# Factors Affecting the Teaching of 21st Century Skills According to Teachers' Perceptions[*]

# Öğretmen Algılarına Göre 21. Yüzyıl Becerileri Öğretimini Etkileyen Faktörler

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*ABSTRACT*

*This study investigates teachers' perceptions about the presence of meaning, innovative behavior, burnout, openness toward organizational change, and principals' ethical leadership, focusing on their implications for 21st-century skills teaching. The research aims to determine if these factors individually or collectively influence teachers' readiness and capability to impart 21st-century skills in the class. Employing a quantitative, cross-sectional survey design, the study gathered data from 799 teachers who completed surveys in Şanlıurfa/ Türkiye during the academic year 2022-2023. Results indicate significant relationships among all constructs in the study, from the presence of meaning to 21st-century skills teaching. Specifically, while teachers' perceptions of meaning and burnout are negatively correlated, innovative behavior, openness toward organizational change, and 21st-century skills teaching are positively correlated. The multiple regression analysis reveals that innovative behavior, openness toward organizational change, and perceived ethical leadership significantly predict 21st-century skills teaching while the presence of meaning and burnout do not contribute to the model significantly. Further explanations and suggestions are provided at the end of the paper.*

***Keywords:*** *21st-Century Skills Teaching, Innovative Behavior, Burnout, Ethical Leadership, Presence of Meaning, Openness Towards Organizational Change.*

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***Öz***

*Bu çalışmanın amacı öğretmenlerin mevcut anlam, yenilikçi davranış, tükenmişlik, örgütsel değişime açıklık ve müdürlerin etik liderliğine ilişkin algılarının, 21. yüzyıl becerilerinin öğretimi üzerindeki etkisini araştırmaktır. Araştırma, bu faktörlerin bireysel veya toplu olarak öğretmenlerin sınıfta 21. yüzyıl becerilerini kazandırmaya hazır olma durumlarını ve yeteneklerini etkileyip etkilemediğini belirlemeyi amaçlamaktadır. Nicel yaklaşım ile tasarlanan bu çalışmada, 2022-2023 eğitim yılında Şanlıurfa'da görev yapan 799 öğretmenden veri toplanmıştır. Sonuçlar, mevcut anlamdan 21. yüzyıl becerilerinin öğretimine kadar çalışmadaki tüm boyutlar arasında anlamlı ilişkilerin olduğunu göstermektedir. Özellikle, öğretmenlerin mevcut anlam algısı ve tükenmişliği negatif yönde ilişkiliyken, yenilikçi davranış, örgütsel değişime açıklık ve 21. yüzyıl becerilerinin öğretimi pozitif yönde ilişkilidir. Çoklu regresyon analizi, yenilikçi davranış, örgütsel değişime açıklık ve algılanan etik liderliğin 21. yüzyıl becerileri öğretimini anlamlı bir şekilde yordayan olgular olduğunu, mevcut anlamın ve tükenmişliğin ise modele anlamlı bir katkı sağlamadığını ortaya koymaktadır. Makale sonunda açıklama ve önerilere yer verilmiştir.*

**Anahtar Sözcükler:** *21. Yüzyıl Becerileri Öğretimi, Yenilikçi Davranış, Tükenmişlik, Etik Liderlik, Anlam, Örgütsel Değişime Açıklık*

# INTRODUCTION

The 21st-century educational landscape requires educators to impart a diverse set of skills to their students—commonly referred to as new century skills—including critical thinking, creativity, collaboration, and communication (Tohani & Aulia, 2022). These skills are essential for navigating the complexities of modern society and are increasingly demanded by employers across various sectors (World Economic Forum, 2020). The effectiveness with which teachers convey these skills is crucial for preparing students to thrive in complex life and work environments. The ways teachers teach 21st-century topics are influenced by many factors that shape the educational ecosystem.

Various factors, ranging from motivational sources (Akar, 2020), teacher innovation (Li et al., 2024), school leadership (Leithwood et al., 2020) to attitudes towards change (Kondakçı et al., 2015) and burnout levels (Madigan & Kim, 2021) can influence teachers' ability to teach the essential skills and demonstrate desired performance in the classroom. These factors do not operate in isolation but interact in complex ways to

shape the educational environment and outcomes. Indeed, a recent study asserted that lack of job satisfaction and burnout can lead to decreased motivation, adversely affecting teachers' performance and their students' learning outcomes (Chang & Sung, 2024). This highlights the importance of addressing job satisfaction for motivation as a fundamental aspect of high-quality classroom instruction.

Another study proposed that teachers' well-being and mental health play a pivotal role in shaping learning experiences and the educational environment (Sohail et al., 2023). This underscores the need for comprehensive support systems that address both the professional and personal needs of educators. Furthermore, a sense of meaning at work leads to greater work involvement and effective practices because teachers who perceive their work as meaningful are more likely to demonstrate commitment to and engagement in innovative activities (Bao, 2024). This suggests that fostering a sense of purpose and significance in teaching roles could be a key strategy for enhancing educational innovation and effectiveness.

