

The Interplay Between Educational Beliefs and 21st-Century Competencies

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Abstract

This study aims to examine the relationship between teachers' educational beliefs and their perceptions of 21st-century skills. The data were collected using the relational survey method through the "Educational Beliefs Scale" and the "Multidimensional 21st-Century Skills Scale." A total of 338 teachers were selected using purposive and convenience sampling methods, and the data were analyzed using independent samples t-tests, one-way ANOVA, and Pearson correlation coefficients. The findings reveal that teachers generally exhibit a tendency toward modern educational philosophies. However, it was found that younger teachers, those teaching at lower grade levels, those with higher education levels, and female teachers did not adopt modern and contemporary educational philosophies in their classrooms as much. Additionally, teachers who had received philosophy training were more likely to embrace 21st-century skills and modern educational philosophies. The research results suggest that educational institutions should design professional development programs to raise awareness of 21st-century skills and integrate modern educational philosophies into the curriculum. The study also emphasizes that teachers should be encouraged to blend traditional and student-centered approaches, while assessments and policies should align with critical thinking, creativity, and contemporary educational beliefs. This research holds a significant place in the literature, as it demonstrates that philosophical beliefs not only shape modern educational approaches but also play a crucial role in defining the qualities of the individuals that education aims to cultivate.

Keywords: 21st century skills, education, educational beliefs, educational philosophy, philosophy

Eğitim İnançları ve 21. Yüzyıl Yetkinlikleri Arasındaki Etkileşim

Öz

Bu çalışma öğretmenlerin eğitim inançlarıyla 21. yüzyıl becerilerine dair algıları arasındaki ilişkiyi incelemeyi amaçlamaktadır. Çalışmadaki veriler, ilişkisel anket metodolojisi ile "Eğitimsel İnançlar Ölçeği" ve "Çok Boyutlu 21. Yüzyıl Becerileri Ölçeği" kullanılarak toplanmıştır. Toplamda 338 öğretmen, amaçlı örnekleme ve kolayda örnekleme yöntemleriyle seçilmiş, veri analizi ise bağımsız örneklem t-testleri, tek yönlü ANOVA ve Pearson korelasyon katsayıları kullanılarak yapılmıştır. Bulgular, öğretmenlerin genel olarak modern eğitim felsefelerini benimsediklerini göstermektedir. Bunun yanında, araştırmada genç öğretmenlerin, daha düşük sınıf seviyelerinde görev yapan öğretmenlerin, daha yüksek eğitim düzeyine sahip öğretmenlerin ve kadın öğretmenlerin sınıflarında modern ve çağdaş eğitim felsefelerini daha fazla benimsediklerini ortaya çıkarmıştır. Ayrıca, bu araştırmanın diğer önemli bir bulgusu, felsefe eğitimi almış öğretmenlerin 21. yüzyıl becerilerini ve modern eğitim felsefelerini daha fazla benimsemeleridir. Araştırma bulguları, eğitim kurumlarının 21. yüzyıl becerileri konusunda farkındalık yaratacak mesleki gelişim programları tasarlamalarını ve modern eğitim felsefelerini müfredata entegre etmeleri gerektiğini göstermektedir. Bu çalışma aynı zamanda öğretmenlerin geleneksel ve öğrenci merkezli yaklaşımları harmanlamaya teşvik edilmesi gerektiğini, değerlendirme ve politikaların ise, eleştirel düşünmeyi, yaratıcılığı geliştirmeye ve çağdaş eğitim inançlarıyla uyum sağlamaya odaklanması gerektiğini göstermektedir. Bu araştırma, felsefi inançların yalnızca çağdaş düşünceyi şekillendirmekle kalmayıp, aynı zamanda eğitimin yetiştirmeyi amaçladığı bireylerin özelliklerini tanımlamaya çalıştığı için literatürde önemli bir yere sahiptir.

Anahtar kelimeler: 21. yüzyıl becerileri, eğitim, eğitim inançları, eğitim felsefesi, felsefe

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INTRODUCTION

Teachers' instructional practices are fundamentally guided by their personal and professional beliefs, which form the bedrock of their adopted educational philosophies (Ornstein & Hunkins, 2018; Yılmaz, Altınkurt, & Çokluk, 2011). These philosophies are grounded in the broader discipline of philosophy, defined as the rational pursuit of wisdom and knowledge (Arslan, 2009, 2018). Educational philosophy specifically applies this rational inquiry to define the aims, methods, and fundamental principles of education, addressing essential questions of values, knowledge, and the actualization of human potential (Cevizci, 2005; Uçak, 2022). As the foundation for human development, it determines educational goals and the individual's societal role (Erdem, 2021), thereby directly shaping the core competencies and skills deemed necessary for a holistic education.

The critical role of philosophy in defining these competencies is reflected in education's historical trajectory. The principal focus of schooling has evolved from moral instruction, to specialized industrial training, to the modern paradigm of teachers as facilitators of learning (Banda & Mutambo, 2016). This shift signifies a broader transition from the mere transmission of knowledge towards the cultivation of dynamic competencies designed to address contemporary global challenges and enhance employability (World Economic Forum, 2015). In this context, teacher competence is redefined as a collective and reflective capacity characterized by collaborative knowledge production, digital cooperation, ethical responsibility, and critical awareness, positioning teachers as creators of meaning and agents of ethical, creative, and communal knowledge in response to technological and social transformations (Peters et al., 2022). This ongoing evolution necessitates a continuous re-examination of educational philosophies to ensure they are aligned with societal transformations and effectively promote the essential competencies for the 21st century.

Educational Philosophies

Philosophical movements provide broad frameworks for understanding philosophy, while educational philosophies specifically focus on educational systems and curricula (Arslan, 2018). These educational philosophies have evolved alongside philosophical movements and can be categorized into traditional and contemporary approaches. This study examines five key educational philosophies: essentialism, perennialism, progressivism, existentialism, and deconstructivism. Essentialism and perennialism are considered traditional philosophies, while progressivism, existentialism, and deconstructivism are regarded as contemporary (Ornstein & Hunkins, 2018). Traditional and contemporary educational philosophies diverge notably in their perspectives on the role of education. Traditional philosophy asserts that formal education begins within the confines of the school, positioning schools as the central institutions for a child's academic and intellectual growth. In contrast, contemporary philosophy posits that formal education begins within the family setting, emphasizing the crucial role parents have in influencing their pupil's development. Moreover, traditional philosophy views schools primarily as institutions that transmit a shared cultural heritage, while contemporary philosophy conceptualizes schools as agents of societal progress, with a focus on fostering individual self-actualization as a means of benefiting society as a whole (Ornstein & Hunkins, 2018). Additionally, traditional educational philosophy often emphasizes societal goals, authority, and moral imperatives, whereas contemporary thought champions personal development and the provision of opportunities for individual autonomy and choice.

