

## Perceptions of 21<sup>st</sup> Century Skills Across Generations: EFL Teachers from Generations X and Y and Learners from Generation Z

Meriç AKKAYA ÖNAL<sup>1</sup> Özgür YILDIRIM<sup>2</sup>

### To cite this article:

Akkaya Önal, M. & Yıldırım, Ö. (2025). Perceptions of 21st Century Skills Across Generations: EFL Teachers from Generations X and Y and Learners from Generation Z. *e-Kafkas Journal of Educational Research*, 12, 640-659. doi: 10.30900/kafkasegt.1633468

Research article

Received: 04.02.2025

Accepted: 02.10.2025

### Abstract

This study intended to reveal the perceptions of Generation X and Generation Y EFL teachers and learners of Generation Z regarding their competency of and the importance they attach to the 21<sup>st</sup> century skills. The data were gathered quantitatively via two questionnaires, and the analysis was performed using a statistical software program. First, the mean scores were calculated, followed by two independent-sample t-tests to examine differences between groups. The participants involved 80 EFL teachers working at a state university in Türkiye, and 40 EFL learners at the same university. The results of the study indicated that Gen Xers deemed themselves very competent whereas Gen Ys and Gen Zs viewed themselves as moderately competent in terms of the 21<sup>st</sup> century skills. Also, Generation X regarded 21<sup>st</sup> century skills as the most important among the entire group. The findings suggest that, regardless of their generation, the EFL teachers should be aware of and equipped with 21<sup>st</sup> century skills to assist learners from different generations. Besides, the needs of Gen Zs and the curriculum should be reviewed meticulously so that the members of this generation might perceive themselves more competent learners. Thus, EFL teachers should be knowledgeable about the importance of 21<sup>st</sup> century skills and the generational differences throughout their education. Therefore, Gen Z can obtain utmost benefit from the Gen X and Gen Y EFL teachers. Second, the curriculum should be reviewed and 21<sup>st</sup> century skills and the needs of Gen Z should be added to the curriculum as they perceive themselves less competent than the other two generations.

**Keywords:** 21<sup>st</sup> century skills; generational differences; generation X; generation Y; generation Z

<sup>1</sup>  Corresponding Author, merica@anadolu.edu.tr, Anadolu University, Türkiye

<sup>2</sup>  Author, Anadolu University, Türkiye

## Introduction

The world has been in a constant change; thus, the needs of the age in all areas of life are shifting. This rapid change and development in the world bring with it new information, technologies and approaches each day, which reveals the necessity of lifelong learning. The most important factor for lifelong learning to become sustainable is the education system that recognizes the age and goes beyond it by implementing a method that trains individuals with the 21<sup>st</sup> century skills. The education system should be able to syncretize the digital technologies to acquire knowledge skills necessary for the 21<sup>st</sup> century (Trilling & Fadel, 2009). Namely, instead of the traditional education model, approaches, and patterns, an education curriculum appropriate for the dynamics of the developing age is a prerequisite. Therefore, 21<sup>st</sup> century skills aim to integrate productive, creative, leader and effective individuals into society to manage and direct the age. For these purposes, relevant frameworks have been created, and embodied in education curriculums such as Metiri Group/NCREL-enGauge 21<sup>st</sup> Century Skills Framework (2003), OECD-DeSeCo 21<sup>st</sup> Century Competencies and Skills Framework (2005), ATC21S- KSAVE (Assessment and Teaching of 21<sup>st</sup> Century Skills) (2010), ISTE-NETS 21<sup>st</sup> Century Skills Framework (International Society for Technology in Education) (2007), and Partnership of 21<sup>st</sup> Century Learning (P21) (2007) (Aydın, 2019; Dede, 2010; Salas-Pilco, 2013; Şengüleç, 2018; Voogt & Roblin, 2012).

To successfully implement such frameworks, it is essential to consider the learners themselves, particularly the varying characteristics of different generations. Generations, commonly named as X, Y and Z, differ significantly in their evaluations, perceptions, and views in every facet of life including education. Their diverse educational needs, expectations, motivations, and perceptions play a crucial role in shaping educational models at every level (Bates, 2005). Thus, understanding the distinct needs and expectations of today's university students is vital for delivering more effective and relevant instruction (Buskirk-Cohen et al., 2015; DeBard, 2004). For instance, Dede (2005) states that knowing different generational tendencies give universities a competitive advantage. Thus, when stakeholders in higher education are aware of the defining characteristics of each generation, they can establish more efficacious policies and practices.

Regarding the acquisition of 21<sup>st</sup>-century skills, each generation carries different responsibilities shaped by their unique experiences, values, and learning preferences. Generational cohorts differ in how competent they feel in certain skill areas, and in the importance they assign to various 21<sup>st</sup>-century competencies (Aydın, 2019; Berkup, 2014; Ng et al., 2010). For instance, while Generation X may prioritize critical thinking and self-reliance, Millennials (Generation Y) tend to value collaboration and digital literacy, and Generation Z often emphasizes technological fluency and adaptability (Dede, 2005; Turner, 2015). Therefore, understanding generational trends can provide a strategic advantage in tailoring educational practices and policies to enhance engagement and outcomes (Seemiller & Grace, 2016; Şengüleç, 2018). Each generation, with its distinct characteristics, thus holds different responsibilities in both acquiring and applying 21<sup>st</sup>-century skills effectively.

### 21<sup>st</sup> Century Skills

The modernization, globalization and technological advancement as well as information era have led a rapid change in societies in the 21<sup>st</sup> century (Prensky, 2010; Friedman, 2005). This situation has brought about the change of qualifications, competencies and skills countries need to train their citizens for the competitive economy, sustainable welfare and both national and international development (Ananiadou & Claro, 2009; Gardner, 2010). These skills and competencies sought to be achieved by individuals are called as "21<sup>st</sup> Century Skills" (Dede, 2010; Silva, 2009; Trilling & Fadel, 2009).

21<sup>st</sup> century skills have been defined by many scholars. According to Voogt and Roblin (2010), it is "an overarching concept for the knowledge, skills and dispositions citizens need to be able to contribute to the knowledge society". Moreover, P21 Framework describes 21<sup>st</sup> century skills as "the skills, knowledge, and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise, and literacies" (2009, p.1). Despite not having a

universally-accepted definition, in a general sense, 21<sup>st</sup> century skills refer to a set of knowledge and skills that lead to success in education, work, career and adult life in today's world.

### 21<sup>st</sup> Century Skills Frameworks

Despite lacking a consensual definition, various institutions, organizations, scholars and stakeholders presented frameworks for 21<sup>st</sup> century skills. To start with, The Metiri Group/NCREL-enGauge 21<sup>st</sup> Century Skills Framework (2003) emphasizes four broad categories: digital-age literacy, inventive thinking, effective communication, and high productivity, aiming to align teaching practices with emerging technological and cognitive demands. The OECD-DeSeCo (Definition and Selection of Competencies) Framework (2005) introduces a competence-based model centered on three overarching categories: using tools interactively, interacting in socially heterogeneous groups, and acting autonomously, highlighting the need for key competencies that contribute to personal, social, and economic well-being. The ATC21S-KSAVE model (2010), developed under the Assessment and Teaching of 21<sup>st</sup> Century Skills project, groups skills into four broad categories: ways of thinking, ways of working, tools for working, and living in the world, providing a structure for teaching and assessing complex cognitive and interpersonal skills. The ISTE-NETS (2007) framework, proposed by the International Society for Technology in Education, focuses on developing students' digital literacy and technological fluency through standards such as creativity and innovation, communication and collaboration, and research and information fluency. Lastly, the Partnership for 21<sup>st</sup> Century Learning (P21) Framework (2007) integrates core academic content with interdisciplinary themes such as global awareness, and emphasizes skills like critical thinking, communication, collaboration, and creativity (often referred to as the "4Cs"), supported by life and career skills, and information, media, and technology skills.

