

The Relationship between Intermediate EFL Learners' Awareness of 21st-Century Skills and Their Motivation

Mohammad Sadegh Ghalibafan^{*1}, Homa Ghodrati², Hamideh Ghalibafan³, Neda Yazdanfar⁴

^{1*}Corresponding author, Department of English Language, Faculty of Foreign Languages, Shahid Sattari Aeronautical University of Science and Technology, Tehran, Iran; msghalibafan@gmail.com

² Department of English Language, IslamicAzad University, Torbat Heydariyeh Branch, Torbat Heydariyeh, Iran; homa.ghodrati1984@gmail.com

³ Department of English Language, Ferdowsi University, Mashhad, Iran; hghalibafan@gmail.com

⁴ Department of English Language, Khayyam University, Mashhad, Iran; yazdanfarneda@gmail.com

Original Research Article

Date of Submission: 07 April 2025

Date of Acceptance: 25 June 2025

Abstract

In the 21st century, where success is quantified in terms of rapid technological and international communication advancements, the learning of core skills has been necessary for all in all sectors. These 21st-century skills like critical thinking, creativity, collaboration, and digital literacy are significant for effective learning, problem-solving, and career advancement. This research examines the relationship between Iranian intermediate EFL learners' awareness of 21st-century skills and their motivation to learn English. A quantitative method was employed in this research, sampling 633 Iranian intermediate EFL learners from a number of language institutes in Iran. Two validated tools were used to gather data: a researcher-made questionnaire to measure awareness of 21st-century skills, and a modified Gardner's Attitude/Motivation Test Battery (AMTB) to measure motivation. The result revealed a statistically significant positive relationship ($r = 0.53$, $p < 0.001$) between learners' awareness of 21st-century skills and their motivation to learn English. The outcomes emphasize the importance of integrating 21st-century skills into English as a Foreign Language programs to enhance student engagement and motivation.

Keywords: 21st-century skills, awareness, motivation, English language learning

1. Introduction

In the 21st century, the education system has been significantly transformed, calling for the incorporation of certain competencies in a bid to tackle challenges of the contemporary age (Delors, 1996). The contemporary English as a Foreign Language (EFL) class has developed from conventional approaches to classrooms that appreciate learner autonomy and metacognitive awareness (Naidoo, 2021). This development prompts learners to think about their thinking, leading to independent learning beyond overt teacher intervention (Uyar, 2023). This learner-centered approach emphasizes the necessity for creative and effective approaches to language skills teaching (Bourn, 2018).

Supporting this change is the integration of 21st-century skills, which are essential for students to thrive in the contemporary globalized world (Maravelaki, 2023). These skills include various competencies, including digital literacy, creativity, critical thinking, collaboration, and self-directedness. Schools, particularly those that provide English as a Foreign Language instruction, are encouraged to create practices that foster these competencies, enabling students to respond to challenges of the contemporary world (Bourn, 2018). Similarly, current studies refer to the necessity of integrating the 4Cs—critical thinking, communication, collaboration, and creativity—into EFL integrated skills learning in order to enhance students' flexibility and problem-solving abilities (Fomunyam, 2024).

The idea of 21st-century skills entails more than technological literacy. According to Kay and Greenhill (2010), such competencies encompass a combination of content knowledge, particular skills, expertise, and types of literacy that are required to achieve success in both the professional and personal realms. They posit that such competencies allow people to access, synthesize, and communicate information efficiently, work with diverse groups to resolve intricate problems, and create new ideas through innovative technological development (Naidoo, 2021). This total skill set is invaluable in meeting the challenges of the new economy (Delors, 1996).

The processes of globalization and digitalization have drastically changed the educational landscape. Darling-Hammond (2007) writes that, with the rise of instant transfer of information around the globe, the world was rapidly shrinking in the early 21st century; knowledge was becoming the new oil. The implications of a connected world for working and learning are immense (Maravelaki, 2023). He argues that these trends permeate education and their application as well as our professional practice, emphasizing the need for an understanding of information and communication technologies (ICT) (Delors, 1996). In order to respond to these profound changes, we should focus on removing barriers to access as educational institutions, providing staff with professional development, enhancing innovation to e-learning, developing digital literacy and proclaiming life-long learning (Fomunyam, 2024).

In the same vein, Lotherington and Jensen (2011) assert that globalization and digitalization have changed the communicational ecologies of the world and that the responses to these changes, especially in the context of language and literacy education have been profound. The most recent conversations around education suggest that we should reshape education so that it more accurately reflects what is needed in a digital and AI world, further lobbying for curricular that prioritize literacy and numeracy and supports development of creativity (Fomunyam, 2024).

The development of 21st-century skills is associated with student motivation in EFL education contexts (Guemide et al., 2015). The literature indicates access to the use of new multimedia technology provides engaging and motivating classrooms. These ideas are consistent with broader education perspectives about engaging students' passion for learning (Liu, 2022). Bishop (2008) encourages educational environments where engagement has priority over achievement, stating that understanding how young people prefer to learn, and help them develop motivation is what educational programs aim to achieve (Uyar, 2023). Other recent research is also seeking to understand factors influencing EFL students' motivation in online learning environments. The implications of this research suggest the need to have students' engagement and self-discipline for EFL learning. Therefore, this study will investigate the relationship of Iranian intermediate EFL learners' awareness

of 21st century-skills with their motivational orientations (Guemide, et al., 2015). It is imperative to understand the students' views of these 21st-century skills in order to provide pedagogical strategies designed not only for language proficiency, but also build competencies for learners to be successful citizens in the modern world.

The rise of digital technologies in the 21st century has infiltrated many aspects of human life, including education (Fomunyan, 2024). In EFL situations, there is significant research exploring how tools, notably computer-assisted language learning (CALL), impact language learning (Maravelaki, 2023). However, 21st-century skills are more than the incorporation of technology; they also include creativity, teamwork, critical thinking, and problem solving (Uyar, 2023). Even though the importance of 21st-century skills is widely accepted, there is little research on EFL learners' awareness of 21st-century skills and motivation (Delors, 1996). This research project seeks to explore this gap in the literature and examine the relationship between awareness of 21st-century skills and motivational types of Iranian intermediate EFL learners.

This research is important in the context of 21st century skills in education (Bourn, 2018). With society and students transforming at an ever-quickening pace in schools (Delors, 1996), EFL learners are expected to develop skills including, but not limited to, collaboration, communication, digital literacy, and creative thinking, necessary in their personal and professional lives (Maravelaki, 2023). Studying learners' motivation can provide information about particular psychological aspects that affect second language learning effort. The outcomes of this research could aid EFL teachers and learners with effective ways to develop 21st century skills. The findings will also guide curriculum designers in "creating pedagogically viable courses, policies, and teacher training programs" (Liu, 2022). Also, students will find out what competencies they need in their world today.

