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An Examination of Teachers' Technological Pedagogical Content Knowledge, 21st Century Skills, and Teaching Motivation in the Context of Religious Education in Relation to Various Variables¹

Abstract

This study examines if significant variations are present in the 21st-century skills, Technological Pedagogical Content Knowledge (TPACK), and teaching motivation of Religious Culture and Moral Knowledge (RCMK) instructors, contingent upon demographic factors including their gender, professional seniority, educational background, and teaching level. The research was conducted using the descriptive survey model. The participants of the study consisted of 225 RCMK teachers working in Düzce province during the fall semester of the 2023–2024 academic year. Data were collected using the “21st Century Skills Scale,” the “TPACK Scale,” and the “Teaching Motivation Scale.” Statistical examinations encompassed independent samples t-tests and one-way Analysis of Variance (ANOVA). Findings indicated no statistically significant distinctions in educators' 21st-century skills or TPACK levels based on their gender, professional seniority, or teaching level. However, a significant difference emerged regarding educational background. While teaching motivation did not differ significantly by gender or teaching level, significant variations were observed concerning professional seniority and educational background.

Keywords: Religious culture and moral knowledge, teacher, TPCK , teaching motivation, 21st century skills.

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Din Eğitimi Bağlamında Öğretmenlerin Teknolojik Pedagojik Alan Bilgisi, 21. Yüzyıl Becerileri ve Öğretme Motivasyonlarının Çeşitli Değişkenler Açısından İncelenmesi²

Öz

Bu çalışma, din kültürü ve ahlak bilgisi (DKAB) öğretmenlerinin 21. yüzyıl becerileri, Teknolojik Pedagojik Alan Bilgisi (TPAB) ve öğretme motivasyonlarının; cinsiyet, mesleki kıdem, eğitim düzeyi ve görev yaptıkları öğretim kademesi gibi demografik değişkenlere bağlı olarak anlamlı farklılık gösterip göstermediğini incelemektedir. Araştırma, betimsel tarama modeliyle yürütülmüştür. Araştırmanın katılımcıları, 2023-2024 eğitim öğretim yılı güz döneminde Düzce ilinde görev yapan 225 DKAB öğretmeninden oluşmaktadır. Veriler, “21. Yüzyıl Becerileri Ölçeği”, “TPAB Ölçeği” ve “Öğretme Motivasyonu Ölçeği” ile toplanmıştır. Verilerin analizinde bağımsız örneklem t-testi ve tek yönlü varyans analizi (ANOVA) kullanılmıştır. Bulgular, öğretmenlerin 21. yüzyıl becerileri ve TPAB düzeylerinin; cinsiyet, mesleki kıdem ve öğretim kademesi değişkenlerine göre anlamlı bir farklılık göstermediğini ortaya koymuştur. Ancak, eğitim düzeyine ilişkin anlamlı bir fark belirlenmiştir. Öğretme motivasyonu değişkeninde cinsiyet, görev yapılan öğretim kademesine ilişkin herhangi bir farklılık saptanmamış; sadece mesleki deneyim süresi ve eğitim düzeyi açısından anlamlı bir fark görülmüştür.

Anahtar Kelimeler: Din kültürü ve ahlak bilgisi, Öğretmen, TPAB, öğretme motivasyonu, 21. yüzyıl becerileri.

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Genişletilmiş Özet

Giriş

Son yıllarda yaşanan dijital ve teknolojik gelişmeler, eğitim başta olmak üzere pek çok alanı etkilemiştir. Bu durum, bireylerin değişen dünya koşullarına uyum sağlayabilmesi için eğitim sistemlerinde yeni becerilerin kazandırılmasını zorunlu kılmıştır. Problem çözme, eleştirel düşünme, yaratıcılık, iş birliği ve dijital okuryazarlık gibi becerileri kapsayan yirmi birinci yüzyıl eğitim anlayışı, geleneksel öğretim yöntemlerinden farklılaşarak bireysel öğrenmeyi önceleyen, çok boyutlu bir yaklaşıma dayanmaktadır (Trilling & Fadel, 2012). Öğretmenlerin pedagojik, alan ve teknoloji bilgilerini bir arada kullanabilmeleri, Teknolojik Pedagojik Alan Bilgisine (TPAB) sahip olmaları, etkili öğretim süreçlerinin temelini oluşturmaktadır (Koehler & Mishra, 2009; Mishra & Koehler, 2006). TPAB, öğretmenlerin etkili öğretim için teknoloji bilgisi, pedagojik bilgi ve alan bilgisi arasında kurdukları etkileşimi içeren bütünlük bir bilgi sistemidir (Mishra & Koehler, 2006). Bir başka ifadeyle TPAB, teknolojinin ders içeriklerine nasıl entegre edileceğine ilişkin düşünme biçimini yansıtmaktadır.

Öğretmenlerin bilişim ve iletişim teknolojilerinin (BİT) içerik alanlarında kullanılmasına yönelik deneyim kazanmaları ve bu deneyimi sınıf içi uygulamalara yansıtmaları, öğrencilerin öğrenmelerine anlamlı katkılar sağlayabilir. Bu bağlamda, öğretmenlerin BİT'in öğretim sürecini nasıl destekleyebileceğini deneyimleyerek öğrenmeleri önemlidir. Nitelikli bir öğretmen, alan bilgisi ile birlikte pedagojik ve teknolojik bilgiyi de etkili biçimde kullanarak öğrenme ortamlarını zenginleştirebilmelidir (Koehler vd., 2013; Voogt vd., 2013). 21. yy becerileri ve TPAB'ın öğretim süreçlerine entegrasyonu, öğrencilerin üst düzey bilişsel beceriler geliştirmelerini sağlamakta özellikle DKAB öğretmenleri açısından soyut kavramların aktarımında ve değer eğitiminde kritik önem taşımaktadır (Aras & Öztürk, 2019; Voogt & Roblin, 2012).

Öğretmen motivasyonu da öğretim süreçlerinin niteliğini belirleyen önemli bir değişkendir. Öğretmenlerin yüksek düzeyde öğretme motivasyonuna sahip olmaları, mesleki doyumlarının artmasına katkı sağlar. Bu durum ayrıca öğrencilerin akademik başarıları ve derse yönelik ilgilerinde de olumlu yönde etkilemektedir (Gorozidis & Papaioannou, 2014; Ryan & Deci, 2000). Din eğitiminde öğretmenlerinin öğretme motivasyonları, değer aktarımını güçlendirmektedir. Bu durum öğrencilerin etik muhakeme becerilerini geliştirmelerine ve toplumsal uyum süreçlerine olumlu katkılar sunmaktadır. DKAB öğretmenlerinin öğretme motivasyonları, değer aktarımını güçlendirmekte, öğrencilerin etik muhakeme ve toplumsal uyum becerilerini geliştirmelerine katkı sağlamaktadır (Appova & Arbaugh, 2018; Moè & Katz, 2021). 21.yüzyıl becerileri, TPAB ve öğretme motivasyonunun birlikte incelenmesi, eğitim süreçlerinde öğretmenlerin etkili ve yenilikçi uygulamalar geliştirebilmesi açısından önemlidir. TPAB, öğretmenlerin teknoloji, pedagojik yöntemler ve alan bilgisi entegrasyonunu sağlar (Mishra & Koehler, 2006). 21. yüzyıl becerileri ise, eleştirel düşünme, problem çözme ve dijital okuryazarlık gibi öğrencilerin çağdaş gereksinimlerini karşılamada temel rol oynamaktadır (Trilling & Fadel, 2012). Öğretme motivasyonu ise öğretmenlerin bu becerileri sınıf ortamına aktarabilme isteğini ve çabasını artırarak öğrenme süreçlerinin etkinliğini yükseltmektedir (Ryan & Deci, 2000). Bu üç boyut arasındaki etkileşim, öğretmenlerin mesleki gelişimlerini ve öğrenci başarısını olumlu yönde etkilediği için birlikte değerlendirilmesi gerekmektedir (Koehler vd., 2013). Dolayısıyla, öğretmenlerin hem pedagojik hem teknolojik yeterliklerini artıran güdüleyici faktörlerin desteklenmesi, eğitimde kalite ve sürdürülebilir dönüşüm için kritik öneme sahiptir.

Mevcut literatür incelendiğinde, DKAB öğretmenlerinin 21. yüzyıl becerileri, TPAB ve öğretme motivasyonunu değişkenlerini birlikte inceleyen araştırmaya rastlanmamıştır. Bu durum, söz konusu üç değişkenin birlikte değerlendirildiği araştırmalara duyulan gereksinimi ortaya koymaktadır. Bu araştırmada, DKAB öğretmenlerinin 21. yüzyıl becerileri, TPAB düzeyleri ve öğretme motivasyonları öğretmenlerin cinsiyetleri, mesleki kıdemleri, eğitim durumları ve görev yaptıkları eğitim kademeleri bağlamında incelenmiştir.

Yöntem

Betimsel tarama modeline dayalı olarak yürütülen çalışmanın evrenini, Düzce ilinde çalışan tüm DKAB öğretmenleri oluşturmaktadır. Örneklem yöntemi kullanılmamış, evrenin tamamına ulaşılması hedeflenmiş ve toplam 225 öğretmenden veri elde edilmiştir. Veri toplama sürecinde, 21. Yüzyıl Becerileri Öğretimi Ölçeği (Özyurt, 2020), TPAB Ölçeği (Ay vd., 2015) ve Öğretme Motivasyonu Ölçeği (Candan & Gencel, 2015) kullanılmıştır. Ölçekler, araştırmacılardan uygulama izinlerinin alınması ve gerekli etik kurul onayları tamamlandıktan sonra, çevrim içi olarak uygulanmıştır. Katılımcılara araştırmanın amacı ve gizlilik esasları açıklandıktan sonra onam alınmıştır. Yalnızca onam veren öğretmenler veri toplama formuna erişebilmiştir. Veri toplama süreci Kasım 2023 ile Şubat 2024 tarihleri arasında gerçekleştirilmiştir. Elde edilen verilerin analizinde, çarpıklık ve basıklık katsayılarının ± 2.0 aralığında bulunması ve Kolmogorov-Smirnov testinin anlamlı çıkmaması ($p > .05$) doğrultusunda parametrik testlere başvurulmuştur (George & Mallery, 2019).

Bulgular, Tartışma ve Sonuç

Araştırma bulgularına göre, öğretmenlerin 21. yüzyıl becerileri ile cinsiyetleri arasında anlamlı bir fark bulunmamıştır; bu durum, alanyazındaki bazı araştırmalarla (Balkaş Yaşar, 2021; Duran, 2023) uyumludur. Ancak bazı çalışmalarda (Nuhoglu & Seçkin, 2021; Yıldırım vd., 2022) teknolojinin kullanımı alt boyutunda erkek öğretmenler lehine farklar tespit edilmiştir. Mesleki kıdem değişkenine göre de öğretmenlerin 21. yüzyıl becerileri anlamlı şekilde farklılık göstermemektedir. Bu da kıdemden ziyade bireysel gelişim ve mesleki çabanın belirleyici olduğunu düşündürmektedir. Eğitim durumu ise anlamlı bir değişken olarak öne çıkmaktadır. Lisansüstü eğitim almış öğretmenler, iş birliği, yenilik ve problem çözme becerileri başta olmak üzere birçok boyutta daha yüksek yeterlik düzeyine sahiptir. Bu durum, yüksek lisans ve doktora eğitiminin bireylere bilimsel düşünme, yaşam boyu öğrenme ve araştırma becerileri kazandırmasından kaynaklanmaktadır. Öte yandan, öğretmenlerin görev yaptığı eğitim kademesinin 21. yüzyıl becerileri üzerinde anlamlı bir farklılık oluşturmadığı belirlenmiştir.

Araştırmada TPAB becerileri açısından cinsiyet değişkeni anlamlı bir fark oluşturmazken, bazı araştırmalarda (Boran, 2022; Gül & Sönmez, 2023; Semerci Gaygusuz, 2023; Yanar, 2022) ise, erkek öğretmenler lehine farklar saptamıştır. Bu durumun erkeklerin teknolojiye yönelik ilgisinden kaynaklanabileceği öne sürülmektedir. Mesleki kıdem değişkeni TPAB üzerinde anlamlı bir farklılık oluşturmazken, bazı çalışmalar ise (Bal & Karademir, 2013; Özkara vd., 2018; Saka Öztürk, 2017) kıdemi az olan öğretmenlerin daha yüksek TPAB becerilerine sahip olduğunu göstermektedir. Bu durum, kıdemi az öğretmenlerin güncel öğretim teknolojilerine hâkimiyetleri ile ilişkilendirilebilir. Eğitim durumu, TPAB becerileri üzerinde etkili bir değişken olarak öne çıkmaktadır. Lisansüstü mezunu öğretmenler, öğrenen, program, uygulama ve değerlendirme alt boyutlarında daha yüksek yeterlik sergilemektedir. Bu bulgu, lisansüstü eğitimin öğretmenlerin teknolojik ve pedagojik donanımlarını geliştirdiğini göstermektedir. Eğitim kademesi değişkeni ise TPAB üzerinde anlamlı bir farklılık oluşturmamaktadır.

