

Understanding Teacher Challenges in Online ESL/EFL Instruction: A TPACK-Based Analysis

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Abstract—The importance of technological, pedagogical, and content knowledge (TPACK) in online English as a Second Language (ESL) and English as a Foreign Language (EFL) teaching has been widely confirmed in the literature. The current study aimed to examine the relevance of TPACK in addressing some obstacles within the context of online English teaching. Those challenges concern teachers' inner savvy - stress, pedagogical management and control, and the relationship and communication between teachers and students. The study inspected how different groups of teachers based on age, overall teaching experience, online teaching experience, and preparatory training for online instruction, meet the intrinsic challenges. The data was collected from 395 English teachers working in the United Arab Emirates. The findings confirmed that TPACK can only be observed as a whole for enhancing online teaching. According to the results, senior teachers faced more impediments, as did those with low online teaching experience and those without preparatory training. The challenges generated stress, anxiety, issues with pedagogical delivery and control, and ineffective communication and interaction between teachers and students. Moreover, professional development programs which build teachers' TPACK are potent in lowering those barriers, while a lack of knowledge and practice of online instruction corresponds with lower TPACK.

Index Terms—TPACK, ESL, EFL, online teaching, intrinsic barriers

I. INTRODUCTION

The abrupt shift to virtual teaching during the COVID-19 pandemic spotlighted a known problem: how can educators integrate subject content, pedagogy, and technology, as captured by the TPACK framework (Ait Ali et al., 2023), when faced with practical and psychological obstacles? Although modern students are digital natives, learning through screens and apps, many teachers still struggle to respond to contemporary demands in practice. Reports from pre-pandemic times indicate that teachers in the United Arab Emirates (UAE) relied on self-learning (Almekhlafi & Almeqdadi, 2010), while the national policy later directed the UAE to become a global digital education hub (Ait Ali et al., 2023), albeit in higher education.

Due to limited post-pandemic research in online education in the UAE (Qiqieh & Dukmak, 2024), the avoidance of research on K-12 level education and the contrast between high-level expectations and reality, the current study examines how, in fact, teachers' knowledge contributes to overcoming the intrinsic impediments encountered in online English teaching in the context of school-level education. To address this challenge, we applied the TPACK framework as a reliable and widely accepted framework. TPACK posits that effective integration of technology in teaching requires teachers to employ three interconnected domains: Content Knowledge (understanding of subject matter), Pedagogical Knowledge (knowledge of teaching methods), and Technological Knowledge (familiarity with digital tools) (Mishra & Koehler, 2006). The study contributes to understanding how TPACK proficiency impacts intrinsic, personal, and interpersonal barriers faced by English teachers. Those barriers characterise teachers' abilities and well-being in the online environment: online teaching stress (OTS), identified by Jin et al. (2021); barrier to pedagogical management and control (BPMC); and barrier to relationship and interaction (BRI), addressed by Lloyd et al. (2012). Additionally, we observed teachers' perceived intrinsic barriers based on age, overall teaching experience, online teaching experience, and participation in preparatory training for online teaching to determine which subgroups faced more obstacles in online instruction.

Furthermore, internal factors can create hurdles that impede even well-designed lessons and burden even experienced professionals. The internal factors, including personal and interpersonal hurdles such as stress, control, and relationships and interactions, can be overcome. Thus, a grounded notion that knowledgeable and skilful teachers face fewer barriers, including intrinsic ones, links them to teachers' knowledge within TPACK (Kaisar & Chowdhury, 2020; Lyublinskaya & Du, 2022). These concerns are echoed in classrooms in the UAE, and their overcoming requires systematic action through TPACK improvement via tailored training and courses. Therefore, the current study suggests the importance of institutional support for a thorough capture and addressing of the elements of teachers' knowledge and support through professional development designed to meet teachers' individual needs.

