TO EXAMINE THE TEACHING ENGLISH AS A SECOND LANGUAGE THROUGH VOLATILITY, UNCERTAINTY, COMPLEXITY, AND AMBIGUITY: TEACHERS' PERSPECTIVES FROM PAKISTAN

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Abstract

Rapid technological change and global educational demands require English as a Second Language instruction to address volatility, uncertainty, complexity, and ambiguity in classroom practices. In Pakistan, equipping learners with adaptive and critical language skills has become increasingly important. This study examined English as a Second Language teachers' perceptions of integrating volatility, uncertainty, complexity, and ambiguity into English language teaching at the secondary school level in Pakistan. A quantitative research design was employed using a survey questionnaire administered to thirty English as a Second Language teachers from public and private secondary schools in a selected district. The findings indicate that teachers generally hold positive perceptions toward incorporating these elements through problem-based, digital, collaborative, and cognitively challenging activities. However, some teachers reported limited conceptual understanding and instructional confidence regarding their application. Overall, the study highlights the pedagogical value of integrating volatility, uncertainty, complexity, and ambiguity in English as a Second Language instruction and emphasizes the need for professional development to support teachers in meeting evolving educational demands.

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1. Introduction

Globalization plays a dominant role in shifting English as a Second Language lessons from a traditional approach to a more modern setting (Husin et al., 2016; Srinivas, 2019; Shliakhovchuk, 2021). Orazbayeva (2016, p. 2659) defines globalization as "an objective process and a form of modern society's existence." The onset of globalization in the 21st century has brought significant modifications and changes in educational practices (Saquing, 2018; Zaman et al., 2025). Consequently, education systems worldwide, including in Pakistan, have taken initiatives to align teaching with global education standards.These changes influence teaching and learning processes in ways that benefit both teachers and learners (Allen and White, 2017). Teachers, as an essential component of education (Sert, 2015), play a vital role not only in instruction but also in facilitating and monitoring student learning (Wang and Du, 2016; Dobber et al., 2017; Rowan et al., 2019). In Pakistan, teachers contribute significantly to global education by shifting from teacher-centered to learner-centered approaches, which strengthen students' autonomy (Singh and Yunus, 2021). Canzittu (2022) similarly notes that teachers prepare learners for real-world challenges by adapting lessons to authentic contexts.

In today's globalized era, English serves as a medium of interconnectivity, and proficiency in the language profoundly influences individuals and communities worldwide (Wong and Yunus, 2021; Lin, 2020). English is widely used as an instructional and international medium of communication in countries where it is not the mother tongue (Sinagatullin, 2019). For Pakistani learners, mastering English enables effective communication with native speakers and international peers, enhancing academic, professional, and social opportunities (Yunus and Arshad, 2015; SiRicord and Shah, 2017; Seow et al., 2019). Consequently, English as a Second Language in Pakistan increasingly relies on meaningful instructional approaches, such as problem-based learning, project-based learning, and the integration of authentic contexts, to improve learners' language acquisition.

According to Watkins (2019), English lessons should employ meaningful learning strategies that foster social learning, equip learners to communicate and collaborate effectively, and encourage active participation in challenging environments. English instruction must align with global education goals to develop holistic and future-ready learners. In Pakistan, this objective is reflected in national curriculum initiatives that aim to produce well-rounded individuals capable of critical thinking, communication, and teamwork (Muhamad and Seng, 2019). Achieving these goals requires practical and meaningful learning experiences that equip students for real-life challenges (OECD, 2016; Mansilla and Wilson, 2020).

This study focuses on teaching and learning English as a Second Language in Pakistan, with particular emphasis on the integration of volatility, uncertainty, complexity,

and ambiguity in ESL lessons. Volatility refers to changeability and unpredictability in the learning environment (Bennett and Lemoine, 2014; Maier et al., 2016). Uncertainty involves the absence of definite solutions or predictable outcomes (Bennett and Lemoine, 2014; Maier et al., 2016). Complexity arises when educational or real-world problems are difficult to define or quantify (Bennett and Lemoine, 2014; Maier et al., 2016; Stover and Seemiller, 2017). Ambiguity challenges learners' ability to interpret unclear or multi-meaning situations (Reeves and Reeves, 2015; Asmolov, 2018). Preparing Pakistani ESL learners to face these elements enhances critical thinking, problem-solving, and language application skills (SiRicord and Shah, 2017; Baimanova et al., 2020).