Öğretme motivasyonunun, cinsiyet değişkeni açısından anlamlı bir farklılık göstermediği tespit edilmiştir. Ancak bazı araştırmalar kadın öğretmenlerin içsel motivasyonlarının daha yüksek olduğunu göstermektedir. Mesleki kıdem açısından ise anlamlı farklar tespit edilmiştir. 6-10 yıl arası deneyime sahip öğretmenler, diğer gruplara kıyasla daha düşük motivasyona sahiptir. Bu durum, mesleki doyum, tükenmişlik ya da kariyer doyumu gibi faktörlerle ilişkilendirilebilir. Sonuç olarak, öğretmenlerin 21. yüzyıl becerileri, TPAB yeterlikleri ve öğretme motivasyonları üzerinde eğitim düzeyinin etkisi öne çıkarken, cinsiyet ve görev yapılan eğitim kademesi genellikle belirleyici olmamaktadır. Mesleki kıdem ise bulgulara göre değişken bir etkiye sahiptir.

Introduction

Significant advancements in digital and network technologies have profoundly influenced diverse domains, including education, daily life, the economy, and healthcare. This era, characterized by substantial innovation and transformation, is widely designated as the twenty-first century (21st century). Within the educational sphere specifically, the emphasis on 21st-century skills has considerably reshaped facets such as curriculum design, learner characteristics, and requisite teacher competencies. Consequently, educational frameworks are undergoing re-envisioning and restructuring around pedagogical approaches designed to equip students with these crucial skills, thereby preparing individuals for evolving global conditions and fostering both personal and societal advancement.

The prevailing 21st-century educational framework, distinguished by its emphasis on multifaceted competencies—including advanced problem-solving capabilities, collaborative aptitude, rigorous critical inquiry, creative ideation, digital fluency, and the imperative for sustained professional development—represents a substantive departure from antecedent pedagogical models predominantly oriented towards the mere conveyance of established knowledge (Trilling & Fadel, 2012). It promotes a multifaceted learning experience intended to empower students with skills that cultivate their individual learning journeys. In the contemporary educational landscape, essential professional competencies for educators encompass the capacity to instruct students within this new paradigm, design learning activities grounded in 21st-century skills, and effectively integrate subject matter expertise with technological affordances (Voogt & Roblin, 2012). Accordingly, 21st-century skills, TPACK, broader professional competence, and teacher motivation emerge as fundamental constructs contributing to enhanced quality in both education and the teaching profession (Mishra & Koehler, 2006; Ryan & Deci, 2000).

RCMK educators are tasked with fostering student learning outcomes across both cognitive and affective domains, including value transmission, the cultivation of ethical awareness, and an understanding of diverse belief systems (Aras & Öztürk, 2019). These educators are further expected to possess 21st-century skills, adopt contemporary pedagogical methodologies, and effectively implement technology-integrated teaching practices (Yurtçu & Aktan, 2024). In addition to possessing 21st-century skills, adopting contemporary pedagogical approaches, and effectively integrating technology into instruction, teachers are also expected to demonstrate the ability to transfer these professional competencies into their teaching practices and student learning processes, which reflects a high level of teaching motivation (Orsini et al., 2020).

Within contemporary educational discourse, 21st-century skills are conceptualized as constituting a comprehensive framework of competencies, encompassing critical thinking, digital literacy, collaboration, and ethical decision-making (Voogt et al., 2013). The cultivation of these skills in students necessitates a pedagogical shift on the part of educators (Rotherham & Willingham, 2009). Specifically within the RCMK context, fostering students' comprehension of diverse belief systems, their capacity for ethical reasoning, and their social adaptation skills is intrinsically linked to these 21st-century competencies (Aşlamacı, 2023). It is widely posited that the effective impartation of these skills requires teachers to embrace and implement student-centered instructional designs and methodologies (Voogt & Roblin, 2012). Developing critical thinking and ethical decision-making within RCMK instruction not only bolsters academic achievement but also strengthens students' connection to societal values and norms (Elçi et al., 2020; Uçan, 2022). Consequently, teachers' proficiency in utilizing technology-enhanced resources and employing learner-centered approaches is paramount for the effective conveyance of these vital skills (Darsih, 2018; Stumbrienė et al., 2024).

The unceasing evolution of technology exerts a transformative influence upon pedagogical methodologies, thereby creating an escalating demand for educators to demonstrate a sophisticated amalgamation of technological proficiency, pedagogical acumen, and comprehensive content mastery (Ertmer & Ottenbreit-Leftwich, 2010; Mishra & Koehler, 2006). The TPACK framework was

conceptualized to evaluate the efficacy of teachers' integration of these three domains, underscoring their interdependence within the teaching process (Koehler & Mishra, 2009). Central to the TPACK model is the premise that technology is not merely a supplemental tool but an integral component of pedagogical strategy. Empirical studies examining TPACK indicate that teacher proficiency in technology integration positively influences both instructional effectiveness and student achievement (Schmidt et al., 2009). For RCMK educators, the development of TPACK skills and the structuring of course content in a manner that is both learning-focused and enriched facilitates students' comprehension of abstract concepts. Consequently, this process facilitates the cultivation of higher-order cognitive capacities, encompassing creative thinking, problem-solving, and critical analysis. These capacities, in turn, are posited to augment both student motivation for learning and teacher instructional motivation.

Teaching motivation serves as a fundamental determinant that directly shapes the quality and efficiency of instructional processes, while also being intrinsically linked to educators' professional fulfillment and job satisfaction. Factors such as teachers' ongoing professional development and the integration of innovative, learner-centered pedagogical approaches within classrooms are directly linked to student success, teacher job satisfaction, and motivational levels (Kholifah et al., 2024; Ryan & Deci, 2000). Motivation itself is shaped by a confluence of elements, including personal and professional attributes, opportunities for career advancement, workplace conditions, and the dynamics of student-teacher interactions (Börü, 2018; Han & Yin, 2016; Moè & Katz, 2021). High levels of teacher motivation are closely associated with their capacity to design effective teaching strategies that enable students to meet specified learning objectives (Gorozidis & Papaioannou, 2014). Highly motivated teachers, therefore, provide more effective student guidance, contributing significantly to the achievement of learning goals. Research demonstrates that motivated educators enhance student engagement in lessons and positively impact their cognitive and affective development (Appova & Arbaugh, 2018; Greene et al., 2004). Within this context, the teaching motivation of RCMK educators constitutes a pivotal professional competency essential for enhancing instructional effectiveness and student learning outcomes in this domain.

The contemporary educational paradigm necessitates that teachers evolve beyond mere knowledge dissemination to become educational leaders adept at cultivating critical thinking, digital literacy, problem-solving abilities and ethical awareness in students (Trilling & Fadel, 2012). Educators' proficiency in these 21st-century skills constitutes a foundational element of modern education systems. RCMK teachers, particularly through their emphasis on ethics and values, play a pivotal role in developing students' social adaptation and fostering an understanding of diverse cultural and religious perspectives, thereby promoting tolerance, social justice, and ethical responsibility (Aras & Öztürk, 2019; Ekşici & Berkant, 2024). Achieving these educational aims, however, is contingent upon the effective application of technology-enhanced pedagogical strategies (Mishra & Koehler, 2006). The joint examination of 21st-century skills, TPACK, and teaching motivation is crucial for enabling teachers to develop effective and innovative practices within educational processes. While TPACK facilitates the integration of technology, pedagogical methods, and content knowledge (Mishra & Koehler, 2006), 21st-century skills play a fundamental role in addressing students' contemporary needs such as critical thinking, problem-solving, and digital literacy (Trilling & Fadel, 2012). Teaching motivation enhances teachers' willingness and effort to apply these competencies in the classroom, thereby increasing the effectiveness of learning processes (Ryan & Deci, 2000). The interaction among these three dimensions positively influences teachers' professional development and student achievement, highlighting the necessity of examining them collectively (Koehler et al., 2013). The integration of TPACK can facilitate more interactive religious education and improve student comprehension of abstract concepts. Furthermore, teacher motivation significantly influences instructional processes, impacting student engagement and academic success. Consequently, 21st-century skills, TPACK proficiency, and teaching motivation collectively constitute indispensable prerequisites for effective pedagogical design and

implementation, ultimately exerting a significant influence on the quality of student learning outcomes.

In the context of religious education, equipping students with 21st-century skills through instructional processes has become increasingly important in terms of fostering essential competencies such as critical thinking, communication, collaboration, and digital literacy (El Hiyaroh et al., 2022; Jarmer, 2025; Nasucha et al., 2023). Today, religious education is no longer confined to the transmission of dogmatic knowledge; rather, it requires pedagogical approaches aimed at promoting inquiry, intercultural understanding, and ethical reasoning (Watson & Thompson, 2014). These skills align with competencies emphasized in 21st century learning frameworks, such as adaptability, media literacy, and problem solving, and support students in becoming effective individuals in a multicultural and digitalized society (Arif & Abd Aziz, 2023; Saavedra & Opfer, 2012). In addition, for religious education to be delivered effectively in line with the requirements of the digital age, it is essential that teachers possess TPACK. This integrated knowledge framework enables teachers to design effective instruction by combining content knowledge with appropriate pedagogical methods and technological tools (Mishra & Koehler, 2006). Furthermore, teaching motivation is a key determinant of instructional quality, particularly in value-oriented subjects such as religious education. A teacher's professional commitment, motivation, and sense of purpose directly influence student engagement and learning processes (Bieg et al., 2011). Therefore, teachers who are both motivated and technologically competent are more capable of designing meaningful and holistic learning experiences that are relevant to students' real-life contexts.

An examination of the pertinent literature reveals a significant lacuna in studies comprehensively addressing 21st-century skills, TPACK, and teaching motivation specifically among RCMK teachers. While research interest in 21st-century skills and TPACK has surged in recent years, these investigations have predominantly concentrated on other teaching disciplines such as Turkish, social studies, classroom, science, and preschool education, often including pre-service teacher candidates (Akan & Timur, 2023; Akdemir, 2022; Alkoç, 2020; Ateşoğlu, 2022; Barası & Erdamar, 2021; Bulut, 2022; Demirel, 2022; İlbuğa, 2022; Özer, 2021). Studies involving in-service RCMK teachers tend to focus narrowly on discrete components of 21st-century skills, such as critical thinking (Aşlamacı, 2023, Cingöz & Akyürek, 2021; Algül, 2022; Gök, 2021) or problem-solving (Yiğit, 2021). Similarly, although TPACK competence has been explored across various teaching branches (Saka Öztürk, 2017; Usta, 2021; Yusufoglu & Gençtürk, 2021), research specifically targeting RCMK teachers remains limited. In the study conducted by Şimşek (2018), the competencies of RCMK teachers in the field of instructional technologies were examined. According to the research findings, teachers were found to have a high level of competence in eight instructional technology domains and a moderate level in one. Moreover, despite existing studies on teaching motivation across diverse fields (Avcı, 2014; Bulut, 2022; Çelik, 2022; Genç & Yılmaz, 2024; Orhan, 2022), dedicated research into RCMK teacher motivation appears to be largely absent.

The possession of 21st-century skills, the ability to use technology effectively within a pedagogical context, and strong teaching motivation by RCMK teachers can significantly contribute to the delivery of high-quality religious education that supports both the cognitive and affective development of students. An effective RCMK teacher is not merely a transmitter of religious knowledge but also a guide who fosters students' critical thinking, empathy, intercultural understanding, and ethical reasoning skills. In this context, teachers equipped with 21st-century competencies help cultivate students who are respectful of diverse worldviews, tolerant, and conscious of their social responsibilities. Moreover, a teacher with a high level of TPACK can integrate religious education content with digital tools to create interactive, engaging, and meaningful learning environments. A teacher with strong teaching motivation, on the other hand, is more likely to maintain professional commitment and foster positive student attitudes toward the subject. Therefore, RCMK teachers possessing these competencies play a crucial role in ensuring that religious education is delivered in a manner that is responsive to the needs of the time, as well as democratic and inclusive

in nature. An analysis of the extant literature indicates a significant deficiency in research that holistically examines the concurrent relationships between 21st-century skills, TPACK, and motivation within the RCMK operational context. Such an absence constitutes a noteworthy gap in the existing scholarly discourse.