2. Literature Review

This Study offers an overview of 21st century skills and their importance for EFL teaching and learning. It examines the defining characteristics of a 21st century learner and teacher and identifies the competencies needed to effectively learn a language in today's educational environment. Given that the pace of change is rapidly unfolding regarding digital technology and pedagogical possibilities, it is imperative educators understand the competencies needed to improve language teaching and learner motivation (Maravelaki, 2023; Kay & Greenhill, 2010).

2.1. 21st-Century Skills

Defined as academic and applied experiences, 21st-century skills are often characterized as the combination of broad competencies that position learners for success in current educational and professional environments. 21st century skills include, but are not limited to, content knowledge, critical thinking, problem solving, communication, and collaboration. These skills are essential for managing the complexities of life in the digital age (Kay & Greenhill, 2010). To aid in writing educational programs, Czerkowski & Berti (2020) outline the components of 21st century competencies, including digital literacy, inventive thinking, effective communication, and productivity that enable students to develop multicultural literacy, global awareness, risk-taking, and personal and social responsibility. They also discuss conceptual frameworks of 21st-century skills, including the framework outlined by the North Central Regional Educational Laboratory (Dumbuya, 2025), the Framework for 21st Century Learning. The model involves four skill dimensions: Digital-age literacy

(a category that covers scientific literacy, technological literacy, and cultural literacy); Inventive thinking, which accentuates adaptability, creativity, and higher-order reasoning; Effective communication, which includes collaboration and interpersonal communication; and High productivity, which includes time management and prioritization to achieve results of quality (Zawacki-Richter et al., 2020).

Recent research takes a few steps further and considers the addition of AI and adaptive learning technologies to the ideas and frameworks of 21st-century skills. AI-enabled personalized learning environments will increase engagement and self-regulation of learning pathways and encourage metacognitive awareness strategies in EFL (Dumbuya, 2025). Digital literacy includes cybersecurity awareness, data ethics, and AI literacy, which are considered relevant skills for learners in today's learning contexts (Zawacki-Richter et al., 2020). The ATC21S (Assessment and Teaching of 21st Century Skills) framework is another widely adopted model for 21st-century skills, which groups competencies into four useful categories: ways of thinking (creativity, critical thinking, and metacognition), ways of working (communication and collaboration), tools for working (information literacy and ICT literacy) and living in the world (global citizenship, life and career skills). These four categories emphasize the significance of EFL educators nurturing cognitive skills such as creativity and critical thinking, along with interpersonal skills such as intercultural awareness and collaboration.

2.2. 21st-Century Skills and EFL Learning

In developing learner autonomy, engagement, and communicative competence, the pedagogical inclusion of 21st-century skills into EFL education has emerged as an essential component. As noted by Liu (2022), researchers found that 21st-century skills could promote language learning motivation, amongst other variables of self-regulated learning (e.g., motivation, self-regulation). As part of 21st-century EFL learning, collaborative digital communication represents an avenue to engage with diverse linguistic communities beyond immediate experience. As reported by Fomunyam (2024), learners are increasingly creating CMC (computer-mediated communication) transactions while engaged in learning and communicative exchanges by using online platforms and objects (e.g., virtual exchange programs, AI-supported language tutor system) to enrich the learning experience by enhancing engagement and immersion. By the same token, research studies on gamified language learning indicate that there is an increase in motivation and problem-solving skills, as well as retaining content and language knowledge, when motivated by digital games (Fomunyam, 2024).

Moreover, project-based learning (PBL) approaches that embraced 21st-century competencies positively correlated to EFL learner engagement, as well as increasing accuracy in production (Starodubtseva, 2009). PBL encourages authentic language use and enhances student ability to communicate in both academic and professional language contexts (Wu et al., 2012). Furthermore, millions of daily users (educator + learner) are utilizing immersive technologies (ITs), e.g., VR and AR, within their learning practice as they are shown to increase fluency and cultural competence (Cheng, 2021).

2.3. 21st-Century Skills and Learner Motivation

Motivation is an essential aspect of language learning and continuing to integrate 21st-century skills is essential to engaging learners. Guemide et al. (2015) found students' motivation was enhanced through multimedia-assisted learning because students were able to learn about language in a more

interactive and engaging way. Fomunyan (2024) extend that when learners are in an online learning environment with collaboration tools, they also had increased intrinsic motivation when learning EFL. Critical thinking also appears to support motivation in language learning and is an important 21st-century skill. Cheng (2021) indicated students with greater critical thinking skills have higher motivation and autonomy in EFL classroom contexts. Additionally, collaborative learning environments where which students engaged in peer interaction foster responsibility and involvement (Wu et al., 2012).

Responsibility, a leading component, supports learners' motivation by allowing them to own their learning. Zawacki-Richter et al. (2020) explains that students who get to participate in the decision-making involved in their learning goals report higher levels of self-efficacy and persistence. Cheng (2021) note that technology-enabled feedback mechanisms such as intelligent AI feedback mechanisms for language assessment facilitates enjoyment of learning by presenting a personalized progress tracking system that learners can utilize. From the literature reviewed, we can conclude that 21st-century skills are essential for contemporary EFL teaching and learning. These skills enable a better rate of students' language competence and support the foundations of autonomy, collaboration and digital literacy - skills that are needed for learners to be successful in a global world. Given the proliferation and innovations of AI, AR and adaptive learning technologies in language instruction (Zawacki-Richter et al., 2020), this study will examine the association of Iranian intermediate EFL learners' awareness of relevant 21st-century skills and their motivational orientation. This study aims to identify relationships between what we have identified as key variables to recommend effective practices in pedagogy, and patterns of related variables in language learning related to job demands that meet the evidential perspectives of contemporary language learners.

2.4. Challenges in Integrating 21st-Century Skills into EFL Education

Although integrating 21st-century skills into English as a Foreign Language (EFL) education can be beneficial for many students, some challenges can affect educators' efficiency. Technology barriers: There are varying degrees of access to technology at educational institutions, which is often determined by socioeconomic factors. When there is unequal access, it is difficult to consistently integrate digital tools that are essential to building EFL learners' digital literacy knowledge and skills. Also, some educators may have problems utilizing technology tools, which complicate the inclusion of technology-assisted learning (Alharbi, 2024).

Assessment challenges: There are a number of challenges with assessing 21st-century skills, namely that there are no standardized assessment rubrics. Common assessment methods do not measure some competencies such as critical thinking, creativity, and collaboration. Developing assessments that account for these various competencies will be a more complete assessment of 21st-century skills (Irfiana et al., 2022).

Curricular Constraints: The rigidity of much curricula and the "high-stakes" nature of testing can undermine the flexibility, educators need in order to incorporate 21st-century skills into EFL instruction. Educators may feel pressured to cover the content at the expense of the development of skills and limit their ability to innovate (Alharbi, 2024).

Cultural and Contextual Challenges: Cultural and contextual factors also play a role in the educators' acceptance and implementation of the 21st-century skills. In some contexts, it is more

prevalent for teacher-centered learning to dominate than to adopt learner-centered approaches that encourage students' abilities to be critical thinkers and independent learners (Alharbi, 2024).