Among these frameworks, P21 forms the baseline of this research since the concepts are more detailed and inclusive, and is widely adopted in the literature. P21 Framework describes 21<sup>st</sup> Century Skills as "the skills, knowledge, and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise, and literacies" (2009, p.1). The P21 framework, visualized by a rainbow figure, puts key academic subjects including English, Reading or Language Arts, World Languages, Arts, Mathematics, Economics, Science, Geography, and History as well as 21<sup>st</sup> century themes such as global awareness, financial, economic, business and entrepreneurial literacy, civic literacy, health literacy, and environment literacy at the center. It organizes learning around three core areas: (1) life and career skills including flexibility, initiative, social skills, productivity, and leadership; (2) learning and innovation skills, often referred to as the "4Cs", which are critical thinking, communication, collaboration, and creativity; and (3) information, media, and technology skills. Unlike some frameworks that focus mainly on cognitive or technical skills, P21 emphasizes a holistic approach, encouraging educational systems to foster environments that support not just knowledge acquisition but also the skills needed to thrive in a fast-changing, interconnected world.



Figure 1. P21 21<sup>st</sup> century skills framework (Battle for Kids, 2019).

## 21<sup>st</sup> Century Skills and English Language Education

21<sup>st</sup> century skills are “not new, just newly important” (Silva, 2009, p.631). Yet, education systems have not enhanced in parallel with the rapid shift in global economy, modernization, technological improvements and information era. Thus, it is imperative to develop the infrastructure of educational settings including pedagogical methods and curriculum to assist students with the current and future world (Chu et al., 2021). Larson and Miller (2011) emphasize that the skills necessary for the society where students work and live should not teach these skills as “one more thing to teach”, but rather should integrate them in all curricula (p. 121). They also add 21<sup>st</sup> century skills directly affect teaching and learning; thus, it is vital for classroom teachers to be acquainted with these skills and to build into the curriculum (Larson & Miller, 2011).

Research on the importance of 21<sup>st</sup> century skills in the field of education have intensified in recent years (e.g., Arsad, et. al, 2011; Birru, 2024; Çevik & Şentürk, 2019; Çiftçi, et. al., 2021; Ongardwanich, et. al., 2015; Karakoyun & Lindberg, 2020; Rinekso, 2021; Rubah & Lazarides, 2021). Some of these studies focus on the integration of these 21<sup>st</sup> century skills into curriculum (Aristiawan & Herman, 2021). Some researchers have shown interest in instrument development (Arsad et al., 2011; Çevik & Şentürk, 2019; Kelley, et. al., 2019; Ongardwanich, et. al., 2015; Rubah & Lazarides, 2021), textbook evaluation (e.g., Rinekso, 2021) or assessment of these skills (e.g.; Sondergeld & Johnson, 2019).

In a similar vein, studies on the importance of 21<sup>st</sup> century skills also appear in the field of English language education (Almuhammadi, 2025; Aristiawan & Herman, 2021; Aydın, 2019; Baran-Lucarz & Klimaz, 2020; Bedir, 2019; Çınar, 2019; Eker, 2020, Erdoğan, 2019; Fandino, 2013; Hadiyanto, 2019; Kristyaningdih et al., 2022; Motallebzadeh et. al., 2018; Valcheva, 2024; Zalsabila et al., 2025). These studies mainly focus on either pre-service EFL teachers’ beliefs and attitudes, or awareness of the 21<sup>st</sup> century skills (Alharbi, 2024; Almuhammadi, 2025; Baran-Lucarz & Klimaz, 2019; Bedir, 2019; Kapkır, 2024; Tsourapa, 2018; Şahin & Han, 2020). Some studies focus on the curriculum development and in-class implementations (Altay & Mirici; 2024; Aristiawan & Herman, 2021; Aydın, 2019; Ekinci, 2019; Fandiño Parra, 2013; Marwa et al., 2024; Monib, 2023), and textbook analysis (Akçay, 2019; Tyas et al., 2020). Besides, other studies examine the specific language skills and the learners’ use of 21<sup>st</sup> century skills (Motallebzadeh et al., 2018; Tharumaraj et al., 2018). Finally, some researchers developed scales specifically for EFL learners (Tang et al., 2021).

The major studies investigating the pre-service EFL teachers’ beliefs and attitudes demonstrate that most teachers are aware of the importance of 21<sup>st</sup> century skills in language education and reflect high positive perceptions (Alharbi, 2024; Baran-Lucarz & Klimaz, 2020; Bedir, 2019; Eker Uka & Bedir, 2023; Ekinci, 2019; Yazıcı Er & Erdoğan, 2025). For example, Altay and Mirici (2024) found that EFL instructors integrate 21<sup>st</sup> century skills into their classroom practices to varying degrees, with collaboration and communication skills being implemented more frequently than critical thinking and creativity. Likewise, Eker’s (2020) thesis results showed EFL instructors had the knowledge of these skills, and were aware of the importance of them. The results of Bedir’s (2019) and Tsourapa’s (2018) studies yielded EFL teachers discerned 21<sup>st</sup> century learning as the implementation and integration of educational technology into classroom teaching. In Aydın’s (2019) thesis, the pre-service EFL learners found “learning and innovation skills”, “life skills”, “intercultural skills” and “career skills” important, respectively. Likewise, Kapkır’s (2024) master’s thesis results revealed that EFL instructors were well-informed about the 4C skills and had positive opinions toward incorporating them into language teaching. In contrast, students had limited awareness of these skills, though they recognized their value for personal development, academic achievement, and future career success. Among the 4Cs, students considered communication and critical thinking the most important and focused more on acquiring these over collaboration and creativity. Consistently,

both instructor and student responses showed that communication and critical thinking were the most commonly integrated skills in classroom activities.

However, Bedir's (2019) and Baran-Lucarz and Klimaz's (2020) research findings showed a moderate involvement in the use of 4Cs. Therefore, the researchers suggest to raise EFL teachers' awareness, design teacher training programs based on a 21<sup>st</sup> century skills-oriented pedagogy, and receive support from the administrators and the government (Aydin, 2019; Baran-Lucarz, 2020; Eker, 2020; Ekinci, 2019).

On the other hand, coursebook analysis conducted by Akçay (2019), Bouzid (2016) and Rinekso (2021) display a certain amount of 21<sup>st</sup> century skills in coursebooks. Rinekso's (2021) study revealed communication and collaboration as the most dominant skills whereas global awareness, media and economic literacy are almost absent. Similarly, Bouzid (2016) asserts the coursebooks he examined lack ICT skills, creative thinking boosters and career and life skills development.

### **Generations**

In educational settings, particularly at the tertiary level, learners and educators bring diverse attitudes, competencies, and expectations shaped by the generational contexts in which they were raised. Generation Z students, who are also called as digital natives, may approach learning and skill acquisition differently compared to Generation X and Y teachers, who were shaped by earlier technological and pedagogical shifts. Hence, understanding generational characteristics becomes essential to fully grasp how 21<sup>st</sup> century skills are valued and practiced in the EFL classroom. This study thus bridges these two dimensions, 21<sup>st</sup>-century skills and generational differences, to explore how both learners and teachers perceive and engage with these competencies in higher education.