Aim of the Study

The current investigation seeks to elucidate the dynamic interplay among RCMK teachers' proficiency in TPACK, their command of 21st-century skills, and their pedagogical motivation, thereby informing the development of efficacious and novel instructional strategies. Furthermore, this study will analyze these core constructs in relation to important demographic characteristics and professional attributes. The current research specifically examines the levels of these three core constructs among RCMK teachers. It also explores possible differences based on variables such as gender, professional seniority, educational background, and teaching level.

It is anticipated that the study's findings will inform teacher education policies and yield strategic recommendations for the professional development pathways of RCMK educators. Furthermore, the results are expected to offer guidance to education faculties, policymakers, and in-service training providers for enhancing the classroom practices of RCMK teachers. Lastly, the findings are projected to illuminate future research avenues pertaining to teaching methodologies, technology integration, and teacher motivation within the field of religious education.

Method

Research Design

The current study utilized a descriptive survey design to investigate the 21st-century skills, teaching motivation, and TPACK levels of RCMK teachers relative to various contextual variables. Such designs are conventionally employed to characterize an existing situation or phenomenon, enabling the systematic delineation of individual attributes including, but not limited to, attitudes, knowledge, skills, competencies, and opinions (McMillan & Schumacher, 2010; Cohen et al., 2018). Consequently, this methodological approach is frequently selected for its aptness in ascertaining the perceptions and experiences of a specific population regarding particular subjects or phenomena, thereby demonstrating strong congruence with the objectives of this research (Creswell, 2015).

Participants

Participants in this study were RCMK teachers situated in Düzce province and professionally active during the autumn term of the 2023–2024 academic session. The methodological approach involved a comprehensive census, designed to incorporate all individuals within the defined RCMK teacher population in the specified province, as opposed to employing a selective sampling technique. Data were subsequently obtained from 225 RCMK teachers. Table 1 presents the demographic characteristics of the study group.

Table 1 indicates that among the 225 RCMK teachers participating in the research, females constituted the majority ($f=122$; 54.2%). The most prevalent range for professional seniority was 6-10 years ($f=55$; 24.4%). Furthermore, a significant majority of the teachers held undergraduate degrees ($f=173$; 76.9%), and the predominant teaching level was middle school ($f=108$; 48.0%).

Table 1*Demographic Characteristics of RCMK Teacher Participants*

Variable		<i>f</i>	%
Gender	Male	103	45.8
	Female	122	54.2
Professional seniority	1-5	39	17.3
	6-10	55	24.4
	11-15	43	19.1
	16-20	37	16.4
	≥21	51	22.7
Educational background	Undergraduate	173	76.9
	Graduate	52	23.1
Teaching level	Elementary school	26	11.6
	Middle school	108	48.0
	High school	91	40.4

Data Collection Instruments

Data for the present investigation were acquired utilizing three validated instruments: the 21st Century Skills Teaching Scale (Özyurt, 2020), the TPACK Scale (Ay et al., 2015), and the Teaching Motivation Scale (Candan & Gencel, 2015). A comprehensive description of each instrument is detailed in subsequent sections.

21st Century Skills Teaching Scale

Originating from the work of Jia et al. (2016), the 21st Century Skills Teaching Scale was subsequently adapted by Özyurt (2020) for application within the Turkish linguistic and cultural milieu. This instrument consists of 10 items designed to assess three distinct sub-dimensions: Use of Technology, Collaboration, and Innovation & Problem Solving. Participant responses are captured using a 7-point Likert-type response format, yielding potential total scores from 7 to 70; no items necessitate reverse scoring. In Özyurt's (2020) adaptation and validation study, the reported internal consistency reliability coefficients (Cronbach's Alpha) for the sub-dimensions ranged from .75 to .83, while the coefficient for the overall scale was .91. The results of the repeated Confirmatory Factor Analysis (CFA) conducted within the scope of this study [$\chi^2/df = 2.52$, RMSEA = 0.015, CFI = 0.89, GFI = 0.91, IFI = 0.87, CFI = 0.90, AGFI = 0.89, SRMR = 0.052] indicate an acceptable level of fit. Accordingly, it was determined that the three-dimensional structure of the scale is valid and reliable. These values are consistent with acceptable thresholds reported in the literature (Carvalho & Chima, 2014; MacCallum et al., 1996; Marsh et al., 2004; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2013).

TPACK-Practical Model Scale

Adapted into Turkish by Ay et al. (2015) from its initial development by Yeh et al. (2014), the TPACK-Practical Model Scale comprises 22 items. These items are designed to evaluate five sub-dimensions integral to the practical application of Technological Pedagogical Content Knowledge (TPACK): learner, subject content, curriculum, practical education, and evaluation. Participant responses are recorded using a 5-point Likert-type scale. In the context of the present study, this instrument demonstrated excellent internal consistency, as indicated by a Cronbach's alpha coefficient of .96. The results of the repeated Confirmatory Factor Analysis (CFA) conducted within the scope of this study [$\chi^2/df = 2.41$, RMSEA = 0.052, CFI = 0.88, GFI = 0.89, IFI = 0.90, CFI = 0.89, AGFI = 0.85, SRMR = 0.078] indicate that the five-dimensional structure of the scale is valid and demonstrate that the measurement tool is suitable for the present study (Carvalho & Chima, 2014; MacCallum et al., 1996; Marsh et al., 2004; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2013).

Motivation to Teach Scale

The Teaching Motivation Scale, created by Candan and Gencel in 2015, has 12 items divided into two sub-dimensions: intrinsic motivation with 7 items and extrinsic motivation with 5 items. Participant responses are captured on a 6-point Likert-type response format. In the context of the current investigation, the overall scale demonstrated robust internal consistency, yielding a Cronbach's alpha coefficient of .87. Based on the results of the repeated CFA conducted within the scope of this study [$\chi^2/df = 2.10$, RMSEA = 0.04, CFI = 0.94, GFI = 0.93, IFI = 0.92, CFI = 0.892, AGFI = 0.90, SRMR = 0.051], it was determined that the two-dimensional scale structure is valid. These findings indicate that the Teaching Motivation Scale is a suitable and reliable measurement tool for the present study (Carvalho & Chima, 2014; MacCallum et al., 1996; Marsh et al., 2004; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2013).

Data Collection Process and Analysis

Prior to initiating data collection, requisite permissions were secured from the instrument developers, alongside ethical approval from the relevant committee and institutional authorization for the research. Data were gathered between November 2023 and February 2024 via an online form. This form commenced with information detailing the study's purpose and a request for informed participant consent; only teachers who provided consent could proceed, while those who declined were directed out of the form. Furthermore, contact information for the research team was furnished to address any potential participant inquiries. The adoption of parametric tests for subsequent data analysis was contingent upon the verification that skewness and kurtosis coefficients for all administered scales remained within the conventionally accepted ± 2.0 range (Skewness and kurtosis values were respectively -0.248 and -0.298 for the 21st Century Skills Teaching Scale, -0.503 and -0.341 for the TPACK Scale, and -0.092 and -0.096 for the Teaching Motivation Scale). This prerequisite was further corroborated by non-significant results ($p > .05$) from the Kolmogorov-Smirnov test of normality, a criterion consistent with the guidelines proposed by George and Mallery (2019).

Research Ethics

This study was conducted in strict adherence to the principles of scientific research and publication ethics. Ethical approval for the research was obtained from the Scientific Research and Publication Ethics Committee of Duzce University (20.07.2023/238). In addition, official permission for the study was secured from the relevant institutions and authorities in accordance with legal procedures. All participants were clearly informed about the purpose and scope of the research, the voluntary nature of participation, and the confidentiality of their personal data. Prior to participation, written informed consent was obtained from each participant through an informed consent form. Throughout all stages of the research, participants' rights were respected, confidentiality was maintained, no harm was caused to any individual, and all ethical responsibilities were fully observed. The research process was carried out transparently and reliably in line with applicable legal regulations and national/international ethical standards.

Finding

Findings Related to 21st Century Skills

Gender and 21st Century Skills

An independent-samples t-test was conducted to determine if statistically significant differences in teachers' 21st-century skills existed based on gender. The results of this analysis are presented in Table 2.

Table 2*Independent-Samples t-Test Results for Teachers' 21st-Century Skills by Gender*

Scale and sub dimensions	Group	N	X	SD	t	df	p
Benefits of technology	Male	103	53.75	7.94	1.217	223	.22
	Female	122	51.40	8.40			
Collaboration	Male	103	15.44	3.03	1.480	223	.14
	Female	122	14.96	2.86			
Innovation and problem solving	Male	103	16.92	2.49	2.694	223	.03
	Female	122	16.40	2.73			
Overall scale	Male	103	21.38	3.59	2.148	223	.32
	Female	122	20.03	3.89			

An independent-samples t-test was conducted to examine potential gender-based differences in 21st-century skills. As detailed in Table 2, the analysis revealed no statistically significant differences between genders on the overall 21st-century skills measure ($t=2.148$, $p>.05$). Similarly, no significant gender differences were observed for the benefits of technology ($t=1.217$, $p>.05$) or collaboration ($t=1.480$, $p>.05$) subscales. In contrast, a statistically significant difference predicated on gender was observed for the innovation and problem solving dimension ($t=2.694$, $p<.05$), wherein male teachers exhibited markedly higher mean scores. This pattern of results suggests that participating teachers, regardless of gender, generally reported comparable levels of self-perceived competency across the majority of assessed 21st-century skill domains. Notwithstanding this general congruence, the significant divergence in the Innovation and Problem Solving dimension, indicating superior scores for male teachers, could potentially be ascribed to their more pronounced self-efficacy or greater experiential engagement within this particular area.

3.1.2. Professional Seniority and the 21st Century Skills

An ANOVA was employed to investigate potential variations in participating teachers' 21st-century skills as a function of their professional seniority. The outcomes of this analysis are detailed in Table 3.

Table 3*Independent Groups Anova Test Results for 21st Century Skills of Teachers Professional Seniority*

Scale and subdimensions	professional seniority	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	p
Benefits of technology	1-5	39	15.35	3.60	Between Groups	79.91	4	19.97	2.355	.06
	6-10	55	16.12	2.47	Within Groups	1866.24	220	8.48		
	11-15	43	14.72	2.53	Total	1946.16	224			
	16-20	37	15.00	2.53						
	≥21	51	14.56	3.28						
Collaboration	1-5	39	17.17	2.50	Between Groups	44.424	4	11.10	1.617	.17
	6-10	55	16.69	3.19	Within Groups	1511.41	220	6.87		
	11-15	43	15.83	1.93	Total	1555.84	224			
	16-20	37	16.51	2.45						
	≥21	51	16.94	2.64						
Innovation and problem solving	1-5	39	21.07	4.07	Between Groups	11.166	4	2.79	0.18	.94
	6-10	55	20.70	3.76	Within Groups	3245.79	220	14.75		
	11-15	43	20.39	3.62	Total	3256.96	224			
	16-20	37	20.48	3.20						
	≥21	51	20.60	4.30						
Overall scale	1-5	39	53.61	8.91	Between Groups	226.01	4	56.50	0.82	.51
	6-10	55	53.52	8.26	Within Groups	15062.1	220	68.46		
	11-15	43	50.95	6.72	Total	15288.16	224			
	16-20	37	52.00	7.38						
	≥21	51	52.11	9.47						

As presented in Table 3, the ANOVA results indicated no significant difference in professional seniority on teachers' overall 21st-century skills ($F=.825, p>.05$), nor on the sub-dimensions of benefits of technology ($F = 2.355, p>.05$), collaboration ($F=1.617, p>.05$), or innovation and problem solving ($F=.189, p>.05$). According to this result, it can be stated that teachers' professional seniority is not a significant factor affecting their 21st-century skills.

Educational Background and 21st Century Skills

An independent-samples t-test was utilized to investigate potential statistically significant differences in teachers' 21st-century skills according to their educational background. Table 4 details the corresponding statistical results.

