıştır (Hıdıroğlu, 2018; Senemoğlu, 2018). Öğretmenler, öğretimi planlarken öğrenci özellikleri, fiziksel koşullar, yazılı kaynaklar ve internet gibi faktörleri dikkate aldıklarını ifade etmişlerdir. Borich (2014) ile Kauchak ve Eggen (2007) öğretim planlamasında öğretmenin önemli bir rolü olduğunu vurgulamaktadır. Ayrıca, öğretmenlerin zümreleriyle birlikte öğretim planı hazırladıkları bulunmuştur, bu da öğretim faaliyetlerinin başarısını artırmaktadır (Acarbaş, 2011; Göksoy ve Yenipınar, 2015).

Öğretmenler, öğretim planlamasında okul ve ülke koşullarını dikkate almanın önemini vurgulamışlardır. Bu faktörlerin fırsat eşitliği sağlama, öğrenci ihtiyaçlarına uygunluk, ekonomiklik ve öğrenci odaklılık gibi unsurlar içerdiği ifade edilmiştir. Karakuyu ve Oğuz (2021) ise öğretmenlerin şehir merkezi ya da kırsal alanda çalışma durumunun öğretim programına bağlılıklarını etkilemediğini belirtmiştir. Ancak okul çevresindeki sosyo-ekonomik koşulların öğretim programına bağlılık üzerinde etkili olduğu sonucunu yansıtan çalışmalar da (Bümen, Çakar ve Yıldız, 2014; Turan Özpolat, 2015) bulunmaktadır. Buna bağlı olarak, öğretmenlerin ders kitaplarındaki etkinliklerin az olduğu görüşü paylaşılsa da, bu etkinliklerin örnek olduğu ve çeşitlendirilebileceği ifade edilmiştir.

Öğretmenler, öğretim programının pratikte uygulanmasında süre yetersizliği, fiziksel koşulların eksikliği ve materyal eksiklikleri gibi zorluklarla karşılaştıklarını belirtmiştir. Bu durum, öğretmenlerin teorik olarak olumlu bir tutum sergileseler de pratikte öğretim planlamasında sorunlar yaşadıklarını göstermektedir. Ayrıca öğretmenlerin çevresel koşulların planlamayı etkilediğini ve bazı öğretmenlerin bireysel olarak planlama yaparak okul yönetimi veya zümrelerle bu süreci paylaşmadıklarını ortaya koymuştur. Çoğunluğu internetten temin ettikleri yıllık planları kullanarak planlama yapmaktadır ve bazı öğretmenlerde bilgi eksiklikleri bulunmaktadır.

Öneriler

Öğretmenlerin öğretim programına yönelik farkındalıklarının artırılması için hizmet öncesi ve hizmet içi eğitimlerin güçlendirilmesi, sınıf koşullarının iyileştirilmesi ve materyal desteği sağlanması gerekmektedir. Öğretim planlama sürecine öğrenciler, veliler, okul yönetimi ve akademisyenlerin de dahil edilmesi önerilebilir. Eğitimlerin çeşitlendirilmesi ve öğretmenlerin planlama becerilerinin geliştirilmesi, öğretim programı farkındalıklarını artırabilir. Programın başarısı, öğretmenlerin benimsemesi ve uygulama düzeyine bağlı olduğundan, öğretmenlerin program okuryazarlıklarının izlenmesi önerilebilir.

How do Information Technologies Teachers Implement the Information Technologies and Software Curriculum?

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Abstract

The primary aim of this study is to examine, in detail, the processes through which information technology teachers implement the Information Technology and Software course curriculum. The study employed a phenomenological design within a qualitative research methodology. The participants comprised 11 information technology teachers working in state schools in a province in northern Türkiye. A semi-structured interview form was used as the data collection instrument, and the data obtained were analysed through content analysis. The findings were organised under the themes of content determination, teaching methods and techniques, instructional materials, measurement tool identification processes, and factors affecting the curriculum implementation process. They indicate that teachers determine lesson content, teaching methods and techniques, instructional materials, and assessment tools predominantly on the basis of curriculum learning objectives and student characteristics. The findings further show that, when determining lesson content, teachers draw primarily on teacher guidebooks and digital content; in their lessons, they most frequently employ demonstration followed by practice and expository instruction; they use computers and software programs as the main instructional materials; and they incorporate Web 2.0 tools and written examinations as assessment tools within the assessment and evaluation process. Furthermore, Information Technology and Software teachers report that the curriculum implementation process is influenced by the school's physical resources, student characteristics, access to instructional materials, lesson time, teacher competencies, class size, current technological developments, school management, society's attitude towards the course, the presentation of content, and parents' attitudes towards technology.

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Introduction

An effective teaching and learning process depends on well-designed and efficient curricula (Aslan & Erden, 2020). The curriculum is defined as the overarching structure that encompasses all instructional activities related to the content to be addressed across different year groups and subject areas within a given educational period (Demirel, 2020). However, the manner in which a curriculum designed on paper is enacted in the classroom varies according to teachers' individual approaches. How teachers bring the curriculum to life - that is, how they translate the implementation process into the classroom environment - constitutes one of the fundamental processes determining curriculum success. In the literature, curriculum implementation is broadly characterised as a dynamic interplay between curriculum fidelity and curriculum adaptation. Curriculum fidelity has been defined as the degree to which curricula designed by curriculum development specialists are implemented as originally intended (Dusenbury et al., 2003); the extent to which curricula are delivered in accordance with the predetermined plan (Dane & Schneider, 1998); and the level at which practitioners in the field implement the curriculum in the manner envisaged by its designers (Pence et al., 2008). Curriculum fidelity is therefore of considerable importance for determining the extent to which a designed curriculum is implemented faithfully - particularly by teachers - the degree to which the intended outcomes are achieved, the challenges encountered during implementation, and, consequently, whether the curriculum is being delivered effectively (Karakuyu & Oğuz, 2021).

The way teachers shape the curriculum during implementation can be conceptualised through the notion of curriculum adaptation. According to Drake and Sherin (2006), every teacher adapts the curriculum in their own distinctive way. Ben-Peretz (1990) further emphasises that no curriculum is ever implemented blindly or without adaptation. Teachers make curriculum-related decisions behind closed doors, based on their beliefs about what is best for their students, rather than adhering rigidly to the curriculum prescribed by the district (Meidl & Meidl, 2011). Curriculum adaptation is made possible by teachers who know their students, are aware of their levels of readiness, can identify socio-cultural and economic differences, and possess the professional competence to manage such diversity (İlhan & Bümen, 2023). According to Bümen and Yazıcılar (2020), when teachers' adaptation skills are insufficiently supported and they are left to navigate the adaptation process independently, this may at times adversely affect - and even impede - student learning.

Snyder et al. (1992) draw attention to the importance of 'mutual adaptation', a process in which the teacher shapes the curriculum in response to classroom dynamics while also implementing the curriculum faithfully as originally designed. Mutual adaptation is defined as a bidirectional and dynamic process in which the curriculum is adapted to meet the needs of the school and the classroom during implementation, while the school and teachers simultaneously modify their own behaviours and practices in order to align with the curriculum (Dusenbury et al., 2003). Berman and McLaughlin (1976) report that the most effective strategy for curriculum implementation is one in which both the curriculum and the institution delivering it mutually accommodate one another. It may be argued that grounding the implementation process in mutual adaptation - by allowing the curriculum to be flexibly adjusted to local conditions - facilitates teachers' ownership and internalisation of the curriculum; that teachers' development of a culturally responsive curriculum structure

contributes positively to students' developmental processes; and that this, in turn, enables the overall successful implementation of the curriculum (Fullan & Pomfret, 1977; McGrew et al., 1994). Accordingly, rather than violating or disregarding curriculum fidelity during implementation, conceptualising it within a complementary framework alongside curriculum adaptation may be regarded as an important factor in the effective delivery of curricula. This is because, given the complex nature of the classroom, differences in students' levels of readiness in particular may make it impossible to deliver the curriculum precisely as specified on paper (Oliva, 2013). When undertaken with care, curriculum adaptation assumes a complementary role to curriculum fidelity as a professional act aimed at sustaining the core objectives of the curriculum, rather than representing rigid adherence to a formal text (Snyder et al., 1992).

Domitrovich et al. (2008) indicate that factors influencing the curriculum implementation process operate at macro, micro, and individual levels. Macro-level factors include national and local educational policies affecting the education system and schools, the centralised structure of the education system, and nationwide examinations. Micro-level factors encompass the environmental, institutional, and organisational conditions associated with the school and classroom context, including the school's climate and leadership structure, physical and financial resources, and student characteristics. Individual-level factors refer to the personal, psychological, and professional characteristics of teachers, who are responsible for enacting the curriculum directly within the classroom environment. In this context, the quality of curriculum implementation is contingent upon teachers' beliefs and perceptions, their levels of occupational stress and burnout, and their professional characteristics and self-efficacy (Domitrovich et al., 2008, 2015).