Innovative behavior by teachers is one of the crucial factors affecting student engagement, promoting critical thinking, and fostering lifelong learning (Li et al., 2024). Such behavior encompasses not only the adoption of new teaching methods and technologies but also the creation of novel approaches tailored to the unique needs of diverse student populations. Additionally, ethical leadership has long emerged as another crucial factor influencing students' learning and classroom practices in schools (Ahmed, 2023). Both of these studies suggest that students who are exposed to ethical behaviors and innovative practices in the school environment are more likely to emulate these qualities and experience a high-quality learning environment induced by these factors.

The changes affecting society and overall education also greatly influence teachers and their organization. These changes include technological advancements, shifting labor market demands, and evolving social norms, all of which necessitate continuous adaptation in educational approaches (Schleicher, 2020). Teachers who adapt to these

changes are better equipped to help students acquire 21st-century skills effectively (Gümüş, 2022). The teachers' ability to adapt effectively serves a dual purpose: it elevates the quality of classroom instruction while simultaneously aligning with the expectations of their educational institutions in an agile, technology-driven landscape. This alignment between individual teacher competencies and organizational goals is crucial for creating cohesive, forward-thinking educational ecosystems that can thrive amidst rapid societal changes affecting the organization and person.

In parallel with this literature, it could be accepted that learning and teaching in the 21st century are influenced by a myriad of interconnected factors that mutually reinforce one another. In this context, the 21st century requires educators who are not only equipped with a diverse set of skills for teaching but also demonstrate openness to organizational change, a strong sense of meaning in their work, and a high level of motivation, among other essential attributes. Accordingly, there is a significant need for research that delves into the complex interplay between teachers' sense of meaning, motivation, job satisfaction, the leadership styles they encounter, their attitudes towards changes at both personal and organizational levels, and their innovative behaviors to see how these factors affect their ability to impart 21st-century skills to students effectively.

Central to this exploration, in this study, are the constructs of meaningfulness, openness towards organizational change, innovative behaviour, burnout, and ethical leadership within educational settings. By examining these interrelationships, researchers can illuminate how these various factors collectively support or impede the development and implementation of 21st-century teaching. Insights from such a study could inform policy decisions, guide teacher preparation programs, and shape professional development initiatives, ultimately fostering a more responsive and dynamic ecosystem for teachers and their teaching.

**Literature Review**

*Presence of Meaning*

Meaningfulness motivates individuals to make sense of their environment and empowers them to cope successfully (Korotkov, 1998). It serves as an inherent motivator for individuals to learn and strive towards higher-order goals. This sense of purpose energizes and commits individuals to meet life's demands, enabling teachers to devote time and energy to their work, students, and personal aspirations (Göçen, 2021).

Individuals who find meaning in their work often exhibit positive outcomes, such as an increased willingness to enhance their job resources and meet job demands, and resilience characterized by determination and flexibility (Van Wingerden & Poell, 2019). Specifically, among teachers, meaningful work is linked to reduced burnout, heightened engagement, improved self-assessments of performance, and better retention rates (Fouché et al., 2017). Despite the numerous benefits associated with the feeling of meaning at work, there has been limited research on how teachers perceive meaning and its impact on their teaching practices and student learning (Turner & Thielking, 2019). However, examining meaningfulness as a motivational power in teaching can present teachers with inner-motivated paths for high-quality student learning experiences.

Experiencing a sense of meaning is an intrinsic reward (Thomas, 2009) that could motivate teachers in their tasks that benefit students' need most. Self-determination theory by Ryan and Deci (2000) describes how teaching practices that support students' needs foster their intrinsic motivation for learning and engagement (Stroet et al., 2013). Furthermore, teachers who experience meaningful work will adopt a more positive attitude toward teaching (Willemse & Deacon, 2015), positively contributing to students' learning. Teachers, motivated by a sense of meaningful work, are expected to center their teaching around topics that will benefit students most in their daily lives. Based on the findings and related literature, we expect that the presence of meaning in teachers positively impacts their 21st-century skills teaching.

### Openness Toward Organizational Change

As Charles F. Kettering once said, "*The world hates change, yet it is the only thing that has brought progress*" underscoring the indispensable role of change in fostering individual, organizational and societal advancement (ACCA Global, 2023, p.26).

Organizational change is recognized as a fundamental aspect of organizational life (Robbins et al., 2013). When employees perceive themselves as ready for organizational change, this means readiness and willingness to support the transition (Weiner, 2009). However, a misinformed or incorrect perception of change often leads to negative reactions toward new ideas, preventing organizations from promptly responding to various challenges and opportunities and hindering their ability to be flexible, adaptive, and innovative (Şendrea, 2023).

Due to the rapidly evolving nature of the economy and lifestyles driven by technological advancements, educational institutions must prioritize change to effectively address the new needs and expectations of individuals and society. In an era where digital devices are ubiquitous, schools can no longer rely solely on traditional teaching methods. Similarly, the curriculum must be adapted to incorporate the skills required for success in this century (Erstad & Voogt, 2018). Teachers and schools, as the cornerstones of the education system, must demonstrate adaptability and readiness for change to foster advancements that shape the country's future (Karsantik, 2021).