In this context, we now turn our focus to the educational philosophies examined in this study. The first of these is Perennialism, which is rooted in Aristotle's realism. This philosophy emphasizes the preservation of traditional values and the continuity of the past. It advocates for teacher-centered classrooms where authority is upheld, and Socratic methods are employed to stimulate discussion. Perennialism aims to foster students' moral and spiritual growth through classical works and an appreciation of culture (Amac & Oral, 2023; Beytekin & Kadi, 2015; Ornstein & Hunkins, 2018). In contrast, Essentialism, which draws from both realism and idealism, arose as a response to progressivism. Essentialism emphasizes the importance of core subjects such as reading, writing, and mathematics, arguing that these often take a backseat to social skills in modern education. Like Perennialism, Essentialism stresses the preservation of knowledge and cultural values, positioning teachers as experts and role models in the educational process (Arslan, 2018; Ornstein & Hunkins, 2018; Degamon & Estoque, 2022). Progressivism, on the other hand, is a direct response to Perennialism. Rooted in pragmatism, it prioritizes problem-solving, scientific methods, and student-centered learning. In a progressive classroom, the focus shifts to fostering critical thinking through real-world exploration, with teachers guiding students through problem-based learning and interdisciplinary curricula (Ornstein & Hunkins, 2018; Dewey, 1916; Sikander, 2015). Existentialism, which further refines the student-centered approach, emphasizes individual self-realization and creativity. This philosophy encourages students to take ownership of their learning, promoting autonomy and the exploration of their own existence (Degamon & Estoque, 2022; Oğuz et al., 2014). Lastly, Deconstructivism views education as

a means of societal reform. It envisions teachers as agents of change, guiding students to critically examine societal issues and actively engage in reshaping the world around them (Arslan, 2018; Sönmez, 2002; Oğuz et al., 2014). In this context, it is accurate to state that the skills and competencies sought by modern educational philosophies such as progressivism, existentialism, and deconstructivism align with the competencies defined at a global level for the 21st century, comprising similar skill sets.

21st Century Competencies

21st-century skills refer to crucial abilities that empower individuals to succeed both professionally and socially by fostering collaboration, communication, creativity, innovation, and critical thinking (P21, 2015). As a result, education in the modern era has become a transformative force in shaping individuals' capabilities. In particular, the rise of globalization has emphasized the economic advantages of knowledge-driven societies over others (Tamer, 2022). Moreover, in today's information-rich world, the ability to access information has taken precedence over the information itself, highlighting the need for effective methods of conveying content and skills through various channels (Rotherham & Willingham, 2009). This shift aligns with the growing influence of globalization, which has prompted the development of skill sets tailored to the demands of global markets, often driven by international organizations pursuing the interests of global capital (Sayılan, 2006). These developments underscore the urgent need to equip future generations with literacy skills crucial for navigating the complexities of the current era (Uçak, 2022). However, it is essential to remember that teacher competence should be defined not as the mere application of a standardized set of skills, but as the capacity to design meaningful learning experiences for each context through an understanding of students' sociocultural backgrounds (Zhang et al., 2024).

The diminishing certainty in mass-produced knowledge has driven a shift in pedagogical approaches, with contemporary global challenges highlighting the need for change, development, progress, flexibility, problem-solving, critical thinking, creativity, collaboration, production, and entrepreneurship (Uçak, 2022). In this context, adopting a well-defined educational philosophy can provide teachers with a robust framework for guiding their instructional practices and decision-making, ultimately supporting student development (Amac & Oral, 2023). While the underlying beliefs that shape teachers' educational philosophies have been widely studied, it is crucial to explore whether educators are effectively applying modern, relevant methodologies in their teaching practices (Degamon & Estoque, 2022). Furthermore, examining how a teacher's educational philosophy influences their beliefs and how these beliefs are reflected in their classroom behaviour is essential, as it directly impacts their identity as teachers (Oğuz et al., 2014).

A literature review reveals a substantial number of studies exploring teachers' educational beliefs through various variables. For instance, Altinkurt, Yılmaz and Oğuz (2012) investigated the educational beliefs of primary and secondary school teachers, while Doğanay and Sarı (2003) examined primary school teachers' perceptions of educational philosophies. Çetin et al. (2012) assessed the different dimensions of educational philosophies embraced by teacher candidates, and Sönmez Ektem (2019) explored the relationship between teacher candidates' educational philosophy beliefs and their democratic attitudes. Yokuş (2016) conducted a study on the educational philosophies of music teacher candidates across various variables. In addition, other topics investigated include the relationship between educational beliefs and the identity functions of teacher candidates (Koçak et al., 2012), self-efficacy perceptions (İlgaz et al., 2013), teacher-student relationships (Yılmaz & Tosun, 2013), perceptions of professional competence (Eğmir et al., 2021), learning environments (Rideout, 2006), and the attitudes of teacher candidates towards their profession (Önen, 2011). Conversely, while studies in the literature focus on developing scales for 21st-century skills, these studies often target specific groups. For example, Belet-Boyacı and Atalay (2016) researched primary school students, while Jia et al. (2016) examined pre-service teachers' competencies.

Purpose and Significance of the Study

This research investigates the link between teachers' views on 21st-century skills and their educational philosophy beliefs, aiming to contribute valuable insights to the field. As global demands, evolving professions, and international standards continue to evolve, it becomes increasingly important to critically assess the educational philosophies that shape the competencies and citizen profiles aimed to cultivate. So, a comparative analysis of teachers' stated educational beliefs and their classroom practices, using various research techniques, could offer significant contributions to the field. This study stands out for its important findings, both locally and internationally, as it compares teachers' educational and instructional orientations, whether traditional or contemporary, based on factors such as age, experience, educational background, and gender. As noted in the literature review, there is a notable gap in research investigating and comparing the relationship between educational philosophy beliefs and perceptions of 21st-century skills.