In Türkiye, curricula are developed by a central authority, and teachers are expected to implement the prescribed curricula accordingly. However, as the primary implementers of the curriculum, teachers are not always able to deliver it as originally intended - that is, they may be unable to maintain full curriculum fidelity or may be compelled to make 'necessary adaptations'. Studies conducted specifically within the Turkish context have examined the factors influencing teachers' curriculum fidelity and, consequently, their implementation processes. Bümen et al. (2014) report that teacher characteristics, student characteristics, regional factors, economic factors, social and cultural factors, institutional factors, the centralised education system, the examination system, teacher education, and curriculum characteristics all affect the degree to which teachers adhere to prescribed curricula. In addition, Doğuş and Tabak (2024b) highlight that political factors, health crises, natural disasters, and the pressure of supervisory oversight on teachers also influence curriculum fidelity. Teachers' inability to implement centrally developed curricula with complete fidelity, together with the multiplicity of factors influencing adherence, necessitates adapting the curriculum to specific contextual circumstances rather than delivering it verbatim. In light of these considerations, an in-depth examination of teachers' curriculum implementation processes is necessary in order to achieve an appropriate balance between curriculum fidelity and curriculum adaptation.

Information technology (IT) is a critical and continuously evolving field that societies seeking not to fall behind the times must actively support and develop. Technology permeates every aspect of daily life, and developments in information and communication technologies are closely followed. Technology shapes the ways in which we socialise, learn, communicate, and even entertain ourselves (Gülbahar & Kalelioğlu, 2018). Education is also among the primary

domains in which information and communication technologies are most extensively used. Given the view that schools prepare individuals for life, cultivating individuals who can adapt to evolving technologies in order to keep pace with global innovations and advancements is of considerable importance (Daggett, 2010). IT education has become increasingly significant in nurturing individuals who remain informed about developments in everyday life, who are capable not only of consuming knowledge but also of producing it, and who are enquiring, questioning, and able to keep pace with the demands of the contemporary world (Demirer & Sak, 2015). In light of these considerations, it is necessary to integrate school subjects with technology and to update curricula on a technological foundation. In particular, the Information Technology and Software (ITS) course requires regular updating in line with advances in science and technology. At the same time, current developments should be consistently monitored during the implementation of the course curriculum, and the implementation process should be reviewed within the context of evolving information and communication technologies.

The ITS course curriculum for Years 5 and 6 was among the curricula updated in Türkiye in 2018. The updated curriculum aims to equip every student with the ability to benefit from technology and to develop computational thinking skills (Ministry of National Education [MoNE], 2018). Delivered in Years 5 and 6 of secondary school, the ITS course curriculum seeks to create rich learning environments for students, introduce them to a range of hardware and software options, and enable them to engage in practical application alongside theoretical knowledge. The curriculum aims to help students establish meaningful connections between prior learning experiences and newly acquired knowledge through the use of organisational strategies, ensure their active participation in the learning process through experiential and hands-on learning, and equip them with the algorithmic thinking skills required to solve real-life problems they encounter (MoNE, 2018). The 2018 ITS course curriculum adopts a unit-based approach as its organisational framework, comprising five core units: IT; ethics and security; communication, research and collaboration; product development; and problem solving and programming. Delivered as a compulsory two-hour weekly lesson in Years 5 and 6, the course aims to equip students with foundational computer literacy and programming skills (MoNE, 2018). As of 2024, the curricula developed within the framework of the Türkiye Century Education Model (TCEM) began to be implemented in Years 1, 5, and 9. In May 2025, the TCEM ITS course curriculum was published as a draft programme for public consultation; as of the 2025-2026 academic year, it was approved and incorporated among the TCEM curricula entering implementation (MoNE, 2024). The TCEM ITS course curriculum continues to be implemented on a phased basis in Year 5, while the 2018 curriculum remains in effect for Year 6.

Successive revisions to curricula in Türkiye over the years (1993, 2005, 2009, 2015, 2018, and 2024) have necessitated a re-examination of curriculum structures (Özkan et al., 2022). A review of studies on the ITS course curriculum reveals research addressing the updating of the curriculum (Gülbahar & Kalelioğlu, 2018), its evaluation from teacher and student perspectives (Gündüz & Kuzu Demir, 2020; Karaosmanoğlu & Adigüzel, 2021; Özkan et al., 2022; Öztuzcu & Karamete, 2022; Sarıkoz & Alpan, 2019), its examination according to the CIPP model (Özdemir & Başaran, 2021), the evaluation of activities in the teacher guidebook (Kayahan & Özyurt, 2020), the comparison of curricula from different periods (Karaman & Karaman, 2019), and the comparison of Türkiye's curriculum with those of other countries (Tarım & Senemoğlu, 2020).

The curriculum has also been examined from the perspectives of technology literacy (Fidan & Debbağ, 2019), curriculum components (Çaka, 2022), Bloom's taxonomy (Öztürk et al., 2020), the metaverse (Sirkintı & Bolat, 2023), 21st-century skills (Doğuş & Tabak, 2024a), and digital skills and competencies (Başarıcı, 2025). Studies pertaining to curriculum implementation have addressed augmented reality (Kurtoğlu, 2019), flipped learning (İnce, 2022), learning losses during the pandemic period (Bozkurt et al., 2023), gamification (Öz, 2023), and project-based learning activities (Koçhan, 2025). When the existing literature is evaluated holistically, studies on the 2018 ITS course curriculum appear to concentrate predominantly on its structural characteristics and method-based applications, while studies addressing the applicability of the curriculum within teaching and learning processes from a holistic perspective remain limited.

Research Context

The dynamic nature of ITS course curricula raises not only the challenge of theoretical planning, but also the question of the extent to which such planning is implemented with fidelity in practice. Curricula developed within Türkiye's centralised structure cannot always be implemented in the ITS course context as originally planned. Barriers encountered in schools - such as resource shortages, lack of technical support, and limited lesson time - may impede teachers' capacity to enact the curriculum effectively. This, in turn, generates considerable variation in curriculum fidelity across educational settings and affects the degree to which the intended learning objectives of the curricula are achieved.

ITS teachers are required to strike a dynamic balance between curriculum fidelity and adapting the curriculum in accordance with their prevailing contextual conditions. The absence of a textbook, inherent to the nature of the ITS course, together with the rapid pace of technological change, positions teachers not merely as implementers but also as curriculum adapters. The learning objectives that teachers prioritise - and those they are compelled to address only superficially because of time constraints and infrastructural deficiencies - are among the fundamental determinants of the quality of the implementation process. Consequently, the effectiveness of the ITS course curriculum depends not solely on the quality of the plan itself, but also on the extent to which teachers can optimise that plan in relation to the school's physical resources and students' levels of readiness. Furthermore, Maral Polat et al. (2022) emphasise that teachers' positive and negative evaluations of the extent to which curricula are successfully implemented serve as a valuable guide for the design of future curricula.

In conclusion, the extent to which teachers implement the curriculum with fidelity, together with the contextual necessities that compel them to make adaptations, constitutes a critical factor in effective curriculum implementation. As emphasised in previous studies, when curriculum interventions are implemented with greater fidelity, positive educational outcomes are expected to increase. For curricula to be implemented successfully, it is important to understand how teachers deliver them, which factors influence their implementation, and what adaptations they make during the instructional process. Understanding how ITS teachers implement the 2018 ITS course curriculum will contribute to future curriculum development endeavours and shed light on ways of improving the implementation process by identifying the challenges teachers encounter. In light of these considerations, the primary aim of this

study is to examine how teachers implement the 2018 ITS course curriculum. In pursuit of this overarching aim, the study sought to address the following research questions:

1. How do teachers seek to ensure that the curriculum learning objectives are achieved, and which elements do they prioritise in this process?
2. How do teachers select and deliver content for the ITS course?
3. How do teachers select and employ teaching methods and techniques for the ITS course?
4. How do teachers select and utilise instructional materials for the ITS course?
5. How do teachers select and apply assessment tools within the assessment and evaluation process of the ITS course?
6. What factors do teachers consider to influence the implementation process of the ITS course curriculum?

Method

Research Design

This study aims to examine how teachers implement the ITS course curriculum. To this end, a phenomenological design, one of the qualitative research designs, was employed. Phenomenological design focuses on the meanings that individuals construct through their experience of the phenomenon under investigation (Creswell, 2021). The phenomenon on which this study is grounded is ITS teachers' experiences of implementing the ITS course curriculum'.