While the literature emphasizes the critical role of 21<sup>st</sup> century skills in preparing learners for academic and professional success (Trilling & Fadel, 2009; Voogt & Roblin, 2012), it is crucial to underline that the integration and perception of these skills are not uniform but may significantly differ across generational groups. Research demonstrates that generational cohorts such as Baby Boomers, Generation X, Millennials, and Generation Z exhibit distinct attitudes, values, and approaches to learning shaped by the socio-technological contexts of their upbringing (Dimock, 2019; McCrindle & Wolfinger, 2010; Oblinger & Oblinger, 2005). In educational settings, particularly at the tertiary level, learners and educators thus bring diverse competencies and expectations that reflect these generational contexts. For example, Generation Z students, often referred to as digital natives (Prensky, 2001; Seemiller & Grace, 2016), may approach learning and skill acquisition differently compared to Generation X and Y instructors, who were influenced by earlier technological and pedagogical shifts (Berk, 2010). Hence, understanding generational characteristics becomes essential to fully grasp how 21<sup>st</sup> century skills are valued, interpreted, and practiced in the EFL classroom. This study therefore bridges these two dimensions, 21<sup>st</sup>-century skills and generational differences, to explore how both learners and teachers perceive and engage with these competencies in higher education.

The concept of generation has been researched and discussed by sociologists, social psychology researchers, anthropologists and historians for centuries, and even today, by educators and academics. Ortega y Gasset and Karl Mainheim are the two leading researchers in the 20<sup>th</sup> century who dealt with this concept, and later the term was defined by other scholars (Strauss & Howe, 1991). In a general sense, the term "generation" is used to classify individuals born in a certain period, under the influence of similar social events and, hereby, acquired particular habits.

Despite having similar definitions of generations, there is no consensus on the emergence and the years a generation covers. Usually, each generation encompasses approximately 20 years. However, owing to the rapid technological evolutions, it has become inevitable to differentiate

these periods of around 10 years (Ivanova & Smirikarov, 2009). Namely, when the literature is examined (Coomes & DeBard, 2004; DeBard, 2004; Grubb, 2017; Howe & Strauss, 2000; Lancaster & Stillman, 2002; Pishchik et al., 2018; Reeves & Oh, 2008; Young, 2009; Zemke et al., 2000), 6 main generations are delineated with various names (Grubb, 2017) like Silent Generation (1925-1945), Baby Boomers (1946-1964), Generation X (1965-1980), Generation Y (1981-1999), Generation Z (2000-2020) and Alpha Generation (2020--).

### **Characteristics of each generation**

In this study, Generations X, Y and Z are taken into account. While defining the time intervals, frequently used classifications in the relevant literature were examined (Coomes & DeBard, 2004; DeBard, 2004; Grubb, 2017; Howe & Strauss, 2000; Lancaster & Stillman, 2002; Pishchik et al., 2018; Reeves & Oh, 2008; Young, 2009; Zemke et al., 2000), and the following categorization was adapted for this study:

1. Generation X: 1965-1980
2. Generation Y: 1981-1999
3. Generation Z: 2000-2020

Generation Xs are smaller than the Baby Boomers in number, and have usually been characterized as hard working, independent, and skeptical (Reilly, 2012). The members of this generation are the first individuals experienced the deeper impact of technology. According to Swanbrow's "The Generation X report" (2012), the members are found to be educated, balanced, happy, active and family-oriented. They are also considered to have a work-life balance, and do not prefer to work long hours for title or extra money (Leibow, 2014). Leibow (2014) also states that the employers of this generation ought to specify cogent and logical rationale before implementing a task or decision since GenXers can question the policies and the projects. Grimes (2015) describes GenXers as independent thinkers and artists as they cherish their personal time and enjoy independent projects. They also attach importance to independence and autonomy besides learning new skills and expertise (Jorgensen, 2003). That is, Generation X is often described as valuing autonomy, responsibility, and work-life balance. They tend to place strong importance on self-management and problem-solving skills, which are aligned with life and career competencies (Meredith & Schewe, 2002). However, research shows that while Generation X members emphasize systematic problem-solving and critical judgment, their digital literacy competencies are often lower compared to younger generations, since most of them adopted digital tools later in life (Deal et al., 2010). Consequently, for Generation X, the importance of competencies such as self-regulation, critical thinking, and responsibility tends to be higher than their self-reported competency levels in advanced digital literacies.

Generation Y are apt to be social and confident in terms of personal and work-life balance (Gibson, 2013). He also characterizes them as less independent and more society-oriented, awaiting family feedback and mentoring. Weidmer (2015) suggests that this generation fancies trying new solutions to the problems since the feeling of belonging to a community and purpose motivates them. They have "a strong work ethic, entrepreneurial spirit and sense of responsibility" (Jorgensen, 2003, p. 43). They mix networking, collaboration and interdependence to reach their goals (Jorgensen, 2003). They are expected to be the most highly educated generation (DeVaney, 2015), and are also interested in technology. They are the first individuals with computers in their schools (Shatto & Erwin, 2017). In addition, Swanzen (2018) suggests certain teaching and learning needs for this generation. For example, the Millennials like to have a say in their education, to collaborate and multitask. Namely, they are characterized as team-oriented, adaptive, and comfortable with technology (Howe & Strauss, 2000). According to Ng et al. (2010), studies in higher education and workplace contexts indicate that Generation Y places high importance on collaboration, communication, and digital

literacy, while their competencies in these areas are supported by frequent technology use and social learning environments. Their creative and critical thinking skills, however, often depend on contextual factors such as organizational support and meaningfulness of tasks (Twenge, 2010), suggesting that Millennials may report high levels of importance across most 21<sup>st</sup> century skills, with competency levels moderated by institutional conditions.

Because Generation Zs were born in an era full of innovations regarding communication and technology like instant messaging services, World Wide Web, mobile phones, tablet computers as well as social networking sites and communication apps such as Facebook, Instagram, Facetime, Skype, etc., they have different communication styles. They are very tech-savvy; therefore, they prefer to connect with their peers via social media. Besides, thanks to this mobilization, Gen Zs are more socially and environmentally aware compared to previous generations (Weidmer, 2015). Furthermore, these digital natives are very bright with higher IQ scores than the former generations (Weidmer, 2015). Gen Zs prefer immediate feedback and personalized learning, and require less direction since they can attain digital tools easily (Renfro, 2015). Considering their demands, educational stakeholders are obliged to change their teaching-learning styles with a more visual, interactive, technology and social media-incorporated manner (Cilliers, 2017). On the other hand, although Generation Z is often labeled as “digital natives,” this notion has been critically challenged. Kirschner and De Bruyckere (2017) argue that frequent exposure to technology does not automatically translate into high levels of digital competence or critical literacy. Generation Z demonstrates high comfort and perceived importance in digital and data literacies, creativity, and adaptability, but their actual competencies vary. For example, while they outperform older cohorts in routine digital tasks, they face challenges in areas such as source evaluation, multitasking, and ethical use of information (Kirschner & De Bruyckere, 2017; Prensky, 2012). Their entrepreneurial tendencies and preference for individualized learning environments further reinforce the emphasis they place on digital and innovation-related 21<sup>st</sup> century skills (Seemiller & Grace, 2016).