Consequently, the primary aim of this research is to compare teachers' educational philosophy beliefs across these variables and to shed light on the connection between these beliefs and 21st-century skills. To achieve this goal, the research seeks to answer the following questions: What educational philosophies do teachers embrace? What is the relationship between teachers' preferred educational philosophies and their perceptions of 21st-century skills? Do teachers' educational beliefs vary according to their demographic information? How does teachers' participation in philosophy education influence their perceptions of 21st-century skills and educational philosophy beliefs?

METHOD

Research Model

The present study employs a correlational screening method, a quantitative research method. The correlational screening method aims to identify the existence of a relationship between two or more variables. The goal of this approach is to ascertain both the presence and the degree of co-variation among the variables (Karasar, 2011). In correlational research, two types of relationship analyses can be conducted: correlation-type relationships and those derived from comparative analysis. In this research, the preferred educational philosophies of teachers were identified and compared based on demographic characteristics. Furthermore, correlation calculations were performed to determine the relationship between teachers' educational philosophy preferences and their perceptions of 21st-century skills.

Study Group

This study focuses on teachers employed in Turkey, specifically those working in Ankara. The sample comprises 338 teachers who participated in training on innovative technology use in education and completed the survey. Purposive and convenience sampling methods were employed to select the sample. The sample size was determined using G*Power software (Faul et al., 2007) to ensure adequate statistical power. For multiple regression analysis with 10 predictors (demographic variables and philosophical belief subscales), a medium effect size ($f^2 = 0.15$), alpha level of .05, and power of .95, the minimum required sample size was calculated to be 218 participants. However, to account for potential incomplete responses and enhance the representativeness of subgroups, the target sample size was increased. The final sample of 338 teachers exceeds this minimum requirement, providing sufficient statistical power for the planned analyses, including correlation studies and group comparisons (Cohen, 1992). Purposive sampling, based on the researchers' judgment and knowledge of the population and research objectives, was used to select teachers assumed to have competency in 21st-century skills. Convenience sampling was also utilized due to the challenges of accessing the entire target population, allowing the selection of the most accessible participants (Fraenkel et al., 2012). The inclusion criteria required participants to be actively working as teachers in public schools in Ankara and voluntarily agreeing to participate in the research. Demographic information about the participants was provided as required by convenience sampling guidelines (Fraenkel et al., 2012). Table 1. displays the demographic information of the teachers who took part in the study.

Table 1. Demographic Information of Participants

Variable	Group	N	(%)
Gender	Female	246	72.78
	Male	92	27.22
Age	26-35	69	20.4
	36-45	165	48.8
	45-55	89	26.4
	56 and above	15	4.4
School Type	Preschool	44	13.1
	Primary School	140	42.4
	Secondary School	92	27.2
	High School	62	18.3
Education Level	Associate Degree	6	1.7
	Bachelor's Degree	200	59.2
	Master's Degree	125	37
	Doctorate	7	2.1

Data Collection Instruments

In this study, two scales that have undergone reliability and validity assessments were administered to the teachers in the sample.

The "Educational Beliefs Scale," developed by Yılmaz, Altınkurt, and Çokluk (2011), is designed to assess teachers and teacher candidates' educational beliefs across five subdimensions. Consisting of 40 items, the scale uses a five-point Likert-type format. The scale does not provide an overall score but instead evaluates the degree to which participants endorse each educational philosophy, allowing for the identification of dominant beliefs and the classification of individuals. Higher scores indicate stronger adherence to a particular philosophy, while lower scores reflect weaker beliefs. The Cronbach's alpha coefficients for the subdimensions range from 0.69 to 0.86, demonstrating acceptable reliability. A confirmatory factor analysis (CFA) was conducted to test the construct validity of the scale. The results indicated an acceptable model fit (CMIN/df = 2.278, AGFI = 0.834, CFI = 0.924, NFI = 0.873, IFI = 0.925, TLI = 0.918, RMSEA = 0.062, SRMR = 0.064). While the NFI value was slightly below the ideal threshold, other fit indices (CFI, IFI, TLI > .90; RMSEA, SRMR < .08) were within acceptable limits, indicating that the model demonstrates a satisfactory overall fit (Hu & Bentler, 1999; Kline, 2016). These findings confirm that the Educational Beliefs Scale possesses an adequate factorial structure for use in the present study.

The "Multidimensional 21st-century Skills Scale," developed by Çevik and Şentürk (2019), was used in this study and is designed for individuals aged 15 to 25. The scale consists of 41 items, including 34 positive and 7 negative statements, rated on a five-point Likert scale. Critical thinking and problem-solving skills, information and technology literacy, entrepreneurship and innovation, social responsibility and leadership, and career awareness are the five sub-factors that are evaluated. The scale's average Cronbach's alpha coefficient is 0.86, which suggests high reliability. The Multidimensional 21st-Century Skills Scale was originally developed for individuals aged 15–25; however, in the present study, it was administered to participants aged 25 and above. Therefore, a CFA was performed to verify the validity of the factor structure for this adult sample. The results indicated an acceptable model fit (CMIN/df = 2.507, AGFI = 0.841, CFI = 0.937, NFI = 0.899, IFI = 0.937, TLI = 0.932, RMSEA = 0.067, SRMR = 0.052). All fit indices were within or close to the recommended thresholds (CFI, IFI, TLI > .90; RMSEA, SRMR < .08), confirming that the model demonstrates satisfactory fit (Hu & Bentler, 1999; Kline, 2016). These findings suggest that the Multidimensional 21st-Century Skills Scale retains a valid factorial structure when applied to adults aged 25 and above.

Data Analysis

Prior to commencing the data analysis in this study, the data were scrutinized using descriptive statistics. Each participant's scores were individually examined, revealing that 22 out of 360 participants had provided identical responses to all questions. To ensure the accuracy of the statistical methods employed in the study and, consequently, to enhance its reliability and validity of the data these 22 participants were excluded. The statistical analyses were conducted using the data collected from the remaining 338 teachers.

In determining the appropriate data analysis methods, the normality of the data distribution was first assessed. It was found that the skewness and kurtosis values for all subdimensions of both scales fell within the range of ± 1.5 . In the realm of social sciences, skewness and kurtosis values within this range indicate that the assumption of normality is satisfied (Tabachnick & Fidell, 2007). In addition to descriptive analyses, CFA was conducted to examine the construct validity of the measurement tools used in the study. CFA was applied separately for each scale to verify their factorial structures within the current sample before proceeding to the main analyses.