Developing English proficiency is crucial for Pakistani students to access global knowledge and opportunities (Lin, 2020). The integration of the fourth industrial revolution principles and volatility, uncertainty, complexity, and ambiguity in education provides a framework for meaningful ESL instruction (Reeves and Reeves, 2015; Seow et al., 2019). Incorporating these elements allows teachers to create engaging, problem-based, collaborative, and digitally enriched learning experiences (Stover and Seemiller, 2017; LeBlanc, 2018; Wang, 2019). Learners thus develop skills to navigate complex real-life challenges in education and future workplaces (Bennett and Lemoine, 2014; Maier et al., 2016; Rowan et al., 2019; Seow et al., 2019; Du and Chen, 2018).

For successful implementation, Pakistani ESL teachers must proactively design lessons that foster students' competencies in coping with real-life problems (Kilic, 2015; Wang and Du, 2016; Clary, 2015). Effective ESL instruction should combine linguistic skills with relevant content that reflects global and local contexts, enabling meaningful learning experiences (Zulkefly and Razali, 2019). As volatility, uncertainty, complexity, and ambiguity are emerging concepts in Pakistani ESL education, research on their integration is limited (Canzittu, 2020; Stein, 2021; Seow et al., 2019). Therefore, this study examines Pakistani ESL teachers' perceptions of their teaching practices and the incorporation of volatility, uncertainty, complexity, and ambiguity in English lessons.

1.1. Research Objectives
The study aims to:
- Examine the current teaching practices of English as a Second Language teachers in Pakistan in relation to volatility, uncertainty, complexity, and ambiguity.
- Explore English as a Second Language teachers' perceptions of integrating volatility, uncertainty, complexity, and ambiguity into classroom instruction.

1.2. Research Questions
1. What are the current teaching practices of English as a Second Language teachers in Pakistan in association with volatility, uncertainty, complexity, and ambiguity?
2. What are the teachers' perceptions of integrating volatility, uncertainty, complexity, and ambiguity into English as a Second Language lessons?

1.3. Significance of the Study

This study is significant for several reasons:

It provides insights into how English as a Second Language teachers in Pakistan implement teaching strategies that address volatility, uncertainty, complexity, and ambiguity, helping improve instructional practices.

The findings can inform training programs and workshops, enhancing teachers' knowledge, understanding, and confidence in applying these elements in lessons.

By examining teaching practices and perceptions, the study contributes to preparing students for real-world challenges, promoting critical thinking, adaptability, and autonomous learning in line with global education standards.

The results may guide curriculum designers and policymakers in integrating globally relevant teaching approaches in Pakistan's ESL programs.

This study fills a gap in Pakistani ESL research by investigating the incorporation of volatility, uncertainty, complexity, and ambiguity in secondary school classrooms, which has received limited attention.

1.4. Literature Review

In 21st-century education, elements of volatility, uncertainty, complexity, and ambiguity are increasingly integrated into English as a Second Language lessons to encourage collaborative work, technological engagement, and the development of higher-order thinking skills (Chai and Kong, 2017; Gunawardena et al., 2017; SiRicord and Shah, 2017; Kusumastuti et al., 2019). According to Wright and Zhu (2018), navigating a complex and globalized world requires learners to develop sophisticated cognitive skills. Issues related to globalization and global education necessitate that learners prepare themselves to meet the demands of the modern workplace, cope with competition, and adapt to volatile environments (Canzittu, 2022). Globalization has become a major force driving democratic reforms across nations, with English established as a key medium of communication in global education (Sinagatullin, 2019). As such, education in the 21st century must equip learners to thrive in uncertain and challenging real-life contexts (Husin et al., 2016; Beno and Funke, 2017; Asmolov, 2018; Rafiq et al., 2019). This requires students to develop knowledge, competencies, and skills that go beyond academic performance (Watkins, 2019; Ansarian and Mohammadi, 2018). One effective approach is the integration of volatility, uncertainty, complexity, and ambiguity through technology-based tasks, authentic problem-solving, and project-based activities, which stimulate learners to engage meaningfully with the target language (Reeves and Reeves, 2015; Beno and Funke, 2017; Chai and Kong, 2017; Clary, 2015).