2.5. Strategies to Enhance Learner Motivation in EFL Classrooms

Motivation is a vital component to language acquisition and there are a number of ways to promote engagement in EFL contexts. **Autonomy-Supportive Instruction:** Teaching in ways that support learners' autonomy through collaboration in decision-making and providing options for learning experiences can increase intrinsic motivation. Autonomy-supportive teaching provides learners with a sense of ownership and responsibility for their learning, which can foster engagement (Hung, 2014).

Using Motivational Strategies: Adding specific motivational strategies to the classroom instruction such as achievable goals, positive feedback, and supportive classroom context can influence student motivation. Teacher motivational behaviors have been correlated with student engagement and effort (Moskovsky et al., 2012).

The Use of Technology: The extent to which technology can be integrated into learning like video, multimedia, and language learning apps can contribute to a more interesting and interactive, attractive learning environment. Technology integration allows for a variety of learning styles and opportunities for authentic contexts for language use, which can spark motivation (Hung, 2014).

Engagement Via Culturally Relevant Pedagogy: Designing learning activities that honor students' backgrounds and interests can increase relevance and engagement. Culturally relevant pedagogy recognizes learners' identities and experiences and thus builds an inclusively motivating environment for learning (Alharbi, 2024).

Adopting 21st-century skills into the EFL classroom is vital for educating learners to deal with the complexities present in the current global landscape. Barriers such as technological access, assessment issues, curricular restrictions, and cultural demands can pose challenges to addressing 21st-century skills; however, thoughtful approaches can lessen these pitfalls. Teacher facilitation of learner motivation by supporting autonomy, grappling with various motivational strategies, employing technology, and culturally relevant pedagogy can lead to a more enjoyable and productive EFL learning experience.

3. Research Questions

To achieve the objectives of this study, the following research questions were addressed:

1. Is there a significant relationship between Iranian intermediate EFL learners' awareness of 21st-century skills and their motivation?
2. Is there a significant difference between male and female participants concerning their awareness of 21st-century skills?

4. Method

The key purpose of this study was to explore EFL learners' awareness of 21st-century skills and motivation; therefore, this part addresses the data collection process of participants' selection, instrumentation, and analytical techniques systematically. The research described the participants and

setting, followed by the definition of the instruments used for data collection. The procedures for administering the questionnaire and analyzing the data will then be explained. Finally, the research reflected upon the research design.

4.1. Research Design

A correlational research design was adopted in the study to explore the relationship between Iranian intermediate EFL learners' knowledge of 21st-century skills and learners' motivation. Correlational research designs are the best way to assess relationships between variables without changing any condition (Creswell & Plano Clark, 2023). The study examined the following two primary variables:

1. EFL learners' knowledge of 21st-century skills (independent variable)
2. Learners' motivation to learn English (dependent variable)

The correlation research design used Pearson's Product-Moment Correlation to assess the directional and strength of the relationship between these two variables. Pearson's Product-Moment Correlation calculates the strength and directionality of linear relationships with correlation coefficient values from +1 (perfect positive correlation) to -1 (perfect negative correlation), while near zero indicates no relationship (Chapman, 2017). The study followed a non-experimental design and did not impose an intervention or manipulation. Information was collected from learners through self-report questionnaires and examined with quantitative methods to infer relationships. The research design is consistent with prior research concerning motivational states and cognitive awareness in EFL learning (Dörnyei & Ushioda, 2021).

4.2. Participants and Setting

The sample for this study involved 633 intermediate EFL learners from various cities in Iran; Tehran, Mashhad, Kashmar, Bandar Abbas, Sabzevar, Tabas, and Kermanshah. Participants were selected using the Krejcie-Morgan table from 50,000 EFL learners with a confidence level of 95% and a margin of error of 3.5%. Most learners who chose to participate were between 18 and 50 years of age, and both genders were included in the sample. All participants studied English for at least two years in Iranian language institutes, but none had experienced living in an English-speaking country. Participation in the research was voluntary therefore ethical considerations around consent and confidential data were upheld (Creswell & Plano Clark, 2023).

4.3. Instrumentation

To measure the two key variables of the study—motivation and awareness of 21st-century skills—two validated instruments were employed: the Attitude/Motivation Test Battery (AMTB) and the 21st Century Skills Questionnaire.

4.3.1. Attitude/Motivation Test Battery (AMTB)

Motivation levels of study participants in learning English were assessed through a modified version of the Attitude/Motivation Test Battery (AMTB). The original AMTB was designed by Gardner et al. (1985) to correspond with the context of EFL learning in Yemen. In the present research study, a further change was made to its Persian form by removing one of the items and changing the format of the response options to a Likert-type scale ranging from "Strongly Disagree" to "Strongly

Agree." The translated questionnaire was finally approved by experts in the field in Islamic Azad University, Torbat-e Heydarieh Branch, and piloted on 20 intermediate EFL learners in Mashhad, Iran. To assess the reliability of the questionnaire, Cronbach's alpha was calculated, and the coefficient came to 0.78, proving that the internal consistency of the instrument was acceptably high (Dörnyei & Ushioda, 2021).

4.3.2. 21st Century Skills Questionnaire

The researchers developed a questionnaire which researchers used to evaluate participants' understanding of 21st-century skills. The questionnaire was created after the research team examined multiple academic papers and validated questionnaires to generate a complete list of 21st-century skills. The researchers generated an initial draft of 100 questionnaire items which they refined through language expert feedback from Islamic Azad University, Torbat-e Heydarieh Branch. The finalized questionnaire featured 50 multiple-choice questions with Likert scale responses from "Always" to "Never" options. The research team translated the questionnaire into Farsi before testing it with 20 intermediate EFL learners in Mashhad, Iran who achieved a Cronbach's alpha reliability coefficient of 0.83. The questionnaire included two sections: the first part recorded participant information about age, gender, language learning duration, educational level, and institutional association; the second part evaluated 21st-century skill awareness. A research publication currently under review for the P21 Framework for 21st Century Learning has details about the questionnaire (2019). The scientific community determined the questionnaire's validity and clarity through a systematic validation process which included experts in applied linguistics and educational measurement. The validation procedure involved consulting experts before analyzing feedback and running a pilot study.

Three experts to analyze and reviewed the questionnaire:

1. Expert 1: A professor who has spent more than 15 years working in language assessment.
2. Expert 2: A professor in educational measurement and statistics, skilled in developing and validating tests.
3. Expert 3: An expert in curriculum development focusing on blending 21st-century skills with language learning.

These experts were chosen for their knowledge in test design, validation, and language education to make sure we got a thorough evaluation of the questionnaire.

Feedback and Changes Made: Some valuable feedbacks were received from experts on the questionnaire. Here's what we focused on:

- Clarity: Some questions were confusing or too complicated, so we simplified them.
- Overlapping Items: A few questions were too similar. We either combined or cut those to reduce redundancy.
- Response Scale: Experts suggested changing the response scale from four points to five to allow for more varied answers and better results.
- Content Validity: We adjusted items that didn't fit well with the P21, ATC21S, and OECD Learning Compass frameworks, making sure they aligned with 21st-century skills.