The intrinsic barriers concern stress caused by online teaching (Dahabiyeh et al., 2022; Jin et al., 2021; MacIntyre et al., 2019; Suh & Lee, 2017; Ziebell et al., 2020), the control and management of online classes (Dasoar, 2022; Lloyd et al., 2012), and positive communication: relationships and interactions between students and teachers and students with

other students (Dasoar, 2022; Lloyd et al., 2012; Macur, 2022; Özüdoğru & Simsek, 2021). The shift to online instruction during the COVID-19 pandemic has exacerbated these issues, particularly due to the combination of ESL and EFL (and sometimes ENL) students in the classes. In response, the Ministry of Education initiated the provision of internet connectivity and devices for all students in many UAE universities and schools (Qiqieh & Dukmak, 2024), as well as a variety of free online training sessions and webinars on online teaching proficiency for educators (The United Arab Emirates' Government Portal, 2025). However, commonly reported external obstacles such as technical glitches, unfamiliar digital platforms, and unreliable internet persisted, significantly hindering virtual learning and highlighting the need for robust infrastructure and training (Decker & Rimm-Kaufman, 2008; Feng et al., 2023; Qiqieh & Dukmak, 2024).

In summary, although UAE teachers are expected to integrate technology into a rapidly evolving educational landscape of online teaching while addressing issues and challenges along the way, a lack of ability to do so was noted in our context. This study highlights how TPACK proficiency enables English teachers to overcome internal hurdles for more effective online instruction. Currently, TPACK is applied as an established framework to interpret teachers' experiences in an online context (Bueno et al., 2023; Krauskopf & Forssell, 2018; Lyublinskaya & Du, 2022; Masry-Herzallah, 2025). Ultimately, the goal is to chart tailored training for professional development and policy that addresses the individual dimension of online teaching in the UAE, investigating the stances of 395 English school-level educators in the UAE concerning their TPACK levels and characteristics in different groups.

II. LITERATURE REVIEW

Within the TPACK framework, teachers' knowledge is observed in three key aspects: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). A conglomerate of the three prepares teachers to respond to the modern demands of continuous learning (Bueno et al., 2023; Jayathilakan & Nah, 2021).

Proposed as integrative by Mishra et al. (2009), Mishra and Koehler (2006), and Koehler et al. (2007), the TPACK framework posits that technology is equally important as content and pedagogy. Adopted by multiple scholars (Angeli & Valanides, 2005; Koehler & Mishra, 2005; Niess, 2005; Pierson, 2001; Zhao, 2003), TPACK became widespread and applied to teaching instruction (Rosenberg & Koehler, 2015) and in research on teacher professional development and technology proficiency (Chai et al., 2013; Voogt et al., 2013). As high technological proficiency positively impacts students' outcomes (Saubern et al., 2020; Tondeur et al., 2012), Niess and Gillow-Wiles (2017) stressed the need to reshape teachers' 21st-century technological and pedagogical reasoning processes through updated TPACK. Not surprisingly, technology integration has increased over time, particularly during the last pandemic, setting new requirements for teachers' TPACK. Although technology supports and eases teaching and teaching methodologies, elicits students' interest in language learning, and promotes interaction and communication between students and teachers (Shyamlee, 2012), many intrinsic obstacles have been noted in the online setting. They include stress and anxiety (Dahabiyeh et al., 2022; Jin et al., 2021; MacIntyre et al., 2019; Suh & Lee, 2017; Ziebell et al., 2020), issues in control and management of online classes (Dasoar, 2022; Lloyd et al., 2012), and effective relationships and interactions between students and teachers and among students (Dasoar, 2022; Lloyd et al., 2012; Macur, 2022; Özüdoğru & Simsek, 2021).