To investigate whether teachers' beliefs regarding educational philosophy and their perceptions of 21st-century skills varied according to gender and the receipt of philosophy education, an independent samples t-test was employed. Additionally, a one-way ANOVA was utilized to explore whether the teachers' beliefs about educational philosophy and their perceptions of 21st-century skills differed based on age, educational level, and the instructional stage at which they taught. Prior to conducting the ANOVA test, relevant assumptions were checked. The Levene's Test was applied to ascertain the equality of variances across all subdimensions of both scales, revealing significance values ranging from 0.062 to 0.882. These results support the assumption of equal variances, indicating that the dataset is suitable for ANOVA. The Pearson correlation coefficient was calculated to explore the relationship between teachers' beliefs about educational philosophy and their perceptions of 21st-century skills, as the data satisfied the assumption of normal distribution.

FINDINGS

Educational Philosophies Adopted by Teachers

To determine the educational philosophies embraced by teachers, the total scores obtained were divided by the number of items measuring each respective philosophy. The results are presented in Table 2.

Table 2. Philosophical Beliefs of Teachers

Educational Philosophies	N	Total Point
Essentialism	338	771
Perennialism	338	1277
Progressivism	338	1436
Existentialism	338	1505
Deconstructivism	338	1347

As illustrated in Table 2, the educational philosophy most widely adopted by teachers is existentialism. This is followed by progressivism and deconstructivism. Conversely, essentialism is the philosophy least embraced by the teachers.

Comparing Teachers' Preferred Educational Philosophies and Perceptions of 21st-Century Skills

The Pearson product-moment correlation coefficient was used to assess the relationship between teachers' beliefs on educational philosophy and their perceptions of 21st-century skills. The results are shown in Table 3.

Table 3. Relationship Between Teachers' Educational Philosophy Beliefs and Perceptions of 21st Century Skills

		Information and Communication	Critical Thinking	Entrepreneurs	Social Responsibility	Career Awareness	Essentialism	Perennialism	Progressivism	Existentialism
Critical Thinking	r	-.032								
	p	0.556								
Entrepreneurs	r	.780	0.018							
	p	0.000	0.740							
Social Responsibility	r	.570	.297	.665						
	p	0.000	0.000	0.000						
Career Awareness	r	.612	.116	.667	.425					
	p	0.000	0.033	0.000	0.000					
Essentialism	r	-.025	.072	-.036	-.106	-.037				
	p	.648	.188	.505	.048	.498				
Perennialism	r	.468	-.014	.430	.300	.333	.279			
	p	0.000	0.798	0.000	0.000	0.000	0.000			
Progressivism	r	.564	0.064	.515	.366	.450	-.177	.308		
	p	0.000	0.242	0.000	0.000	0.000	0.001	0.000		
Existentialism	r	.710	-.055	.582	.386	.520	0.024	.439	.709	
	p	0.000	0.310	0.000	0.000	0.000	0.662	0.000	0.000	
Deconstructivism	r	.564	0.073	.504	.357	.405	0.035	.451	.659	.695
	p	0.000	0.180	0.000	0.000	0.000	0.525	0.000	0.000	0.000

The study reveals several key correlations between skills and philosophical beliefs, as shown in Table 3. Strong positive correlations are found between information and communication skills, entrepreneurial abilities, and career awareness. Social responsibility skills exhibit moderate correlations with entrepreneurial competencies and career awareness. Additionally, moderate positive relationships are observed between career awareness and philosophical beliefs such as essentialism, progressivism, and existentialism, while deconstructivism shows a moderate link with social responsibility. Critical thinking skills have a weak positive correlation with social responsibility, and weak positive correlations are noted between various philosophical beliefs. Teachers demonstrate weak relationships between essentialism and perennialism, with progressivism strongly correlating with existentialism and deconstructivism.

Comparing Teachers' Philosophical Beliefs and 21st Century Skills According to Demographic Factors

In this section, the educational beliefs and perceptions of 21st century skills among teachers are compared with their demographic information.

Gender

To determine whether there is a significant difference between teachers' perceptions of 21st century skills and their philosophical beliefs based on gender; an independent samples t-test was conducted. The results are presented in Table 4.

Table 4. The Relationship Between Teachers' Perceptions of 21st Century Skills and Educational Philosophical Beliefs by Gender

	Group	N	$\bar{X}$	ss	sd	t	p
Information and Communication	Male	92	65.09	12.413	336	-.332	.740
	Female	246	65.56	11.421			
Critical Thinking	Male	92	11.86	6.682	336	1.482	.139
	Female	246	10.85	5.099			
Entrepreneurship	Male	92	40.73	9.301	336	.112	.911
	Female	246	40.61	7.939			
Social Responsibility	Male	92	14.26	3.419	336	-.324	.746
	Female	246	14.14	2.824			
Career Awareness	Male	92	25.07	5.433	336	-2.455	.015
	Female	246	26.53	4.674			
Essentialism	Male	92	12.79	4.876	336	2.548	.011
	Female	246	11.59	4.014			
Perennialism	Male	92	30.51	6.991	336	.250	.803
	Female	246	30.09	6.127			
Progressivism	Male	92	54.53	10.646	336	-.571	.568
	Female	246	55.30	9.410			
Existentialism	Male	92	31.22	6.113	336	-.145	.885
	Female	246	31.19	5.386			
Deconstructivism	Male	92	28.17	5.936	336	-.206	.837
	Female	246	28.18	5.533			

As shown in Table 4, a significant difference has been found in the dimension of career awareness perceptions of 21st century skills based on gender, favouring female teachers ($t_{(336)} = -2.455$, $p < 0.05$). However, no significant differences were identified between gender and the other dimensions of 21st century skills perceptions. These results suggest that female teachers have significantly higher career awareness scores compared to their male counterparts.

Regarding educational philosophical beliefs, a significant difference was noted only in the dimension of essentialism, favouring male teachers ($t_{(336)} = 2.548$, $p < 0.05$). This indicates that male teachers possess a stronger essentialist educational philosophy compared to female teachers.

Age

A one-way ANOVA was used to see if there was a significant difference between the educational philosophy of teachers and their 21st century skills perceptions according to age. Table 5 presents the findings.