Participants

This study was conducted during the autumn semester of the 2024-2025 academic year with ITS teachers employed in four districts randomly selected from a province in northern Türkiye. A total of 35 teachers are employed across these districts. Criterion sampling, one of the purposive sampling methods, was used to select the research participants. The participant selection criteria required teachers to be employed at the secondary school level in state schools and to have a minimum of ten years of professional experience. The minimum requirement of ten years of professional experience was established on the grounds that teachers with greater familiarity with the ITS course curriculum would be better able to articulate their implementation experiences comprehensively. In accordance with these primary criteria, 20 teachers were identified as working in secondary schools in the randomly selected districts. These teachers were first informed about the scope and content of the study, after which 11 ITS teachers who volunteered to participate were designated as the research participants. The professional experience of the participating teachers ranges from 10 to 20 years; 8 participants are male and 3 are female. The participating teachers were assigned codes in the form of T1, T2, T3, ... T11.

Data Collection Instruments

A semi-structured interview form developed by the researchers was used as the data collection instrument. During the preparation of the instrument, studies incorporating teachers' views on curricula and research examining curriculum implementation processes were reviewed in detail by the researchers. Subsequently, studies evaluating the ITS course

curriculum from teacher perspectives were also examined in detail, and the interview questions were constructed by the researchers on the basis of the research questions. The prepared interview questions were submitted by e-mail to two faculty members specialising in Curriculum and Instruction, and expert opinions were obtained. The interview form was finalised in accordance with the feedback received from the experts.

The semi-structured interview form developed and finalised by the researchers comprised 13 questions designed to explore ITS teachers' experiences of instructional practices grounded in the ITS course curriculum. Selected examples of the interview questions aimed at examining teachers' views and experiences within the context of the research questions - across the themes of 'processes of achieving and prioritising learning objectives', 'content determination processes', 'teaching methods and techniques determination processes', 'instructional materials determination processes', 'measurement tools identification processes', and 'factors affecting the curriculum implementation process' - are as follows: "How do you select content for the ITS course?", "How do you deliver the content you have planned during lessons?", "How do you determine the teaching methods and techniques you will employ in your lessons, and which methods and techniques do you use?", "How do you determine the instructional materials you will use in your lessons, and which materials do you use?", "What considerations or criteria do you attend to when selecting these materials?", "How do you determine the assessment tools you will incorporate into the assessment and evaluation process of the course, and which assessment tools do you use?", and "What factors do you believe affect the process of implementing the ITS course curriculum?"

Prior to data collection, the necessary permissions were obtained from the Ordu University Educational Research Ethics Committee and the relevant Provincial Directorate of National Education. Subsequently, a meeting protocol was established with the teachers who constituted the study participants, and, as all teachers consented to audio recording, the interviews were recorded using an audio recording device. The research data were collected between September and November 2024, with each interview lasting approximately 30 minutes.

Data Analysis

The data obtained in the study were transcribed using Microsoft Office Word immediately after the interviews and then transferred to the MaxQDA 24 qualitative data analysis program. Content analysis was employed to analyse the research data. The data analysis process followed both deductive and inductive analytical approaches. Accordingly, the researchers first constructed themes on the basis of the research questions. The data in the analysis program were then read individually by the researchers, with codes identified first and categories subsequently developed. Upon completion of the coding process, the data under each category were read from beginning to end within the program, and the codes, categories, and themes assigned by the researchers were reviewed accordingly. To present the data visually in the findings section, MaxMaps were created in MaxQDA 24 for each theme identified in the study, and the resulting models are presented separately in the findings section in the form of themes, categories, and codes.

Trustworthiness

The criteria of credibility, transferability, dependability, and confirmability were adopted to establish the validity and reliability of the qualitative data (Creswell, 2021; Yıldırım & Şimşek,

2016). Face-to-face interviews were conducted with the participating teachers to ensure the credibility of the study. The semi-structured interview form developed by the researchers was reviewed by field experts, and the form was revised in accordance with the feedback provided by the relevant curriculum development specialists. With regard to transferability, the study participants were selected using criterion sampling, one of the purposive sampling methods. In addition, teachers' statements are presented through direct quotations in the findings section. To ensure confirmability, the views and recommendations of a curriculum development specialist who was not involved in the study were sought. To evaluate the dependability of the study, a pilot application was conducted with teachers implementing the curriculum who were not included in the study, and consistency was sought throughout. To establish inter-coder reliability, the data transferred to MaxQDA 24 were first read in detail by the researchers. Each researcher then independently coded the entire dataset and constructed the categories and themes. Following their separate analyses, the researchers convened and reached 85% agreement on the analysis. Disagreements over differing codes were discussed, the definitions of codes were clarified, and the process continued until 100% consensus on the coding was achieved.

Ethical Issues and Limitations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the [Ordu University Educational Research Ethics Committee] (Approval No: [2024-176], Date: [23/12/2024]) prior to data collection. All participating teachers were informed in detail about the purpose, scope, and procedures of the study and participated voluntarily, with the understanding that they could withdraw at any point without negative consequences. Written informed consent was obtained from all 11 ITS teachers prior to the interviews. To ensure confidentiality, participants were not referred to by their real names; instead, they were assigned codes (T1-T11) throughout the data collection, analysis, and reporting process. Interview recordings and transcripts were stored securely and accessed only by the researcher(s) involved in the study.

This study has several limitations that should be acknowledged. First, the findings are based on the perspectives of 11 ITS teachers and therefore cannot be generalised to all ITS teachers implementing the 2018 ITS Curriculum; rather, the results should be interpreted within the boundaries of this specific group and context. Second, the study provides a cross-sectional account of teachers' experiences at a single point in time and therefore does not capture how curriculum implementation practices may evolve over time. Finally, although measures were taken to enhance the credibility of the qualitative analysis, the interpretive nature of qualitative coding inherently involves a degree of researcher subjectivity.

Results

The analyses conducted in the study identified the following themes in relation to teachers' ITS course curriculum implementation processes: "Processes of Achieving and Prioritising Learning Objectives", "Content Determination Processes", "Teaching Methods and Techniques Determination Processes", "Instructional Materials Determination Processes", "Measurement Tools Identification Processes", and "Factors Affecting the ITS Curriculum Implementation Process". The identified themes and their associated findings are presented in this section.

ITS teachers' Processes of Achieving and Prioritising Learning Objectives

The study first examined the strategies teachers employed to achieve the curriculum learning objectives of the ITS course and the elements they prioritised throughout this process.

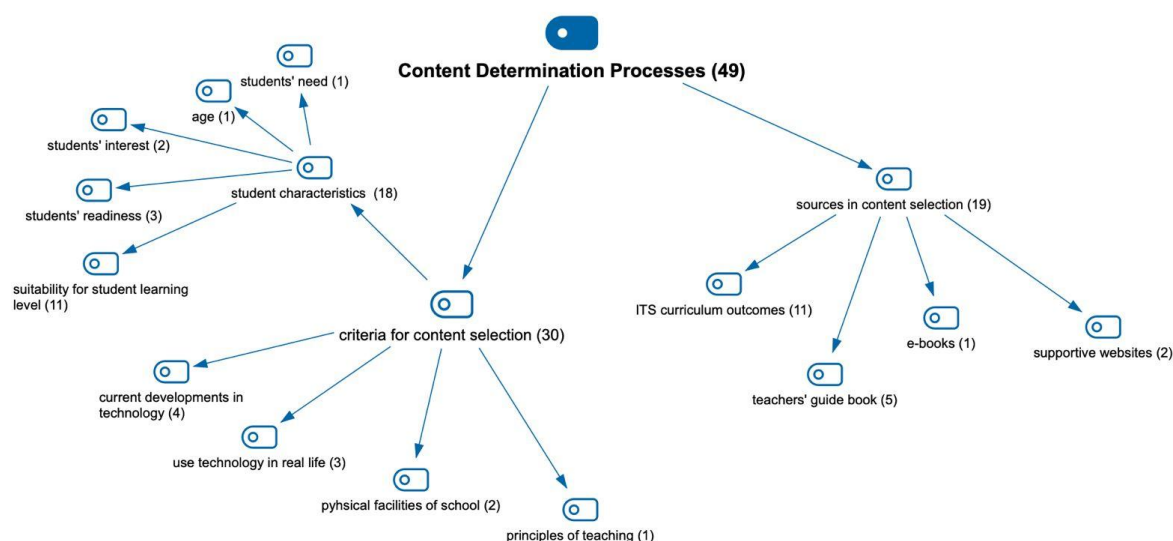
Teachers generally employ 'simplification' and 'theory-practice balance' strategies to achieve the curriculum learning objectives. T1 emphasised that concretising the ITS course curriculum learning objectives is a fundamental requirement: "We first break it down into sub-topics, then I try to place them into a daily lesson plan and deliver accordingly. Depending on the nature of the learning objective - if it is to be taught through expository instruction, I use that; if through a game, I use that... Demonstration followed by practice is indispensable to our lesson." T10 explained that they monitor the achievement of learning objectives through instant feedback: "I use Web 2.0 tools such as Kahoot to ask questions at the end of each topic, obtain instant feedback, and revisit any curriculum learning objectives that have not been adequately acquired."