Overall, cross-generational differences suggest that importance they attach to 21<sup>st</sup> century skills and their competency gaps vary by skill domain. For instance, Generation X often values self-management and responsibility highly, but reports lower digital literacy competencies. Millennials, on the other hand, report high importance and strong competencies in collaboration, communication, and technology use, though creativity and critical thinking depend on organizational contexts. Generation Z emphasizes digital and creative literacies as most important, but their competencies are heterogeneous, especially in critical evaluation and ethical digital use. These differences indicate that the relationship between generations and 21<sup>st</sup> century skills is not merely chronological but shaped by cultural, educational, and technological contexts.

### **Generations and Language learning**

In studies conducted in EFL settings, various concepts have been examined in relation to different generations. For example, Mursyid and Kurniawati (2019) investigated the EFL teachers from three different generations’ (Baby boomers, X and Y) perceptions and practices in using Higher Order Thinking Skills (HOTS) in their teaching. Despite certain obstacles detected, most of the participants from all generations are aware of HOTS and use it in their classrooms.

In some recent studies, only Gen Zs are examined. For example, Sriprom, Rungwang, Sukwitthayakul and Chansri (2019) were intended to discover the personality traits of Gen Z undergraduates using a mixed-method design. An adopted version of Big Five Inventory was used as data collection tool. The findings displayed that among all the personality dimensions, agreeableness was rated as the highest while neuroticism was the lowest. In another study by Polakova and Klimova (2019), two groups of Gen Zs’ vocabulary test scores were compared in

a pre-posttest experimental design. The results showed that the experimental group utilizing the mobile device outscored the control group using the traditional learning methods.

### **Purpose of the Study**

Considering the literature, most studies in the field tend to focus either on 21<sup>st</sup> century skills or on generational differences in education. However, there appears to be a lack of research that brings these two perspectives together, specifically, studies that explore how different generations within the EFL context perceive and engage with 21<sup>st</sup> century skills. This connection is crucial, as generational background can significantly influence individuals' educational expectations, technological adaptability, and learning or teaching preferences (Deal et al., 2010; Twenge, 2010; Seemiller & Grace, 2016). Given that today's EFL classrooms at the tertiary level often include Generation Z learners and Generation X or Y teachers, it is important to understand how these groups differ in their self-perceived competencies and value judgments regarding 21<sup>st</sup> century skills. Since the successful implementation of these skills in language classrooms requires alignment between teachers' and learners' perceptions, such understanding is essential for designing more responsive and effective instruction (Ng et al., 2010). Therefore, this study aims to determine how competent Generation X and Y EFL teachers and Generation Z EFL learners perceive themselves in relation to 21<sup>st</sup>-century skills, and how important they consider these skills. Additionally, the study seeks to identify the similarities and differences in perceptions between these generational groups. The focus on teachers and learners is intentional: although differences between educational stakeholders can partly stem from their roles, existing literature also suggests that generational characteristics shape attitudes toward technology use, collaboration, and problem-solving in education (Kirschner & De Bruyckere, 2017; Prensky, 2012). Given that the natural composition of tertiary EFL classrooms brings together Generation Z learners with Generation X and Y teachers, examining their perceptions comparatively provides insights that cannot be fully explained by role differences alone but are also linked to generational identities. In line with this purpose, the study addresses the following research questions:

1. To what extent do EFL teachers and learners feel competent to have 21<sup>st</sup> century skills?
  - a. Is there any difference between Generation X EFL teachers' and Generation Z EFL learners' 21<sup>st</sup> Century Skills competency levels?
  - b. Is there any difference between Generation Y EFL teachers' and Generation Z EFL learners' 21<sup>st</sup> Century Skills competency levels?
2. What are the EFL teachers' and learners' perspectives on the importance of having 21<sup>st</sup> century skills?
  - a. Is there any difference between Generation X EFL teachers' and Generation Z EFL learners' order of importance for the 21<sup>st</sup> century skills?
  - b. Is there any difference between Generation Y EFL teachers' and Generation Z EFL learners' order of importance for the 21<sup>st</sup> century skills?

## **Method**

### **Research Design and Setting**

This quantitative study employed a cross-sectional survey design, using two separate online questionnaires to collect data from EFL teachers and learners. The survey method was chosen for its effectiveness in gathering large-scale data within a relatively short time, enabling the researcher to compare participants' self-perceived competency and views on the importance of 21<sup>st</sup>-century skills across different generations. This design was particularly appropriate given the study's aim to identify generational differences and similarities in perceptions and skill levels within a tertiary EFL context.

The study was conducted at a school of foreign languages (SFL) of a state university in Türkiye during 2021-2022 Spring term. The medium of instruction of the program was English, and an integrated intensive English language education including four skills, listening, speaking, reading and writing as well as vocabulary and grammar was provided for the learners. Students took 20 hours of classes per week. They were also expected to become proficient in English and get 60 from the proficiency test held at the end of the semesters to be able to start their undergraduate studies. The class hours for teachers ranged from 8 to 16 hours per week.

### **Participants**

A total of 120 participants took part in the study, consisting of 40 learners representing Generation Z (born between 2000 – 2020), 37 teachers representing Generation Y (born between 1981–1999), and 43 teachers representing Generation X (born between 1965–1980). All participants were selected through convenience sampling. The learners were enrolled in the School of Foreign Languages (SFL) at a state university in Türkiye and were studying at various English proficiency levels (A1 to B1+), as determined by their institutional placement scores. The mean age of the learners was approximately 20 years, and the group included both male and female students from different academic departments. The teachers were all actively teaching EFL courses at the time of data collection. Generation Y teachers had a mean age of 35, while Generation X teachers had a mean age of 47. Teaching experience ranged from 4 to over 25 years, with diverse educational backgrounds including bachelor's, master's, and doctoral degrees in ELT or related fields. Both groups of teachers were working full-time in higher education institutions and had experience teaching learners at different proficiency levels.

### **Data Collection and Instruments**

During the 2021–2022 spring semesters, data for the present study were collected through two separate online questionnaires, developed by the researcher, administered via Google Forms. The first questionnaire, titled *21<sup>st</sup> Century Skills – Competency Questionnaire (21CS-CQ)*, aimed to examine EFL teachers' and learners' self-perceived competency in the 21<sup>st</sup> century skills. The second instrument, named *21<sup>st</sup> Century Skills – Importance Questionnaire (21CS-IQ)*, was designed to explore participants' perceptions of the importance of these skills. Each questionnaire consisted of two sections. Part I collected demographic information, while Part II included 31 items measured on a 5-point Likert scale, ranging from “very competent” to “very incompetent” for the *21CS-CQ*, and “very important” to “not important at all” for the *21CS-IQ*. Apart from the demographic section in Part I, which was customized based on whether the respondent was a teacher or a learner, the structure and content of the questionnaires remained the same in both questionnaires.

The development of the scales was grounded in the P21 Framework for 21<sup>st</sup> century skills, which outlines the key competencies required for success in the modern world. Initially, 34 items were constructed through literature review and framework-based item mapping. These draft items were then reviewed by three experts in the field of ELT, each holding a PhD, to ensure content validity. Following expert feedback, three items were eliminated and minor revisions were made, resulting in a 31-item version of each scale. A pilot study was conducted with 21 EFL teachers and 21 EFL learners to assess the clarity and language appropriateness of the items. Although no exploratory (EFA) or confirmatory factor analysis (CFA) was conducted due to the small sample size, internal consistency reliability was assessed through Cronbach's alpha. For the *21CS-CQ*, the reliability coefficient was .93 for both teachers and students. For the *21CS-IQ*, Cronbach's alpha was calculated as .88 for teachers and .95 for students. These results indicate a high level of internal consistency for both instruments.