Pilot Study Details

We conducted a pilot study with 50 intermediate English learners from different language institutes in Iran. The participants were diverse in:

- Age: 18–40 years
- Gender: 27 females, 23 males
- Education: A mix of university students and working professionals learning English
- Language Level: Intermediate (B1–B2 on the CEFR scale)

Changes Based on Pilot Study Feedback

After the pilot study, we made several changes:

- Item Difficulty: We looked at which items weren't getting varied responses and either rewrote or dropped those to improve clarity.
- Factor Analysis: Our initial analysis showed two items didn't fit well with their groups, so we revised or swapped them out for better options.
- Consistency: The updated questionnaire showed a Cronbach's alpha of 0.83, indicating strong internal consistency.

4.4. Procedure

The data were gathered from several cities in Iran, including Tehran, Mashhad, Kashmar, Bandar Abbas, Sabzevar, Tabas, and Kermanshah. Participants filled out the AMTB and the 21st Century Skills Questionnaire in Farsi, so they could understand it better. The researcher and some local helpers took care of handing out the questionnaires. We made sure to get permission from the English language schools before we started. Everyone was told that their answers would be kept secret, and they could answer honestly without worrying about being right or wrong. They could fill out the questionnaires either in class or at home.

For those in far-off places, we sent the questionnaires out by email. If anyone had questions and was confused about something, we helped them out in person or via email. Despite our efforts, 67 people didn't return their questionnaires, leaving us with 566 completed ones. Once we had all the responses, we put the data into SPSS software (version 16.0) for analysis. We looked at the overall data using descriptive statistics and checked the reliability of the responses. We also used principal component analysis (PCA) to confirm the validity of what we were measuring. To see how EFL learners' awareness of 21st-century skills related to their motivation, we did a Pearson's Product-Moment Correlation analysis.

While the researcher checked reliability with Cronbach's alpha, we needed to take more steps to make sure our tool was solid. It was important to make sure the questionnaire matched well with accepted models of 21st-century skills. These models helped make our questionnaire more credible and kept it in line with global educational standards.

- P21 Framework for 21st Century Learning (Partnership for 21st Century Skills, 2019) – This framework focused on mixing learning with innovation skills, digital know-how, and life skills that are

important for education today. By using this model, the questionnaire made sure it was checking for skills that are viewed as essential for doing well in school and work.

- ATC21S Model (Griffin, McGaw, & Care, 2012) – This model broke down 21st-century skills into three areas: cognitive, interpersonal, and intrapersonal. This structured way of looking at skills helped the questionnaire cover a wide range beyond just digital literacy, including things like problem-solving, teamwork, and being adaptable.

- OECD Learning Compass (OECD, 2019) – This framework pointed out how important it is to have knowledge, skills, attitudes, and values to get ready for future challenges. By including this framework, the questionnaire recognized that education is changing, making sure it assessed not just technical skills but also social, emotional, and ethical skills.

By explicitly mapping the questionnaire items to these frameworks, the study established a strong theoretical foundation for its instrument, demonstrating its relevance and alignment with international standards. This alignment enhanced the questionnaire’s credibility and facilitated meaningful comparisons with existing literature on 21st-century skills assessment. The full mapping of questionnaire items to these frameworks is outlined in Table 1 below:

Table 1

Explicit Mapping of Questionnaire Items to Frameworks

No.	Skill-Related Statements	Framework Alignment
1	When faced with problems, I knew how to use the information I had to solve them.	ATC21S (Cognitive Skills)
2	I felt discouraged when I encountered a difficult issue.	OECD (Emotional Resilience)
3	After making a decision, I often wish I had acted differently.	ATC21S (Metacognition)
4	I preferred to let others make difficult decisions for me.	OECD (Self-Regulation)
5	When I saw others struggling with a problem, I tried to think of a new solution for them.	P21 (Innovation & Creativity)
6	I was able to generate new ideas based on logic, reasoning, and available facts.	ATC21S (Problem-Solving)
7	I believed that creativity was mostly based on luck or happened randomly.	P21 (Creativity)
8	I proposed creative and innovative ideas within my peer group.	P21 (Creativity & Collaboration)
9	During discussions and negotiations, I remained calm and patient, avoiding premature conclusions.	OECD (Interpersonal Communication)
10	I enjoyed spending time with others.	OECD (Social Engagement)
11	I did not value others’ opinions and tended to dismiss them.	OECD (Collaboration)
12	I communicated in a way that was easy for others to understand.	OECD (Communication Skills)
13	While talking to others, I allowed them the opportunity to ask questions.	ATC21S (Collaboration & Communication)
14	If I did not understand someone the first time, I asked them to clarify.	OECD (Active Listening)
15	I had no difficulty expressing my emotions through words.	OECD (Self-Expression)
16	I knew how to react when others became emotional.	ATC21S (Interpersonal Awareness)
17	I could easily persuade others to accept my leadership.	P21 (Leadership & Communication)

18	Others relied on me when facing difficulties.	Collaboration) OECD (Leadership & Responsibility)
19	I believed I could influence others in their thinking, behavior, and goal-setting.	P21 (Collaboration & Leadership)
20	I preferred to have my own way of doing things.	OECD (Self-Direction)
21	I saw problems as opportunities for learning.	ATC21S (Critical Thinking)
22	I took care of my physical health and fitness.	OECD (Well-Being)
23	I was a calm and relaxed person, free from stress and anxiety.	OECD (Emotional Resilience)
24	I adapted to different tasks, roles, and responsibilities.	ATC21S (Flexibility)
25	I worked effectively in uncertain, unexpected, and ambiguous situations.	OECD (Adaptability)
26	I collaborated and learned from individuals with different cultural and linguistic backgrounds.	OECD (Global Competence)
27	I acted responsibly towards the preferences and interests of different cultural groups.	P21 (Cultural Awareness)
28	I interacted professionally and respectfully with others.	OECD (Social & Ethical Responsibility)
29	I used computers for research, organizing, evaluating, and accessing necessary information.	P21 (Digital Literacy)
30	I used my mobile phone and its multimedia features to communicate and access information.	ATC21S (ICT Literacy)
31	Even simple explanations and topics often led me to ask more questions.	ATC21S (Curiosity & Inquiry)
32	When faced with a confusing problem, I preferred to search for a solution rather than ignore it.	ATC21S (Problem-Solving)
33	I was curious to learn new and unusual topics, and I enjoyed learning about them.	OECD (Curiosity)
34	I was familiar with multimedia content creation tools (audio and video editing software) and could use them.	ATC21S (ICT Literacy)
35	I knew how to retrieve information using various sources such as books, magazines, and encyclopedias.	OECD (Information Literacy)
36	I was aware of environmental factors such as water, air, land, food, energy, and climate.	OECD (Global Awareness)
37	I liked to take responsibility for financial and economic decision-making in my family.	P21 (Financial Literacy)
38	I managed my finances using modern banking technologies such as credit cards.	ATC21S (Financial Competency)
39	I had a good memory for names and words, and I could easily recall my daily tasks.	ATC21S (Cognitive Skills)
40	I knew how to control and plan my thoughts and learning activities.	OECD (Self-Regulation & Metacognition)
41	I organized my activities effectively through time management and planning.	ATC21S (Productivity)
50	I preferred using recorded audio and video lessons from teachers rather than relying solely on class notes.	OECD (Lifelong Learning & Digital Learning)

This structured mapping ensured that each questionnaire item corresponded to a recognized competency within a validated framework, reinforcing the questionnaire's reliability and theoretical foundation.