The constantly growing demands for technological development have put pressure on teachers, especially during the pandemic. Therefore, teachers' feedback, based on their experience in various situations (e.g., the COVID-19 pandemic), should be incorporated into the development of TPACK (Bueno et al., 2023). By contrast, some ESL/EFL teachers still resist technology integration (Ehn, 2022) due to technological issues within TPACK: lack of teachers' computer literacy, lack of teachers' training for online instruction and knowledge of online instruction, lack of facilities to implement online instruction, and lack of interaction in online language-teaching courses (Bollen et al., 2022). The exchange of information through verbal and nonverbal communication became more challenging as gestures and tones became less noticeable (Ko & Rossen, 2017). Moreover, compared to younger teachers, experienced elderly teachers sometimes lack technical knowledge, which can result in increased pressure and stress (Huang et al., 2019). Language teachers experienced various stressors (workload, loss of control over work, and family health) while expecting positive uplifts (MacIntyre et al., 2019). Specific teacher characteristics can either mitigate or intensify these intrinsic barriers. Corry and Stella (2018) state that instructors with more experience using web-based teaching tools reported higher online teaching self-efficacy, whereas older teachers tended to report lower confidence (Corry & Stella, 2018). Teachers with more online teaching experience demonstrated stronger classroom management efficacy in virtual settings (Baroudi & Shaya, 2022).

Conclusively, some authors (Kaisar & Chowdhury, 2020; Lyublinskaya & Du, 2022) link TPACK and overcoming intrinsic barriers, suggesting that the interaction between students and teachers can be improved by enhancing teachers' pedagogical skills in preparing interesting and engaging activities that foster more interaction. Consistent with the current study, other authors have also noted that training sessions for enrichment in online methodologies and workshops on stress and mental health should preferably be tailored to individual needs (Decker & Rimm-Kaufman, 2008; Feng et al., 2023; Lyublinskaya & Du, 2022).

III. METHODOLOGY

A. Hypotheses

This study will examine how elements of TPACK are reflected in addressing intrinsic obstacles in online English teaching in the UAE, considering factors such as age, experience, and training. It aims to test four hypotheses as follows:

H1: There is a statistically significant difference in teachers' perceived intrinsic barriers (IB) in online teaching based on age, teaching experience, online teaching experience and the attendance of preparation courses for online teaching.

H2: There is a significant negative impact of teachers' pedagogical knowledge (PK) on their perceived intrinsic barriers (IB).

H3: There is a significant negative impact of teachers' technological knowledge (TK) on their perceived intrinsic barriers (IB).

H4: There is a significant negative impact of teachers' content knowledge (CK) on their perceived intrinsic barriers (IB).

B. Participants

The research sample comprises 395 randomly selected participants teaching in primary, middle, and secondary schools across the UAE. Following a stratified random sampling approach, participants were chosen from various population groups based on demographics – age (20-34: 29.6%, 35-44: 25.6 %, and 45 and above: 44.8 %), years of teaching experience (below 5: 45.3 %, 5-8: 20.8 %, 9-12: 29.8 %, and 13 and above: 4.1 %), years of online teaching experience (below 2: 14.7 %, 2-5: 56.5 %, 6-10: 28.8 %), and participation in online teaching training/course (yes – 47.4 %, no – 52.6 %).

C. Instruments and Procedures

The instrument was administered to primary, middle, and high school English teachers, with prior permission obtained from the participants. The participants were informed about the anonymity, trustworthiness, voluntariness, and purpose of the survey, and clarification was provided where necessary. The participants were kindly asked to read the statements attentively and select answers on a five-point Likert scale according to their opinions, beliefs, and experiences to complete the survey items. The survey consists of a) demographic questions (age, gender, nationality, working experience on-site and online, attendance of training or course about online teaching), b) questions about TPACK levels adapted from Baser et al. (2015), and c) questions about perceived intrinsic barriers in online teaching adapted from Jin et al. (2021) and Lloyd et al. (2012). The above-mentioned authors issued the permission.

D. Data Analysis

In data analysis, the Statistical Package for the Social Sciences (SPSS) version 29 was employed to examine intrinsic obstacles to online teaching concerning TPACK. The Cronbach's alpha coefficient was applied to measure the subscales of TPACK: TK, PK, and CK. Investigation of differences in intrinsic barriers based on age, overall teaching experience, online teaching experience, and attendance at preparatory training for online instruction was conducted using a four-way analysis of variance (factorial ANOVA). Also, Bonferroni's post hoc test was performed to analyse significant differences between the groups based on overall and online teaching regarding teachers' intrinsic barriers. A multiple regression test was employed to investigate the impact of PK, TK, and CK on the intrinsic barriers.