The primary goal of second language teaching is to develop essential competencies that allow learners to communicate effectively in another language (Gunawardena et al., 2017). In Pakistan, English is taught as a second language in schools and higher education

institutions. Studies have highlighted challenges such as limited English proficiency among graduates, which affects employability and cross-cultural communication despite strong academic performance (Sukri et al., 2017). Integrating volatility, uncertainty, complexity, and ambiguity into English lessons provides students with authentic, real-life contexts to practice the language (Bennett and Lemoine, 2014; Seow et al., 2019). Effective integration of these elements supports learners in communicating ideas accurately, avoiding misunderstandings, and developing skills required for diverse workplaces (Watkins, 2019; Clary, 2015). Cross-cultural interaction requires learners to be aware and adaptable, making meaningful, skill-based learning central to high-quality English language instruction (Shliakhovchuk, 2021; Chai and Kong, 2017). When ESL learners are actively engaged, they can use the language purposefully while enhancing critical thinking, which are key competencies in volatile and complex learning environments.

Teachers play a pivotal role in embedding volatility, uncertainty, complexity, and ambiguity into lessons. The integration of these elements should begin at the school level to prepare students for collaboration and interaction within diverse communities (Sinagatullin, 2019). Universities and schools must produce learners capable of adapting to changing environments, requiring teachers to employ strategies that promote autonomous learning and engagement (Clary, 2015; Kilic, 2015; Akbari, 2015; Srinivas, 2019; Watkins, 2019). Understanding how volatility, uncertainty, complexity, and ambiguity are incorporated in ESL lessons enables curriculum developers and education authorities to design effective programs that enhance teacher skills and student outcomes. One critical aspect of teaching is creating supportive environments that balance guidance with autonomy, allowing learners to develop critical thinking skills while navigating uncertain situations (LeBlanc, 2018; Yunus and Arshad, 2015; Clary, 2015; Maier et al., 2016; Dobber et al., 2017; Seow et al., 2019). Alongside language competencies, social-emotional skills such as self-awareness, empathy, responsible decision-making, and social interaction are also vital for learners' holistic development, reinforcing the importance of integrating volatility, uncertainty, complexity, and ambiguity into ESL teaching (Hadar et al., 2020).

The Organisation for Economic Co-operation and Development (OECD) emphasizes that future generations must acquire skills to succeed in complex and unpredictable environments, and teachers must possess similar competencies to navigate the evolving educational landscape (Hadar et al., 2020). Educators' preparedness reflects their ability to plan and implement lessons that incorporate these elements, although it remains challenging (Frank et al., 2014; Clary, 2015; Maier et al., 2016; Asmolov, 2018). Changes in education, economy, politics, and business highlight the need for learners and teachers alike to be ready for uncertainty. In Pakistan, aligning ESL curricula with

international frameworks, such as CEFR-based curricula, exposes students to global topics and authentic contexts, enhancing language acquisition (Chong and Yamat, 2021). Consequently, ESL teachers must possess strong subject knowledge, pedagogical understanding, and curriculum literacy while continuously engaging in professional development to meet 21st-century teaching demands (Chai and Kong, 2017; Du and Chen, 2018; Clary, 2015; Kilic, 2015; Allen and White, 2017; Lo, 2019). Teacher education programs may need revision to strengthen the knowledge, skills, and attitudes required to integrate volatility, uncertainty, complexity, and ambiguity in lessons, and for in-service teachers, structured professional development programs can enhance these competencies effectively (Rowan et al., 2019; Lo, 2019).

2. Research Methodology

The study employed a quantitative research approach using a survey questionnaire to collect data aligned with the study's objectives. A purposive sampling method was used to select participants who were practicing ESL teachers, ensuring that insights were obtained from individuals with relevant teaching experience. The study did not aim to generalize the findings to a larger population due to the small sample size (Creswell and Creswell, 2018). The participants consisted of 30 in-service secondary school ESL teachers (female = 26, male = 4) from a selected district in Pakistan. These teachers were drawn from three types of schools: Government Secondary Schools, Religious Government Secondary Schools, and Religious-Government Assisted Secondary Schools. Their ages ranged from 21 to 50 years, with a minimum of one year of ESL teaching experience, ensuring that respondents had sufficient practical exposure to address the survey items on teaching practices.

The questionnaire was specifically designed to investigate ESL teachers' perceptions of their current teaching practices in relation to the integration of volatility, uncertainty, complexity, and ambiguity (VUCA) and to assess their views on the importance of incorporating these elements into lessons. The instrument was developed using an online platform (Google Form), which allowed easy access for teachers. The questionnaire consisted of 36 items, with 30 items measured on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The items were categorized into three sections: demographic information, perceptions of current ESL teaching practices, and perceptions of the importance of integrating VUCA in ESL lessons.