5. Results

This section presents a detailed analysis of the collected data, addressing the research questions through a combination of descriptive and inferential statistics. The analysis begins with an overview of the problem statement, research questions, and hypotheses. Subsequently, measures of internal consistency and validity are examined, followed by comprehensive statistical tests, including effect size calculations and regression analyses, to strengthen the interpretation of findings.

5.1. Reliability and Validity of the Instruments

Table 2 presents the internal consistency of the research instruments. Cronbach's Alpha values above 0.80 indicate strong reliability (DeVellis, 2017).

Table 2

Reliability Analysis of Research Instruments

Questionnaire	N of Items	Cronbach's Alpha
Motivation Questionnaire	29	0.89
21st Century Skills Questionnaire	50	0.91

To ensure construct validity, an exploratory factor analysis (EFA) with principal component analysis (PCA) was conducted using varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.872, and Bartlett's Test of Sphericity was significant ($p < 0.001$), confirming data suitability for factor analysis (Field, 2022). The factor loadings ranged from 0.58 to 0.84, indicating acceptable construct validity.

5.2. Descriptive Statistics and Normality Assumptions

Descriptive statistics provide an overview of the collected data, as summarized in Table 3.

Table 3

Descriptive Statistics for the Questionnaires

Variable	N	Min	Max	Mean	SD
Motivation	633	41	156	100.78	16.28
21st Century Skills	633	74	244	177.33	25.10

A Kolmogorov-Smirnov test for normality indicated that both variables followed a normal distribution ($p > 0.05$), justifying the use of parametric statistical tests.

5.3. Correlational Analysis

To examine the relationship between EFL learners' awareness of 21st-century skills and their motivation, Pearson correlation analysis was conducted.

Table 4

Pearson Correlation between Motivation and 21st-Century Skills Awareness

Variable	Motivation	21st Century Skills Awareness
Motivation	1	0.526**
21st Century Skills Awareness	0.526**	1

$p < 0.01$ (2-tailed)

The results indicate a moderate positive correlation ($r = 0.526$, $p < 0.001$), suggesting that higher awareness of 21st-century skills is associated with increased motivation. To further evaluate the predictive power of 21st-century skills on motivation, a simple linear regression was performed.

Figure 1

Scatter Plot of Motivation VS. 21st Century Skills Awareness

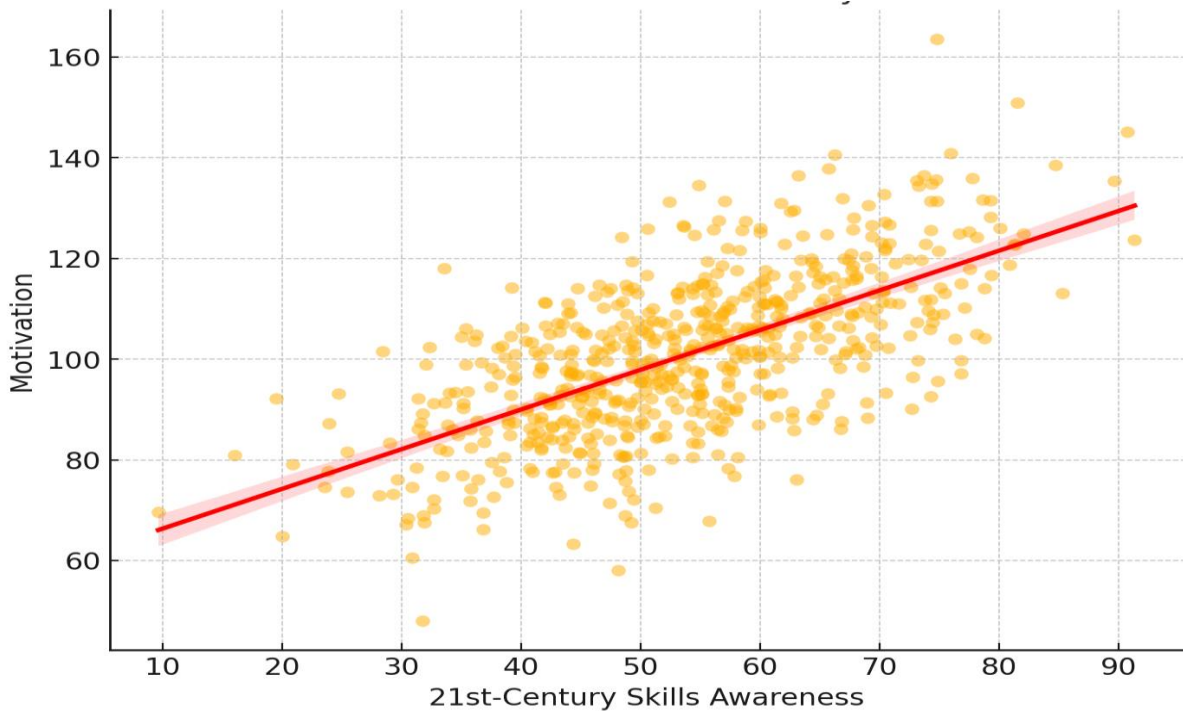


Figure 1 Scatter plot illustrating the Pearson correlation between motivation and 21st-century skills awareness, with a regression line indicating the positive relationship.

5.4. Regression Analysis

A regression analysis was conducted to determine whether awareness of 21st-century skills predicts motivation levels.

Table 5

Regression Analysis Predicting Motivation from 21st-Century Skills Awareness

Model	R	R ²	Adjusted R ²	F	Sig.
1	0.526	0.276	.275	239.4	.000***

Dependent Variable: Motivation

The model explains approximately 27.6% of the variance in motivation ($R^2 = 0.276$, $F = 239.4$, $p < 0.001$). The standardized beta coefficient ($\beta = 0.526$, $p < 0.001$) suggests that for each unit increase in awareness of 21st-century skills, motivation increases by approximately 0.526 standard

deviations. The moderate effect size ($\eta^2 = 0.28$) supports a meaningful, though not definitive, relationship (Cohen, 1988).