When explaining the elements they prioritise in delivering curriculum learning objectives, teachers emphasise the limited lesson time allocated to the ITS course and infrastructural deficiencies. Under these circumstances, they indicate that they cannot assign equal weight to all curriculum learning objectives. T9 expressed that insufficient time undermines the depth with which learning objectives can be addressed: "The curriculum is, in my view, disjointed. In Year 5, it jumps abruptly from ethics to cybercrime. It is very difficult to break that down to the child's level in two hours. Either the curriculum needs to be simplified, or the time allocation needs to be increased." T2 notes that in schools without a computer laboratory, the learning objectives remain purely theoretical: "An IT lesson that stays at the theoretical level is definitely insufficient and ends up in the air. I determine the assessment tools and delivery approach according to the characteristics of the learning objective and the physical environment of the school." Teachers further reported that algorithm and coding learning objectives, in particular, are not appropriate for the age group concerned. T7 expressed this as follows: "The algorithm component requires abstract thinking - Year 5 and Year 6 pupils are really struggling. The child does not know what a coordinate plane is, so I end up having to teach mathematics first."

The elements teachers prioritise in relation to curriculum learning objectives are primarily shaped by objectives that are 'connected to everyday life' and 'appropriate to students' levels of readiness'. Teachers place curriculum learning objectives that students can apply outside school - such as Office applications and safe internet use - at the top of their priorities. T4 emphasised this as follows: "What matters most to me is that the child can use what they have learnt in everyday life. Computer literacy and technology literacy are my priorities in this regard." Furthermore, when certain sections of the ITS course curriculum learning objectives prove too demanding for students' level, teachers resort to 'learning objective elimination'. T7 conveyed this necessity as follows: "I eliminate some topics from the curriculum. In some classes I teach the topics I have selected; in others I do not. It varies depending on the students' level and the condition of the class."

Content Determination Processes of ITS teachers

The analyses conducted under the theme of 'content determination processes' examined how teachers determine lesson content during the implementation of the ITS course curriculum and the criteria on which they base this process. The hierarchical code-subcode model identified through these analyses is presented in Figure 1.

Figure 1*Hierarchical Code-Subcode Model of Teachers' Content Determination Processes*

Teachers indicated that, when determining content during the implementation of the ITS course curriculum, they primarily draw on the curriculum learning objectives and the teacher guidebook published by the MoNE. T11 expressed this as follows: "I select content for the ITS course in accordance with the curriculum and learning objectives prescribed by the MoNE. I incorporate the main headings specified in the curriculum and the topics falling under these headings into the lesson plan." It was also concluded that teachers make use of supplementary websites and e-books related to the course content. T4 highlighted this as follows: "For more practical tasks such as coding and presentation preparation, I also make use of websites and print resources. By print resources, I do not mean anything we would ask the children to purchase, but I do review books produced through collaborations between Google and the MoNE that are available externally."

It was determined that teachers primarily take student characteristics into account when selecting content. They place particular emphasis on ensuring that content is appropriate to students' level and also consider students' readiness, interests, age, and needs. Teachers further stated that they take current technological developments into account and incorporate technological tools and events that students will use in real life into their lesson content. T11 conveyed this as follows: "I take care to ensure that the content is appropriate to the age and knowledge level of the students. Currency - I keep content up to date by following the latest developments in IT. Engagement - I include interactive and enjoyable topics that will capture students' interest. Applicability - I prefer content that is practical and applicable in everyday life. Digital safety - I attach importance to topics related to digital literacy and safe internet use." ITS teachers also indicated that they consider the physical resources of the school when selecting content. These resources primarily refer to the availability of a computer laboratory. T7 expressed this as follows: "For instance, in the first semester I was at a school with a computer laboratory, where I was able to deliver the content in considerably more detail. In the second semester my school changed - I no longer have a computer laboratory. There were problems with the boards, and by the time we had sorted those out, we had already had to eliminate quite a few topics." In addition, T9 indicated that the instructional principles of simple

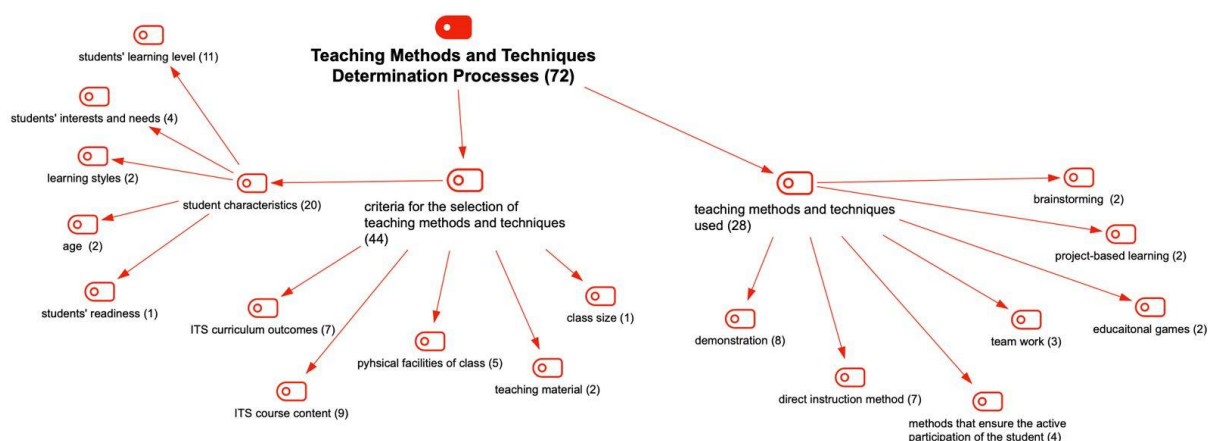
to complex and concrete to abstract are taken into account in content selection: "Now, Year 5 students find it very difficult to grasp abstract examples due to their age. For that reason, it is necessary to use somewhat more concrete examples with them. I make a point of finding content that is simpler and more easily comprehensible."

Teaching Methods and Techniques Determination Processes of ITS teachers

The analyses conducted under the theme of 'teaching methods and techniques determination processes' examined the criteria on which teachers base their selection of teaching methods and techniques, as well as the methods and techniques they employ during the implementation of the ITS course curriculum. The hierarchical code-subcode model identified through these analyses is presented in Figure 2.

Figure 2

Hierarchical Code-Subcode Model of Teachers' Teaching Methods and Techniques Determination Processes



It was determined that, among the teaching methods and techniques used in their lessons, ITS teachers most frequently employ demonstration followed by practice and expository instruction. Teachers were observed to draw predominantly on expository instruction when delivering the theoretical content of the course, whilst preferring demonstration followed by practice for applied content. T4 conveyed this as follows: "For theoretical topics, I mostly opt for the expository instruction method. For the others, since they are already heavily focused on computer use and practical application, as I mentioned - IT devices, interactive whiteboards, computers. We mostly use the demonstration followed by practice method in our lessons." Beyond these methods, teachers were seen to favour group work, educational games, project-based learning, and brainstorming techniques, all of which promote students' active participation in lessons. They also expressed that methods ensuring students' active participation are important in their lessons. T1 highlighted this as follows: "So let us say we have delivered the lesson and the child is having a little difficulty understanding - for instance, I very much prefer the game method in such situations, and I immediately use it when students are struggling to understand."