IV. RESULTS

A. Initial Analysis

A correlation matrix (Table 1) was computed to examine the relationships among teachers' PK, TK, CK, and IB. The correlation between PK and TK was strong and positive, $r = .965$, $p < .001$. Similarly, a strong and positive correlation was found between PK and CK, $r = .915$, $p < .001$. Additionally, teachers' TK exhibited a strong positive correlation with CK, $r = .895$, $p < .001$. On the other hand, IB demonstrated a very high negative correlation with PK, $r = -.889$, $p < .001$, TK, $r = -.880$, $p < .001$, and CK, $r = -.878$, $p < .001$. The analysis showed that all variables above are usually distributed using skewness and kurtosis values (ranging from -2 to +2, as proposed by Hair et al., 2010).

TABLE 1
THE CORRELATION MATRIX OF PK, TK, AND CK

| | N | M | SD | PK | TK | CK | PIAB | α | Skewness | Kurtosis |
|----|-----|------|------|----|--------|--------|---------|----------|----------|----------|
| PK | 395 | 3.53 | 1.37 | 1 | .965** | .915** | -.889** | 0.976 | -.775 | -1.337 |
| TK | 395 | 3.55 | 1.39 | - | 1 | .895** | -.880** | 0.984 | -.716 | -1.325 |
| CK | 395 | 3.32 | 1.30 | - | - | 1 | -.878** | 0.955 | -.642 | -1.460 |
| IB | 395 | 2.55 | 1.32 | - | - | - | 1 | 0.970 | .646 | -1.479 |

** Correlation is significant at the 0.01 level (2-tailed).

These findings suggest significant associations among the variables, highlighting the strong negative relationship between teachers' knowledge domains and their intrinsic barriers. This result shows that an increase in teacher knowledge may lower the teachers' intrinsic barriers.

B. Teachers' Intrinsic Barriers Based on Age, Teaching Experience, Online Teaching Experience, and Attendance of Preparation Training for Online Teaching

The four-way analysis of variance (factorial ANOVA) was performed to investigate differences in intrinsic barriers to online teaching based on age (A), teaching experience (TE), online teaching experience (OTE), and attendance of preparation training for online teaching (PT). In particular, the factorial ANOVA analysis indicates a significant interaction effect only between OTE and the PT: $F(47, 333) = 12.499$, $p < .001$, with a moderate effect size $\text{partial } n^2 = .070$, while other interaction effects on teachers' perceived ability barriers with online teaching proved insignificant. On the contrary, the significant main effect was found for TE: $F(47, 333) = 5.628$, $p < .001$, with low effect size $\text{partial } n^2 = .048$ and OTE: $F(47, 333) = 25.535$, $p < .001$, having moderate effect size $\text{partial } n^2 = .133$, and PT: $F(47, 333) = 88.103$, $p < .001$, with high effect size $\text{partial } n^2 = .209$, while main effects of A: $F(47, 333) = 1.646$, $p = .162$, $n^2 = .019$ were statistically insignificant (Table 2).

TABLE 2
FACTORIAL ANOVA RESULTS – H1: INTRINSIC BARRIERS (IB) BASED ON AGE (A), TEACHING EXPERIENCE (TE), ONLINE TEACHING EXPERIENCE (OTE), AND PREPARATORY TRAINING ATTENDANCE (PT)

| Source | SS | df | F | P | partial n^2 |
|-------------------|--------|----|--------|-------|---------------|
| A | 4.135 | 4 | 1.646 | .162 | .019 |
| TE | 10.607 | 3 | 5.628 | <.001 | .048 |
| OTE | 32.081 | 2 | 25.535 | <.001 | .133 |
| PT | 55.345 | 1 | 88.103 | <.001 | .209 |
| A * TE | 7.855 | 9 | 1.389 | .191 | .036 |
| A * OTE | 8.139 | 8 | 1.620 | .118 | .037 |
| A * PT | 3.081 | 4 | 1.226 | .299 | .015 |
| TE * OTE | 5.029 | 6 | 1.334 | .241 | .023 |
| TE * PT | 2.791 | 3 | 1.481 | .220 | .013 |
| OTE * PT | 15.704 | 2 | 12.499 | <.001 | .070 |
| A * TE * OTE | 1.026 | 4 | .408 | .803 | .005 |
| A * TE * PT | 2.752 | 3 | 1.460 | .225 | .013 |
| A * OTE * PT | 2.626 | 6 | .697 | .652 | .012 |
| TE * OTE * PT | 3.333 | 3 | 1.768 | .153 | .016 |
| A * TE * OTE * PT | .000 | 0 | . | . | .000 |