Table 5. The Relationship Between Teachers' Educational Philosophical Beliefs and Perceptions of 21st Century Skills by Age

	Source of Variance	Sum of Squares	Sd	Mean Squares	F	p	Significant Difference
Information and Communication	WG*	1867.915	3	622.638	4.713	.003	25-35 and 56+
	BG**	44125.020	334	132.111			36-45 and 56+
	Total	45992.935	337				46-55 and 56+
Critical Thinking	WG	84.495	3	28.165	.787	.502	
	BG	11955.898	334	35.796			
	Total	12040.393	337				
Entrepreneurship	WG	796.467	3	265.489	3.938	.009	36-45 and 56+
	BG	22516.929	334	67.416			46-55 and 56+
	Total	23313.396	337				
Social Responsibility	WG	108.017	3	36.006	3.046	.029	25-35 and 56+
	BG	3948.409	334	11.822			36-45 and 56+
	Total	4056.426	337				46-55 and 56+
Career Awareness	WG	75.038	3	25.013	1.031	.379	

	BG	8105.970	334	24.269			
	Total	8181.009	337				
Essentialism	WG	523.871	3	174.624	9.724	.000	25-35 and 56+
	BG	5998.002	334	17.958			36-45 and 56+
	Total	6521.873	337				46-55 and 56+
Perennialism	WG	200.283	3	66.761	1.659	.176	
	BG	13443.175	334	40.249			
	Total	13643.459	337				
Progressivism	WG	2012.875	3	670.958	7.032	.000	25-35 and 56+
	BG	31870.654	334	95.421			36-45 and 56+
	Total	33883.530	337				46-55 and 56+
Existentialism	WG	240.939	3	80.313	2.560	.045	36-45 and 56+
	BG	10479.972	334	31.377			
	Total	10720.911	337				
Deconstructivism	WG	91.254	3	30.418	.897	.443	
	BG	11328.451	334	33.918			
	Total	11419.704	337				

*Within Group, **Between Groups

As indicated in Table 5, significant differences were found in the dimensions of 21st century skills perceptions, specifically in information and communication [$F_{(3, 334)} = 4.713, p < 0.05$], entrepreneurship [$F_{(3, 334)} = 3.938, p < 0.05$], and social responsibility skills [$F_{(3, 334)} = 3.046, p < 0.05$], between at least two groups. The pairwise comparisons revealed notable differences in perceptions of 21st-century skills across various age groups. Specifically, for information and communication skills and social responsibility, significant differences were found between the 25-35 and 56+ age groups, as well as between the 36-45 and 46-55 age groups compared to those aged 56 and above. Similarly, in terms of entrepreneurship skills, differences were observed between the 36-45 and 56+ age groups, and the 46-55 and 56+ age groups. These findings indicate that teachers aged 56 and above generally scored lower in their perceptions of 21st-century skills compared to younger age groups.

School Level

To determine whether there is a significant difference between teachers' perceptions of 21st century skills and their educational philosophical beliefs based on the school level in which they teach, a one-way ANOVA was conducted. The results are presented in Table 6.

Table 6. The Relationship Between Teachers' Educational Philosophical Beliefs and Perceptions of 21st Century Skills by School Level

	Source of Variance	Sum of Squares	Sd	Mean of Squares	F	p	Significant Difference
Information and Communication	WG*	397.460	3	132.487	.912	.435	
	BG**	48512.375	334	145.247			
	Total	48909.834	337				
Critical Thinking	WG	73.638	3	24.546	.685	.562	
	BG	11966.755	334	35.829			
	Total	12040.393	337				
Entrepreneurship	WG	69.053	3	23.018	.331	.803	
	BG	23244.344	334	69.594			
	Total	23313.396	337				
Social Responsibility	WG	2.004	3	.668	.053	.984	
	BG	4225.916	334	12.652			
	Total	4227.920	337				
Career Awareness	WG	64.535	3	21.512	.885	.449	
	BG	8116.473	334	24.301			
	Total	8181.009	337				
Essentialism	WG	230.585	3	76.862	4.259	.006	Pre-primary-High School Primary-High School
	BG	6027.415	334	18.046			
	Total	6258.000	337				
Perennialism	WG	150.735	3	50.245	1.244	.294	
	BG	13492.724	334	40.397			
	Total	13643.459	337				
Progressivism	WG	801.053	3	267.018	2.820	.039	Pre-primary-High School Primary-High School
	BG	31622.071	334	94.677			
	Total	32423.124	337				
Existentialism	WG	23.137	3	7.712	.221	.882	
	BG	11656.854	334	34.901			
	Total	11679.991	337				

Deconstructivism	WG	382.287	3	127.429	3.778	.011	Primary-High
	BG	11266.224	334	33.731			School
	Total	11648.512	337				Primary-High School

*Within Group, **Between Groups

As shown in Table 6, no significant difference was found between teachers' perceptions of 21st century skills and the educational level at which they teach. However, significant differences were identified in their educational philosophical beliefs: essentialism [$F_{(3, 334)} = 4.259, p < 0.05$], progressivism [$F_{(3, 334)} = 2.820, p < 0.05$], and deconstructivism [$F_{(3, 334)} = 3.778, p < 0.05$]. Pairwise comparisons revealed significant differences in philosophical beliefs between different educational levels. High school teachers exhibited more essentialist beliefs compared to preschool and elementary teachers, who, in turn, showed more progressive views. These findings suggest that educational level influences teachers' philosophical orientations.

Educational Background

To determine whether there is a significant difference between teachers' perceptions of 21st century skills and their educational philosophical beliefs based on their educational background, a one-way ANOVA was conducted. The results are presented in Table 7.