It was determined that ITS teachers primarily take student characteristics into account when selecting the teaching methods and techniques they employ in their lessons. Among these characteristics, teachers were observed to consider students' learning levels in particular,

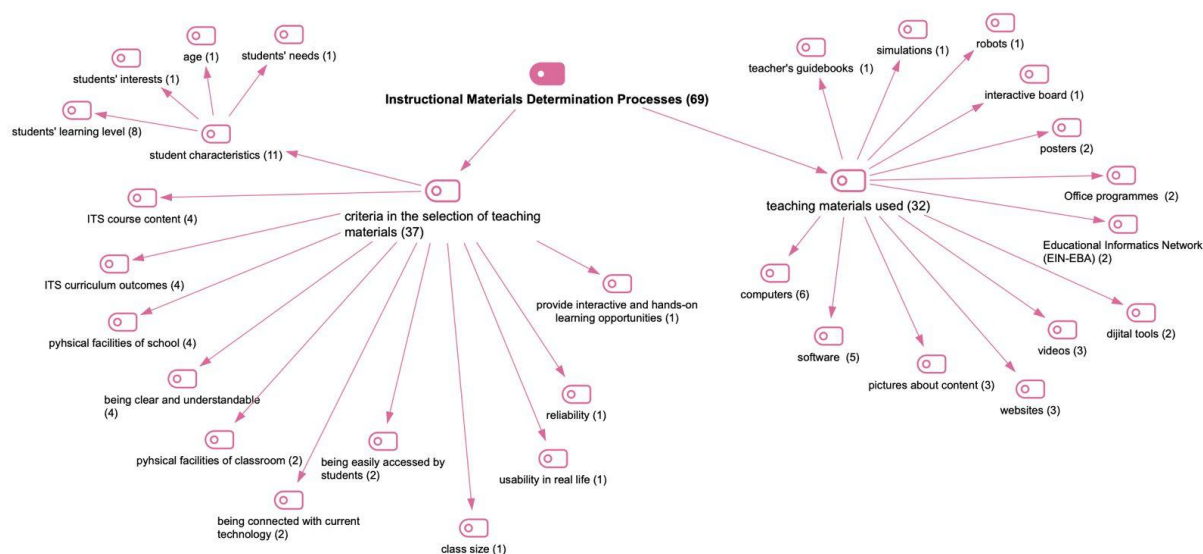
alongside their interests and needs, learning styles, ages, and levels of readiness. Furthermore, teachers select teaching methods and techniques in accordance with the content and curriculum learning objectives. T3 conveyed this as follows: "I act in accordance with their age, prior knowledge level, learning styles, and individual needs. I determine different methods according to the aims and learning objectives of the lesson." Teachers also regard the physical conditions of the classroom, the selection of instructional materials, and class size as criteria in determining teaching methods and techniques. T1 expressed this as follows: "The physical conditions of the classroom and students' accessibility are very important. I take this into account, to be honest."

Instructional Materials Determination Processes of ITS teachers

The analyses conducted under the theme of 'instructional materials determination processes' examined the criteria on which teachers base their selection of instructional materials, as well as the materials they employ during the implementation of the ITS course curriculum. The hierarchical code-subcode model identified through these analyses is presented in Figure 3.

Figure 3

Hierarchical Code-Subcode Model of Teachers' Instructional Materials Determination Processes



ITS teachers most frequently use computers as instructional materials in their lessons. They also employ visuals, videos and animations, software programs (Python, Scratch, etc.), web pages, digital tools, the Educational Informatics Network, Office applications, posters, interactive whiteboards, robots, simulations, and teacher guidebooks as instructional materials in ITS course. T11 conveyed this as follows: "In ITS course, I generally use digital tools, presentations, videos and animations, homework and project templates, and software program. In addition, I help students grasp the subject matter more effectively through interactive applications and simulations."

It was determined that ITS teachers primarily take student characteristics into account when selecting the instructional materials they use in their lessons, paying particular attention to whether the selected materials are appropriate to students' levels. Teachers also consider

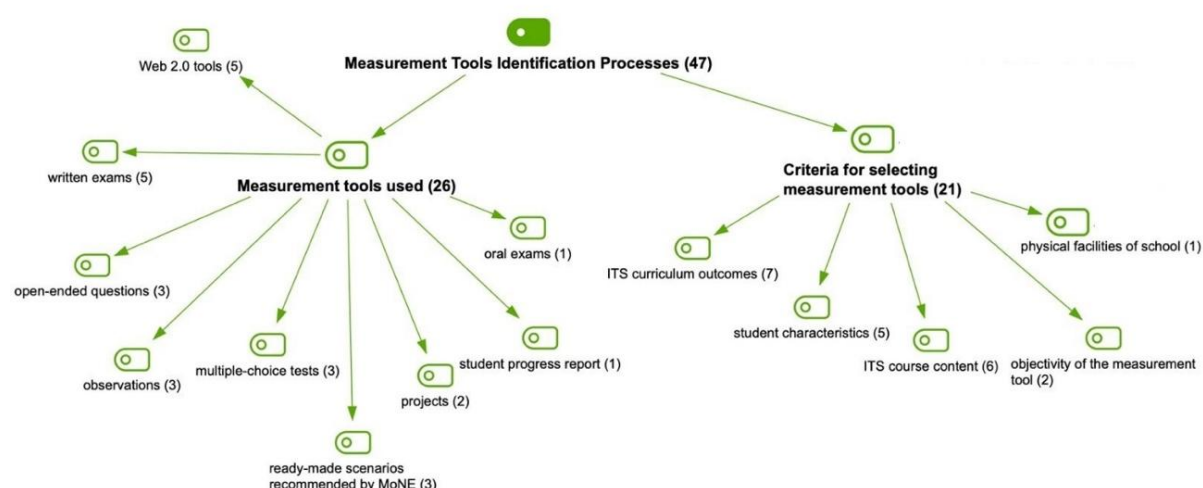
students' interests, needs, and age characteristics when selecting instructional materials. They employ materials that are aligned with the content and learning objectives, as well as clear and comprehensible. T10 indicated this as follows: "I determine the materials according to their suitability for the learning objectives and student characteristics. I actually select materials that will capture students' interest and are visually rich." Teachers further indicated that the physical resources of the school and class size are important considerations in the use of instructional materials. T2 conveyed this as follows: "I pay attention to ensuring that the materials are appropriate to the learning objective, student level, and classroom environment." In addition, it was concluded that teachers prefer instructional materials that are compatible with current technology, applicable in real life, readily accessible to students, reliable, and supportive of an interactive learning environment. T11 emphasised this as follows: "When selecting materials, I pay attention to ensuring that they meet the requirements of the subject matter, are appropriate to students' age and knowledge levels, reflect current technology, offer opportunities for interactive and hands-on learning, and are resources that students can easily access and use."

Measurement Tools Identification Processes of ITS teachers

The analyses conducted under the theme of 'measurement tools identification processes' examined the criteria on which teachers base their selection of assessment tools, as well as the tools they employ during the implementation of the ITS course curriculum. The hierarchical code-subcode model identified through these analyses is presented in Figure 4.

Figure 4

Hierarchical Code-Subcode Model of Teachers' Measurement Tools Identification Processes



ITS teachers most frequently prefer Web 2.0 tools and written examinations as assessment tools in the assessment and evaluation process. Alongside these tools, they also employ open-ended questions, observation, multiple-choice tests, ready-made scenarios recommended by the MoNE, projects, progress reports, and oral examinations in the course assessment and evaluation process. T9 expressed this as follows: "In recent times, the MoNE has introduced an innovation. There must now be topic-based learning objective scenarios. They are paying considerably more attention to the matter of assessment. In our course there are ready-made scenarios - I take those and make minor adjustments to suit my own context." T11, on the other hand, conveyed this as follows: "I employ the assessment tools I have planned in lessons by

determining students' levels of knowledge and comprehension through written examinations, testing their practical skills through applied assessments, ensuring in-depth learning through projects and assignments, evaluating their ability to understand and articulate the subject matter through oral examinations and presentations, and monitoring their participation and performance during lessons through observation and performance assessments."