The effectiveness of schools in implementing change and their adaptability are key drivers of educational system improvement (Fullan, 2007). In response, organizations are increasingly embracing change and innovation to enhance their standards and existing conditions (Kharkheli & Gavardashvili, 2023). This process in schools encompasses changes and innovations spanning from management practices to classroom instruction.

Wanberg and Banas (2000) modeled the predictors of openness toward organizational change where self-esteem, optimism, self-efficacy, etc., play important roles, producing positive work outcomes. As a result, we propose that teachers' openness to

organizational change can significantly influence other outcomes, particularly the quality of teaching practices and content delivery. Based on the findings and related literature, we believe that openness toward organizational change positively impacts teachers' ability to teach 21st-century skills effectively.

### Innovative Behavior

Innovation in education is a multifaceted concept, encompassing process-oriented knowledge sharing, technological advancements, and the development of knowledge-based products and services (Göl & Bülbül, 2012, p. 98). Expanding on this idea, Damanpour (1987, p. 676) describes innovation as a means for an organization to adapt its structure, procedures, and products to better align with societal needs.

In light of this understanding, it becomes clear why educational institutions, serving as the cornerstone for developing human capital across various sectors, must proactively embrace change and innovation. This proactive approach is crucial for fostering advancements vital for the nation's and society's future. Indeed, organizational survival itself is rooted in the ability to innovate (Krskova & Breyer, 2023). However, the importance of innovation extends beyond mere survival; it is essential not only for survival but also for thriving within the rapidly evolving global information economy (Hodgson, 2012).

Within this dynamic context, teachers face increasing expectations to actively pursue their professional development, equipping themselves with the skills and innovation capacity demanded by this era. As a result, the ability of teachers to seamlessly integrate innovations into their teaching practice has become a fundamental requirement in our constantly changing digital age (Stumbrienė et al., 2024; Punie & Redecker, 2017). In parallel with this new normal, teachers should not only embody innovative behavior but also successfully implement 21st-century teaching methods in their classrooms to create innovative and critical-thinking generations.

As Rogers (2003) defines different groups in adopting new developments, it becomes evident that individuals react differently to new ideas or applications due to their

characteristics and individual innovativeness (Yigit & Aksay, 2015). Consequently, while some teachers may be inherently open to new changes and innovation, others may be more resistant. This variance underscores the likelihood that teachers exhibiting higher levels of innovativeness are more prone to adopt new programs and teaching methods. These teachers are more likely to opt for skills and content that the new normal necessitates. Drawing from these insights and the existing literature, we expect that teachers' innovative characteristics and behaviors positively impact their teaching of 21st-century skills.

### *Burnout*

A majority of teachers experience burnout at some point in their employment (Albertson & Kagan, 1987; Friedman, 1996; Merseth, 1992; Van Horn & Van Dierendonck, 1998). This was reinforced in a research study published in the American literature by Farber (1991), which estimated that between 5% and 20% of American teachers would experience burnout at some point in their careers. Unfortunately, these findings persist in this decade as well (Göçen, 2019). Burnout is still common among teachers in Türkiye (Seis, 2023), including teacher candidates (Örsdemir & Yıldırım, 2024)

The extreme amounts of stress teachers experience in their jobs are a clear indicator of how demanding the teaching profession is. Novice teachers, in particular, experience high levels of burnout early in their careers, often exacerbated by factors such as lack of student appreciation, insufficient public recognition, and the absence of a supportive work environment (Gavish & Friedman, 2010). Furthermore, teachers typically report moderate levels of burnout, with reduced personal accomplishment being the most common symptom, followed by emotional exhaustion and depersonalization. These experiences vary by gender (Jamaludin & Woon, 2019). Thus, burnout, characterized by emotional exhaustion, depersonalization, and reduced feelings of personal accomplishment (Halbesleben & Buckley, 2004), can seriously affect teachers' teaching practices, transfer of new century skills and classroom management to great extent.

Research has consistently shown that teachers' professional knowledge and motivation are strongly related to students' learning and motivation. Newer results have also revealed that teachers' emotional exhaustion is significantly negatively related to students' learning achievement (Klusmann et al., 2016). This finding underscores the importance of considering teachers' emotional well-being in educational outcomes. Expanding on this, Mameli and Molinari (2017) found that the adoption of interactive practices that favor students' participation negatively predicted burnout. Conversely, teacher-centered practices and lack of flexibility positively predicted burnout symptoms. These findings collectively suggest that burnout and exhaustion in teachers can significantly influence their teaching quality, instructional practices and content delivery. Specifically, teachers experiencing burnout may be less likely to implement student-centered, interactive approaches that are often associated with effective teaching of 21st-century skills. Based on the findings and related literature, we hypothesize that the burnout level of teachers negatively impacts their teaching of 21st-century skills.

### Ethical Leadership of Principals

Brown et al. (2005, p.120) defined ethical leadership as the demonstration of morally upright behavior through personal actions and interpersonal relationships, promoting such behavior among followers through communication, reinforcement, and decision-making. Ethical leaders are distinguished by their moral integrity and are guided by values influencing their conduct and interactions. For Brown and Treviño (2006), ethical leaders are individuals who maintain high ethical standards and serve as role models through their daily actions and decisions. Ethical leadership, characterized by the moral attributes, involves integrating ethical principles into both personal and professional responsibilities (Páez Gabriunas, 2017). Such leaders are committed to ethical principles, leading their teams with consistency and purpose, and significantly impacting the attitudes of their followers.