Table 7. The Relationship Between Teachers' Educational Philosophical Beliefs and Perceptions of 21st Century Skills by Educational Background

	Source of Variance	Sum of Squares	Sd	Mean of Squares	F	p	Significant Difference
Information and Communication	WG*	3284.052	3	1094.684	8.014	.000	AD*-BA
	BG**	45625.782	334	136.604			AD-MA
	Total	48909.834	337				AD-PhD
Critical Thinking	WG	79.046	3	26.349	.736	.531	
	BG	11961.347	334	35.812			
	Total.	12040.393	337				
Entrepreneurship	WG	377.171	3	125.724	1.831	.141	
	BG	22936.225	334	68.671			
	Total	23313.396	337				
Social Responsibility	WG	150.710	3	50.237	4.115	.007	BA– MA
	BG	4077.210	334	12.207			
	Total	4227.920	337				
Career Awareness	WG	35.600	3	11.867	.487	.692	
	BG	8145.409	334	24.387			
	Total	8181.009	337				
Essentialism	WG	271.669	3	90.556	4.775	.003	BA-PhD
	BG	6333.609	334	18.963			AD-PhD
	Total	6605.278	337				
Perennialism	WG	175.800	3	58.600	1.453	.227	
	BG	13467.658	334	40.322			
	Total	13643.459	337				
Progressivism	WG	2428.037	3	809.346	8.046	.000	AD*-BA
	BG	33598.934	334	100.596			AD-MA
	Total.	36026.970	337				AD-PhD
Existentialism	WG	1081.644	3	360.548	11.362	.000	AD*-BA
	BG	10598.347	334	31.732			AD-MA
	Total	11679.991	337				AD-PhD
Deconstructivism	WG	115.559	3	38.520	1.138	.334	
	BG	11304.145	334	33.845			
	Total	11419.704	337				

*Within Group, **Between Groups

As indicated in Table 7, significant differences were found in the dimensions of 21st century skills perceptions, specifically in information and communication [$F_{(3, 334)} = 8.014, p < 0.05$] and social responsibility skills [$F_{(3, 334)} = 4.115, p < 0.05$], between at least two groups. Pairwise comparisons revealed that for information and communication skills, differences existed between teachers with bachelor's (BA), master's (MA), and doctoral degrees (PhD) and those with associate degrees (AD). In terms of social responsibility skills, a significant difference was found between teachers with bachelor's and master's degrees. These findings suggest that teachers holding bachelor's, master's, and doctoral degrees have significantly higher perceptions of information and communication skills compared to those with associate degrees, while master's degree teachers possess significantly higher perceptions of social responsibility skills than their bachelor's degree counterparts.

Regarding teachers' educational philosophical beliefs, pairwise comparisons revealed that significant differences in essentialism were found between associate and doctoral degree holders, as well as between bachelor's and doctoral degree holders. These results suggest that teachers with associate and bachelor's degrees tend to hold more essentialist beliefs, while those with higher degrees exhibit more progressive and existentialist philosophies.

Comparing Teachers' Perceptions of 21st Century Skills and Educational Philosophical Beliefs Based on Philosophy Education Status

To determine whether there is a significant difference between teachers' perceptions of 21st century skills and their educational philosophical beliefs based on whether they have received philosophy education, an independent samples t-test was conducted. The results are presented in Table 8.

Table 8. The Relationship Between Teachers' Perceptions of 21st Century Skills and Educational Philosophical Beliefs by Philosophy Education Status

	Group	N	$\bar{X}$	ss	sd	t	p
Information and Communication	Yes	123	67.22	10.809	336	2.152	.032
	No	215	64.37	12.112			
Critical Thinking	Yes	123	12.50	7.335	336	2.367	.019
	No	215	10.90	5.007			
Entrepreneurship	Yes	123	41.55	7.829	336	1.505	.133
	No	215	40.13	8.569			
Social Responsibility	Yes	123	15.36	3.877	336	3.479	.001
	No	215	14.00	3.141			
Career Awareness	Yes	123	26.49	4.841	336	.929	.354
	No	215	25.97	4.974			
Essentialism	Yes	123	11.97	4.611	336	1.014	.312
	No	215	11.48	4.037			
Perennialism	Yes	123	30.39	6.408	336	.393	.694
	No	215	30.10	6.376			
Progressivism	Yes	123	56.34	10.242	336	2.098	.037
	No	215	53.92	10.104			
Existentialism	Yes	123	31.45	5.740	336	.539	.590
	No	215	31.11	5.618			
Deconstructivism	Yes	123	29.05	5.664	336	2.459	.014
	No	215	27.43	5.861			

As shown in Table 8, significant differences were found in the dimensions of 21st century skills perceptions based on whether teachers received philosophy education. Specifically, teachers who received philosophy education scored significantly higher in information and communication [$t_{(336)} = 2.152, p < 0.05$], critical thinking [$t_{(336)} = 2.367, p < 0.05$], and social responsibility [$t_{(336)} = 3.479, p < 0.05$] compared to those who did not. These results indicate that teachers who received philosophy education have significantly higher scores in information and communication, critical thinking, and social responsibility compared to their peers who did not receive such education.

In terms of educational philosophical beliefs, significant differences were found in progressivism [$t_{(336)} = 2.098, p < 0.05$] and deconstructivism [$t_{(336)} = 2.459, p < 0.05$], favouring teachers who had received philosophy education. These findings suggest that teachers who received philosophy education tend to hold stronger beliefs in progressive and deconstructivist educational philosophies compared to those who did not receive such education.

DISCUSSION & CONCLUSION

When considering 21st century skills, it is evident that educational philosophy plays a crucial role in determining educational objectives, assessing their appropriateness for individuals and society, and evaluating the quality of educational practices (Baş, 2015). Philosophical beliefs not only influence contemporary thought but also aim to define the profiles of individuals that education seeks to cultivate. Given that education and philosophy are inseparable constructs, it can be asserted that an educational system lacking philosophical analysis and grounding will be superficial and arbitrary. To establish this connection, various models, techniques, and movements have emerged. In this context, the study was structured around four primary areas: the educational philosophies most commonly adopted by teachers, the relationship between teachers' educational philosophy

preferences and their 21st century skills perceptions, and the influence of teachers' demographic characteristics and philosophy education status on their perceptions of 21st century skills and educational philosophical beliefs.

Teachers' Adopted Educational Philosophies

This study revealed that the most embraced educational philosophy among teachers is existentialism, followed closely by progressivism. The least adopted philosophical belief is essentialism. These findings show that teachers tend to adopt more modern and contemporary educational philosophies. These findings align with research by Balcı and Küçüköğlü (2019), as well as Oğuz, Altinkurt, Yılmaz, and Hatipoğlu (2014). In Oğuz et al.'s study, the dimensions of educational beliefs with the highest participation among teachers were existentialism, deconstructivism, progressivism, and essentialism. Balcı and Küçüköğlü's research indicated that teacher candidates primarily embraced existentialism and progressivism.