Bonferroni's post hoc test was conducted to determine which TE and OTE groups were significantly different regarding IB. Results revealed that teachers with more teaching experience (9-12 years and above 13 years) reported significantly more perceived intrinsic barriers in online teaching than those who have less teaching experience. In contrast, teachers with less online teaching experience (below two years) reported significantly more intrinsic barriers than those with more online teaching experience. Furthermore, the results showed that teachers who attended preparation training for online teaching ($M = 1.75$, $SD = .68$) reported significantly fewer perceived ability barriers in online teaching than those who did not participate in similar training ($M = 3.55$, $SD = 1.22$).

C. The Impact of Teachers' Pedagogical Knowledge, Technological Knowledge, and Content Knowledge on Intrinsic Barriers

The dependent variable, intrinsic barriers (IB), was regressed on the predicting variables of teachers' PK, TK, and CK. These independent variables (PK, TK, CK) significantly predict IB, $F(3, 391) = 595.590$, $p < .001$, which indicates that all three factors under study have a significant impact on IB. Moreover, the $R^2 = .820$ depicts that the model explains 82% of the variance in the IB.

Additionally, coefficients were further assessed to ascertain the influence of each factor on the criterion variable (IB). H2 evaluates whether PK significantly and negatively affects the IB ($B = -.275$, $t = -3.121$, $p = .002$). Hence, H2 was supported. Further, H3 evaluates whether TK significantly and negatively affects the IB ($B = -.253$, $t = -3.215$, $p = .001$). Therefore, H3 was supported. H4 evaluates whether CK significantly and negatively affects the IB ($B = -.384$, $t = -7.084$, $p < .001$). Consequently, H4 was also supported. The results are presented in Table 3.

TABLE 3
H2, H3, AND H4 – MULTIPLE REGRESSION TEST RESULT

| Hypotheses | Regression Weights | B | t | p-value | Results |
|-------------|--------------------|-------|--------|---------|-----------|
| H2 | PK → PIAB | -.275 | -3.121 | .002 | Supported |
| H3 | TK → PIAB | -.253 | -3.215 | .001 | Supported |
| H4 | CK → PIAB | -.384 | -7.084 | <.001 | Supported |
| R^2 | .820 | | | | |
| $F(3, 391)$ | 595.590 | | | | |

V. DISCUSSION

Technological Pedagogical Content Knowledge (TPACK) conceptualises teacher expertise as the complex interplay of three domains: Pedagogical Knowledge (PK), Technological Knowledge (TK), and Content Knowledge (CK) (Mishra &

Koehler, 2006). The initial analysis revealed a strong correlation between PK and TK. Also, a strong and positive correlation was found between PK and CK. Similarly, teachers' TK manifested a strong positive correlation with CK. This together aligns with the construct of TPACK, which suggests that elements of TPACK are not merely an intercombination of individual knowledge bases. As per both transformative and integrative approaches, the elements should be observed together and cannot be taken separately (Mishra & Koehler, 2006; Kennedy, 2024). Similarly, Schmidt et al. (2009) note that teachers develop an intuitive sense of how these domains interact when designing technology-integrated lessons. The initial analysis also illustrates that an increase in teacher knowledge may lower the teachers' intrinsic barriers, as elaborated in H2, H3, and H4.