The research by Zhu et al. (2004) and Yidong and Xinxin (2013) highlights the numerous benefits of ethical leadership, including increased job satisfaction, engagement, productivity, a positive organizational climate, and overall effectiveness.

In light of these findings, school leadership should adopt a values-driven approach that guides educational teams toward achieving their objectives, emphasizing integrity, fairness, and responsibility, which are essential in fostering a safe and positive teaching environment for this century.

Recent studies have further corroborated the importance of ethical leadership in educational settings. School leadership with ethical approach to school staff can positively affect their job satisfaction (Cansoy et al., 2023). Moreover, teachers who perceive their leaders as ethical are more likely to be motivated in their work (Flores & Zacarias, 2024). Ethical leadership in the organization also contributes to teachers' voice behavior (Sagnak, 2017), school effectiveness (Işik, 2020), and may reduce organizational hypocrisy (Kılıçoğlu & Kılıçoğlu, 2021). Collectively, these studies all pinpoint the significant effects of ethical leadership on teacher attitudes and motivations in the school environment. Consequently, it can be reasonably claimed that an ethical leader in school can both directly and indirectly contribute to positive teacher outcomes in the school setting. This multifaceted impact suggests that ethical leadership may play a crucial role in shaping teachers' approaches to instruction, including their ability and willingness to teach 21st-century skills effectively. Based on the findings and related literature, we expect that the ethical leadership portrayed by school leaders impacts teachers' 21st-century skills teaching.

### *21st-Century Skills Teaching*

Wagner (2008) mentions the critical skills for this age: critical thinking and problem-solving, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, accessing and analyzing information, curiosity, and imagination. Developing these skills is vital for empowering individuals to actively participate in civic life and address complex societal challenges (Chu et al., 2021). These skills are required for individuals to effectively navigate global landscape, highlighting the necessity for education systems to include these capabilities (Mansilla & Jackson, 2011).

While the concept of 21st-century skills as above is widely recognized in many international reports (Kennedy & Sundberg, 2020), the practical implementation of teaching and truly embodying students with these skills (i.e., critical thinking) remains a complex challenge. Indeed, it is often easier to identify what skills are needed than to determine how to effectively impart them. This gap between theory and practice explains why teachers' focus on imbuing students with twenty-first-century skills is garnering increased interest (Özyurt, 2020). Teaching 21st century skills is about developing students' ability to think critically and independently, rather than just presenting specific information or tools. The focus is on creating habitual thinking patterns that students can apply across various learning situations (Beers, 2011). Teaching in the class is not enough, these skills should be supported with the right summative and formative assessment techniques, not giving way to superficial memorization (Saavedra & Opfer, 2012).

In order to provide meaningful experiences, teacher must thoroughly understand the goals of a 21st-century curriculum, grasp the dynamics of their student populations, and devise instructional practices for creating an engaging and effective learning environment. They need to develop a repertoire of instructional strategies and content knowledge aligned with the 21st-century paradigm. They need to move beyond traditional teaching methods and embrace more innovative, student-centered approaches that foster critical thinking, creativity, collaboration, and digital literacy. This transition can be challenging, as it often requires teachers to continually update their own skills and knowledge.

Teaching any subject can be challenging if the dynamic interplay between teachers' subject-matter knowledge, technological knowledge, and teachers' pedagogy knowledge is poorly understood (Bullock, 2011). Moreover, teaching is affected by both internal and external factors, such as teachers' motivation, the learning environment, and the needs of students, among others. In light of this complexity, understanding several key factors this study put forward becomes crucial: how teachers perceive meaning in their work, their levels of innovativeness, experiences of burnout, openness to organizational

change, and their views on the ethical leadership exhibited by their principals. These factors may profoundly influence teachers' ability to teach new-century skills and engage with new-generation students effectively.

**Purpose of the study**

Based on the findings in the literature, this research aims to investigate the complex interplay of factors influencing teachers' 21st-century skills teaching. The study explores the relationships among teachers' perceptions of meaning, levels of burnout they experience, their perceptions of leaders' ethical behaviors, openness towards organizational change, and innovative behavior. The primary objective is to analyze how these variables impact teachers' ability to effectively teach 21st-century skills. By examining these factors and their potential interactions, this study seeks to provide a comprehensive understanding of the dynamics in 21st-century skills teaching.

## METHOD

### *Research Design*

This study employed a quantitative, cross-sectional survey design to collect data from teachers across different subject areas and demographics. Aggarwal and Ranganathan (2019, p. 35) describe the cross-sectional study as a 'snapshot' of the frequency and characteristics of the topic among a specific population at a certain point in time. This study analyzed the relationship among the intended dimensions that could affect teachers and their teaching.