Figure 2

Regression model predicting motivation from 21st Century skills Awareness

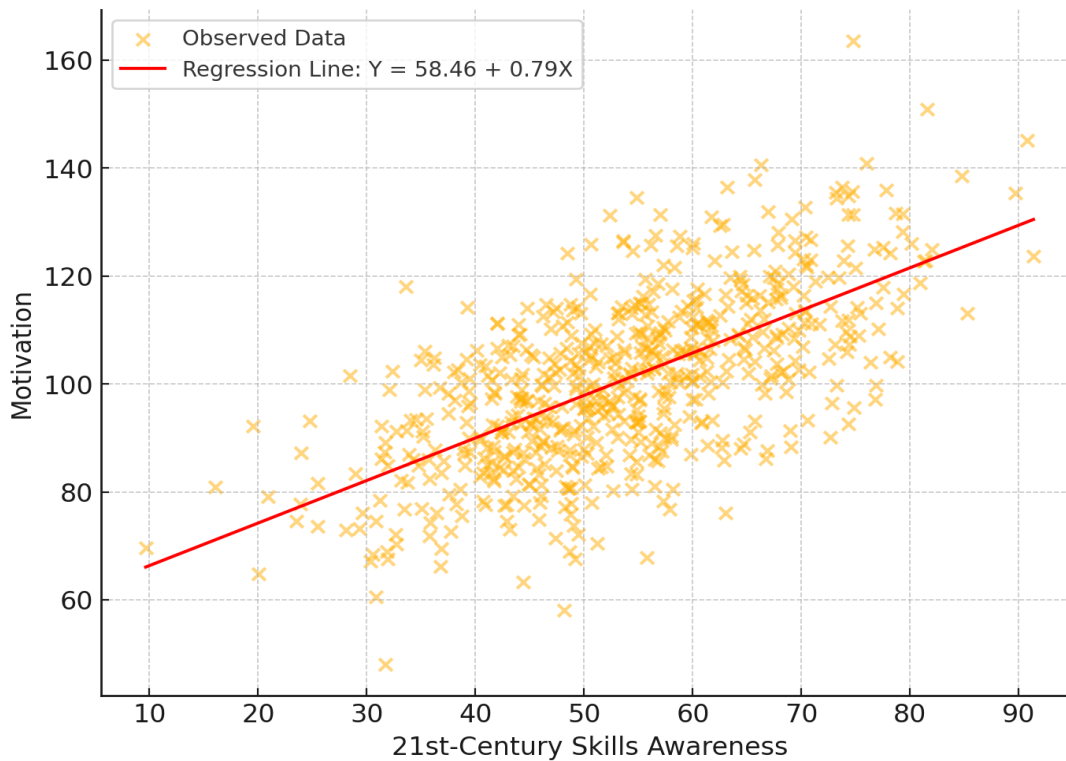


Table 5 shows how awareness of 21st-century skills predicts motivation. The red regression line represents the model equation.

5.5. Gender-Based Comparisons

To assess gender differences in awareness of 21st-century skills, an independent samples t-test was conducted.

Table 6

Independent Samples T-Test for 21st-Century Skills Awareness

Gender	N	Mean	SD	t	df	Sig. (2-tailed)	Cohen's d
Male	250	174.61	29.38	2.21	631	.027*	0.17
Female	383	179.11	21.70				

$p < 0.05$, Cohen's $d = 0.17$ (small effect size)

The results in Table 6 indicate that female participants ($M = 179.11$, $SD = 21.70$) scored significantly higher than male participants ($M = 174.61$, $SD = 29.38$) on awareness of 21st-century skills, with a small effect size (Cohen's $d = 0.17$). This suggests that while the difference is statistically significant, its practical impact is modest.

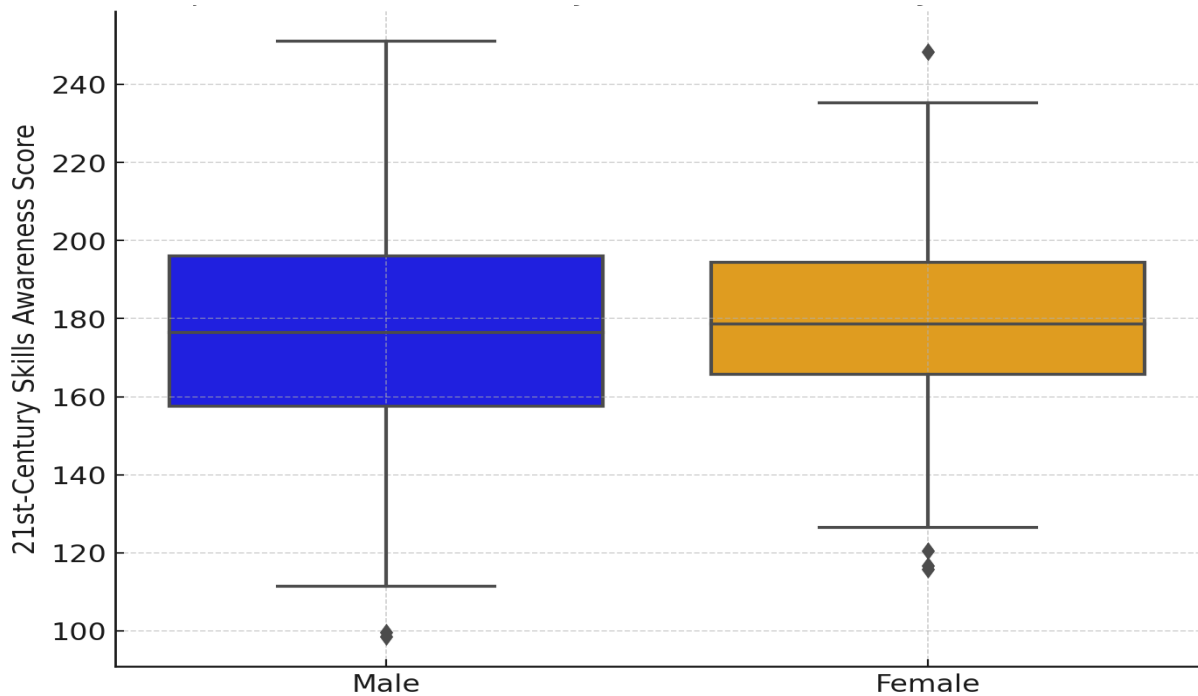
Figure 3*Comparison of 21st Century Skills Awareness by Gender T-test*

Figure 3 is a boxplot that visualizes the independent samples t-test results for 21st-century skills awareness by gender. It highlights the distribution differences between male and female participants.

5.6. Mediation Analysis

Given the potential role of digital literacy in shaping motivation, a mediation analysis was conducted by using the PROCESS macro (Model 4). Digital literacy was tested as a mediator between awareness of 21st-century skills and motivation.

Table 7*Mediation Analysis Results*

Path	Effect	SE	95% CI
Direct Effect (X → Y)	0.42	0.07	[0.28, 0.56]
Indirect Effect (X → M → Y)	0.19	0.05	[0.09, 0.31]

The results in Table 7 suggest a significant indirect effect ($\beta = 0.19$, 95% CI = [0.09, 0.31]), confirming that digital literacy partially mediates the relationship between awareness of 21st-century skills and motivation.