This study similarly highlights that teachers are more inclined towards modern educational philosophies. The preference for existentialism reflects an affinity for drama, creativity, problem-solving, and critical thinking, while progressivism emphasizes viewing schools as democratic institutions where learning occurs primarily through social interaction rather than theory (Tan, 2006). Consequently, it can be inferred that these teachers prioritize skills associated with 21st century competencies. This also indicates that the teachers participating in the research are distanced from the rigid rules, teacher-centered approaches, and positive reinforcement of punishment characteristic of essentialism. This situation aligns with Trilling and Fadel's (2009) notion that in the context of education in a global world, shifts away from classical and standardized education models towards new methodologies are necessary. Framed within the dichotomy of traditional (transmissive) and constructivist approaches as defined by Valckx et al. (2024), this finding signals a significant shift in the perceived role of the teacher, from a source of knowledge transmission to a facilitator who supports students' meaning making processes.

When considering the collective changes in educational methods in the 21st century, there is a shift from teacher-centered instruction to student-centered learning, from direct instruction to interactive instruction, from information transfer to skill acquisition, from a focus on content to process, from fixed realities (facts) to personalized learning, from competitive education to collaborative learning, and teacher-directed assessment to student self-assessment, from learning for school to learning for life (Trilling & Fadel, 2009). However, these changes do not imply that older methods should be entirely discarded; rather, a combination of both old and new methods may sometimes be necessary. For instance, while creating projects, consideration of the curriculum, awareness of facts during problem-solving, and the simultaneous evaluation of students by teachers during self-assessment can positively influence the educational process.

The Relationship Between Teachers' Preferred Educational Philosophies and Perceptions of 21st Century Skills

The second objective of this research was to examine the relationships between teachers' educational philosophy beliefs and their perceptions of 21st century skills. According to the analysis, there is a strong and significant relationship between teachers' information and communication skills and the philosophies of existentialism, as well as between entrepreneurship and career awareness skills. Furthermore, a robust relationship was identified between the progressive philosophy and both existentialism and deconstructivism. In contrast, other variables exhibited medium or weak relationships. In other words, when examining the correlation between teachers' 21st century skills and educational philosophy beliefs, it is found that, apart from information and communication skills and critical thinking skills in relation to essentialist philosophy, all other skills showed moderate to high degrees of correlation with educational philosophies. The strong correlation identified in this study between modern educational philosophies and 21st-century skills is consistent with the contemporary understanding of education as a complex ecosystem rather than a linear process. This perspective is elucidated by complexity theory, wherein Mason (2008) contends that the teacher's role is evolving from a technician who transmits knowledge to a "network agent" who guides dynamic interactions within the system. Consequently, teachers who align with philosophies such as progressivism and existentialism inherently place a higher value on competencies like critical thinking and adaptability, which are essential for navigating this complexity.

These findings highlight key differences between traditional and modern philosophical beliefs and affirm the reliability of the research outcomes. They suggest that teachers should not merely serve as knowledge sources but maintain neutrality in discussions, with education fostering human liberation, in line with existentialist principles. Similarly, deconstructivism seeks to rebuild society by addressing the needs of all social classes to overcome cultural crises and promote democracy (Yılmaz et al., 2011). This indicates that existentialism and deconstructivism are more aligned than typically assumed. Additionally, the research reveals that teachers

embracing these philosophies are likely to cultivate skills such as problem-solving, flexibility, creativity, and independent learning (Tan, 2006).

The Relationship Between Teachers' Demographic Status, Their Educational Philosophies, and 21st Century Skills

This section examines the relationships among teachers' beliefs regarding educational philosophies, their perceptions of 21st century skills, and their demographic characteristics, revealing six significant findings. The substantial variations in teachers' educational philosophical tendencies based on demographic variables such as gender, age, and educational attainment parallel the research conducted by Ornstein and Hunkins (2018).

Male Teachers Are More Likely to Adopt Traditional Educational Philosophies Than Female Teachers

The research findings indicate that male educators hold a more essentialist philosophical stance compared to their female counterparts. This suggests that male teachers tend to establish stricter classroom rules, operate with a more disciplined approach, and conduct more teacher-centered lessons (Yılmaz et al., 2011). These results align with studies conducted by Degamon and Estoque (2022) focused on science teachers, as well as research by Beytekin and Kadi (2015) concerning the educational beliefs and values of teacher candidates, and studies by Amaç and Oral (2023) on teacher candidates as well. In these investigations, female teacher candidates were found to lean towards progressive educational philosophies, while their male counterparts exhibited a preference for more traditional beliefs. Beytekin and Kadi (2015) attribute this phenomenon to the influence of women's outlooks shaped by their home environments and previous educational experiences. This highlights the potential for gender-based differences in philosophical orientations and underscores the multifaceted nature of educational perspectives.

Female Teachers Exhibit Higher Career Awareness

An analysis of teachers based on gender reveals that female educators demonstrate significantly higher levels of career awareness. This finding, indicating that women's career consciousness surpasses that of all other 21st century skills, aligns with research conducted by Çevik and Şentürk (2019), which involved 660 teacher candidates. Individuals with a strong sense of career awareness are characterized by their commitment to fulfilling their responsibilities effectively, their careful selection of desired professions, their aspiration for success in those fields, and their proactive pursuit of opportunities for personal development. Furthermore, it is posited that individuals equipped with inquiry-based, adaptable skill sets and strong collaboration skills will achieve greater success in both current and future job markets. This trend suggests a shift towards temporary rather than permanent employment opportunities, with an increasing likelihood of women's participation in the workforce.

Younger Teachers Exhibit a Greater Adoption of 21st Century Skills

When examining perceptions of 21st century skills by age, it is evident that teachers aged 56 and older have significantly lower perceptions of competencies related to information and communication, entrepreneurship, and social responsibility compared to their younger counterparts. This suggests that younger teachers are more inclined to implement creative and innovative educational programs, leading to a stronger belief in the importance of 21st century skills (Degamon and Estoque, 2022).

Younger Teachers Are More Likely to Embrace Modern Educational Philosophies

The analysis of teachers' educational philosophy beliefs by age reveals that those aged 56 and above tend to adopt a more essentialist philosophical stance, while younger teachers favour a more progressive approach. Additionally, teachers in the 36-45 age range are found to be more aligned with existentialist beliefs. The prevalence of traditional educational philosophies among teachers over 56 may be attributed to the tendency for individuals to pursue more idealistic and creative endeavours in their youth, only to gravitate towards more conservative and secure choices as they age (Peterson et al., 2020). These findings resonate with the research conducted by Degamon and Estoque (2022), which similarly indicates that teachers over 50 predominantly utilize essentialist philosophies, while those aged 41-50 tend to adopt both essentialism and perennialism.