### *Sample and Data Collection*

Upon ethics approval for this study, the researchers contacted school principals and teachers in the city center of Şanlıurfa / Türkiye. The printed surveys did not include

descriptive information; participants' anonymity and confidentiality were ensured throughout the data collection and analysis.

Convenience sampling was preferred for the study. A total of 900 surveys were distributed to schools in the city. Of these, only 799 surveys were returned and completed, representing the final sample size. The printed surveys were distributed in the academic year of 2022-2023. Only gender information of the participants was listed as follows in Table 1.

**Table 1.** Demographic Characteristics of Teachers in the Study

| Variable | Group | N | % |
|---|---|---|---|
| Gender | Woman | 439 | 55,8 |
|  | Man | 348 | 44,2 |
|  | Total | 787 | 100 |

Only 787 out of 799 participants filled this gender question in the survey format; the respondents were on average 30,91 years old (SD = 5.4). The gender was woman by 55,8 % while 44,2 % was man.

*Data Collection Tools*

In this study, the researchers employed a personal information form and scales about the presence of meaning, innovative behavior, leaders' ethical leadership, burnout, openness toward organizational change, and 21st-century skills teaching. They are all explained in detail below:

**Presence of Meaning:** Teachers' perception of meaning was assessed using the Presence of Meaning subscale from the Meaning in Life Questionnaire developed by Steger et al. (2006), which has been adapted into Turkish by many studies (Akin & Taş, 2015; Demirdağ & Kalafat, 2015). This Presence of Meaning subscale consists of five items that evaluate the extent to which individuals perceive their lives as meaningful and purposeful. Specifically, it assesses teachers' recognition of life's meaning, the presence of a clear life purpose, and their satisfaction with the direction their lives are

taking. In this study, the Cronbach's Alpha coefficient of the scale was found to be 0.834, indicating a high level of internal consistency. A sample item from the scale is as follows: "*I am looking for something that makes my life feel meaningful.*"

**Innovative Behaviour:** This scale was originally developed by Scott ve Bruce (1994) and the version used in this study was adapted into Turkish by Çalışkan et al (2019). Innovative behaviour scale aims to determine an individual's proactive behavior in discovering and applying new solutions, advocating for innovative ideas, securing necessary resources, and planning their execution, ultimately reflecting their overall innovative capacity. The Cronbach's Alpha coefficient for this study was found to be 0.886; the sample item from the scale is "*I research new technologies, processes, techniques and generate ideas.*"

**Ethical Leadership:** The teachers' perceptions of the ethical behavior of their schools' principals were assessed with Ethical Leadership Scale (ELS) developed by Brown et al. (2005) and adapted into Turkish by Tuna, Bircan ve Yeşiltaş (2012). This scale, tested in multinational samples (Şen & Göçen, 2021) as well, includes ten items about leader behaviors, from acts of fairness and honesty to allowing followers a voice and rewarding ethical conduct. It evaluates how well leaders listen to employees, define success, conduct their personal and professional lives, enforce ethical standards, make fair decisions, establish trust, communicate values, set ethical examples, consider employees' interests, and prioritize doing the right thing in decision-making. In this study, the Cronbach's Alpha coefficient of the scale was found to be 0.819. A sample item from this scale is as follows: ''*My managers are reliable people..*''

**Burnout:** The Burnout Measure Short Version was developed by Pines (2005) and adapted to Turkish by Tümkaya et al (2009). Having ten items on burnout, this scale assesses feelings of emotional strain and discontent of persons. It captures the extent to which individuals experience feelings of being trapped, helplessness, sadness or depression, hopelessness, fatigue, worthlessness, disappointment by others, ailment with

illness, and sleep disturbance. The analysis yielded a Cronbach's Alpha coefficient of 0.914 for this study. A sample item is as follows ''*I feel fatigued*''

**Openness Toward Organizational Change:** This six-item scale was developed by Çalışkan (2022) in Turkish. Measuring a person's openness to organizational change, this scale quantifies an individual's receptiveness to and positive attitudes towards change within their workplace. It assesses beliefs about the role of change in improving undesirable situations, enhancing personal performance, achieving organizational goals, and benefiting the institution as a whole, as well as the individual's willingness to support change efforts. The Cronbach's Alpha coefficient was found to be 0.896 for this study. A sample item from this scale is: ''*I think the change will positively affect my performance.*''

**21st-Century Skills Teaching:** To assess teachers' competence in implementing curricula enriched with 21st century skills, the study used the Scale of 21st-Century Skills Teaching. This scale was originally developed by Jia et al. (2016) and adapted into Turkish by Özyurt (2020). It is a self-report scale that measures teachers' confidence in teaching students about twenty-first-century skills. This scale assesses teachers' self-efficacy perceptions regarding teaching 21st-century skills and consists of 10 items. The scale is composed of three dimensions: technology (three items), collaboration (three items), and innovation, problem-solving (four items) for preservice teachers, and a one-dimension scale, cross-functional skills, for in-service teachers (Jia et al., 2016; Özyurt, 2020). The Cronbach's Alpha coefficient of this scale was found to be 0.885 for this study. A sample item from this scale is "Teaching students to take the lead on a group project... (Choose *between I am very inadequate (1) - I am completely competent(7))*

*Data Analysis*

The collected data were analyzed using two statistical techniques: correlation analysis and multiple regression analysis. These were chosen to investigate the relationships

among the variables and identify significant predictors of 21st-century skills teaching. After checking the scales' Cronbach's alpha reliability coefficients, the skewness and kurtosis values in the scales were checked, and they were found to be around +2 and -2, which ensures the assumption of normality (George & Mallery, 2016; Tabachnick & Fidell, 2013). All the data attained from the participants entered the statistics program, and related tests were executed after each assumption was controlled at each analysis (i.e., parametric and non-parametric tests, number of groups).