Table 4

Independent-Samples t-Test Analysis: Teachers' 21st-Century Skills in Relation to Educational Background

Scale and sub-dimensions	Educational Background	N	X	SD	t	df	P
Benefits of technology	Undergraduate	173	14.97	3.05	-2.015	223	.10
	Graduate	52	15.90	2.45			
Collaboration	Undergraduate	173	16.39	2.73	-2.534	223	.02*
	Graduate	52	17.44	2.09			
Innovation and problem solving	Undergraduate	173	20.33	3.92	-2.304	223	.04*
	Graduate	52	21.71	3.22			
Overall scale	Undergraduate	173	51.70	8.50	-2.599	223	.02*
	Graduate	52	55.05	6.84			

* $p<0.05$

Examination of the data presented in Table 4 indicated a statistically significant difference in overall 21st-century skills corresponding to teachers' educational background ($t=-2.599, p<.05$). Specifically, this difference was also evident in the sub-dimensions of collaboration ($t= -2.534, p<.05$) and innovation and problem solving ($t=-2.304, p<.05$). Further scrutiny of the mean scores revealed that these significant differences were consistently in favor of teachers holding graduate degrees, both for the composite 21st-century skills score and for the aforementioned sub-dimensions. In contrast, no statistically significant difference was observed in the benefits of technology sub-dimension ($t=-2.015, p>.05$). Based on this result, holding a graduate degree was found to be a significant factor influencing teachers' overall 21st-century skills, particularly in collaboration, innovation, and problem-solving competencies.

Teaching levels and the 21st Century Skills

An ANOVA was conducted to determine if statistically significant differences in teachers' 21st-century skills existed based on their teaching levels. The results of this analysis are presented in Table 5.

Table 5 shows that there is no significant difference in 21st-century skills among teachers based on their teaching levels. This applies to both the overall scale ($F=1.834; p>.05$) and the sub-dimensions; benefits of technology ($F=1.246; p>.05$), collaboration ($F=0.686; p>.05$), and innovation and problem solving ($F=2.580; p>.05$). These results indicate that teaching level is not a significant factor affecting their 21st-century skills.

Table 5*One-Way ANOVA Results for Teachers' 21st-Century Skills by Teaching Level*

Scale and sub-dimensions	Group	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	p
Benefits of technology	Elementary school	26	14.38	3.28	Between Groups	21.59	2	2.744	1.246	.29
	Middle school	108	15.39	2.59	Within Groups	1924.56	222	8.669		
	High school	91	15.16	3.21	Total	1946.16	224			
Collaboration	Elementary school	26	16.11	2.61	Between Groups	9.56	2	4.781	.686	.50
	Middle school	108	16.62	2.43	Within Groups	1546.27	222	6.965		
	High school	91	16.80	2.87	Total	1555.84	224			
Innovation and problem solving	Elementary school	26	19.07	4,204	Between Groups	73.99	2	36.995	2.580	.78
	Middle school	108	20.79	3,337	Within Groups	3182.96	222	14.338		
	High school	91	20.93	4,149	Total	3256.96	224			
Overall scale	Elementary school	26	49.57	9.07	Between Groups	248.04	2	124.02	1.834	.16
	Middle school	108	52.82	7.24	Within Groups	15040.11	222	67.74		
	High school	91	52.90	9.04	Total	15288.16	224			

Findings Related to to TPACK**Gender and TPACK**

An independent-samples t-test was utilized to investigate potential gender-based differences in teachers' TPACK. Table 6 delineates the pertinent statistical outcomes of this analysis.

Table 6*Independent t-test Results Regarding the TPACK of the Teachers According to Gender*

Scale and sub-dimensions	Group	N	X	SD	t	df	P
Learners	Male	103	10.68	2.20	1.090	223	.27
	Female	122	10.37	2.08			
Subject content	Male	103	7.22	1.48	.378	223	.70
	Female	122	7.14	1.51			
Curriculum	Male	103	28.66	5.30	.446	223	.65
	Female	122	28.36	5.07			
Practical education	Male	103	23.84	2.03	.698	223	.48
	Female	122	23.64	2.19			
Evaluation	Male	103	11.08	1.61	.353	223	.72
	Female	122	11.00	1.72			
Overall scale	Male	103	81.51	11.71	.663	223	.52
	Female	122	80.54	11.38			

Examination of the data presented in Table 6 indicated an absence of statistically significant gender-based differences in teachers' composite TPACK scores ($t=-0.288, p>.05$). This lack of significant differentiation by gender was consistently observed across all specified TPACK sub-dimensions: learners ($t= 1.090, p> .05$), subject content ($t=0.378, p> .05$), curriculum ($t=0.446, p>.05$), practical education ($t=0.698, p>.05$), and evaluation ($t=0.353, p> .05$). Collectively, these results suggest that gender did not constitute a significant differentiating factor in the self-perceived TPACK competence of this educator cohort.

Professional seniority and TPACK

In order to determine whether there were significant differences in TPACK proficiency based on the professional seniority of the teachers in the study group, a one-way ANOVA test was employed. The results of the one-way ANOVA test regarding TPACK proficiency according to professional seniority are presented in Table 7 below.

Table 7

TPACK Independent Groups Anova Test Results of Teachers According to Professional Seniority

Scale and sub-dimensions	Group	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	P
Learners	1-5	39	10.64	2.65	Between Groups	11.21	4	2.80	0.60	.65
	6-10	55	10.60	1.89	Within Groups	1016.94	220	4.62		
	11-15	43	10.83	2.14	Total	1028.16	224			
	16-20	37	10.29	1.54						
	≥21	51	10.23	2.35						
Subject content	1-5	39	7.10	1.83	Between Groups	5.99	4	1.49	0.66	.61
	6-10	55	7.30	1.41	Within Groups	495.53	220	2.25		
	11-15	43	7.41	1.45	Total	501.52	224			
	16-20	37	7.08	1.11						
	≥21	51	6.98	1.59						
Curriculum	1-5	39	28.87	6.69	Between Groups	59.435	4	14.85	0.55	.69
	6-10	55	28.74	4.94	Within Groups	5936.81	220	26.98		
	11-15	43	29.11	5.11	Total	5996.24	224			
	16-20	37	28.02	3.38						
	≥21	51	27.78	5.28						
Practical education	1-5	39	23.61	2.33	Between Groups	4.13	4	1.03	0.22	.92
	6-10	55	23.89	2.04	Within Groups	1005.39	220	4.57		
	11-15	43	23.81	2.15	Total	1009.52	224			
	16-20	37	23.81	1.83						
	≥21	51	23.54	2.26						
Evaluation	1-5	39	11.05	1.89	Between Groups	5.88	4	1.47	0.52	.72
	6-10	55	11.25	1.58	Within Groups	619.67	220	2.81		
	11-15	43	10.97	1.73	Total	625.55	224			
	16-20	37	11.13	1.37						
	≥21	51	10.80	1.74						
Overall scale	1-5	39	81.28	14.34	Between Groups	250.32	4	62.58	0.46	.76
	6-10	55	81.80	10.68	Within Groups	9480.63	220	134.00		
	11-15	43	82.16	11.62	Total	29730.96	224			
	16-20	37	80.35	8.04						
	≥21	51	79.35	12.23						

Examining the data in Table 7 showed no significant difference in teachers' composite TPACK scores ($F=1.002, p>.05$) based on professional seniority. This lack of significance was consistent across all defined TPACK sub-dimensions; learners ($F=.607, p>.05$), subject content ($F=.665, p>.05$), curriculum ($F=.551, p>.05$), practical education ($F=.226, p>.05$), and evaluation ($F=.522, p>.05$). Overall, these results indicate that professional seniority did not play a significant role in self-reported TPACK competencies among these teachers.

Educational Background and TPACK

To ascertain whether statistically significant variations in TPACK were evident among participating teachers in relation to their educational background, an independent-samples t-test was employed. The findings derived from this statistical examination are systematically presented in Table 8.

Table 8*Independent Groups t Test Results Regarding TPACK According to Educational Background*

Scale and sub-dimensions	Educational background	N	X	SD	t	df	P
Learners	Undergraduate	173	10.34	2.22	-2.307	223	.02*
	Graduate	52	11.11	1.71			
Subject content	Undergraduate	173	7.09	1.56	-1.540	223	.12
	Graduate	52	7.46	1.19			
Curriculum	Undergraduate	173	28.20	5.41	-2.104	223	.01*
	Graduate	52	29.48	4.19			
Practical education	Undergraduate	173	23.65	2.17	-2.114	223	.03*
	Graduate	52	24.00	1.93			
Evaluation	Undergraduate	173	10.93	1.70	-2.312	223	.02*
	Graduate	52	11.40	1.49			
Overall scale	Undergraduate	173	80.24	11.9	-1.775	223	.01*
	Graduate	52	83.46	9.60			

* $p < 0.05$

Analysis of data presented in Table 8 indicates a statistically significant difference in composite TPACK scores ($t = -1.775$, $p < .05$) when comparing teachers with graduate qualifications to those without. This pattern of significant differentiation extended to several constituent TPACK sub-dimensions, learners ($t = -2.307$, $p < .05$), curriculum ($t = -2.104$, $p < .05$), practical education ($t = -2.114$, $p < .05$), and evaluation ($t = -2.312$, $p < .05$). Inspection of mean scores confirmed that educators holding graduate degrees consistently demonstrated superior performance on the overall TPACK measure and across these specified sub-dimensions. In contrast, no statistically significant variation was evident in the subject content sub-dimension when analyzed in relation to teachers' level of educational background. According to this result, it can be stated that teachers' possession of graduate education is an influential factor affecting learners, curriculum, practical education, and evaluation skills.

Teaching levels and TPACK

An ANOVA was conducted to determine if statistically significant differences existed in teachers' TPACK levels based on their teaching levels. The results of this analysis are presented in Table 9.

Table 9*Independent Groups Anova Test Results Regarding TPACK of Teachers According to the Teaching Levels They Serve*

Scale and sub-dimensions	Group	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	P
Learners	Elementary school	26	10.19	1.87	Between Groups	4.87	2	2.43	0.52	.59
	Middle school	108	10.64	2.07	Within Groups	1023.28	222	4.60		
	High school	91	10.46	2.29	Total	1028.16	224			
Subject Content	Elementary school	20	7.15	1.30	Between Groups	5.75	2	2.87	1.288	.27
	Middle school	97	7.35	1.54	Within Groups	495.77	222	2.23		
	High school	75	7.18	1.39	Total	501.52	224			
Curriculum	Elementary school	26	6.92	1.09	Between Groups	1.10	2	.55	0.02	.98
	Middle school	108	7.34	1.43	Within Groups	5995.14	222	27.00		
	High school	91	7.06	1.65	Total	5996.24	224			
Practical Education	Elementary school	26	23.46	2.12	Between Groups	2.25	2	1.12	0.24	.78
	Middle school	108	23.76	2.04	Within Groups	1007.27	222	4.53		
	High school	91	23.78	2.22	Total	1009.52	224			

Scale and sub-dimensions	Group	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	P
Evaluation	Elementary school	20	10.95	1.57	Between Groups	5.68	2	2.01	1.017	.48
	Middle school	97	11.25	1.58	Within Groups	619.87	222	2.77		
	High school	75	10.97	1.77	Total	625.55	224			
Overall scale	Elementary school	26	10.65	1.57	Between Groups	71.68	2	2.84	0.26	.36
	Middle school	108	11.16	1.57	Within Groups	29659.27	222	2.79		
	High school	91	11.01	1.79	Total	29730.96	224			

As indicated in Table 9, the ANOVA revealed no statistically significant difference in teachers' overall TPACK scores ($F = .268, p > .05$) based on their teaching levels. This pattern of non-significance was consistently observed across all delineated TPACK sub-dimensions; learners ($F=.529, p>.05$), subject content ($F=1.288, p>.05$), curriculum ($F=.021, p>.05$), practical education ($F=.248, p>.05$), and evaluation ($F=1.017, p>.05$). Collectively, these results imply that teaching levels did not emerge as a significant differentiating factor for their self-reported TPACK competencies within this sample.

Findings Related to Teaching Motivation

Gender and Teaching Motivation

To ascertain whether statistically significant variations in teaching motivation were evident among participating teachers contingent upon gender, an independent-samples t-test was employed. The findings derived from this statistical examination are systematically presented in Table 10.

Table 10.