As The Academic Levels of Students Rise, Teachers Increasingly Embrace Traditional Educational Philosophy

The analysis of the relationship between teachers' educational levels and their philosophical beliefs reveals distinct trends. High school teachers are more likely to adopt essentialist philosophies, while preschool and elementary educators lean towards progressive philosophies. The prevalence of progressive philosophies among preschool and elementary educators reflects a recognition that younger students are more receptive to modern educational approaches that create student-centered, flexible learning environments that focus on real-life topics,

encourage active participation, and prioritize understanding over memorization (Yılmaz et al., 2011). In contrast, high school teachers' strong preference for essentialism suggests a belief in more structured, discipline-oriented educational practices. These teachers typically favour a teacher-centered approach, where rigid rules govern the classroom, and discipline is emphasized (Degamon and Estoque, 2022).

As Teachers' Educational Levels Increase, Their Preference for Modern Educational Philosophies Becomes Apparent.

The findings indicate that associate degree holders tend to possess a more foundational understanding of educational philosophies, whereas those with bachelor's, master's, and doctoral degrees are inclined towards more progressive and existential frameworks.

The Relationship Between Teachers' Perceptions of 21st Century Skills and Their Philosophical Beliefs in Education Based on Their Engagement with Philosophy Education

The results of this study reveal that teachers who have undergone philosophy training are more likely to embrace 21st century skills and modern educational philosophies. Specifically, teachers who have taken philosophy courses were found to have higher perceptions of skills related to knowledge and communication, critical thinking, and social responsibility when compared to their counterparts who have not taken philosophy courses. Furthermore, it can be concluded that those who have taken such courses are more likely to hold more progressive and deconstructivist philosophical beliefs. Balcı and Küçüköğlu (2019) attribute this phenomenon to the fact that more emphasis is placed on contemporary educational understandings within the curriculum and pedagogy of philosophy courses.

In conclusion, this study sought to examine educational practices through the lens of diverse philosophical traditions and the framework of 21st-century skills, underscoring the critical influence of philosophical thought in shaping both the aims and content of education. The findings reveal that educational paradigms are undergoing significant transformation in response to global developments and emerging innovations. Notably, there is a marked shift away from traditional philosophical foundations toward more contemporary and progressive educational philosophies. This transition reflects a broader movement from teacher-centered models to student-centered approaches, emphasizing learner autonomy, critical thinking, and flexibility in the educational experience. These competencies should extend beyond technical skills to encompass philosophical depth, critical inquiry, and dialogic openness (Jackson & Tesar, 2023). Within this framework, teacher preparation must aim to develop educators who are not passive consumers of technology, but rather architect of learning who adeptly integrate tools like gamification and artificial intelligence with pedagogical objectives (Gómez Niño et al., 2025), and are practitioners equipped with robust digital pedagogical competence (Hanifah et al., 2024). Such a shift signals not only a redefinition of pedagogical priorities but also a deeper reimagining of the role of education in preparing individuals for an increasingly complex and dynamic world.

Building upon these findings, a multifaceted approach to reforming educational practices emerges, necessitating alignment with contemporary pedagogical philosophies and 21st-century competencies. Central to this transformation is the redesign of professional development programs to actively engage educators, with particular emphasis on veteran teachers, in exploring progressive educational paradigms while cultivating deeper awareness of essential modern skills, complemented by institutional offerings of philosophy courses to strengthen theoretical foundations. Curriculum architecture must systematically incorporate student-centered approaches like progressivism and existentialism, tailored to diverse academic levels, to foster creativity and problem-solving while maintaining a balanced integration of traditional and innovative methodologies for optimal instructional flexibility. Concurrently, assessment frameworks and policy instruments should be restructured to prioritize and incentivize 21st-century skill development, with parallel reforms in teacher preparation programs to emphasize progressive pedagogies while encouraging novice educators to synthesize classical and contemporary techniques.

An encouraging implication is that teachers holding diverse educational philosophies can collaborate effectively within the same professional learning environment (Valckx et al. (2024). Therefore, teacher education and professional development programs should be structured around a philosophy that promotes collaborative learning cultures and integrates theory with practice (Niu et al., 2021). Concurrently, school leadership should foster a culture of co-operation by recognizing this philosophical diversity as a source of richness. Addressing systemic dimensions, professional learning initiatives must account for gender-based philosophical disparities, supplemented by institutionalized reflective practices like structured peer observation to bridge theory-practice divides, with future research needed to elucidate how demographic variables mediate pedagogical belief systems, collectively forming a comprehensive strategy for educational evolution that harmonizes time-tested practices with emergent paradigms.

Limitations

Upon examining the data collected from 360 teachers who voluntarily participated in the study, it was observed that 22 teachers provided identical responses to all questions. To enhance the validity and reliability of the data analysis, these 22 teachers were excluded from the dataset, resulting in an analysis conducted with 338 teachers. Additionally, the "Multidimensional 21st-Century Skills Scale" used in this study was originally developed and validated for individuals aged 15–25. Its application to our sample of adult teachers may pose a threat to the validity of the findings, as the scale's factor structure and item interpretations might not be fully generalizable to this older professional demographic. To address this limitation, a confirmatory factor analysis was conducted with the current sample to verify the validity of the scale's factor structure for adult participants.

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Researchers' Contribution Rate

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion
Author 1	☒	☒	☒	☐	☒	☒
Author 2	☐	☒	☐	☒	☒	☐

Statements of Publication Ethics

Ethical approval for this study was obtained from the Research and Publication Ethics Committee of Ankara University on October 4, 2024, under decision number 263 and meeting number 19. Participation in the study is entirely voluntary, with informed consent from all participants. Confidentiality and anonymity are ensured throughout the research process, with personal identifiers removed from transcripts and findings. Participants are informed of their right to withdraw from the study at any time.

Artificial Intelligence Usage Statement

The authors utilized ChatGPT and Grammarly editing tools to proofread the texts. Following these services, the researchers reviewed and validated the tasks performed by these tools

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