Before distribution, the questionnaire underwent content and face validity checks by an expert in the field and the researcher's supervisor. It was then pilot-tested with four ESL teachers who were not included in the main study. The pilot test served to evaluate the internal consistency of the items, determine the time required to complete the questionnaire, and identify any potential issues (Creswell and Creswell, 2018). Following the pilot study, the instrument was revised and refined to ensure clarity and accuracy.

For data collection, participants were contacted through social networking platforms, including a district ESL teachers' group on Telegram. A detailed explanation of the study and its objectives was provided along with the Google Form link. Considering the teachers' professional workload, participants were given two weeks to complete the questionnaire. Participation was voluntary, ensuring that responses were provided by teachers genuinely interested in contributing to the research. The online survey method facilitated convenient access and completion by the respondents.

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS 22.0). Descriptive analysis, including mean scores and standard deviations, was employed to interpret teachers' perceptions. The overall mean scores were categorized into four levels of agreement: low, medium-low, medium-high, and high, following the classification by Alias (1997, in Raduan et al., 2016). This approach provided a clear understanding of the extent to which Pakistani ESL teachers integrate VUCA elements into their teaching practices and perceive their significance in lessons.

2.1. Findings section

The findings highlight ESL teachers' implementation of volatility, uncertainty, complexity, and ambiguity (VUCA) elements in their teaching practices and their perceptions regarding the integration of these elements into lessons. Based on the mean scores, teachers generally adopted VUCA strategies in classroom activities, emphasizing real-life contexts, problem-solving, collaborative work, and technology use. Table 1 provides the interpretation of the mean scores used in this study.

Table 1. Interpretation of Mean Scores

Level	Mean Score Range
Low	1.00 – 1.50
Medium Low	1.51 – 2.50
Medium High	2.51 – 3.50
High	3.51 – 5.00

Source: Alias, 1997 in Raduan et al., 2016

Teachers reported high integration of real-life situations (M = 4.40), authentic materials (M = 4.05), and project-based tasks (M = 4.00) in their English lessons. These activities exposed students to challenging real-life scenarios that required practical use of English and critical thinking. Teachers also incorporated meaningful learning approaches (M = 4.30), their own comfort in teaching (M = 4.10), students' comfort (M = 4.05), and enjoyable lessons (M = 4.00), suggesting that teachers actively varied instructional methods to develop students' adaptability to the VUCA environment.

Students were observed to benefit from problem-based learning, as evidenced by the inclusion of problems (M = 4.20), the process of problem-solving (M = 4.10), and

critical thinking activities (M = 4.05). Collaborative learning in lessons (M = 4.15) and projects (M = 4.05) was also emphasized. Technology played a significant role, with teachers (M = 3.75) and students (M = 4.00) frequently using technological tools in lessons, which enhanced students' understanding (M = 3.90). Table 2 summarizes teachers' reported use of VUCA elements in ESL lessons.

Table 2. Teachers' Use of VUCA Elements in ESL Lessons

Items	Mean (M)
Real-life situations	4.40
Authentic materials	4.05
Project-based tasks	4.00
Meaningful learning	4.30
Teacher's comfort in teaching style	4.10
Students' comfort in learning style	4.05
Enjoyable lessons	4.00
Problem inclusion	4.20
Problem-solving process	4.10
Critical thinking activities	4.05
Collaborative learning in lessons	4.15
Collaborative learning in projects	4.05
Technology use in lessons	3.75
Students' understanding via technology	3.90

Regarding teachers' perceptions of integrating VUCA elements, the data reflected generally positive knowledge, attitudes, and practices. Teachers agreed that guidance from the Ministry of Education is important for VUCA implementation (M = 4.30) and recognized that these elements assist students in navigating uncertain situations (M = 3.65) and are integral to 21st-century learning (M = 3.60). Teachers' familiarity with VUCA concepts was moderate (M = 3.35).

Teachers held positive attitudes toward VUCA integration to enhance problem-solving skills (M = 3.80), support practical learning in ESL lessons (M = 3.78), and prepare students for real-world challenges (M = 3.75). When presented with negative statements such as "VUCA elements do not suit my lessons," teachers responded moderately (M = 2.35), indicating careful adaptation of activities to students' needs. Overall, teachers acknowledged the importance of varying activities, posing problems, and integrating VUCA elements to develop students' higher-order thinking skills and readiness for complex environments.