## FINDINGS

This study investigated the relationships among teachers' perceptions of meaning, innovative behavior, burnout, openness toward organizational change, perceived ethical leadership of their principals, and their self-efficacy in teaching 21st-century skills. The analysis used data collected from teachers across various subject areas and demographics. Table 2 displays the correlation analysis for the variables in the model.

**Table 2.** Correlation among the teacher variables in the study

| Variables | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Presence of Meaning | 1 | .363** | .225** | -.419** | .304** | .316** |
| 2. Innovative Behavior | | 1 | .251** | -.245** | .494** | .346** |
| 3. Ethical Leadership | | | 1 | -.192** | .251** | .217** |
| 4. Burnout | | | | 1 | -.229** | -.165** |
| 5. 21st Cent. Skills Teaching | | | | | 1 | .363** |
| 6. Openness toward Organizational Change | | | | | | 1 |

$p < 0.01$**

Table 2 examines the correlations between different constructs. The analysis aims to understand how attributes such as presence of meaning, innovative behaviour, ethical leadership of leaders, burnout, 21st-century skills teaching and openness toward organizational change relate to each other. The Pearson correlation coefficient analysis revealed significant relationships between all measured constructs.

Overall, the results suggest that positive teacher attributes (presence of meaning, innovative behavior, ethical leadership, and openness to change, 21st-century skills teaching) are interconnected and positively related to each other. Burnout, however,

negatively impacts all these positive aspects of teaching. For example, openness toward organizational change was positively correlated with other attributes but negatively with burnout (r=-.165). The highest correlation was between innovative behavior and 21st skills teaching (r=-.494).

Based on the hypotheses in the study, a multiple regression analysis was conducted to assess the impact of several predictors on 21st-century skills teaching. The model included meaning, innovativeness, ethical leadership, burnout, and openness toward organizational change as predictors. Before running the regression, the assumptions of linearity, normality of residuals, homoscedasticity and independence etc. were checked to see if the study met the standards. Table 3 presents regression results for this study

**Table 3.** Multiple regression results for the variables

| Model | Unst. B | Coef. Std. Error | β | t | F | $p$ | R | $R^2$ | Tol. | VIF |
|---|---|---|---|---|---|---|---|---|---|---|
| (Constant) | 1,046 | ,342 | | 3,056 | 69,867 | ,002 | ,553 | ,306 | | |
| Meaning | ,101 | ,055 | ,064 | 1,845 | | ,065 | | | ,718 | 1,394 |
| I. Behavior | ,595 | ,054 | ,368 | 11,003 | | ,000 | | | ,784 | 1,276 |
| E. Leadership | ,117 | ,040 | ,092 | 2,941 | | ,003 | | | ,897 | 1,115 |
| Burnout | -,072 | ,037 | -,064 | -1,935 | | ,053 | | | ,808 | 1,237 |
| Org. Change | ,321 | ,056 | ,185 | 5,679 | | ,000 | | | ,827 | 1,209 |

Note: Durbin Watson=1,917

A multiple regression was run to predict 21st-century skills teaching from the constructs of meaning, innovative behavior, ethical leadership, burnout, and openness toward organizational change. These variables statistically significantly predicted 21st-century skills teaching, $F(5, 793) = 69.867$, $p< .05$, $R^2 = .306$. All four variables added statistically significantly to the prediction. Approximately 30.6% of the variance in 21st-century skills teaching is explained by the model.

The standardized beta coefficients (β) indicate the strength of each predictor. The largest beta value is for innovative behavior (β = .368). Openness to organizational

change and ethical leadership also positively predict 21st-century skills teaching. The variables of meaning and burnout, approached significance with p-values close to .05.

# DISCUSSION AND CONCLUSION

This study investigated the relationships among teachers' perceptions of meaning, innovative behavior, burnout levels, openness toward organizational change, perceived ethical leadership of their principals, and their self-efficacy in teaching 21st-century skills. Data were collected from teachers across various schools in Türkiye.

The correlation coefficient analysis revealed several significant relationships between the measured variables. Presence of meaning, innovative behavior, ethical leadership of leaders, 21st-century skills teaching, and openness toward organizational change are all positively correlated; but negatively with burnout. Burnout was negatively correlated, particularly with the presence of meaning, innovative behavior, and 21st-century skills teaching. Overall, while the highest positive correlation was among openness toward organizational change, innovative behavior, and 21st-century skills teaching, the highest negative correlation was between meaning and burnout. Similarly, meaning is negatively correlated with burnout and emotional exhaustion in teaching and other professions as well (Hooker et al., 2020; Krok, 2016; Iqbal, 2022; Suyatno et al., 2022). As teachers carry out key roles in the success of educational changes, adaptations, and innovations (Jadhav et al., 2024), it is logical to see a correlation between their roles and their approach to change and innovation. Indrasari and Takwin (2019) assert that teachers perform innovative behavior under ideas related to teaching methods and processes.