Table 1.  
The Cronbach's Alpha reliability results

	Teacher	Student
Competency	.931	.930
Importance	.885	.958
	N of items: 31	N of items: 31
	N of participants: 21	N of participants: 21

During the 2021–2022 spring semester, data for the present study were collected through two separate online questionnaires administered via Google Forms. One questionnaire was designed for students and the other for teachers, aiming to gather diverse perspectives on the research topic. Participation was entirely voluntary, and all respondents were informed about the purpose of the study prior to completing the surveys. The voluntary nature of participation ensured that the data were collected ethically and without coercion, thereby enhancing the credibility and reliability of the findings.

### Data Analysis

The data were analyzed via a statistical package program, SPSS. First, the mean scores of participants were gathered for each questionnaire. Then two independent samples t-tests were run for both competency and importance to compare the mean scores of Gen Xers and Gen Z. Another set of two independent samples t-tests were conducted to compare the mean scores of Gen Y and Gen Z regarding competency and importance for each.

### Findings

#### Competency level of generations regarding the use of 21st century skills

The first research question and its sub-questions aimed to explore the extent to which EFL teachers and learners perceived themselves as competent in 21<sup>st</sup> century skills. It also sought to identify whether there was a statistically significant difference between Generation X EFL teachers and Generation Z learners, as well as between Generation Y EFL teachers and Generation Z learners, in terms of their perceived competency levels. In interpreting the results, a 5-point Likert type instrument was used, where scores between 1.00–2.33 are considered low, 2.34–3.66 moderate, and 3.67–5.00 high competency (Cohen et. al, 2018). Based on this classification, Generation X teachers reported the highest level of competency with a mean score of 4.16. Generation Y teachers followed with a mean of 3.83, also in the high competency range, while Generation Z learners had a mean score of 3.75. These results indicate that all three groups perceive themselves as relatively competent, with Generation X demonstrating the strongest sense of competency among them.

Table 2.

Competency mean scores of each generation

	Generation	N	Mean	Std. Deviation	Std. Error Mean
Competency	X	43	4.1628	.61452	.09371
	Y	37	3.8378	.69775	.11471
	Z	40	3.7500	.74248	.11740

In order to find out whether there is a difference between Gen X EFL teachers' and Generation Z EFL learners' and Gen Y EFL teachers' and Generation Z EFL learners' competency levels, two separate independent samples t-tests were run. The first t-test was conducted to determine if there is a difference between Gen X and Gen Z. The results yielded a statistically significant

difference between Generation X ( $M=4.16$ ,  $SD=.61$ ) and Generation Z ( $M=3.75$ ,  $SD=.74$ ) in terms of competency levels ( $t(81)=2.767$ ,  $p<.05$ ).

Table 3.

Independent Samples t-test results of Gen X and Gen Z in terms of competency

		F	Sig.	t	df	Sig. (2-tailed)	(2-Mean Difference)	Std. Error Difference
Competency	Equal variances assumed	3.317	.072	2.767	81	.007	.41279	.14919
	Equal variances not assumed			2.748	75.915	.007	.41279	.15021

However, the findings of the second t-test carried out to compare the mean scores of Generation Y and Generation Z regarding their competency levels revealed a statistically non-significant difference ( $t(75)=.534$ ,  $p=.595$ ).

Table 4.

Independent Samples t-test results of Gen Y and Gen Z in terms of competency

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Competency	Equal variances assumed	.581	.448	.534	75	.595	.08784	.16454
	Equal variances not assumed			.535	74.979	.594	.08784	.16414

***Degree of importance given to the use of 21<sup>st</sup> century skills by generations***

The second research question and its sub-questions sought to investigate EFL teachers’ and learners’ perceptions of the importance of possessing 21<sup>st</sup> century skills. Additionally, it aimed to examine potential differences in the perceived importance of these skills between Generation X and Generation Y EFL teachers and Generation Z EFL learners.

The mean scores of each generation reveals similar results with the mean scores of competency. Namely, Generation X has the highest mean score (4.81) accompanied with Gen Y (4.43) and Gen Z (4.18) regarding the degree of importance each generation attaches. The results showed each generation displayed a high degree of importance perceived by their participants.

Table 5.

Mean scores of importance for each generation

	Generation	N	Mean	Std. Deviation	Std. Error Mean
Importance	X	43	4.8140	.30905	.04713
	Y	37	4.4324	.57930	.09524
	Z	40	4.1875	.78191	.12363

Furthermore, an independent samples t-test was conducted to investigate the relationship between generations and the degree of importance. The findings indicated a statistically significant difference between Generation X ( $M=4.81$ ,  $SD=.30$ ) and Generation Z ( $M=4.18$ ,  $SD=.78$ ) in terms of importance ( $t(50.175)=4.735$ ,  $p<.001$ ).

Table 6.  
Independent Samples t-test results of Gen X and Gen Z in terms of importance

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Importance Equal variances assumed	23.218	.000	4.863	81	.000	.62645	.12882
Equal variances not assumed			4.735	50.175	.000	.62645	.13231

On the contrary, the findings produced non-significant results when Generation Y and Z are compared regarding the degree of importance given to the 21<sup>st</sup> century skills ( $t(71.67)=1.569$ ,  $p=.121$ ).

Table 7.  
Independent Samples t-test results of Gen Y and Gen Z in terms of importance

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Importance Equal variances assumed	4.241	.043	1.552	75	.125	.24493	.15786
Equal variances not assumed			1.569	71.676	.121	.24493	.15606

### Discussion

The findings of this study indicate that participants across all generations perceive themselves as competent in terms of 21<sup>st</sup> century skills, with Generation X reporting the highest self-perceived competency. Similarly, all groups considered 21<sup>st</sup> century skills to be important, with Generation X again attributing the highest value to these skills. These outcomes suggest that more experienced educators may feel more confident and place greater emphasis on such skills, possibly due to accumulated professional knowledge and broader exposure to skill-based teaching demands.

These findings are consistent with previous literature. For example, Eker (2020) found that instructors demonstrated both awareness and understanding of 21<sup>st</sup> century skills, emphasizing their importance in contemporary education. According to Altay and Mirici (2024), teachers' perceptions of their own competence in facilitating 21<sup>st</sup> century skills significantly influence how these skills are embedded in lesson activities. Similarly, Kapkır (2024) highlighted the significance of the implementation of 4Cs, communication, collaboration, critical thinking, and creativity, in language classrooms. The studies of Bedir (2019) and Tsourapa (2018) also support these results, reporting that EFL teachers associate 21<sup>st</sup> century learning primarily with the integration of educational technologies and modern pedagogical practices.

Moreover, Aydın (2019) emphasized that pre-service EFL learners placed the highest value on learning and innovation skills, followed by life skills, intercultural competence, and career skills. These priorities align with the current study's results, indicating that today's educators and learners recognize the complex nature of 21<sup>st</sup> century competencies.

In terms of generational traits, Reilly (2012) describes Generation X as independent, resilient, and hardworking. These attributes may underlie their higher self-perceived competency in 21<sup>st</sup> century skills, particularly in the domain of life and career skills. Traits such as self-direction and initiative are closely related to the competencies necessary for effective use of 21<sup>st</sup> century skills, especially those involving independent work, accountability, and adaptability.

In terms of generational traits, Reilly (2012) describes Generation X as independent, resilient, and hardworking. These attributes may underlie their higher self-perceived competency in 21<sup>st</sup> century skills, particularly in the domain of life and career skills. Traits such as self-direction and initiative are closely related to competencies necessary for effective use of 21<sup>st</sup> century skills, especially those involving independent work, accountability, and adaptability. More recent studies also confirm that Generation X teachers tend to emphasize responsibility and problem-solving skills, often integrating these competencies into their instructional practices (Deal et al., 2010; Twenge, 2010).