Independent Groups t Test Results on Teaching Motivation by Gender

Scale and sub-dimensions	Gender	N	X	SD	t	df	P
Intrinsic Motivation	Male	103	52.08	11.50	-1.568	223	.11
	Female	122	54.22	8.89			
Extrinsic Motivation	Male	103	32.70	6.89	-1.722	223	.09
	Female	122	34.11	5.34			
Overall scale	Male	103	19.37	5.47	-1.079	223	.28
	Female	122	20.10	4.64			

As indicated in Table 10, the independent-samples t-test revealed no statistically significant gender differences in teachers' overall teaching motivation scores ($t=-1.079, p>.05$). Similarly, no significant gender differences were observed for the sub-dimensions of intrinsic motivation ($t = -1.568, p>.05$) or extrinsic motivation ($t=-1.722, p>.05$). Collectively, these findings suggest that gender was not a significant differentiating factor in the self-reported teaching motivation of this teacher cohort.

Professional Seniority and Teaching Motivation

To investigate potential statistically significant variations in teachers' teaching motivation based on their professional seniority, an ANOVA was employed. The detailed outcomes of this statistical procedure are systematically presented in Table 11.

According to the test results, significant differences were found in teachers' intrinsic motivation scores based on their professional seniority. Specifically, teachers with 1–5 years of professional seniority had significantly higher intrinsic motivation scores than those with 6–10 years of professional seniority; likewise, teachers with 11–15 years of professional seniority scored significantly higher than those with 6–10 years of professional seniority, and teachers with 16–20 years of professional seniority scored significantly higher than those with 6–10 years of professional seniority. These findings indicate that teachers with 6–10 years of professional seniority exhibit lower levels of intrinsic motivation compared to teachers in other professional seniority groups.

Table 11.

Independent Anova Test Results Regarding Teachers' Teaching Motivation According to Their Professional Seniority

Scale and sub-dimensions	Group	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	p	Difference *
Intrinsic Motivation	1-5	39	34.51	5.01	Between Groups	502.66	4	125.66			
	6-10	55	30.87	7.20	Within Groups	7913.40	220	35.97			1-2
	11-15	43	34.20	5.58	Total	8416.06	224		3.494	.01*	3-2
	16-20	37	34.64	4.25							4-2
	≥21	51	34.00	6.62							
Extrinsic Motivation	1-5	39	19.46	4.72	Between Groups	246.97	4	61.74			
	6-10	55	18.18	5.48	Within Groups	5448.47	220	24.76			
	11-15	43	20.09	5.46	Total	5695.44	224		2.493	.04*	4-2
	16-20	37	21.24	4.34							5-2
	≥21	51	20.39	4.55							
Overall scale	1-5	39	53.97	8.47	Between Groups	1360.95	4	340.23			
	6-10	55	49.05	11.57	Within Groups	21968.60	220	99.85			2-1
	11-15	43	54.30	10.18	Total	23329.55	224		3.407	.01*	2-3
	16-20	37	55.89	8.13							2-4
	≥21	51	54.39	10.26							2-5

* $p < 0.05$

Educational Background and Teaching Motivation

To ascertain whether statistically significant variations in teaching motivation were evident among participating teachers in relation to their level of educational background, an independent-samples t-test was employed. The findings derived from this statistical examination are systematically presented in Table 12.

Table 12

Independent Groups t-Test Results on Teachers' Teaching Motivation According to Their Educational Background

Scale and sub-dimensions	Educational background	N	X	SS	t	df	p
Intrinsic Motivation	Undergraduate	173	33.14	6.14	-1.462	223	.014*
	Graduate	52	34.55	6.01			
Extrinsic Motivation	Undergraduate	173	19.41	5.12	-1.982	223	.039*
	Graduate	52	20.98	4.60			
Overall scale	Undergraduate	173	52.55	10.24	-1.859	223	.003*
	Graduate	52	55.53	9.81			

Analysis of data presented in Table 12 reveals a statistically significant difference in composite teaching motivation scores ($t = -1.859$, $p < .05$) when comparing teachers with graduate qualifications to those without. This pattern of significant differences, with teachers possessing graduate qualifications demonstrating higher scores, also extended to the sub-dimensions of intrinsic motivation and extrinsic motivation. Inspection of mean scores confirmed that educators holding graduate degrees consistently demonstrated superior levels of motivation on the overall measure and across both sub-dimensions. According to this result, it has been determined that teachers' possession of graduate education is an influential factor on their teaching motivation, as well as their intrinsic and extrinsic motivation.

Teaching Levels and Their Motivation to Teach

To find potential statistically significant differences in teaching motivation among participating teachers based on their teaching levels, we conducted an ANOVA test. The detailed outcomes of this statistical procedure are systematically presented in Table 13.

Table 13.

Independent Groups Anova Test Results on Teachers' Teaching Motivation According to the Teaching Levels They Serve

Scale and sub-dimensions	Group	N	Mean	SD	The Source of Variance	Sum of squares	df	Mean square	F	P
Intrinsic Motivation	Elementary school	26	34.46	5.47	Between Groups	48.41	2	24.20	0.64	.52
	Middle school	108	33.62	5.23	Within Groups	8367.64	222	37.69		
	High school	91	33.00	7.22	Total	8416.06	224			
Extrinsic Motivation	Elementary school	26	21.03	5.00	Between Groups	88.66	2	44.33	1.755	.17
	Middle school	108	20.02	4.64	Within Groups	5606.79	222	25.26		
	High school	91	19.10	5.44	Total	5695.44	224			
Overall scale	Elementary school	26	55.50	10.07	Between Groups	267.83	2	133.95	1.289	.27
	Middle school	108	53.65	9.10	Within Groups	23061.72	222	103.88		
	High school	91	52.10	11.37	Total	23329.55	224			

When examining Table 13, it was found that there were no significant differences in the overall scale scores ($F=1.298$, $p>.05$) and subdimensions such as intrinsic motivation ($F=0.64$, $p>.05$) and extrinsic motivation ($F=1.755$, $p>.05$) based on their teaching levels. Collectively, these results imply that their teaching levels did not emerge as a significant differentiating factor for their self-reported teaching motivation within this sample.

Discussion

The research findings revealed that there were no statistically significant differences in teachers' 21st-century skills in terms of the gender variable, either in the overall scale scores or in the subdimensions. This finding is congruent with the results reported by several previous investigations (Balkaş Yaşar, 2021; Cigilli & Eryaman, 2023; Duran, 2023; Gürültü et al., 2018; Kozikoğlu & Özcanlı, 2020; Uyar & Çiçek, 2021; Yalçın İncik, 2020). However, some studies (Nuhoğlu & Seçkin, 2021; Yıldırım et al., 2022) have identified differences in favor of male teachers in the sub-dimension of technology use. The observed difference favoring male teachers may stem from their higher interest in technology and more frequent use of technological tools, as well as greater confidence in utilizing such tools. Additionally, males may have more opportunities to gain experience in technology-related areas, which can contribute to this difference. This finding suggests that differences in technology use can influence teachers' levels of digital competence. Furthermore, this study revealed no significant link between professional seniority and teachers' 21st-century skills, suggesting that years of experience do not serve as a primary determinant of these competencies. This observation is consistent with multiple studies (Duran, 2023; Gürültü et al., 2018; Özer, 2021; Uyar & Çiçek, 2021); conversely, other research has identified professional seniority as a significant variable (Çınar, 2019; Korkmaz, 2019; Yıldırım et al., 2022). Such discrepant findings concerning seniority may indicate that individual teachers' commitment to ongoing professional development and competency enhancement, rather than mere length of service, could be more influential factors in advancing their 21st-century skills and TPACK proficiency.

The present investigation revealed statistically significant differences in 21st-century skills based on their educational background among participating teachers. Specifically, educators holding graduate degrees demonstrated markedly superior proficiency in overall 21st-century skills. This enhanced competency also extended to the sub-dimensions of collaboration, innovation, and problem-solving, when contrasted with their counterparts possessing undergraduate qualifications.

These results intimate that advanced academic training at the graduate degrees may be instrumental in cultivating these particular skill sets. This finding is consonant with existing literature. Illustratively, Kafalı and Akçöltekin (2024) documented that science educators possessing doctoral qualifications demonstrated superior self-perceived competence in 21st-century skills relative to their colleagues with graduated degrees. Similarly, research by Yıldırım et al. (2022) indicated that educators with graduate degrees demonstrated higher levels of self-assessed 21st-century skill proficiency compared to those holding only undergraduate degrees. This enhanced proficiency was apparent not only in composite scores but also specifically within the domains of technology integration, innovation, and problem-solving. The findings of the current study corroborate these previous observations, thereby strengthening the proposition that graduate education positively influences the development of 21st-century skills. This discernible effect might be attributable to the inherent characteristics of graduate programs, which conventionally prioritize the cultivation of personal and professional development, scientific literacy, dispositions toward lifelong learning, and proficiency in research methodologies (Aktan, 2020).

In contrast, the findings of the present study revealed an absence of statistically significant variation in teachers' 21st-century skills, pertaining to both their composite scores and the constituent sub-dimensions, when analyzed as a function of their designated teaching level. This finding suggests that, for the current sample, teaching level does not emerge as a significant variable influencing these competencies. This outcome is, however, incongruent with findings from several previous studies. For instance, Uyar and Çiçek (2021) reported that primary school teachers exhibited higher self-perceived competence in 21st-century skills compared to their counterparts in secondary and high schools. Similarly, Gürültü et al. (2018) observed significantly higher levels of 21st-century skills in primary school teachers compared to their secondary school counterparts. Kozikoğlu and Özcanlı (2020) also reported findings indicating an advantage for primary school teachers over high school teachers in this regard. The discrepancy in these findings underscores that the relationship between teaching level and 21st-century skills may be context-dependent or vary across different teacher populations.

Findings from the present study indicated an absence of statistically significant gender-based variations in teachers' TPACK levels. This observation was consistent for both the composite TPACK measure and its constituent sub-dimensions. From the present findings, it can be deduced that gender does not function as a significant variable affecting TPACK proficiency levels within the studied cohort of educators. This outcome aligns with several previous studies that reported similar findings (Akiska, 2022; Kıyılık, 2016; Tokmak et al., 2013; Yılmaz, 2020). In contrast, the present study's outcome diverges from several prior investigations that have documented statistically significant differences in TPACK proficiency, with male educators exhibiting an advantage (Boran, 2022; Gül & Sönmez, 2023; Semerci Gaygusuz, 2023; Yanar, 2022). Augmenting this body of contrasting literature, Gómez-Trigueros and Yáñez de Aldecoa (2021) found that female teachers reported lower levels of self-efficacy concerning digital competence when compared to their male colleagues. It has been suggested that such findings—indicating higher TPACK levels among male teachers—may be attributable to a potentially greater inclination towards, and interest in, technology among males.

According to the research findings, no significant differences were found in teachers' TPACK competencies across the overall scale and its relevant subdimensions based on their professional seniority. Based on these findings, it can be concluded that teachers' professional seniority is not an influential factor on their TPACK competencies. Similar results are also reported in the relevant literature supporting this finding (Karasu, 2019; Kişi et al., 2024; Özdemir, 2022; Singin & Gökbulut, 2020; Türker, 2020; Yusufoğlu & Gençtürk, 2021). However, the broader literature presents a more nuanced landscape, with discrepant findings regarding the role of professional seniority. For instance, some research indicates that teachers with fewer years of service demonstrate superior TPACK proficiencies (Bal & Karademir, 2013; Özkara et al., 2018; Saka Öztürk, 2017), a phenomenon potentially attributable to their more recent engagement with contemporary training methodologies and technological integration during pre-service education. Conversely, other research (e.g., Karadeniz

& Vatanartiran, 2015) has reported superior TPACK competence among more experienced teachers, possibly reflecting the cumulative benefits of practical classroom experience augmented by relevant in-service professional development. This finding may be attributed to the in-service training they have received, along with the knowledge and skills accumulated through experience and years of professional practice.

According to the research findings, the analysis based on teachers' educational background revealed statistically significant differences in favor of graduate degree holders in the overall TPACK scale, as well as in the subdimensions of "learner," "curriculum," "practical education," and "evaluation." However, no significant difference was found in the "subject content" subdimension. These findings indicate that having a graduate education is an influential factor on teachers' overall TPACK competencies, particularly in the areas of "learner," "curriculum," "practical education," and "evaluation." This finding suggests that graduate training particularly enhances the pedagogical application and technological integration components of TPACK. This outcome aligns with a substantial body of literature underscoring the benefits of graduate education for TPACK development (Akiska, 2022; Bal & Karademir, 2013; Gül & Sönmez, 2023; Mailizar et al., 2021), an effect potentially attributable to the targeted training and research activities inherent in such programs (Gül & Sönmez, 2023; Karatut & Şentürk, 2022). However, some studies have also reported that educational background does not have a significant impact on teachers' TPACK competencies (Doğan & Doğan, 2022; Doğru & Aydın, 2017). In contrast, teaching level did not exhibit a significant relationship with their TPACK proficiencies, either in aggregate or across sub-dimensions, in the present study. This observation, which is consistent with findings by Oğuz (2022), suggests that teaching levels taught do not serve as a primary determinant of TPACK proficiency for this particular cohort of educators.