The multiple regression analysis was conducted to assess the impact of teachers' perceptions of meaning, innovative behavior, burnout, openness towards organizational change, and ethical leadership of school leaders as predictors of 21st-century skills teaching. The results confirmed some of the factors in the study that affect the teaching of 21st-century skills. The regression model was statistically significant, indicating that

more than thirty percent of the variability in "21st-century skills teaching" was explained by the predictors of teachers' innovative behavior, openness toward organizational change, and perceived ethical leadership of school leaders. In contrast, others (meaning and burnout) neared the p-value but did not contribute to the model significantly. As discussed in the introduction, multiple factors such as motivation (Akar, 2020), teacher innovation (Li et al., 2024), leadership (Leithwood et al., 2020), attitudes toward change (Kondakçı et al., 2015), and burnout (Madigan & Kim, 2021) can influence the way teachers teach in the class. The factors affecting classroom teaching do not function independently; instead, they intertwine in complex ways to shape the educational environment and outcomes.

Among the predicting factors, innovative behavior emerges as the most crucial contributor to the model. This finding aligns with broader research in education, which suggests that effective teachers positively influence students through innovative methods and creative teaching approaches, ultimately leading to high-quality content delivery and improved learning outcomes (Hosseini & Haghighi Shirazi, 2021, p.2). The importance of these innovative approaches becomes clear when considering the skills students need to develop. Zivkovic (2016) emphasizes that students must cultivate creativity, communication skills, and innovativeness - collectively known as 21st-century competencies - to effectively address challenges in their personal and professional lives. To foster these abilities in their students, teachers themselves must embody innovative skills and embrace new teaching methods, serving as role models for their learners.

When teachers positively embrace organizational changes, it can transform potentially disruptive transitions into enjoyable and favorable experiences, ultimately benefiting both educators and students (Çalışkan, 2011). This positive attitude toward change is closely linked to teachers' and leaders' attitudes within educational institutions. Indeed, recent research indicates that teachers working under ethical leaders report higher levels of motivation, greater job satisfaction, and improved performance (Alwis & Hendriani,

2024). These positive outcomes directly influence classroom practices and teaching quality, creating a cycle that could enhance the educational experience.

Overall, the findings suggest that fostering a workplace culture that encourages innovation, openness toward organizational change, and ethical leadership can positively impact teachers' self-efficacy in teaching 21st-century skills. The sense of meaning experienced by teachers should be empowered against their burnout levels.

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## GENİŞ ÖZET

### Giriş

*Öğretmenlerden, öğrencilere yirmi birinci yüzyıl becerilerini kazandırmaya yönelik beklentiler her geçen gün artmaktadır. Öğretmenlerin bu yolda yeni yüzyıl müfredatının amaçlarını derinlemesine anlamaları, mevcut öğrenci dinamiklerini kavramaları ve etkileyici ve etkili bir öğrenme ortamı oluşturmak için stratejiler geliştirmeleri gerekmektedir. Wagner (2008) bu çağ için kritik becerileri eleştirel düşünme ve problem çözme, ağlar arası iş birliği ve liderlik, çeviklik ve adaptasyon, girişimcilik ve inisiyatif, etkili sözlü ve yazılı iletişim, bilgiye erişim ve analiz etme, merak ve hayal gücü olarak sıralamaktadır. Kitlesel göç, dijital bağlantılılık, çevresel sorunlar ve jeopolitik dinamiklerle dolu günümüz dünyasının karmaşık yapısı, küresel yetkinlik ve adaptasyon ihtiyacını ve etkili öğretmenlerin gerekliliğini vurgulamaktadır.*

*Günümüzde öğretmenlerin, özellikle 21. yüzyıl becerilerinin öğretimi bağlamında karşılaştıkları zorluklar birçok faktörden etkilenebilmektedir. Bu faktörler yalnızca akademik hazırlık veya öğretim tasarımı eksikliği olmayabilir; bu bağlamda öğretmenlerin motivasyon kaynakları yani işlerinde anlam bulma biçimleri, tükenmişlik düzeyleri, yenilikçilik, değişime açıklık algıları ve okul müdürlerinin sergiledikleri etik liderlik hakkındaki görüşleri gibi birçok farklı faktör sınıf içi öğretim becerilerinde önemli etkiye sahip olabilir.*

### Amaç

*Bu çalışma, öğretmenlerin mevcut anlam, tükenmişlik, yenilikçi davranış, örgütsel değişime açıklık ve okul müdürlerinin etik liderliği hakkındaki algılarını araştırmayı ve bu faktörlerin öğretmenlerin 21. yüzyıl becerilerini öğretimi üzerindeki etkisini incelemeyi amaçlamaktadır.*