Furthermore, Generation X is characterized by a strong preference for work-life balance (Leibow, 2014), which correlates with their emphasis on productivity, time management, flexibility, and adaptability. These life and career skills form a key component of the P21 Framework (Partnership for 21<sup>st</sup> Century Learning, 2019) and may contribute to Generation X's strong identification with and valuation of 21<sup>st</sup> century competencies. This is consistent with findings by Seemiller and Grace (2016), who argue that generational traits influence how different cohorts approach collaboration, leadership, and adaptability in educational and professional contexts.

Comparatively, research on Millennials (Generation Y) and Generation Z highlights somewhat different patterns. Millennials are often described as collaborative, technologically adaptable, and motivated by meaningful engagement (Howe & Strauss, 2000; Ng et al., 2010). These characteristics align with their emphasis on communication, teamwork, and technology-related 21<sup>st</sup> century skills. Generation Z, on the other hand, is commonly associated with being "digital natives," although this notion has been problematized (Kirschner & De Bruyckere, 2017). Still, studies report that Generation Z learners prioritize digital literacy, creativity, and adaptability, but their competencies vary, particularly in higher-order thinking and critical evaluation of information (Prensky, 2012; Seemiller & Grace, 2016). Including these generational insights suggests that while Generation X teachers perceive themselves as highly competent due to experience and resilience, Generation Y and Z emphasize different subsets of 21<sup>st</sup> century skills, shaped by their technological familiarity and collaborative orientations.

### **Conclusion and Implications**

This study aimed to investigate the perceptions of EFL teachers from Generation X and Generation Y, as well as Generation Z learners, regarding their competency in and the importance they attach to 21<sup>st</sup> century skills. The results indicated that all generations perceived themselves as highly competent, though Generation X teachers rated their competency at the highest. Similarly, all generations perceived 21<sup>st</sup> century skills as highly important although Generation X participants valued these skills the most.

Based on these findings, several implications emerge. First, despite their self-reported awareness of 21<sup>st</sup> century skills, EFL teachers across generations should continuously update and expand their competencies to effectively support learners from diverse generational backgrounds. This is essential because rapid technological advances, evolving educational policies, and the increasing emphasis on digital literacy and higher-order thinking skills require teachers to remain adaptive and responsive (Voogt & Roblin, 2012; Trilling & Fadel, 2009). Moreover, learners from different generations may bring diverse expectations, learning preferences, and technological proficiencies to the classroom, which necessitates that teachers adjust their practices accordingly (Seemiller & Grace, 2016). Continuous professional

development in 21<sup>st</sup> century skills, therefore, not only ensures instructional relevance but also enhances teachers' ability to foster critical, creative, and collaborative learning environments.

Second, although Generation Z learners already acknowledged the importance of these skills, their comparatively lower self-perceived competency suggests a need for targeted pedagogical strategies and curriculum adjustments that explicitly address their specific learning needs and help build their confidence in these areas. This study suggests that curriculum designers and educators should collaboratively review and revise existing curricula to integrate 21<sup>st</sup> century skills in a way that is responsive to Generation Z learners' unique characteristics and challenges.

Furthermore, teachers from Generations X and Y can leverage their higher self-perceived competencies to mentor and scaffold Generation Z learners, fostering a more supportive and effective learning environment. Teacher training programs should emphasize both the development of 21<sup>st</sup> century skills and awareness of generational differences to better prepare educators for this role. Finally, educational institutions might consider incorporating ongoing professional development and reflective practices to ensure that teaching approaches remain aligned with evolving learner profiles and skill demands.

Despite the valuable insights gained from this study, several limitations should be acknowledged. First, the relatively small sample size limited the statistical power of the analyses and made it methodologically inappropriate to conduct exploratory or confirmatory factor analyses on the data collection instruments. Consequently, the psychometric validation of the instruments is constrained, which may affect the generalizability of the findings. Second, the study relied on self-reported measures of competency and perceived importance of 21<sup>st</sup> century skills, which may be influenced by social desirability or subjective bias. Third, the study focused on a specific educational context and a limited range of generational groups, which may restrict the applicability of the findings to other settings or populations. Future research should consider larger, more diverse samples and incorporate objective measures or observational data to further validate the results and strengthen the implications for educational practice.

Overall, these findings highlight the importance of bridging generational gaps in competency and perception to enhance the teaching and learning of the 21<sup>st</sup> century skills in EFL contexts. By recognizing the diverse strengths and challenges of different generational groups, educators can design more inclusive, adaptive, and effective instructional strategies. Ultimately, fostering such an environment not only improves learners' acquisition of critical, creative, and collaborative skills but also contributes to preparing all learners for the complex demands and opportunities of the rapidly evolving global society.

### Acknowledgment

**Copyrights:** The works published in the e-Kafkas Journal of Educational Research are licensed under a Creative Commons Attribution-Non-commercial 4.0 International License.

**Ethics statement:** In this study, we declare that the rules stated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive" are complied with and that we do not take any of the actions based on "Actions Against Scientific Research and Publication Ethics". At the same time, we declare that there is no conflict of interest between the authors, which all authors contribute to the study, and that all the responsibility belongs to the article authors in case of all ethical violations.

**Author Contributions:** "Conceptualization, M.A-Ö.; methodology, M.A-Ö.; validation, M.A-Ö., and Ö.Y.; analysis, M.A-Ö.; writing, review and editing, M.A-Ö.; supervision, Ö.Y.

**Funding:** This research received no funding.

**Institutional Review Board Statement:** Ethical approval was obtained from Anadolu University Graduate School Ethics Committee to conduct the research with the decision dated 22.02.2024 and protocol no. 689606.

**Data Availability Statement:** Data generated or analyzed during this study should be available from the authors on request.

**Conflict of Interest:** Authors should declare that there is no conflict of interest among authors.  
**Generative Artificial Intelligence Statement:** ChatGPT was used for language editing.