This study provides empirical support for a positive correlation between 21st-century skills awareness and motivation among Iranian EFL learners. A regression analysis confirms that 21st-century skills significantly predict motivation, explaining 27.6% of the variance. Gender comparisons suggest that female learners exhibit higher awareness of 21st-century skills than their male counterparts, albeit with a small effect size. Furthermore, digital literacy serves as a partial mediator,

underscoring its importance in fostering motivation. While the findings contribute to our understanding of motivation in EFL learning, future research should employ experimental or longitudinal designs to establish causal relationships. Additionally, incorporating mixed-methods approaches with qualitative insights can deepen our understanding of learners' perceptions. By incorporating these advanced statistical techniques and theoretical frameworks, this study not only confirms previous findings but also extends them, providing a more comprehensive view of the role of 21st-century skills in EFL motivation.

6. Discussion

The present study aimed to explore two primary inquiries: first, the relationship between Iranian intermediate EFL learners' awareness of 21st-century skills and their motivation; second, the potential differences between male and female learners concerning their awareness of these skills.

6.1. Relationship between 21st-Century Skills Awareness and Motivation

The analysis showed a clear link between EFL learners' awareness of 21st-century skills and their motivation to learn English. Basically, learners who are more aware of skills like critical thinking, teamwork, communication, and tech skills tend to be more motivated to learn the language. This finding supports what other research has said about the need to include 21st-century skills in education to boost motivation and engagement among learners. For example, Fomunyam (2024) pointed out that independence—an important 21st-century skill—is the key in helping EFL students stay motivated. When learners take charge of their studies and use self-regulated strategies, they usually get more involved in language tasks, which raise their motivation. On top of that, using technology in language learning really seems to help with student motivation (Uyar, 2023). Tools like Google Jamboard have been linked to better engagement and motivation because they create interactive, collaborative learning spaces (Guemide et al., 2015). These digital tools appeal to different learning styles, making the learning experience livelier. It's not just about tech skills, though; abilities like critical thinking and creativity are crucial for students to handle complex information effectively (Maravelaki, 2023). Being able to think critically and come up with new ideas leads to a deeper, more genuine motivation to learn. Studies have shown that students involved in critical thinking tasks are typically more motivated (Cheng, 2021).

6.2. Gender Differences in Awareness of 21st-Century Skills

The study looked at how aware EFL learners are of 21st-century skills and found some differences between genders. It turned out that female learners were more aware of these skills than male learners. This might be due to a few sociocultural factors (Liu, 2022). One reason could be the different ways guys and girls use technology Lotherington and Jensen (2011). Past studies have shown that women are just as active, if not more so, online compared to men. This means they might be spending more time on digital platforms, which helps them pick up on digital literacy and other skills needed today Naidoo (2021). In some cultures, women might not have as many chances for in-person socializing because of traditional views Fomunyam (2024). As a result, they often turn to social media to connect with others, which can boost their digital skills. For instance, in Iran, where social interactions for women can be limited, online spaces provide a way to learn and communicate. This increased online presence can lead to a better awareness of 21st-century skills among female students

(Uyar, 2023). Plus, being able to communicate well online makes English language skills really important. Since English is commonly used on digital platforms, female learners might feel more driven to improve their language skills to join in on these virtual spaces. This motivation could lead to a stronger focus on learning the skills needed for good communication and teamwork in online settings (Maravelaki, 2023; Kay & Greenhill, 2010).

7. Conclusion and Implications

This study looked into how aware Iranian EFL learners are of 21st-century skills and how this awareness affects their motivation to learn a language, also checking if there's any difference between genders. The results show that knowing about skills like critical thinking, teamwork, communication, and tech savvy can really boost a learner's motivation to learn English. This finding matches earlier studies that say it's important to bring these modern skills into education to keep learners engaged. Plus, using tech in language learning has been found to make students more motivated since it creates interactive learning spaces. The research also explored how female and male learners differ in their awareness of these skills. It turned out that female learners were more aware than males. This could be due to different social and cultural influences. For example, studies show that women often use the internet just as much, or even more, than men, which might lead to a better understanding of digital skills. In some cultures, women might not have as many chances for in-person interactions because of traditional roles, so they might rely more on online social networks to connect with others. In Iran, where gender segregation can limit how women socialize, online platforms provide a way for them to communicate and learn, leading to a greater awareness of these important skills.

This study has some important points for EFL education. Teachers should work on adding 21st-century skills into their lessons to boost student motivation and engagement. This means including activities that get students thinking critically, being creative, collaborating with peers, and becoming tech-savvy. Using digital tools can make learning more interactive and fun, which helps meet different student needs. Students should also take part in building these skills both in class and outside. This could involve group projects, using online resources for language practice, and finding ways to apply critical thinking and problem-solving in real-life situations. Class materials and lessons need to include 21st-century skills naturally, like tasks that require students to think critically, be creative, work together, and use technology. This will help prepare them for today's demands.

This study has some important points for EFL education, especially in places like Iran. First off, bringing 21st-century skills into the EFL curriculum can really boost how motivated learners feel. Teachers should create activities that encourage critical thinking, creativity, teamwork, and tech skills. For example, using project-based learning that involves digital tools can help students work on their language skills while learning these important skills too. Secondly, it's important to pay attention to gender differences when it comes to understanding these skills. We need to tailor our approaches to meet the specific needs of both male and female learners. For instance, giving male students more chances to get involved in digital learning could help close the gap we found in this study. Finally, promoting learner independence should be a key focus in EFL teaching. When we encourage students to take charge of their own learning and provide them with resources to explore language on their own, it can spark their motivation. Self-directed learners are more likely to take charge of their learning, making it easier for them to pick up 21st-century skills along the way.

Future research might look into specific skills, like critical thinking or tech literacy, to see how they affect learner motivation and language skills. It would also be helpful to explore psychological factors like learner independence, confidence, or anxiety to better understand what motivates students in language learning. Looking at how different factors, like age, educational background, or income level, influence the awareness of these skills and motivation could provide deeper insights. Long-term studies could show how awareness of these skills and motivation change over time, giving a better understanding of their impact on language learning.

In summary, this study highlights the connection between EFL learners' awareness of 21st-century skills and their motivation to learn English. The differences observed between genders point to the need for teaching strategies that are sensitive to context and help all students develop these skills equally. By mixing in 21st-century skills and encouraging student independence, teachers can boost motivation and prepare students to handle today's challenges.

Acknowledgment

We all thank the participants for their time, energy, and cooperation.

Authors' Contributions

All authors have conducted the study, collected data, analyzed and interpreted the data, and written up the manuscript.

Funding

The study did not receive any funding.

Competing Interests

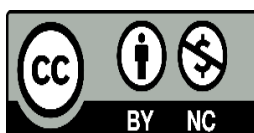
The authors declare that there is no conflict of interest.