Findings from the present study indicated an absence of statistically significant gender-based differentiation in levels of teaching motivation. This difference was consistently observed for both composite motivation scores and the distinct intrinsic and extrinsic facets of the construct. These results therefore imply that, within the cohort of educators studied, gender did not constitute a significant determinant of teaching motivation, thereby offering empirical validation for the premise that teaching motivation, at least within the parameters of this investigation, is not intrinsically gender-dependent. This outcome aligns with several previous studies that also reported no significant gender-based differences in teaching motivation (Argon & Cicioğlu, 2019; Kırbaç & Kaya, 2023; Wahab et al., 2013). Conversely, this finding is incongruent with other research in which gender has been identified as a significant variable influencing teacher motivation (Berkant, 2017; İlğan et al., 2019; Yavuz & Karadeniz, 2009). For instance, Demirkol (2019) reported significantly higher overall work motivation among female teachers, while Ertürk (2016) observed that female teachers demonstrated greater intrinsic motivation relative to their male counterparts.

According to the research findings, statistically significant differences were found in teachers' teaching motivation across the overall scale and its relevant subdimensions based on their professional seniority. Accordingly, teachers with 6–10 years of service exhibited significantly lower levels of motivation compared to their colleagues in other professional seniority groups. Specifically, their aggregate motivation was significantly lower than all other cohorts; their intrinsic motivation was lower than those with 1-5, 11-15, and 16-20 years of service; and their extrinsic motivation was lower than those with 11-15 and 16-20 years of service. This finding indicates that professional seniority is an important variable influencing teaching motivation, potentially pointing to a dip in motivation experienced during mid-career. Such variations in motivation across career stages may be attributable to several factors. For instance, the higher motivation often observed in early-career teachers (0-5 years) could be linked to their recent engagement with pre-service training, initial professional idealism, and comparatively lower levels of accrued burnout. Conversely, the sustained motivation among more highly experienced educators might stem from greater pedagogical expertise, an enhanced understanding of student needs cultivated through extensive experience, and potentially more effective integration of pedagogical innovations. While some extant literature supports the

observation of higher motivation among early-career teachers (Klassen & Chiu, 2011; Kütükcü, 2020), a notable portion of studies reports no significant effect of seniority on teaching motivation (Arslantaş et al., 2018; Bulut, 2022; Çelik, 2022; Özşahin, 2019; Taşdemir, 2019). The present study's identification of a mid-career motivational nadir thus introduces further nuance to this complex and ostensibly variable relationship.

The present study identified statistically significant differences in teachers' teaching motivation contingent upon their educational background. Specifically, educators holding graduate qualifications demonstrated markedly higher levels of intrinsic, extrinsic, and overall teaching motivation compared to their counterparts with undergraduate degrees. This result supports the inference that graduate education positively influences teachers' teaching motivation. In a study conducted by Arslantaş, Tösten, and Beştaş Marakçı (2018), it was concluded that teachers' teaching motivation increased as their educational background rose. However, it is pertinent to acknowledge discrepant findings in the extant literature, with several studies reporting no significant effect of educational background on teaching motivation (Çelik, 2022; Güneş, 2021). According to the research findings, no significant differences were found in teachers' teaching motivation across teaching levels, either in the overall scale or in the sub-dimensions of intrinsic and extrinsic motivation. Based on this result, it can be said that the teaching levels at which teachers work do not constitute a significant variable influencing their teaching motivation. In the literature, studies examining the effect of teaching level on teaching motivation are quite limited; however, the study conducted by Bulut (2022) presents findings that are consistent with the results of the present study.

Conclusion

This study examined variations in teachers' 21st-century skills, TPACK proficiencies, and teaching motivation based on various demographic variables. The main findings revealed that gender, professional seniority, and teaching level did not produce significant differences in teachers' 21st-century skills or TPACK competencies. On the other hand, participants' educational background showed statistically significant differences in both 21st-century skills and TPACK levels. Specifically, teachers with graduate education demonstrated notably higher proficiency in these areas compared to their colleagues holding only an undergraduate degree. These results emphasize that graduate education can potentially make an important contribution to the development of these critical professional competencies.

In terms of teaching motivation, no significant differences were observed based on gender and teaching level; however, professional seniority and educational background were found to create significant differences in teaching motivation. According to the research results, teachers' teaching motivation showed significant differences based on professional seniority both in the overall scale and in the relevant sub-dimensions. Particularly in the overall scale, intrinsic motivation, and extrinsic motivation sub-dimensions, significant differences were observed between teachers with 6–10 years of professional seniority and those in other seniority groups, favoring the other seniority groups. It was found that teachers with 6–10 years of professional seniority perceived themselves as less competent in terms of teaching motivation compared to teachers with other seniority levels. According to the research findings, significant differences were observed in teachers' teaching motivation based on their educational background across the overall scale as well as the intrinsic and extrinsic motivation sub-dimensions, favoring teachers with graduate qualifications. These findings indicate that having a graduate education is an influential factor on teachers' overall teaching motivation, as well as on their intrinsic and extrinsic motivation levels.

Recommendations

Based on the findings of this study, the following recommendations are presented;

- Based on the finding that graduate education positively affects teachers' 21st-century and TPAB skill levels, teachers should be encouraged to pursue graduate studies, which can be made more attractive through incentives such as service points, salary increases, or achievement certificates.
- It was determined that teachers with 6–10 years of professional seniority have the lowest teaching motivation. Therefore, groups should be formed considering teachers' years of service, and training programs and interventions aimed at increasing teaching motivation should be planned accordingly.
- In-service training and activities can be organized to enhance teachers' teaching motivation as well as their 21st-century and TPAB skill levels.
- Providing theoretical and practical online or face-to-face training for the use of technological teaching materials is expected to improve the technology proficiency of RCMK teachers, thereby making classroom instruction more effective.
- The professional competencies of DKAB teachers can be developed regarding the use of methods, techniques, and Web 2.0 tools that activate students' different thinking skills during lessons.

Ethical Statement

This research was ethically reviewed by “Publication Ethics Committee of Duzce University” and was approved ethically with the;

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Authors Contribution Rate

The processes related to the development of the theoretical framework, data collection, data analysis, and the discussion of findings and results were carried out by the first author. During these stages, the second author provided supervision, revision, and other academic contributions.

Conflicts of Interest

The authors have no conflict of interest to declare.

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References

- Akan, E., & Timur, B. (2023). Fen bilimleri öğretmenlerinin 21. yüzyıl beceri ve STEM uygulamaları yeterlilik düzeylerinin incelenmesi. *Eurasian Journal of Teacher Education*, 4(1), 42-56. <https://dergipark.org.tr/tr/download/article-file/2945055>
- Akdemir, B. (2022). *Sosyal bilgiler öğretmenlerinin 21. yüzyıl becerileri çerçevesinde dijital yetkinlik düzeyi: Adana ili örneği* [Yayımlanmamış yüksek lisans tezi]. Mersin Üniversitesi.
- Akıska, T. (2022). *Türkçe öğretmenlerinin teknolojik pedagojik alan bilgisi yeterliliklerinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Akdeniz Üniversitesi.

- Aktan, O. (2020). Evaluation of postgraduate education for the teachers career development. *Journal of Higher Education and Science*, 10(3), 596. <https://doi.org/10.5961/jhes.2020.419>
- Algül, Ö. (2022). *Din Kültürü ve Ahlak Bilgisi dersinde eleştirel düşünme: dokuzuncu sınıf ders kitabı ve öğretmen görüşleri üzerine bir inceleme* [Yayımlanmamış yüksek lisans tezi]. Sakarya Üniversitesi Sosyal Bilimler Enstitüsü.
- Alkoç, N. (2020). *Okulöncesi öğretmen adaylarının 21.yüzyıl öğrenen becerileri ile eleştirel düşünme eğilimleri arasındaki ilişkinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Kafkas Üniversitesi.
- Appova, A., & Arbaugh, F. (2018). Teachers' motivation to learn: Implications for supporting professional growth. *Professional development in education*, 44(1), 5-21. <https://doi.org/10.1080/19415257.2017.1280524>
- Aras, İ., & Öztürk, V. (2019). İmam hatip ortaokulu din kültürü ve ahlak bilgisi öğretmenlerinin özel alan yeterlilikleri. *Türkiye Din Eğitimi Araştırmaları Dergisi*, (7), 101-123. <https://dergipark.org.tr/en/download/article-file/758025>
- Argon, T., & Cicioğlu, M. (2019). Meslek lisesi öğretmenlerinin eğitime inanma düzeyleri ile öğretme motivasyonları. *The Journal of Academic Social Science Studies*, 4(57). <https://doi.org/10.9761/JASSS7108>
- Arif, M., & Abd Aziz, M. K. N. (2023). Islamic religious education learning model in the 21st century: Systematic literature review. *Indonesian Journal of Islamic Education Studies (IJIES)*, 6(2), 237-262. <https://doi.org/10.33367/ijies.v6i2.4417>
- Arslandaş, H. İ., Tösten, R., & Marakçı, D. B. (2018). Lise öğretmenlerinde mesleki motivasyon unsurları: Karma yöntemli bir çalışma. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 14(3), 880-895. <https://doi.org/10.17860/mersinefd.485161>
- Aşlamacı, İ. (2023). *21. yüzyıl becerileri ve din eğitimi-eleştirel bir yaklaşım*. Dem Yayınları.
- Ateşoğlu, S. K. (2022). *Sınıf öğretmenlerinin 21. yüzyıl öğrenen ve öğreten becerileri arasındaki ilişkinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Hatay Mustafa Kemal Üniversitesi.
- Avcı, T. (2014). *Fen bilimleri öğretmenlerinin teknolojik pedagojik alan bilgisi ve özgüven düzeylerinin belirlenmesi* [Yayımlanmamış yüksek lisans tezi]. Celal Bayar Üniversitesi.
- Ay, Y., Karadağ, E., & Acat, M.B. (2015). The technological pedagogical content knowledge-practical (tpack-practical) model: Examination of its validity in the Turkish culture via structural equation modeling. *Computers & Education*, 88, 97-108. <https://doi.org/10.1016/j.compedu.2015.04.017>
- Bal, M. S., & Karademir, N. (2013). Sosyal bilgiler öğretmenlerinin teknolojik pedagojik alan bilgisi (TPAB) konusunda öz-değerlendirme seviyelerinin belirlenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 34(34), 15-32. <https://doi.org/10.9779/PUJE468>
- Balkaş-Yaşar, E. (2021). *Fen bilimleri öğretmenlerinin 21. yüzyıl becerileri öz yeterlilik algıları ve stem tutumlarının incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Kırıkkale Üniversitesi.
- Barası, M., & Erdamar, G. (2021). 2018 ortaokul Türkçe dersi öğretim programının 21. yüzyıl becerileri açısından incelenmesi: Öğretmen görüşleri. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 21(1). <https://doi.org/10.17240/aibuefd.2021.21.60703-851474>
- Berkant, H. G. (2017). Öğretmen adaylarının öğretmen öz-yeterlik algılarının incelenmesi. *Eğitim Yansımaları*, 1(2), 1-17. <https://dergipark.org.tr/en/download/article-file/403466>