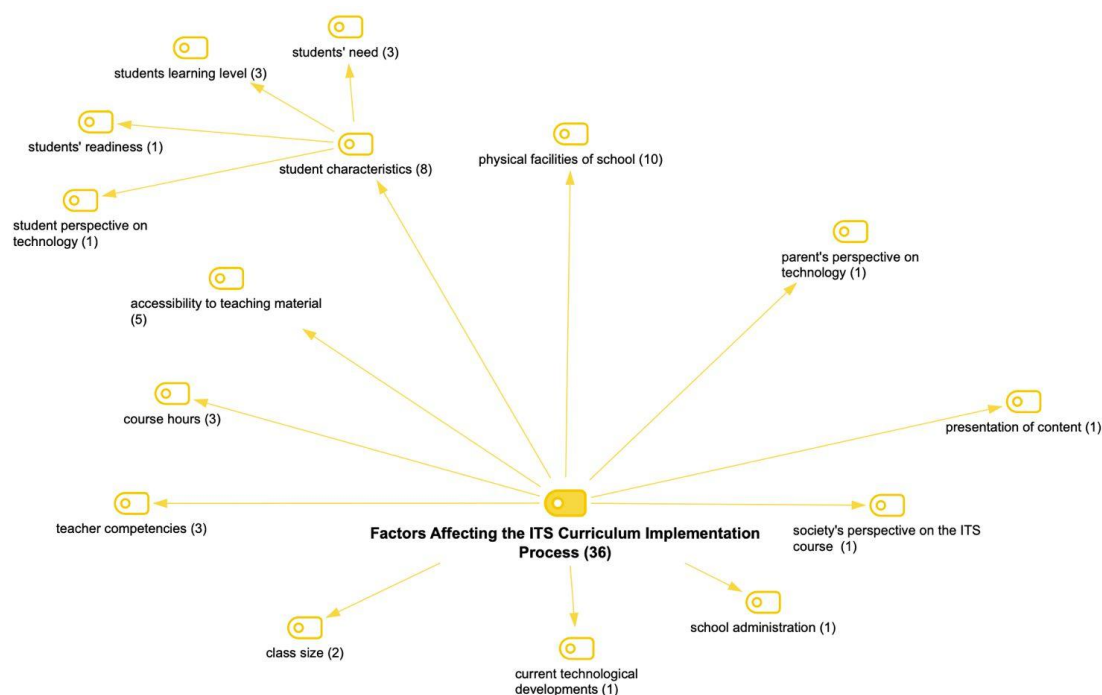
ITS teachers indicate that they primarily take the curriculum learning objectives and content into account when selecting assessment tools in the assessment and evaluation process. They also identify student characteristics as a determining factor in this selection. Teachers further emphasise that the selected assessment tool should enable objective assessment and evaluation while maintaining fairness and equality amongst students. T11 conveyed this as follows: "When determining assessment tools, I pay attention to their alignment with the learning objectives prescribed by the MoNE. I select tools that encompass students' varying levels of knowledge and skill. In order to conduct a fair and objective evaluation, I take care to ensure that the assessment tools offer equal conditions for all students." Some teachers noted that the physical resources of the school are also taken into account in the selection of assessment tools. T10 expressed this as follows: "I determine the assessment tools according to the characteristics of the learning objective and the physical environment, such as the computer laboratory at the school."

Factors Affecting the ITS Curriculum Implementation Process According to ITS teachers

Finally, the study examined ITS teachers' experiences regarding the factors that influence the implementation process of the ITS course curriculum. The analyses conducted under the theme of 'factors affecting the ITS curriculum implementation process' focused on identifying the factors that shape teachers' implementation of the ITS course curriculum. The hierarchical code-subcode model identified through these analyses is presented in Figure 5.

Figure 5

Hierarchical Code-Subcode Model of Factors Affecting the ITS Curriculum Implementation Process



ITS teachers emphasised the physical conditions of the school as one of the factors affecting the implementation process of the ITS course curriculum. They stated that the absence of a computer laboratory, interactive whiteboards, or basic coding tools adversely affects students' learning and that, particularly when practical application is not possible in this course, students' attention wanders and they quickly become disengaged. T4 highlighted this as follows: "Unfortunately, most schools do not have computer laboratories. In our course, the child needs to sit down and apply what they have learnt on the computer. The most important factor is the child's inability to engage in practical application."

ITS teachers indicate that student characteristics also influence the curriculum implementation process. They emphasise students' interest in the course and their learning levels as particularly important, while also noting that students' levels of readiness and attitudes towards technology may affect curriculum implementation. T5 expressed this as follows: "Students' levels of readiness, the prior knowledge they bring with them from primary school, and students' attitudes towards the use of technology all influence the implementation process."

ITS teachers indicate that access to instructional materials for both students and teachers influences curriculum implementation. T1 conveyed this as follows: "...the absence of materials has an impact. For instance, there are not enough computers in the computer laboratory. You deliver the lesson, but naturally the child wants to put it into practice."

ITS teachers indicate that teacher competencies influence the curriculum implementation process, particularly teachers' ability to use IT instructional materials and their command of the subject matter. T3 expressed this as follows: "Teacher competencies are also considerably influential. I have seen IT classrooms falling into disrepair and classrooms with robotics materials that have never been used. The teacher is one of the most important factors in this regard."

In addition to these factors, teachers indicate that class size, current technological developments, school management, content presentation, parents' attitudes towards technology, and society's attitude towards the course may also influence the implementation of the ITS course curriculum. T2 conveyed this as follows: "Society's attitude towards the course is also important. The perception of an ITS course that features questions in the high school entrance examination will of course improve, and I believe this will contribute to the development of our country's young people as generations who produce in the field of IT from primary and secondary school onwards."

Discussion

The findings of this study demonstrate that ITS teachers exhibit a consistent pattern in implementing the ITS course curriculum: they take the curriculum learning objectives as their primary reference point when determining content, teaching methods and techniques, materials, and assessment tools, whilst flexibly adjusting the means through which these objectives are pursued in accordance with student characteristics and the school context. What is notable about this pattern is that the learning objectives simultaneously function as the common determinant of both curriculum fidelity and curriculum adaptation. Teachers' maintenance of fidelity to the learning objectives, whilst flexibly adjusting the means to the context, may therefore be regarded as a concrete example of the fidelity-adaptation debate

frequently addressed in the curriculum implementation literature. If the mutual adaptation process defined by Snyder et al. (1992) is understood as an interaction in which the central design of the curriculum and classroom reality mutually shape one another, the behaviour of the teachers in this study may be interpreted not as passive implementation of the curriculum, but as continuous interaction with it. According to Bümen and Yazıcılar (2020) and Dane and Schneider (1998), the effectiveness of a curriculum is achieved neither through rigid adherence to it nor through its complete and unrestricted modification, but through a balance established between these two extremes. The findings of this study demonstrate that teachers achieve precisely this balance by holding the learning objectives constant whilst varying the means through which they are pursued - content, methods, materials, and assessment tools - thereby concretising this theoretical proposition at the classroom level. Furthermore, Gouëdard et al. (2020) argue that rigid adherence to centralised curricula constrains teacher autonomy and disregards contextual factors; the fact that teachers in this study create space at the level of content and method whilst maintaining fidelity to the learning objectives demonstrates that they mitigate precisely this risk by creating a limited yet functional space for adaptation. When viewed in light of the concept of fidelity as defined by Pence et al. (2008) and Gürbüz (2021), these teachers may be said to concretise the official curriculum within the framework envisaged by its stakeholders, not through mechanical implementation, but through learning objective-centred strategic selectivity.

The absence of a textbook for the ITS course may be regarded as a factor that makes more visible the ground on which this balance is established. Teachers' selection from amongst a variety of digital and print materials as content sources positions them, as Priestley et al. (2015) emphasise, not merely as implementers of the curriculum, but as agents who reconstruct it by investing it with their own meanings. This is consistent with Clandinin and Connelly's (1992) conceptualisation of the 'curriculum designer'. In this sense, the absence of a textbook necessarily transforms teachers into agents who make selections and thereby exercise professional autonomy. As Ball and Cohen (1996) note, teachers respond to a range of factors when making such selections, including their own pedagogical understanding, their students' perceived competencies, and time and material constraints; Çardak's (2023) emphasis on the necessity of designing the teaching and learning process in accordance with student characteristics similarly supports the theoretical grounding of this selective behaviour. From this perspective, the absence of materials and a textbook may be read not merely as a limitation, but also as a mechanism that triggers teacher autonomy.

To explain why the fidelity-adaptation balance becomes necessary in certain areas, the macro, micro, and individual level distinction proposed by Domitrovich et al. (2008) offers an explanatory framework. At the macro level, the development of curricula by a central authority in Türkiye creates fidelity pressure on teachers; this pressure is further reflected in teachers' tendency to evaluate society's and parents' attitudes towards the course predominantly through the lens of the high school entrance examination. When the findings of Doğuş and Tabak (2024a) - demonstrating that ITS learning objectives align with 21st-century skills, particularly digital literacy - are taken into account, the fact that the course's absence from the examination system diminishes its societal value concretises the pressure exerted by the macro-level examination-centred structure on the perceived importance of the course.

At the micro level, the barrier most frequently emphasised by teachers is the absence of computer laboratories and technological infrastructure. The findings of Özdemir and Başaran

(2021) and Süme and Aslan (2022) confirm that this infrastructural problem constitutes a structural limitation specific to the ITS course and leads to inequality between schools; the reduction of application-based learning objectives to theoretical instruction in schools without laboratories is a clear example of how physical resource deficiencies at the micro level can constrain fidelity. At the same level, the support of school management is also a determining factor: Garvin's (2007) finding that supportive leadership enhances teacher autonomy, when read alongside teachers' emphasis in this study on the lack of management support, clarifies the influence of institutional leadership on material provision and motivation. Limited lesson time and the elective status of the course in Years 7 and 8 may also be evaluated at this level; the findings of Yeşiltepe and Erdoğan (2013) regarding staffing norm problems demonstrate that this structural vulnerability may have consequences extending to teachers' employment security.