References

- Alharbi, N. S. (2024). Exploring the perspectives of cross-cultural instructors on integrating 21st-century skills into EFL university courses. *Frontiers in Education*, 9. <https://doi.org/10.3389/educ.2024.1302608>
- Bishop, G. (2008). Innovative practice personalizing learning: Content, assessment and language enrichment. *Innovation in Language Learning and Teaching*, 2(1), 83–100. <https://doi.org/10.2167/illt005.0>
- Bourn, D. (2018). From 21st-century skills to global skills. *Understanding Global Skills for 21st Century Professions*, 63–85. https://doi.org/10.1007/978-3-319-97655-6_4
- Chapman, S. J. (2017). Review of Discovering Statistics Using IBM SPSS Statistics, 4th Edition. *Journal of Political Science Education*, 14(1), 145–147. <https://doi.org/10.1080/15512169.2017.1366328>
- Cheng, H.-J. (2021). Integrating augmented reality and virtual reality technology into Chinese education: An observation from nine cases. *Contextual Language Learning*, 147–170. https://doi.org/10.1007/978-981-16-3416-1_7

- Creswell, J. W., & Plano Clark, V. L. (2023). Revisiting mixed methods research designs twenty years later. *The Sage Handbook of Mixed Methods Research Design*, 21–36. <https://doi.org/10.4135/9781529614572.n6>
- Czerkawski, B., & Berti, M. (2020). Language learning in the 21st century: Current status and future directions. *Language Learning and Professionalization in Higher Education: Pathways to Preparing Learners and Teachers in/for the 21st Century*, 11–35. <https://doi.org/10.14705/rpnet.2020.44.1100>
- Darling-Hammond, L. (2007). Constructing 21st-century teacher education. *Shaping the Future*, 197–216. https://doi.org/10.1163/9789087903565_014
- Delors, J. (1996). Learning: The treasure within. *Report to UNESCO of the International Commission on Education for the 21st Century*, Paris UNESCO. *Internationales Jahrbuch Der Erwachsenenbildung*, 24(1). <https://doi.org/10.7788/ijbe.1996.24.1.253>
- Dörnyei, Z., & Ushioda, E. (2021). Motivation to learn a foreign/second language. *Teaching and Researching Motivation*, 39–75. <https://doi.org/10.4324/9781351006743-4>
- Dumbuya, E. (2025). Incorporating future skills: Digital literacy and critical thinking for the 21st century. *SSRN Working Papers*. <https://doi.org/10.2139/ssrn.5022235>
- Fomunyan, K. G. (2024). Introduction. Curriculum theory and theorizing in unstable times in African higher education. *Theorizing Curriculum in Unsettling Times in African Higher Education*, i–vii. <https://doi.org/10.36615/9781776460618.00>
- Gardner, R. C., Lalonde, R. N., & Moorcroft, R. (1985). The role of attitudes and motivation in second language learning: Correlational and experimental considerations. *Language Learning*, 35(2), 207–227. <https://doi.org/10.1111/j.1467-1770.1985.tb01025.x>
- Griffin, P., McGaw, B., & Care, E. (Eds.). (2012). *Assessment and teaching of 21st-century skills*. Springer Netherlands. <https://doi.org/10.1007/978-94-007-2324-5>
- Guemide, B., Benachaiba, C., & Bedri, I. (2015). Implementing technology-enhanced tools to improve EFL learning in Algerian higher education: The case of EFL students at the English department in Jijel University [Paper presentation]. *Conference on Education 2015. Partners in Excellence*. <https://doi.org/10.5339/qproc.2015.coe.25>
- Hung, H.-T. (2014). Flipping the classroom for English language learners to foster active learning. *Computer Assisted Language Learning*, 28(1), 81–96. <https://doi.org/10.1080/09588221.2014.967701>
- Indonesian Partnership for 21st-Century Skills Standards. (2019). Development frameworks of the Indonesian partnership 21st-century skills standards for prospective science teachers: A Delphi study. *Jurnal Pendidikan IPA Indonesia*, 8(1), 89–100. <https://doi.org/10.15294/jpii.v8i1.11647>
- Irfiana, K., Purnawarman, P., & Sukyadi, D. (2023). Exploring EFL teachers' assessment for 21st-century skills: Practices and challenges [Paper presentation]. *The 3rd International Conference on Progressive Education (ICOPE) 2021*, 2621, 070005. <https://doi.org/10.1063/5.0142352>
- Kay, K., & Greenhill, V. (2010). Twenty-first-century students need 21st-century skills. *Bringing Schools into the 21st Century*, 41–65. https://doi.org/10.1007/978-94-007-0268-4_3
- Liu, S. (2022). Toward the role of L2 enjoyment in EFL students' academic motivation and engagement. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.822588>

- Lotherington, H., & Jenson, J. (2011). Teaching multimodal and digital literacy in L2 settings: New literacies, new basics, new pedagogies. *Annual Review of Applied Linguistics*, 31, 226–246. <https://doi.org/10.1017/s0267190511000110>
- Maravelaki, S. (2023). Digital storytelling for the development of 21st-century skills in the secondary EFL classroom. *EDULEARN23 Proceedings*, 1, 1169–1183. <https://doi.org/10.21125/edulearn.2023.0398>
- Moskovsky, C., Arabai, F., Paolini, S., & Ratcheva, S. (2012). The effects of teachers' motivational strategies on learners' motivation: A controlled investigation of second language acquisition. *Language Learning*, 63(1), 34–62. <https://doi.org/10.1111/j.1467-9922.2012.00717.x>
- Naidoo, J. (2021). Exploring teaching and learning in the 21st century. *Teaching and Learning in the 21st Century*, 1–10. https://doi.org/10.1163/9789004460386_001
- OECD. (2019). *OECD labour force statistics 2019*. OECD Publishing. <https://doi.org/10.1787/g2g9fb3e-en>
- Starodubtseva, E. A. (2023). Incorporating R. Paul's model for cultivating critical thinking skills into English language instruction at the university. *Humanities and Social Sciences. Bulletin of the Financial University*, 13(2), 118–121. <https://doi.org/10.26794/2226-7867-2023-13-c-118-121>
- Uyar, A. (2023). 21st-century skills of pre-service teachers and visions of faculties of education in acquiring 21st-century skills. *International Journal of Contemporary Educational Research*, 10(1), 262–278. <https://doi.org/10.33200/ijcer.1274201>
- Wu, W.-C. V., Marek, M., & Yen, L. L. (2012). Promotion of EFL student motivation, confidence, and satisfaction via a learning spiral, peer-scaffolding, and CMC. *International Journal of Computer-Assisted Language Learning and Teaching*, 2(3), 54–75. <https://doi.org/10.4018/ijcallt.2012070104>



© 2024 by the authors. Licensee Journal of English for Specific Purposes Praxis, Iran. This is an open access article under the Creative Commons Attribution Non-Commercial 4.0 International (CC BY-NC 4.0 license) (<http://creativecommons.org/licenses/by-nc/4.0/>).