2.2. Discussion and Conclusion

The overall findings reveal that most teachers actively incorporated VUCA elements in their ESL teaching practices and held positive perceptions regarding their integration into lessons. In terms of teaching practices, teachers employed a variety of strategies including authentic materials, problem-based and project-based tasks, higher-order thinking activities, and collaborative learning. Activities such as "real-life situations," "meaningful learning," "problems," and "collaborative learning" were frequently applied, suggesting that teachers aimed to provide authentic and relevant ESL experiences that bridge classroom learning with real-world applications. Yew and Goh (2016) emphasize that problem-based learning allows learners to engage actively with meaningful problems, fostering the application of acquired knowledge and skills to address real-world challenges. Similarly, Wright and Zhu (2018) note that such approaches cultivate students' critical thinking and problem-solving abilities, aligning with the demands of a volatile and complex environment.

Teachers also demonstrated awareness of the benefits of collaborative learning in ESL classrooms. Research by Husin et al. (2016), Evans-Whipp et al. (2017), and Kusumastuti et al. (2019) indicates that collaborative engagement enhances learners' critical thinking and language acquisition. Collaborative activities help students work effectively in diverse settings, a skill essential for navigating the VUCA environment (Gunawardena et al., 2017; Wong and Yunus, 2021). These findings suggest that teachers' practices are consistent with the principles of global education, which emphasize holistic, problem-solving, and integrative learning approaches (Sinagatullin, 2019).

Regarding teachers' perceptions of VUCA integration, results show positive responses across knowledge, attitudes, and practices. Teachers expressed the need for clear guidance from the Ministry of Education Malaysia to implement VUCA effectively, highlighting a gap in information and training (Canzittu, 2022). Despite this, teachers recognized the importance of integrating VUCA elements to prepare students for uncertain situations and globalized work environments. The findings also show that teachers from different school types—Government Secondary School, Religious Government Secondary School, and Religious-Government Assisted Secondary School—adapted their teaching practices to suit students' learning needs, reflecting flexibility in lesson planning.

Teachers' attitudes toward VUCA were similarly positive, particularly regarding its role in developing students' problem-solving and higher-order thinking skills (HOTS). The emphasis on HOTS in Malaysia, following the 2013 education policy, encourages proactive learning, exploratory problem-solving, and peer collaboration (Chua, 2015; Ministry of Education Malaysia, 2020; Wang and Du, 2016; Yew and Goh, 2016; van Leeuwen and Janssen, 2019). Teachers' implementation of VUCA strategies through varied activities and meaningful practices demonstrates a classroom environment that

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fosters flexibility, critical thinking, and resilience in students. Integrating VUCA helps students cope with uncertainty and ambiguity, essential competencies in the context of rapid technological and industrial changes associated with the Fourth and Fifth Industrial Revolutions (Choudhury, 2017; Paschek et al., 2019). Overall, Malaysian ESL teachers' VUCA practices align with the global education goal of developing holistic, responsible, and critically-thinking individuals prepared for future challenges.

This study concludes that teachers hold positive perceptions toward the integration of VUCA in ESL teaching and actively implement VUCA strategies in their classrooms. To enhance the effectiveness of VUCA integration, systematic guidelines from the Ministry of Education Malaysia are needed. The study contributes to the literature by providing insights into the practical application of VUCA in secondary school ESL contexts and offers a framework for policymakers, education officers, and stakeholders to support teachers in implementing VUCA-based instruction. However, the study is limited to a small district in Malacca, and the application of VUCA across other Malaysian schools remains unexplored, warranting further research.

References

Ahmadi, M. R. (2018). The use of technology in English language learning: A literature review. *International Journal of Research in English Education, 3*, 115–125.

Akbari, Z. (2015). Current challenges in teaching/learning English for EFL learners: The case of junior high school and high school. *Procedia - Social and Behavioral Sciences, 199*, 394–401. https://doi.org/10.1016/j.sbspro.2015.07.524

Allen, J., & White, S. (2017). *Learning to teach in a new era*. Cambridge University Press.

Ansarian, L., & Mohammadi, F. S. (2018). Problem-based learning in action: Review of empirical studies. *Pertanika Journal of Social Sciences & Humanities, 26*, 13–23.