At the individual level, teacher competencies and perceptions of the curriculum become determining factors. The emphases on professional development by Çolak (2016) and MoNE (2017) support the view that teachers with higher curriculum literacy are able to act more independently during the implementation process. Conversely, teachers' perceptions that the curriculum lags behind current technologies or is disjointed suggest that individual-level beliefs can undermine fidelity, and that teachers with less confidence in the curriculum may be more inclined towards 'necessary adaptation'. Evaluating these three levels together reveals that the success of the curriculum depends not solely on its design as set out on paper, but also on the harmonious functioning of factors at the macro, micro, and individual levels.

The findings of this study largely converge with previous research on the ITS course, whilst also extending it at certain points. The studies of Özdemir and Başaran (2021) and Süme and Aslan (2022) demonstrated that the absence of a textbook and infrastructural deficiencies constitute the primary areas of difficulty in ITS course implementation; this study further shows that these same deficiencies transform teachers from passive implementers into autonomous agents who make selective decisions, thereby reframing this limitation simultaneously as a source of autonomy. Çaka's (2022) recommendation that permanent solutions need to be developed for infrastructural problems, and Tarım and Senemoğlu's (2020) finding that alternative activities are employed in the absence of technology, are also consistent with the findings of this study. The contribution of this study to the literature lies in explaining these fidelity and adaptation behaviours not as separate processes, but through an integrated structure in which the learning objectives simultaneously function as the determinant of both.

Conclusions and Implications

This study offers a holistic understanding of how ITS teachers implement the 2018 ITS course curriculum within the complex dynamics of state secondary schools. The overarching conclusion emerging from the study is that curriculum implementation is not a linear act of rigid adherence to the official curriculum, but rather a dynamic and multilayered process of negotiation between macro-level administrative expectations and micro-level classroom realities. While ITS teachers structurally align their instructional objectives, methods, and assessment designs with the official learning objectives in order to remain within the 'systemic safe zone' dictated by centralised examinations such as the high school entrance examination, the absence of a standard textbook and infrastructural deficiencies compel them to act as active curriculum adapters. Ultimately, the effectiveness of the ITS course curriculum depends

not solely on the technical quality of the design as set out on paper, but also on teachers' pedagogical flexibility as they continuously balance curriculum fidelity with contextual adaptation in order to bridge the gap between abstract algorithmic requirements and students' developmental readiness.

Future research is recommended to employ mixed-methods designs that incorporate both qualitative and quantitative approaches and draw on broader samples. Conducting classroom observations alongside teacher perspectives and examining student-related documents would be beneficial for interpreting curriculum fidelity and curriculum adaptation processes in a more holistic manner. Furthermore, examining the effects of variables such as infrastructural resources, equality of opportunity in education, and teacher and curriculum autonomy on curriculum implementation through advanced quantitative analyses may yield meaningful findings for stakeholders responsible for curriculum development. In addition, comparative studies examining the currently implemented 2018 curriculum alongside the 2025 TCEM curriculum for the ITS course are considered important for evaluating the sustainable impact of the curriculum.

Beyond the recommendations offered for future research, further recommendations may be advanced at the macro, micro, and individual levels to contribute to educational policy specifically in relation to the ITS course, in light of the research findings. Rather than curricula characterised by teachers as overloaded and disjointed, a more flexible structure grounded in current and concrete learning objectives appropriate to students' developmental levels should be adopted specifically for the ITS course. To challenge the perception held by society and parents that the ITS course is 'negligible', its learning objectives should be represented in centralised examinations, such as the High School Entrance Examination, in relation to digital literacy and problem-solving skills, and skill-oriented assessments should be designed accordingly. Given that delivery of the ITS course within the limited allocation of only two hours per week constrains the depth of implementation, lesson hours should be increased, particularly at year group levels in which units with a stronger applied focus are taught; furthermore, the ITS course should be added as a compulsory subject at year group levels where it is not currently offered. The provision of at least one computer laboratory in every school should be made compulsory, and existing laboratories should be freed from internet filter restrictions and supported with modern hardware, including robotics kits and 3D printers. To prevent content inconsistency arising from the absence of a textbook, textbooks and enriched teacher guidebooks that support teachers' autonomy while simultaneously maintaining standards should be published. Awareness training on the strategic importance of the ITS course should be provided to school administrators, and teachers' efforts regarding material procurement and project-based work should be supported at the managerial level. To enable teachers to adapt to rapidly evolving technologies, such as artificial intelligence and cybersecurity, practical training sessions should be organised through the establishment of 'communities of practice' or 'within-department mentoring' systems. Teachers should be supported in making constructive adaptations in response to contextual needs while maintaining fidelity to the curriculum learning objectives.

Declarations

Author Contributions

Feryad Doğuş: Conceptualization; Methodology; Investigation; Data curation; Data analysis; Writing-original draft; Writing-review & editing.

Sanem Tabak: Conceptualization; Methodology; Investigation; Data curation; Data analysis; Writing-original draft; Writing-review & editing.

Conflict of Interest

Our article titled "How do Information Technologies Teachers Implement the Information Technologies and Software Curriculum?" has no financial conflict of interest with any institution, organization or person. There is also no conflict of interest between the authors.

Disclosure of Artificial Intelligence (AI) Use

In this manuscript, the artificial intelligence tools ChatGPT and Claude were used solely for translation purposes. No artificial intelligence tools were employed in the writing, preparation, data analysis, interpretation, or formulation of the findings in any other section of the manuscript.

Availability of Data and Materials

Due to ethical considerations and participant confidentiality, the qualitative data are not publicly available but may be obtained from the corresponding author upon reasonable request.

Ethics Committee Approval

In this study, all the rules specified in the Scientific Research and Publication Ethics Directive of Higher Education Institutions were followed. Ethics committee permission for this study was obtained from Ordu University Educational Research Ethics Committee's decision dated 23/12/2024 and numbered 2024-176.

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TÜRKÇE GENİŞ ÖZET

Bilişim Teknolojileri Öğretmenleri Bilişim Teknolojileri ve Yazılım Dersi Öğretim Programını Nasıl Uyguluyorlar?

Giriş

Etkili bir eğitim ve öğretim süreci, iyi tasarlanmış verimli öğretim programlarına bağlıdır. Ancak öğretim programının sınıf ortamında hayata geçirilme biçimi, öğretmenlerin yaklaşımlarına göre farklılık göstermektedir. Alan yazınında öğretim programının uygulama süreci, genel olarak programa bağlılık ve program uyarlama arasındaki dinamik bir etkileşim olarak ifade edilmektedir. Öğretim programına bağlılık, program geliştirme uzmanları tarafından tasarlanan programların aslına uygun uygulanma derecesi olarak tanımlanırken; program uyarlama, öğretmenlerin öğretim programlarını uygularken programı nasıl şekillendirdiklerini açıklamaktadır. Snyder vd. (1992), programın aslına bağlı kalarak uygulanmasının yanı sıra, öğretmenin sınıf içi dinamiklere göre programı şekillendirdiği karşılıklı uyarlama sürecinin önemine dikkat çekmektedir. Bu bağlamda programın uygulanması sürecinde programa bağlılığı ihlal etmek ya da dikkate almamak yerine, program uyarlama süreçleriyle birlikte tamamlayıcı bir çerçevede düşünmek eğitim programlarının etkili bir şekilde uygulanmasında önemli bir faktör olarak görülebilir.

Türkiye’de öğretim programları merkezi otorite tarafından geliştirilmekte ve öğretmenlerden geliştirilen öğretim programlarını uygulamaları beklenmektedir. Ancak programın uygulayıcısı olan öğretmenler, öğretim programlarını her zaman olduğu gibi uygulayamamakta ya da zorunlu uyarlamalar yapmaktadır. Bu durum, öğretmenlerin öğretim programını uygulama süreçlerinin derinlemesine incelenmesini gerekli kılmaktadır. Bilişim teknolojileri ve yazılım dersi, gelişen bilim ve teknoloji temelinde belirli aralıklarla güncellenmesi gereken derslerden biridir. Türkiye’de 2018 yılında güncellenen 5. ve 6. sınıf BTY dersi öğretim programı, her öğrenciye teknolojiden yararlanma ve bilgi-işlemsel düşünme becerisi kazandırmayı amaçlamaktadır. Alan yazını genel olarak değerlendirildiğinde, 2018 BTY dersi öğretim programına ilişkin çalışmaların daha çok programın yapısal özellikleri ve yöntem temelli uygulamalar üzerinde yoğunlaştığı; programın öğrenme-öğretme süreçlerindeki uygulanabilirliğini bütüncül biçimde ele alan çalışmaların ise sınırlı olduğu görülmektedir.