### Yöntem

*Nicel yaklaşım kapsamında kesitsel veri kullanılan bu çalışmaya 2022-2023 akademik yılında Şanlıurfa'dan 799 öğretmen katılmıştır. Uygun örnekleme göre toplanan veriler korelasyon, regresyon gibi analizlere tabi tutulmuştur. Çalışmada demografik bilgiler formu yanında 6 farklı ölçek ile veri toplanmıştır.*

*Anlam: Bu ölçek, Steger ve arkadaşları tarafından 2006 yılında geliştirilen "Meaning in Life Questionnaire/Hayat Anlamı Ölçeği"nin bir alt ölçeği olan "Presence of Meaning/Mevcut Anlam" ölçeği ile ölçülmektedir. Ölçek, bireylerin yaşamlarını ne kadar anlamlı ve amaçlı bulduklarını değerlendirmek için beş madde içerir.*

*Yenilikçi Davranış: Scott ve Bruce tarafından 1994 yılında geliştirilen bu ölçek, 2019 yılında Çalışkan ve arkadaşları tarafından Türkçeye uyarlanmıştır. Ölçek, bireylerin yeni çözümler keşfetme ve uygulama, yenilikçi fikirleri savunma, gerekli kaynakları temin etme ve bunların uygulanmasını planlama gibi proaktif davranışlarını belirlemeyi amaçlar.*

*Etik Liderlik: Brown ve arkadaşları tarafından 2005 yılında geliştirilen "Ethical Leadership Scale/Etik Liderlik Ölçeği" (ELS), 2012 yılında Tuna, Bircan ve Yeşiltaş tarafından Türkçeye uyarlanmıştır. Ölçek, liderlerin adil ve dürüst davranışlarını, takipçilerine ses verme fırsatı tanımalarını ve etik davranışları ödüllendirmelerini içeren on maddeyi kapsar.*

*Tükenmişlik: Pines tarafından 2005 yılında geliştirilen "Burnout Measure Short Version/ Tükenmişlik Ölçeği Kısa Versiyonu", 2009 yılında Tümkaya ve arkadaşları tarafından Türkçeye uyarlanmıştır. On madde içeren bu ölçek, bireylerin duygusal gerilim ve memnuniyetsizlik*

*hislerini değerlendirir ve bireylerin tuzağa düşmüş, çaresiz, üzgün veya depresif, umutsuz, yorgun, değersiz, hayal kırıklığına uğramış, hastalıkla mücadele etme ve uyku bozukluğu gibi duyguları yaşama derecelerini belirler.*

*Örgütsel Değişime Açıklık: Bu ölçek, 2022 yılında Çalışkan tarafından Türkçe olarak geliştirilmiştir. Altı maddeden oluşan bu ölçek, bir kişinin iş yerindeki değişikliklere açıklığını ve bu değişikliklere karşı olumlu tutumlarını niceliksel olarak değerlendirir. İstenmeyen durumları iyileştirme, kişisel performansı artırma, örgütsel hedeflere ulaşma ve kurumu bütün olarak faydalandırma rolüne olan inançları ile değişiklik çabalarını destekleme istekliliğini ölçer.*

*21. Yüzyıl Becerileri Öğretimi: Jia ve arkadaşları tarafından 2016 yılında geliştirilen bu ölçek, Özyurt tarafından 2020 yılında Türkçeye uyarlanmıştır. Yedi maddeden oluşan bu öz-değerlendirme ölçeği, öğretmenlerin öğrencilere yirmi birinci yüzyıl becerilerini öğretme konusundaki güvenlerini ölçer. Öğretmenlerin 21. yüzyıl becerilerini öğretme konusundaki öz-yeterlilik algılarını değerlendirir ve inovasyon ve problem çözme, işbirliği, teknoloji kullanımı gibi yapıları içerir.*

### Sonuç ve Tartışma

*Sonuçlar, çalışmadaki tüm boyutlar (mevcut anlam duygusu, yenilikçilik, tükenmişlik, örgütsel değişime açıklık, okul müdürlerinin etik liderliği ve öğretmenlerin 21. yüzyıl becerileri öğretimi) arasında anlamlı ilişkiler olduğunu göstermektedir. Örneğin, öğretmenlerin anlam ve tükenmişlik algıları arasında negatif bir ilişki bulunurken yenilikçi davranış, örgütsel değişime açıklık ve 21. yüzyıl becerilerinin öğretimi arasındaki ilişki pozitiftir. Bu bulguyla paralel olarak, yenilikçi davranış, örgütsel değişime açıklık ve algılanan etik liderlik, sınıfta 21. yüzyıl becerilerinin öğretilmesini önemli ölçüde etkileyen faktörler olarak listelenmiştir. Anlam ve tükenmişlik sonuçları modele istatiksel olarak anlamlı bir katkı sağlamasa da p değerine yakındır.*

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### Contribution of Researchers

The first author contributed 40%, while the second and third authors each contributed 30% to this article.

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## Conflict of Interest

The researchers do not have any personal or financial conflicts of interest with other individuals or institutions related to the research.

## Ethics Committee Declaration

This study was conducted with the approval of Harran University Social and Humanity Ethics Commission dated 14.04.2023 and numbered 2023/35