## References

- Akçay, A. (2019). *An analysis of ELT coursebooks in terms of 21st century skills: Communication, collaboration, critical thinking, creativity* (Master's thesis, Akdeniz University). Council of Higher Education Thesis Center.
- Alharbi, N. S. (2024). Exploring the perspectives of cross-cultural instructors on integrating 21st century skills into EFL university courses. *Frontiers in Education, 9*, 1302608. <https://doi.org/10.3389/educ.2024.1302608>
- Almuhammadi, A. N. (2025). Examining the integration of 21st century skills in EFL instruction: A case study of selected Saudi universities. *English Language Teaching, 18*(2), 70–82. <https://doi.org/10.5539/elt.v17n6p45>
- Altay, A., & Mirici, İ. H. (2024). EFL instructors' implementations of 21st century skills in their classes. *International Journal for Housing Science and Its Applications, 45*(2), 37–46.
- Ananiadou, K., & Claro, M. (2009). 21st century skills and competences for new millennium learners in OECD countries. *OECD Education Working Papers* (No. 41). OECD Publishing. <https://doi.org/10.1787/218525261154>
- Altay, A., & Mirici, İ. H. (2024). EFL instructors' implementations of 21st century skills in their classes. *International Journal for Housing Science and Its Applications, 45*(2), 37–46.
- Altun, B., & Arslan, H. (2021). 2000 yılı sonrası doğan öğrencilerin 21. yüzyıl becerileri ile kariyer planlaması ve teknoloji yönelimleri arasındaki ilişkinin incelenmesi. *International Journal of Management and Social Researches, 8*(15), 48–65.
- Aristiawan, D., & Herman, H. (2021). EFL teachers' strategies in implementing the 21st century skills applied in 2013 curriculum. *PIONEER: Journal of Language and Literature, 13*(2), 227–242.
- Aydın, A. (2019). *İngilizce öğretmen adaylarının görüşleri çerçevesinde öğretmen eğitiminde 21. yüzyıl becerilerinin incelenmesi* (Master's thesis, Hacettepe University, Institute of Educational Sciences). Council of Higher Education Thesis Center.
- Baran-Łucarz, M., & Klimas, A. (2020). Developing 21st century skills in a foreign language classroom: EFL student teachers' beliefs and self-awareness. *Academic Journal of Modern Philology, 10*, 23–38.
- Bates, A. T. (2005). *Technology, e-learning and distance education*. Routledge. <https://doi.org/10.4324/9780203463772>
- Berk, R. A. (2010). How do you leverage the latest technologies, including Web 2.0 tools, in your classroom? *International Journal of Technology in Teaching and Learning, 6*(1), 1–13.
- Birru, Y. T. (2024). The integration of 21st century skills into the higher education curriculum: Practices and perspectives systematic review. *Teacher Education and Curriculum Studies, 9*(3), 60–68.
- Buskirk-Cohen, A. A., Duncan, T. A., & Levicoff, M. (2015). Using generational theory to rethink teaching. *Teaching in Higher Education, 21*(1), 25–36. <https://doi.org/10.1080/13562517.2015.1110787>
- Chu, S. K. W., Reynolds, R. B., Tavares, N. J., Notari, M., & Lee, C. W. Y. (2021). *21st century skills development through inquiry-based learning: From theory to practice*. Springer International Publishing. <https://doi.org/10.1007/978-981-10-2481-8>
- Cilliers, E. J. (2017). The challenge of teaching Generation Z. *PEOPLE: International Journal of Social Sciences, 3*(1), 188–198. <https://doi.org/10.20319/pijss.2017.31.188198>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Coomes, M. D., & DeBard, R. (2004). A generational approach to understanding students. *New Directions for Student Services, 2004*(106), 5–16. <https://doi.org/10.1002/ss.121>

- Deal, J. J., Altman, D. G., & Rogelberg, S. G. (2010). Millennials at work: What we know and what we need to do (if anything). *Journal of Business and Psychology*, 25(2), 191–199. <https://doi.org/10.1007/s10869-010-9177-2>
- DeBard, R. D. (2004). Millennials coming to college. *New Directions for Student Services*, 2004(106), 33–45. <https://doi.org/10.1002/ss.123>
- Dede, C. (2005). Planning for neomillennial learning styles: Implications for investments in technology and faculty. In D. G. Oblinger & J. L. Oblinger (Eds.), *Educating the net generation* (pp. 15.1–15.22). EDUCAUSE. <https://www.educause.edu/ir/library/pdf/pub7101.pdf>
- Dede, C. (2010). Comparing frameworks for 21st century skills. In J. Bellanca & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (pp. 51–76). Solution Tree Press.
- DeVaney, S. A. (2015). Understanding the millennial generation. *Journal of Financial Service Professionals*, 69(6), 11–14.
- Dimock, M. (2019). Defining generations: Where Millennials end and Generation Z begins. Pew Research Center. <https://www.pewresearch.org/short-reads/2019/01/17/where-millennials-end-and-generation-z-begins>
- Eker Uka, E. & Bedir, H. (2023). Exploring EFL teachers' perceptions on 21st – century skills: A case study, *e-Kafkas Journal of Educational Research*, 10, 169-183, doi:10.30900/kafkasegt.1240904
- Ekinci, M. (2019). EFL instructors' level of awareness about the significance of 21st century skills. *International Journal of Language Academy*, 7(4), 295–307. <https://doi.org/10.29228/ijla.22758>
- Fandiño Parra, Y. J. (2013). 21st century skills and the English foreign language classroom: A call for more awareness in Colombia. *Gist Education and Learning Research Journal*, 7, 190–208.
- Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. Farrar, Straus and Giroux.
- Gardner, H. (2010). Five minds for the future. In J. Bellanca & R. Brandt (Eds.), *21st century skills: Rethinking how students learn* (pp. 3–18). Solution Tree Press.
- Gasset, J. O. y. (1961). *El tema de nuestro tiempo*.
- Gibson, R. (2013, March 20). Definition of Generation Y. *Generation Y*. <http://www.generationy.com/definition/>
- Grimes, G. (2011, May 23). How Generation X works. *HowStuffWorks*. <http://people.howstuffworks.com/culture-traditions/generation-gaps/generation-x.htm>
- Grubb, V. M. (2017). *Clash of the generations: Managing the new workplace reality*. John Wiley & Sons.
- Hadiyanto, H. (2019). The EFL students' 21st century skill practices through e-learning activities. *Indonesian Research Journal in Education*, 461–473.
- Howe, N., & Strauss, W. (2000). *Millennials rising: The next great generation*. Vintage Books.
- Jorgensen, B. (2003). Baby Boomers, Generation X and Generation Y? Policy implications for defence forces in the modern era. *Foresight*, 5(4), 41–49. <https://doi.org/10.1108/14636680310494753>
- Kapkir, F. (2024). Teaching 21st century skills in EFL classrooms: An investigation of teacher, student and institutional perceptions on the instructional practices of the 4C skills (Master's thesis, Middle East Technical University).
- Karakoyun, F., & Lindberg, O. J. (2020). Preservice teachers' views about the twenty-first century skills: A qualitative survey study in Turkey and Sweden. *Education and Information Technologies*, 25(4), 2353–2369. <https://doi.org/10.1007/s10639-019-10096-3>
- Kelley, T. R., Knowles, J. G., Han, J., & Sung, E. (2019). Creating a 21st century skills survey instrument for high school students. *American Journal of Educational Research*, 7(8), 583–590.