Yöntem

Araştırma, nitel araştırma desenlerinden fenomenoloji deseni ile yürütülmüştür. Araştırmanın katılımcılarını amaçlı örnekleme yöntemlerinden ölçüt örnekleme yöntemi ile belirlenen 11 bilişim teknolojileri öğretmeni oluşturmaktadır. Araştırmada veri toplama aracı olarak araştırmacılar tarafından geliştirilen yarı yapılandırılmış görüşme formu kullanılmıştır.

Araştırmanın verileri 2024 Eylül ile Kasım ayları arasında toplanmış ve görüşmeler ortalama 30 dakika sürmüştür. Araştırmada toplanan veriler içerik analizi ile analiz edilmiştir. Araştırmada hem tımdengelsel hem tımevarımsal analiz sũreci temele alınmıřtır. Araştırmada ȳncelikle gȳrũřme verilerinin metne dȳnũřtũrũlmũř hali MaxQda 24 nitel veri analiz programına aktarılmıřtır. Ardından ȳncelikle arařtırma sorular temele alınarak temalar oluřturulmuřtur. Veri analiz programındaki veriler arařtırmacılar tarafından tek tek okunarak ȳncelikle kodlar, sonrasında kategoriler belirlenmiřtir. Verilerin kodlanması sũreci tamamlandıktan sonra, her kategori altındaki veriler program ȳzerinden bařtan sona okunarak arařtırmacılar tarafından atanan kodlar, kategoriler ve temalar yeniden gȳzden geirilmıřtir. Verilerin bulgular bȳlũmũnde gȳrselleřtirilerek sunulması adına MaxQda 24 nitel veri analiz programında arařtırmada elde edilen her tema iin MaxMaps oluřturulmuř; oluřturulan modeller bulgular bȳlũmũnde tema-kategoriler ve kodlar halinde ayrı ayrı sunulmuřtur.

Tartıřma ve Sonu

Bu alıřma, biliřim teknolojileri ȳğretmenlerinin 2018 BTY dersi ȳğretim programını devlet ortaokullarının karmařık dinamikleri iinde nasıl uyguladıklarına dair bũtũncũl bir anlayıř sunmaktadır. Arařtırma bulguları genel olarak deęerlendirildięinde, biliřim teknolojileri ȳğretmenleri BTY dersi ȳğretim programını uygulama sũrecinde ȳğretim programında yer alan kazanımları temel almaktadır. ȳğretmenlerin kazanımları temele alması, sadece programa profesyonel bir baęlılık deęil, aynı zamanda merkezi denetim mekanizmalarının ve sınav odaklı sistemin (Liseye Geiř Sınavı gibi) yarattıęı "gũvenli alanda kalma" ihtiyaının bir yansıması olarak okunabilir. Bu durum aynı zamanda ȳğretmen ȳzerklięinin bir takım sistemsel baskılarla sınırlandıęını da gȳstermektedir.

BTY ders kitabının bulunmayıřı alanyazında bir eksiklik olarak gȳrũlse de (ȳrn. ȳzdemir ve Bařaran, 2021), bu alıřmanın bulguları durumu "ȳğretmen faillięi" (teacher agency) aısından farklı bir boyutla ortaya koymaktadır. Ders kitabı eksiklięi ȳğretmenleri pasif uygulayıcı olmaktan kurtarıp aktif birer "program tasarımcısı" (Clandinin ve Connelly, 1992) haline getirerek ȳzerklik kapasitelerini (Priestley vd., 2015) harekete geirmektedir. BTY ȳğretmenlerinin sergiledięi "pedagojik esneklik" ve ȳzgũn ȳğretim sũreleri bu ȳzerklięin bir gȳstergesidir. ȳğretmenlerin program bũtũnlũęũnũ koruyarak ȳğrenci ilgisi ve okulun teknolojik altyapısına gȳre yaptıkları esnetmeler, Snyder vd. (1992) tarafından belirtilen "karřılıklı uyarlama" (mutual adaptation) yaklařımının dinamik bir řekilde uygulandıęını gȳstermektedir.

BTY ȳğretmenlerinin resmi bir ders kitabının yokluęunda dijital kaynaklara yȳnelerek birer "program tasarımcısı" rolũ ȳstlenmesi, uluslararası eęitim politikalarıyla da yakından iliřkilidir. ȳzellikle UNESCO (2023) ve OECD'nin (2023) dijital aęda ȳğretmen yeterliliklerine yȳnelik yayınladıęı gũncel ereveler, 21. yũzyıl ȳğretmenini sadece merkezi programın edilgen bir uygulayıcısı olarak deęil, dijital ierik ȳreten ve pedagojik kararlarında ȳzerk olan lider aktȳrler olarak tanımlamaktadır. Arařtırmaya katılan ȳğretmenlerin, altyapı yetersizliklerine raęmen kendi inisiyatifleriyle Web 2.0 aralarını sũrece dahil etmesi, aslında kũresel dũzeyde talep edilen "dijital pedagojik yetkinlięin" yerel dũzeyde geliřtięini gȳstermektedir.

ȳğretmenlerin ȳğrenme-ȳğretme sũrelerindeki tercihleri de bu karřılıklı uyarlama ve pedagojik esneklik eęilimini yansıtmaktadır. ȳğretmenlerin teorik konularda anlatım, uygulamalı ieriklerde ise gȳsterip yaptırma yȳntemini tercih ederken; proje, eęitsel oyun ve

beyin fırtınası gibi öğrenci merkezli tekniklere de yer verdiklerini göstermektedir. Bu yaklaşım, 2018 BTY öğretim programının yapılandırmacı ve algoritmik düşünmeyi hedefleyen vizyonuyla uyumludur. Süreçte Scratch, Python ve EBA gibi dijital araçların kullanılması zengin öğrenme yaşantıları sunarken; ölçme-değerlendirme boyutunda yazılı sınavların yanı sıra Kahoot, proje ve MEB senaryoları gibi alternatif araçlara yer verilmesi, programın süreç odaklı ve bireysel farklılıkları gözeten ilkelerini desteklemektedir.

Ancak bu esnek ve yapıcı uyarılama süreci, okulların sahip olduğu bağlamsal gerçeklikler ve altyapı yetersizlikleri nedeniyle ciddi bir "zorunlu uyarılama" ve dezavantajlılık boyutuna evrilmiştir. Domitrovich vd. (2008) tarafından ortaya konan makro, mikro ve bireysel düzeydeki faktörler modeli çerçevesinden bakıldığında, BTY programının başarısının sadece kağıt üzerindeki tasarıma (makro düzey) değil, okul ve sınıf ortamındaki kurumsal şartlara (mikro düzey) ne denli bağımlı olduğu görülmektedir. Katılımcıların en büyük engel olarak rapor ettiği "bilgisayar laboratuvarı eksikliği" ve "donanım/materyal kısıtlılığı", mikro düzeydeki altyapı yetersizliklerinin program sadakatini nasıl baltaladığının tipik bir göstergesidir. Laboratuvarı veya etkileşimli tahtası bulunmayan dezavantajlı okullarda, normal şartlarda uygulama odaklı olan kodlama ve tasarım kazanımları zorunlu olarak teorik düzeyde kalmakta, bu durum da kurumsal faktörlerin öğretmenlerin programa bağlılıklarını sınırlamasına yol açmaktadır. Bu kısıtlılık, Bümen vd. (2014) ile Süme ve Aslan'ın (2022) vurguladığı, okulların fiziksel imkanlarındaki eşitsizliklerin öğretim programının hayata geçirilmesinde okullar arasında ciddi bir fırsat eşitsizliğine ve kazanımların farklı şekillerde hayata geçirilmesine yol açtığı fikriyle uyushmaktadır.

Bu araştırmanın ortaya koyduğu genel sonuç, öğretim programını uygulama sürecinin, resmi programa katı bir bağlılıktan ibaret doğrusal bir eylem olmadığını; aksine makro düzeydeki idari beklentiler ile mikro düzeydeki sınıf gerçeklikleri arasında dinamik ve çok katmanlı bir uzlaşma süreci olduğunu göstermektedir. Nihayetinde, Bilişim Teknolojileri ve Yazılım dersi öğretim programının etkililiği, sadece kağıt üzerindeki tasarımın teknik kalitesine değil, programa bağlılık ile bağlamsal uyarlamaları sürekli olarak dengeleyen öğretmenlerin pedagojik esnekliğine bağlıdır.