- Bieg, S., Backes, S., & Mittag, W. (2011). The role of intrinsic motivation for teaching, teachers' care and autonomy support in students' self-determined motivation. *Journal for educational research online*, 3(1), 122-140. <https://doi.org/10.25656/01:4685>
- Boran, G. (2022). *İlköğretim matematik öğretmenlerinin teknolojik pedagojik alan bilgisi yeterlikleri ile bilgi ve iletişim teknolojileri kullanımları arasındaki ilişkinin incelenmesi* [Yayımlanmamış doktora tezi]. Çanakkale Onsekiz Mart Üniversitesi.
- Börü, N. (2018). The factors affecting teacher-motivation. *International Journal of Instruction*, 11(4), 761-776. https://www.e-iji.net/dosyalar/iji_2018_4_48.pdf
- Bulut, D. (2022). *Sınıf öğretmenlerinin 21. yüzyıl becerileri ile öğretme motivasyonu düzeylerinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Ege Üniversitesi.
- Candan, D. G., & Gencel, İ. E. (2015). Öğretme Motivasyonu Ölçeği'ni Türkçe'ye uyarlama çalışması. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 1(36), 72-89. <https://dergipark.org.tr/en/download/article-file/181542>
- Carvalho, J., & Chima, F. O. (2014). Applications of structural equation modeling in social sciences research. *American International Journal of Contemporary Research*, 4 (1), 6-11. http://www.aijcrnet.com/journals/Vol_4_No_1_January_2014/2.pdf.
- Ciğilli, E., & Eryaman, M.Y. (2023). Sınıf öğretmenlerinin teknolojik pedagojik alan bilgisi ile 21. yüzyıl öğrenen becerileri algı düzeyleri arasındaki ilişkilerin incelenmesi. *Akdeniz Eğitim Araştırmaları Dergisi*, 17(44), 47-82. <https://doi.org/10.29329/mjer.2023.571.3>
- Cingöz, O., & Akyürek, S. (2021). DKAB öğretmenlerinin, ölçme ve değerlendirme tekniklerini eleştirel düşünme eğitimine katkı sağlayacak şekilde kullanma durumları. *Bilimname*, 2021(44), 239-278. <https://doi.org/10.28949/bilimname.695541>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson.
- Çelik, B. N. (2022). *Teknostresin öğretmenlerin öğretme motivasyonu ve mutluluk düzeylerine etkisi*. Yayımlanmamış Yüksek Lisans Tezi. Bülent Ecevit Üniversitesi Sosyal Bilimler Enstitüsü.
- Çınar, F. S. (2019). *Ortaokul öğretmenlerinin 21. yüzyıl becerilerine ilişkin algılarının ve görüşlerinin incelenmesi (Çorum ili örneği)* [Yayımlanmamış yüksek lisans tezi]. Kafkas Üniversitesi.
- Darsih, E. (2018). Learner-centered teaching: What makes it effective. *Indonesian EFL Journal*, 4(1), 33-42. <https://doi.org/10.25134/ieflj.v4i1.796>.
- Demirel, F. (2022). *Fen bilimleri dersinde uygulanan STEM etkinliklerinin ortaokul öğrencilerinin 21. yüzyıl beceri düzeyleri, fen başarıları ve fen dersine yönelik motivasyonlarına etkisinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Akdeniz Üniversitesi.
- Demirkol, M. (2019). Sınıf öğretmenlerinin öğretmenlik mesleğine yönelik motivasyon düzeyleri. *Academia Eğitim Araştırmaları Dergisi*, 4(1), 37-54. <https://dergipark.org.tr/en/download/article-file/706940>
- Doğan, A., & Doğan, İ. (2022). İlkokullarda görev yapmakta olan okul yöneticilerinin teknolojik pedagojik alan bilgisi (TPAB) yeterliliklerinin farklı değişkenler açısından değerlendirilmesi. *Journal of Multidisciplinary Studies in Education*, 6(2), 39-53. <https://dergipark.org.tr/en/download/article-file/2439552>

- Doğru, E., & Aydın, F. (2017). Coğrafya öğretmenlerinin teknolojik pedagojik alan bilgisi ile ilgili yeterliliklerinin incelenmesi/examining the skills of geography teachers' technological pedagogical content knowledge. *Journal of History Culture and Art Research*, 6(2), 485-506. <http://dx.doi.org/10.7596/taksad.v6i2.686>
- Duran, M. (2023). Okul öncesi öğretmenlerinin 21. yy. becerileri öğretimi, girişimci öğretmen ve yaratıcılığı besleme davranış düzeylerinin belirlenmesi. *Milli Eğitim Dergisi*, 52(1), 813-850. <https://doi.org/10.37669/milliegitim.1309224>
- Ekşici, Ü., & Berkant, H. G. (2024). Din kültürü ve ahlak bilgisi öğretmenlerinin değer eğitiminin davranışa aktarılmasındaki sorunların nedenlerine ve çözüm yollarına ilişkin görüşleri. *Eğitim Yansımaları*, 8(2), 119-138. <https://doi.org/10.70740/eduref.1544909>
- El Hiyaroh, D., Salimah, I. D., & Thohir, M. (2022). Perception of islamic religious education teachers based on TPACK. *Edukasi: Jurnal Pendidikan Islam*, 10(1), 107-118. <https://doi.org/10.54956/edukasi.v10i1.308>
- Elçi, A. C., Tuncel, F., Demiroğları, B., Akman, P., Elçi, R. M., & Kutlu, M. O. (2020). Ortaokul öğrencilerinin eleştirel düşünme eğilimleri. *Turkish Studies*, 15(5), 3315-3326. <https://dx.doi.org/10.47423/TurkishStudies.46323>
- Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of research on Technology in Education*, 42(3), 255-284. <https://doi.org/10.1080/15391523.2010.10782551>
- Ertürk, R. (2016). Öğretmenlerin iş motivasyonları. *Eğitim Kuram ve Uygulama Araştırmaları Dergisi*, 2(3), 1-15. <https://dergipark.org.tr/en/download/article-file/286576>
- Genç, M. M., & Yılmaz, M. (2024). Mesleki motivasyon kaynakları açısından din kültürü ve ahlak bilgisi öğretmenleri üzerine bir araştırma. *Bartın Üniversitesi İslami İlimler Fakültesi Dergisi*, (21), 36-76. <https://doi.org/10.59536/buiifd.1420885>
- George, D., & Mallery, P. (2019). *IBM SPSS statistics 26 step by step: A simple guide and reference*. Routledge.
- Gómez-Trigueros, I. M., & Yáñez de Aldecoa, C. (2021). The digital gender gap in teacher education: The TPACK framework for the 21st century. *European Journal of Investigation in Health, Psychology and Education*, 11(4), 1333-1349. <https://doi.org/10.3390/ejihpe11040097>
- Gorozidis, G., & Papaioannou, A. G. (2014). Teachers' motivation to participate in training and to implement innovations. *Teaching and teacher education*, 39, 1-11. <https://doi.org/10.1016/j.tate.2013.12.001>
- Gök, F. B. (2021). *Kur'ân-ı Kerim'de eleştirel düşünme eğitimi ve ortaöğretim DKAB öğretim programları üzerine bir değerlendirme* [Yayımlanmamış doktora tezi]. Bursa Uludağ Üniversitesi.
- Greene, B. A., Miller, R. B., Crowson, H. M., Duke, B. L., & Akey, K. L. (2004). Predicting high school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary educational psychology*, 29(4), 462-482. <https://doi.org/10.1016/j.cedpsych.2004.01.006>
- Gül, M. D., & Sönmez, S. (2023). Özel eğitim öğretmenlerinin teknolojik pedagojik alan bilgisi-uygulama yetkinlik düzeylerinin incelenmesi. *Cumhuriyet Uluslararası Eğitim Dergisi*, 12(3), 701-714. <https://doi.org/10.30703/cije.1253727>

- Güneş, A. (2021). *Okul yöneticilerinin kayırmacı davranışları ile öğretmen motivasyonu arasındaki ilişki (Adıyaman İli Örneği)* [Yayımlanmamış yüksek lisans tezi]. Kahramanmaraş Sütçü İmam Üniversitesi.
- Gürültü, E., Aslan, M., & Alcı, B. (2018). İlköğretim öğretmenlerinin yeterliliklerinin 21. yüzyıl becerileri ışığında incelenmesi. *The Journal of Academic Social Sciences*, 71(71), 543-560. <https://doi.org/10.16992/ASOS.13770>
- Han, J., & Yin, H. (2016). Teacher motivation: Definition, research development and implications for teachers. *Cogent Education*, 3(1), 1-18. <https://doi.org/10.1080/2331186X.2016.1217819>
- İlbuğa, H. (2022). *Okul öncesi öğretmenlerine yönelik 21. yüzyıl becerilerine ilişkin hizmet içi eğitim programının etkililiği* [Yayımlanmamış yüksek lisans tezi]. Ondokuz Mayıs Üniversitesi.
- İlğan, A., Canoğlu, Ö., Karamert, Ö., & Şensoy, Ç. P. (2019). Öğretmenlerin çocuk sevmeye düzeyleri ile öğretme motivasyonları arasındaki ilişkinin incelenmesi. *Journal of Turkish Studies*, 13(19), 979-1003. <https://doi.org/10.7827/TurkishStudies.13985>
- Jarmer, S. T. (2025). Critique of religion and critical thinking in religious education. *British Journal of Religious Education*, 47(3), 253-267. <https://doi.org/10.1080/01416200.2024.2403400>
- Jia, Y., Oh, Y., Sibuma, B., LaBanca, F., & Lorentson, M. (2016). Measuring twenty-first century skills: Development and validation of a scale for in-service and pre-service teachers. *Teacher Development*, 20, 229-252. <https://doi.org/10.1080/13664530.2016.1143870>
- Kafalı, C., & Akçöltekin, A. (2024). Fen bilimleri öğretmenlerinin 21. yüzyıl becerileri ile bilimsel araştırma öz yeterlikleri arasındaki ilişkinin incelenmesi. *TroyAcademy*, 9(1), 51-77. <https://doi.org/10.31454/troyacademy.1365799>
- Karadeniz, Ş., & Vatanartıran, S. (2015). Sınıf öğretmenlerinin teknolojik pedagojik alan bilgilerinin incelenmesi. *İlköğretim Online*, 14(3), 1017-1028. <https://doi.org/10.17051/io.2015.12578>
- Karasu, F. (2019). *Türk dili ve edebiyatı öğretmenlerinin teknopedagojik alan bilgisi (TPAB) yeterliliklerinin çeşitli değişkenler bakımından incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Atatürk Üniversitesi.
- Karatut, A., & Şentürk, H. E. (2022). COVID 19 pandemisinde uzaktan eğitim sürecinde beden eğitimi ve spor öğretmenlerinin teknolojik pedagojik alan bilgisi özgüvenlerinin incelenmesi. *Avrasya Spor Bilimleri ve Eğitim Dergisi*, 4(2), 96-109. <https://doi.org/10.47778/ejsse.1181977>
- Kholifah, N., Nurtanto, M., Mutohhar, F., Subakti, H., Ramadhan, M. A., & Majid, N. W. A. (2024). The mediating role of motivation and professional development in determining teacher performance in vocational schools. *Cogent Education*, 11(1), 1-21. <https://doi.org/10.1080/2331186X.2024.2421094>
- Kırbaç, M., & Kaya, F. (2023). Öğretmenlerin öğretme motivasyonları ile öğretmenlik mesleğine adanmışlık düzeyleri arasındaki ilişkinin incelenmesi. *RumeliDE Dil ve Edebiyat Araştırmaları Dergisi*, (Ö13), 642-657. <https://doi.org/10.29000/rumelide.1379204>
- Kıyık, D. (2016). *Sınıf öğretmeni adaylarının teknolojik pedagojik alan bilgisi seviyelerinin çeşitli değişkenlere göre incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Yüzüncü Yıl Üniversitesi.
- Kiş, İ., Yıldırım, K., & Gök, S. (2024). Sınıf öğretmenlerinin 21. yüzyıl becerileri bağlamında teknolojik pedagojik alan bilgisi (TPAB) yeterlilik algılarının incelenmesi. *Uşak Üniversitesi Eğitim Araştırmaları Dergisi*, 10(2), 112-129. <https://doi.org/10.29065/usakead.1464806>
- Klassen, R. M., & Chiu, M. M. (2011). The occupational commitment and intention to quit of practicing and pre-service teachers: Influence of self-efficacy, job stress, and teaching context.