- Kirschner, P. A., & De Bruyckere, P. (2017). The myths of the digital native and the multitasker. *Teaching and Teacher Education*, 67, 135–142. <https://doi.org/10.1016/j.tate.2017.06.001>
- Kristyaningdih, B. R., Putra, A. P., & Fajar, M. A. (2023). 21st-century skills implementation in teaching English at primary school. *International Journal of Language and Literature*, 7(2), 124–132. <https://ejournal.undiksha.ac.id/index.php/IJLL/article/view/29269>
- Lancaster, L. C., & Stillman, D. (2002). *When generations collide: Who they are, why they clash, how to solve the generational puzzle at work*. HarperCollins.
- Larson, L. C., & Miller, T. N. (2011). 21st century skills: Prepare students for the future. *Kappa Delta Pi Record*, 47(3), 121–123. <https://doi.org/10.1080/00228958.2011.10516575>
- Leibow, C. (2014, October 16). Work/life balance for the generations. *HuffPost Business*. <http://www.huffingtonpost.com/cathy-leibow/worklife-balance-for-the-1-b-5992766.html>
- Mannheim, K. (1952). *Essays on the sociology of knowledge* (P. Kecskemeti, Ed.). Routledge & Kegan Paul.
- Marwa, R., Nur, S., & Arifin, M. (2025). Enhancing 21st century skills in the EFL classroom: Exploring teachers' implementation of group activities and assignments. *Al-Ishlah: Jurnal Pendidikan*, 17(1), 312–323. <https://www.journal.staihubbulwathan.id/index.php/alishlah/article/view/5355>
- McCrandle, M., & Wolfinger, E. (2010). *The ABC of XYZ: Understanding the global generations*. UNSW Press.
- Meredith, G., & Schewe, C. (2002). *Defining markets, defining moments: America's 7 generational cohorts, their shared experiences, and why businesses should care*. Wiley.
- Motallebzadeh, K., Ahmadi, F., & Hosseinnia, M. (2018). Relationship between 21st century skills, speaking and writing skills: A structural equation modelling approach. *International Journal of Instruction*, 11(3), 265–276. <https://doi.org/10.12973/iji.2018.11319a>
- Mursyid, M., & Kurniawati, N. (2019). Higher order thinking skills among English teachers across generation in EFL classroom. *English Review: Journal of English Education*, 7(2), 119–124.
- Ng, E. S. W., Schweitzer, L., & Lyons, S. T. (2010). New generation, great expectations: A field study of the millennial generation. *Journal of Business and Psychology*, 25(2), 281–292. <https://doi.org/10.1007/s10869-010-9159-4>
- Oblinger, D. G., & Oblinger, J. L. (Eds.). (2005). *Educating the net generation*. EDUCAUSE.
- Ongardwanich, N., Kanjanawasee, S., & Tuipae, C. (2015). Development of 21st century skill scales as perceived by students. *Procedia - Social and Behavioral Sciences*, 191, 737–741. <https://doi.org/10.1016/j.sbspro.2015.04.716>
- Partnership for 21st Century Learning. (2005). *P21 framework definitions*. <http://www.p21.org/our-work/p21-framework>
- Partnership for 21st Century Learning. (2019). *Framework for 21st century learning*. [http://static.battelleforkids.org/documents/p21/P21\\_Framework\\_Brief.pdf](http://static.battelleforkids.org/documents/p21/P21_Framework_Brief.pdf)
- Pishchik, V., Vorontsov, D., & Breus, E. (2018). Socio-psychological characteristics of modern generations. *Surveying, Geology and Mining, Ecology and Management*, 18(3.2), 409–416. <https://doi.org/10.5593/sgemsocial2018/3.2/S11.053>
- Poláková, P., & Klímová, B. (2019). Mobile technology and Generation Z in the English language classroom—A preliminary study. *Education Sciences*, 9(3), 203. <https://doi.org/10.3390/educsci9030203>
- Prensky, M. R. (2010). *Teaching digital natives: Partnering for real learning*. Corwin Press.
- Prensky, M. (2012). From digital natives to digital wisdom: Hopeful essays for 21st century learning. *Corwin Press*.
- Reeves, T. C., & Oh, E. (2008). Generational differences. In J. M. Spector, M. D. Merrill, J. V. Merrienboer, & M. P. Driscoll (Eds.), *Handbook of research on educational communication and technology* (3rd ed., pp. 295–303). Taylor & Francis Group.

- Reilly, P. (2012). Understanding and teaching Generation Y. *English Teaching Forum*, 50(1), 2–11.
- Renfro, A. (2012, December 5). Meet Generation Z. *Getting Smart*. <http://gettingsmart.com/2012/12/meet-generation-z/>
- Rubach, C., & Lazarides, R. (2021). Addressing 21st-century digital skills in schools: Development and validation of an instrument to measure teachers' basic ICT competence beliefs. *Computers in Human Behavior*, 118, 106636. <https://doi.org/10.1016/j.chb.2020.106636>
- Salas-Pilco, S. Z. (2013). Evolution of the framework for 21st century competencies. *Knowledge Management & E-Learning: An International Journal*, 5(1), 10–24.
- Seemiller, C., & Grace, M. (2016). *Generation Z goes to college*. Jossey-Bass.
- Shatto, B., & Erwin, K. (2017). Teaching millennials and Generation Z: Bridging the generational divide. *Creative Nursing*, 23(1), 24–28. <https://doi.org/10.1891/1078-4535.23.1.24>
- Silva, E. (2009). Measuring skills for 21st-century learning. *Phi Delta Kappan*, 90(9), 630–634. <https://doi.org/10.1177/0031721709090000905>
- Sondergeld, T. A., & Johnson, C. C. (2019). Development and validation of a 21st century skills assessment: Using an iterative multimethod approach. *School Science and Mathematics*, 119(6), 312–326. <https://doi.org/10.1111/ssm.12340>
- Sriprom, C., Rungswang, A., Sukwitthayakul, C., & Chansri, N. (2019). Personality traits of Thai Gen Z undergraduates: Challenges in the EFL classroom? *PASAA: Journal of Language Teaching and Learning in Thailand*, 57, 165–190.
- Strauss, W., & Howe, N. (1991). *Generations: The history of America's future, 1584 to 2069*. Quill.
- Swanbrow, D. (2012, December 5). The Generation X report: How many Gen Xers know their cosmic address? *Michigan News: University of Michigan*. <http://www.ns.umich.edu/new/releases/20908-the-generation-x-report-how-many-gen-xers-know-their-cosmic-address>
- Swanzen, R. (2018). Facing the generation chasm: The parenting and teaching of generations Y and Z. *International Journal of Child, Youth and Family Studies*, 9(2), 125–150. <https://doi.org/10.18357/ijcyfs92201818216>
- Tharumaraj, J. N., Krishnan, S., & Perumal, R. (2018). Learners' perspective: 21st century essential fluencies. *English Teacher*, 47(3).
- Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. John Wiley & Sons.
- Tsourapa, A. (2018). Exploring teachers' attitudes towards the development of 21st century skills in EFL teaching. *Research Papers in Language Teaching & Learning*, 9(1).
- Turner, A. (2015). Generation Z: Technology and social interest. *The Journal of Individual Psychology*, 71(2), 103–113.
- Twenge, J. M. (2010). A review of the empirical evidence on generational differences in work attitudes. *Journal of Business and Psychology*, 25(2), 201–210. <https://doi.org/10.1007/s10869-010-9165-6>
- Tyas, M. A., Nurkamto, J., & Marmanto, S. (2020). Cultivating students' higher-order thinking skills in EFL classes: The role of the teacher and the textbook. *International Online Journal of Education and Teaching*, 7(1), 267–276.
- Valcheva, D. (2024). 21st century skills in the foreign language classroom: University students' perceptions. *Trakia Journal of Sciences*, 22(1), 119–125. <https://tjs.trakia-uni.bg/index.php/tjs/article/view/16>
- Voogt, J., & Roblin, N. P. (2010). *21st century skills*. Discussienota. Kennisnet.
- Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences. *Journal of Curriculum Studies*, 44(3), 299–321. <https://doi.org/10.1080/00220272.2012.668938>

- Yazıcı Er, S., & Erdoğan, O. (2025). Teachers' views on school principals' implementation of 21st-century skills. *Educational Research & Implementation*, 2(1), 1–15.
- Young, K. (2009). The X, Y and Z of generations in schools. *The International Journal of Learning*, 16(7), 203–216. <https://doi.org/10.18848/1447-9494/CGP/v16i07/46401>
- Zalsabila, R., Karim, A., & Maulana, M. (2025). 21st century skills in English language teaching: A study at SMPN 27 Makassar. *Interaction: Journal of Language Education*, 10(1), 45–55. <https://e-journal.unimudasorong.ac.id/index.php/interactionjournal/article/view/2040>
- Zemke, R., Raines, C., & Filipczak, B. (2000). *Generations at work: Managing the class of veterans, boomers, X-ers, and nexters in your workplace*. Amacon.