Asmolov, A. G. (2018). Race for the future: "… now here comes what's next". *Russian Education & Society, 60*, 381–391. https://doi.org/10.1080/10609393.2018.1495017

Baimanova, U., Akhmedov, B., Niyazov, A., Kiyassova, K., & Kazakov, A. (2020). Training future English teachers for the formation of critical thinking in students. *Asian ESP Journal, 16*, 116–130.

Bennett, N., & Lemoine, G. J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons, 57*, 311–317. https://doi.org/10.1016/j.bushor.2014.01.001

Beno, C., & Funke, J. (2017). *The nature of problem-solving: Using research to inspire 21st century learning*. OECD Publishing.

Canzittu, D. (2020). A framework to think of school and career guidance in a VUCA world. *British Journal of Guidance & Counselling, 50*, 248–259. https://doi.org/10.1080/03069885.2020.1825619

Canzittu, D. (2022). A framework to think of school and career guidance in a VUCA world. *British Journal of Guidance & Counselling, 50*, 248–259. https://doi.org/10.1080/03069885.2020.1825619

Chai, C. S., & Kong, S. (2017). Professional learning for 21st century education. *Journal of Computers in Education, 4*, 1–4. https://doi.org/10.1007/s40692-016-0069-y

Chong, G., & Yamat, H. (2021). Teachers' implementation of CEFR-aligned curriculum: A preliminary study. *Journal of English Language Teaching and Applied Linguistics, 3*, 5–9. https://doi.org/10.32996/jeltal.2021.3.3.2

Choudhury, S. (2017). The role of the ESL teacher in a VUCA world. *ELT Journal, 71*, ccw065–ccw235. https://doi.org/10.1093/elt/ccw065

Chua, B. S. (2015). The policy and practice of higher-order thinking in Malaysian schools. *International Journal of Educational Management, 29*, 319–335. https://doi.org/10.1108/IJEM-09-2013-0103

Clary, D. (2015). Partnerships in professional learning: Engaging with secondary teachers to support literacy in a global world. *Journal of the International Society for Teacher Education, 19*, 29–40.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed method approaches* (5th ed.). Sage Publications.

Dobber, M., Zwart, R., Tanis, M., & van Oers, B. (2017). Literature review: The role of the teacher in inquiry-based education. *Educational Research Review, 22*, 194–214. https://doi.org/10.1016/j.edurev.2017.09.002

Du, J., & Chen, Z. (2018). Applying organisational ambidexterity in strategic management under a 'VUCA' environment: Evidence from high tech companies in China. *International Journal of Innovation Studies, 2*, 42–52. https://doi.org/10.1016/j.ijis.2018.03.003

Evans-Whipp, T., Mundy, L., Canterford, L., & Patton, G. (2017). *Student wellbeing, engagement and learning across the middle years*. Australian Government Department of Education and Training.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2016). *How to design and evaluate research in education* (9th ed.). McGraw-Hill Education.

Frank, A. I., Mironowicz, I., Lourenco, J., Franchini, T., Ache, P., Finka, M., et al. (2014). Educating planners in Europe: A review of 21st century study programmes. *Progress in Planning, 91*, 30–94. https://doi.org/10.1016/j.progress.2013.05.001

Gunawardena, M., Sooriyampola, M., & Walisundara, N. (2017). Scaffolding thinking in ESL lessons: Negotiating challenges. *Thinking Skills and Creativity, 24*, 279–285. https://doi.org/10.1016/j.tsc.2017.04.004

Hadar, L. L., Ergas, O., Alpert, B., & Ariav, T. (2020). Rethinking teacher education in a VUCA world: Student teachers' social-emotional competencies during the Covid-

19 crisis. *European Journal of Teacher Education, 43*, 573–586. https://doi.org/10.1080/02619768.2020.1807513

Hanak-Hammerl, M., & Newby, D. (2003). *Second language acquisition: The interface between theory and practice*. University of Graz.

Husin, W. N. F. W., Arsad, N. M., Othman, O., Halim, L., Rasul, M. S., Osman, K., et al. (2016). Fostering students' 21st century skills through project oriented based learning (POPBL) in integrated STEM education program. *Asia-Pacific Forum on Science Learning & Teaching, 17*, 1–18.

Zaman, M., Jawad, M., & Buriro, G. S. (2025). Understanding ESL lecturers' beliefs and teaching methodologies in the context of Communicative Language Teaching (CLT) in Karachi. ACADEMIA International Journal for Social Sciences, 4(1), 447. https://doi.org/10.63056/ACAD.004.01.0057