- Contemporary educational psychology*, 36(2), 114-129.
<https://doi.org/10.1016/j.cedpsych.2011.01.002>.
- Koehler, M. J., Mishra, P., & Cain, W. (2013). What Is technological pedagogical content knowledge (TPACK)? *The Journal of Education*, 193(3), 13-19.
<https://doi.org/10.1177/002205741319300303>
- Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary issues in technology and teacher education*, 9(1), 60-70.
<https://www.learntechlib.org/d/29544/>
- Korkmaz, Ç. (2019). *Sınıf öğretmenlerinin yaşam boyu öğrenme eğilimleri ile yaşam ve 21. yüzyıl öğretene beceri düzeyleri arasındaki ilişki* [Yayımlanmamış yüksek lisans tezi]. Afyon Kocatepe Üniversitesi.
- Kozikoğlu, İ., & Özcanlı, N. (2020). Öğretmenlerin 21. yüzyıl öğretene becerileri ile mesleğe adanmışlıkları arasındaki ilişki. *Cumhuriyet Uluslararası Eğitim Dergisi*, 9(1), 270-290.
<http://dx.doi.org/10.30703/cije.579925>
- Kütükcü, G. (2020). *İlköğretim kademesindeki öğretmenlerin öğretme motivasyonları ile uzaktan eğitime yönelik tutumlarının incelenmesi* [Yayımlanmamış yüksek lisans tezi]. İstanbul Sabahattin Zaim Üniversitesi.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1(2), 130-149.
<https://www.statpower.net/Content/312/Handout/MacCallumBrowneSugawara96.pdf>
- Mailizar, M., Hidayat, M., & Artika, W. (2021). The effect of demographic variables on mathematics teachers' Tpack: Indonesian context. *Journal of Physics: Conference Series*, 1882, 1-9.
<https://doi.org/10.1088/1742-6596/1882/1/012041>
- Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural equation modeling*, 11(3), 320-341.
https://doi.org/10.1207/s15328007sem1103_2
- McMillan, J. H., & Schumacher, S. (2010). *Research in education: Evidence-based inquiry* (7th ed.). Pearson.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers college record*, 108(6), 1017-1054.
<https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Moè, A., & Katz, I. (2021). Emotion regulation and need satisfaction shape a motivating teaching style. *Teachers and Teaching*, 27(5), 370-387. <https://doi.org/10.1080/13540602.2020.1777960>
- Nasucha, M. R., Khozin, K., & Thoifah, I. A. (2023). Synergizing islamic religious education and scientific learning in the 21st century: A systematic review of literature. *Jurnal Pendidikan Agama Islam (Journal of Islamic Education Studies)*, 11(1), 109-130.
<https://doi.org/10.15642/jpai.2023.11.1.109-130>
- Nuhoğlu, H., & Seçkin, G. (2021). The Analysis of relationship between teacher' 21 st century teaching-learning skills and information technology usage levels. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 22(3), 1358-1388. <https://doi.org/10.29299/kefad.952565>

- Oğuz, H. C. (2022). *Sınıf öğretmenlerinin teknolojik pedagojik alan bilgisi düzeyleri ve uzaktan eğitim sürecinde fen bilimleri dersi bağlamında görüşlerinin belirlenmesi* [Yayımlanmamış yüksek lisans tezi]. Kırşehir Ahi Evran Üniversitesi.
- Orhan, P. C. (2022). *İngilizce öğretmen adaylarının öğretme motivasyonu, akademik motivasyonu ve motivasyonel çalışma koşulları* [Yayımlanmamış yüksek lisans tezi]. Ege Üniversitesi.
- Orsini, C. A., Tricio, J. A., Segura, C., & Tapia, D. (2020). Exploring teachers' motivation to teach: A multisite study on the associations with the work climate, students' motivation, and teaching approaches. *Journal of Dental Education*, 84(4), 429-437. <https://doi.org/10.1002/jdd.12050>
- Özdemir, O. G. (2022). *İngilizce öğretmenlerinin teknolojik pedagojik alan bilgisi özyeterlilik inançları ile WEB 2.0 araçları yeterlilikleri ve algıları üzerine çalışma* [Yayımlanmamış yüksek lisans tezi]. Süleyman Demirel Üniversitesi.
- Özer, M. (2021). *Sınıf öğretmenlerinin 21. yüzyıl becerilerine yönelik yeterlik algıları ile dijital okuryazarlık düzeyleri arasındaki ilişkinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Fırat Üniversitesi.
- Özkara, E. C., Konokman, G. Y., & Yelken, T. Y. (2018). Eğitimde teknoloji kullanımı hizmetiçi eğitime katılan öğretmenlerin TPAB özgüvenlerinin incelenmesi. *Amasya Üniversitesi Eğitim Fakültesi Dergisi*, 7(2), 371-412. <https://dergipark.org.tr/en/download/article-file/597642>
- Özşahin, C. (2019). *Öğretmenlerin sosyal medya bağımlılığı, öğretmenlik öz yeterlilikleri ve motivasyonları arasındaki ilişkinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Gaziantep Üniversitesi.
- Özyurt, M. (2020). 21. yüzyıl becerileri öğretimi ölçeğinin Türk kültürüne uyarlanması: Geçerlik güvenirlik çalışması. *OPUS Uluslararası Toplum Araştırmaları Dergisi*, 16, 2568-2594. <https://doi.org/10.26466/opus.725042>
- Rotherham, A. J., & Willingham, D. (2009). 21st century. *Educational leadership*, 67(1), 16-21. <https://www.aft.org/sites/default/files/RotherhamWillingham.pdf>.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67. <https://doi.org/10.1006/ceps.1999.1020>.
- Saavedra, A. R., & Opfer, V. D. (2012). *Teaching and learning 21st century skills: Lessons from the learning sciences*. A Global Cities Education Network Report. Asia Society. <https://www.opsba.org/wp-content/uploads/2021/02/RANDPaper.pdf>
- Saka Öztürk, H. (2017). *Öğretmenlerin tekno-pedagojik alan bilgisi (TPAB) düzeyleri, öğrencilerin özyeterlilikleri ve akademik başarıları arasındaki ilişkilerin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Necmettin Erbakan Üniversitesi.
- Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK) the development and validation of an assessment instrument for preservice teachers. *Journal of research on Technology in Education*, 42(2), 123-149. <https://doi.org/10.1080/15391523.2009.10782544>
- Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling* (p.85-90). Taylor & Francis
- Semerci Gaygusuz, N. (2023). *Okul öncesi öğretmenlerinin teknolojik pedagojik alan bilgisi öz yeterlilikleri ile mesleki profesyonellikleri arasındaki ilişkinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Maltepe Üniversitesi.

- Singın, R. H. Ö., & Gökbulut, B. (2020). Okul öncesi öğretmenlerinin teknopedagojik yeterliklerinin belirlenmesi. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 20(1), 269-280. <https://doi.org/10.17240/aibuefd.2020.20.52925-556477>
- Stumbrienė, D., Jevsikova, T., & Kontvainė, V. (2024). Key factors influencing teachers' motivation to transfer technology-enabled educational innovation. *Education and Information Technologies*, 29(2), 1697-1731. <https://doi.org/10.1007/s10639-023-11891-6>
- Şimşek, E. (2018). Din kültürü ve ahlak bilgisi dersi öğretmenlerinin öğretim teknolojileri alanındaki yeterlikleri. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 22(3), 1631-1648. <https://dergipark.org.tr/en/download/article-file/553641>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics*. Pearson
- Taşdemir, R. (2019). *İlkokul ve ortaokul öğretmenlerinin örgütsel kültür ve motivasyon algıları (Nevşehir Örneği)* [Yayımlanmamış yüksek lisans tezi]. Kırşehir Ahi Evran Üniversitesi.
- Tokmak, H., Konokman, G., & Yelken, T. (2013). Mersin üniversitesi okul öncesi öğretmen adaylarının teknolojik pedagojik alan bilgisi tpab özgüven algılarının incelenmesi. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi*, 14(1), 35-51. <https://dergipark.org.tr/en/download/article-file/1490643>
- Trilling, B., & Fadel, C. (2012). *21st century skills: Learning for life in our times*. John Wiley & Sons.
- Türker, M. S. (2020). Yabancı dil olarak türkçe öğretenlerin teknolojik pedagojik alan bilgilerinin çeşitli değişkenler açısından incelenmesi. *Uluslararası Türkçe Edebiyat Kültür Eğitim (TEKE) Dergisi*, 9(1), 271-292. <https://dergipark.org.tr/en/download/article-file/1024823>
- Uçan, A. D. (2022). Din kültürü ve ahlak bilgisi derslerinde eleştirel düşünme becerisinin geliştirilmesinde 'Çocuklar için Felsefe' yaklaşımının kullanılması. *Yakın Doğu Üniversitesi İlahiyat Fakültesi Dergisi*, 8(2), 161-178. <https://doi.org/10.32955/neu.ilaf.2022.8.2.01>
- Usta, B. (2021). Sınıf öğretmenlerinin Teknolojik Pedagojik Alan Bilgisi (TPAB) ve hizmet içi eğitim durumlarının incelenmesi [Yayımlanmamış yüksek lisans tezi]. Yıldız Teknik Üniversitesi.
- Uyar, A., & Çiçek, B. (2021). Farklı branşlardaki öğretmenlerin 21. yüzyıl becerileri. *IBAD Sosyal Bilimler Dergisi*, (9), 1-11. <https://doi.org/10.21733/ibad.822410>
- Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: Implications for national curriculum policies. *Journal of curriculum studies*, 44(3), 299-321. <https://doi.org/10.1080/00220272.2012.668938>
- Voogt, J., Erstad, O., Dede, C., & Mishra, P. (2013). Challenges to learning and schooling in the digital networked world of the 21st century. *Journal of computer assisted learning*, 29(5), 403-413. <https://doi.org/10.1111/jcal.12029>
- Wahab, J. A., Hamid, A. H. A., Zainal, S., & Rafik, M. F. M. (2013). The relationship between headteachers' distributed leadership practices and teachers' motivation in national primary schools. *Asian Social Science*, 9(16), 161-167. <https://doi.org/10.5539/ass.v9n16p161>
- Watson, B., & Thompson, P. (2014). *The effective teaching of religious education*. Routledge.
- Yalçın İncik, E. (2020). Öğretmenlerin Yaşam boyu öğrenme eğilimleri ve 21. yüzyıl öğretme becerileri arasındaki ilişkinin incelenmesi. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi*, 20(2), 1099-1112. <https://doi.org/10.17240/aibuefd.2020.-638602>
- Yanar, N. (2022). *Beden eğitimi ve spor öğretmenlerinin Teknolojik Pedagojik Alan Bilgisi (TPAB) yeterlikleri: Bir karma desen araştırması* [Yayımlanmamış doktora tezi]. Ankara Üniversitesi.

- Yavuz, C., & Karadeniz, C. B. (2009). Sınıf Öğretmenlerinin motivasyonunun iş tatmini üzerine etkisi. *Uluslararası Sosyal Araştırmalar Dergisi*, 2(9), 507-519. <https://www.sosyalarastirmalar.com/articles/sinif-retmenlernn-motvasyonunun-tatmn-zerne-etks.pdf>.
- Yeh, Y.-F., Hsu, Y.-S., Wu, H.-K., Hwang, F.-K., & Lin, T. C. (2014). Developing and validating technological pedagogical content knowledge-practical (tpack-practical) through the delphi survey technique. *British Journal of Educational Technology*, 45(4), 707-722. <https://doi.org/10.1111/bjet.1207>
- Yıldırım, R., Utkugün, C., & Yurtseven, R. (2022). Öğretmenlerin 21. yüzyıl becerilerinin öğretime ilişkin öz yeterlik algıları / teachers' perceptions of self-efficacy in teaching 21st-century skills. *e-Uluslararası Eğitim Araştırmaları Dergisi*, 13(6), 28-44. <https://doi.org/10.19160/e-ijer.1159560>
- Yılmaz, M. U. (2020). *Sınıf öğretmenlerinin teknolojik pedagojik alan bilgisi ile mesleki profesyonelliği arasındaki ilişkinin incelenmesi* [Yayımlanmamış yüksek lisans tezi]. Çukurova Üniversitesi.
- Yiğit, Y. (2021). Din kültürü ve ahlak bilgisi öğretmenlerinin öğrencilere problem çözme becerisi kazandırma yeterliği üzerine bir alan araştırması (Türkiye Örneği). *Dokuz Eylül Üniversitesi İlahiyat Fakültesi Dergisi* -/53 (June 2021), 133-163. <https://doi.org/10.21054/deuifd.878017>
- Yurtcu, G., & Aktan, O. (2024). Din kültürü ve ahlak bilgisi öğretim programı ders kazanımlarının 21. yüzyıl becerileri açısından incelenmesi. *Türkiye Din Eğitimi Araştırmaları Dergisi*, (17), 13-50. <https://doi.org/10.53112/tudear.1414407>
- Yusufoğlu, A., & Gençtürk, E. (2021). Sosyal bilgiler öğretmen adaylarının teknolojik pedagojik alan yeterliliklerinin incelenmesi. *Türk Akademik Yayınlar Dergisi (TAY Journal)*, 5(2), 181-203. <https://dergipark.org.tr/en/download/article-file/2042756>