Turning next to the first hypothesis, perceived intrinsic barriers (IB) – anxiety, pedagogical, and interaction concerns – we examined how these varied by demographic and experiential factors. The analysis found significant group differences. First, age emerged as a factor. Older teachers generally reported higher levels of intrinsic barriers to online teaching than younger teachers, in line with the so-called *digital native* vs. *digital immigrant* narrative (Prensky, 2001). This trend is echoed in some prior research (Kuskaya Mumcu & Usluel, 2010), which has found that younger, digital-native teachers tend to use technology more comfortably, whereas their older colleagues sometimes feel less confident or more anxious. For instance, Kuskaya Mumcu and Usluel (2010) concluded that 'as the age of teachers increases, their use of ICT for instructional, managerial and personal purposes decreases' (p. 104), implying that younger educators perceive fewer obstacles to technology use.

Additionally, research examining the state of higher education found that the interaction between age and perceived barriers was significant (Lloyd et al., 2012). Many veteran teachers were frustrated and stressed when they were unexpectedly and entirely moved to online teaching due to a lack of preparedness (Mosleh et al., 2022) and prior knowledge. However, familiarity with technology through daily use is not necessarily an advantage. For instance, critics point out that comfort with social media does not automatically translate to pedagogical skills (Alghamdi, 2022).

On the other hand, the interaction effect of age (A) and teaching experience (TE) on teachers' perceived intrinsic barriers to online teaching (IB) has been insignificant. Therefore, this finding is not aligned with theories that identify age and teaching experience as predictors in this context, as observed, for example, by Huang et al. (2019), who studied primary and secondary schools and universities in China. Our results coincide with those of Lloyd et al. (2012) and Ford et al. (2008), who also noted the effect of experience on resistance to online instruction. Some findings report little or no age effect on technology attitudes. For example, Yucel (2018) found no significant differences in ICT use among higher-education instructors by age group. In our data, although older teachers, on average, perceived higher anxiety and less confidence in online teaching, this pattern should be interpreted cautiously. Age often covaries with teaching experience and with opportunities for exposure to technology, which could modify the influence on teachers' barriers. Veteran teachers probably had fewer prior opportunities to practice online pedagogy before the pandemic.

Paradoxically, the results revealed that teachers with more teaching experience (TE) (9-13 years and above) reported significantly higher perceived intrinsic barriers to online instruction than those with less teaching experience, which might be attributed to the attitude of those teachers towards technology integration. Most likely, the result coincides with participation in and experience with online instruction or age. Similar contradictions appear in prior work. While some studies have found that experienced teachers were more confident, others have suggested that they may resist changes in their practice. Mosleh et al. (2022) observed that educators with 7–10 years of online teaching experience reported higher stress than those with 4–6 years of experience. However, in our context, the data suggest that up to a certain point, experience likely reduces barriers (novices sometimes felt overwhelmed by even starting online), but at high levels of tenure, the routine may create resistance.

Teachers with less online teaching experience (OTE) (below two years) expectedly reported significantly more perceived intrinsic barriers in online teaching than those with more online teaching experience. Teachers who had already taught online for some time (or occasionally) generally reported fewer intrinsic barriers to online teaching. This finding aligns with the idea that familiarity with ICT supports confidence and expertise. Newbie online instructors often expressed concerns regarding student engagement or technological failures. The current finding supports broader research showing that prior exposure to online environments builds self-efficacy in faculty education (Hodges et al., 2020). In our sample, the overall trend was that increased online experience expectedly correlated with decreased perceived barriers.

Ultimately, a significant interaction with a moderate effect was also noted between attendance at preparation training for online teaching (PT) in the sample. In other words, the results showed that teachers who attended preparation courses (PT) for online teaching (47.4%) consistently reported significantly fewer perceived intrinsic barriers in online teaching than those who did not participate in similar courses. That resulted in lower anxiety about technology, greater confidence in managing virtual classrooms, and fewer doubts about student engagement. In statistical terms, participants who engaged in at least one structured online teaching course had significantly lower IB scores than those who had not. Those who had undergone online courses before – even just pilot classes or workshops – felt less intimidated. This outcome aligns with the literature, which emphasises the power of professional development to mitigate barriers. Ward and Benson (2010) argue that institutional support, including time for training and resources for online course design, enables technological development. Moreover, the current study supports the notion that a one-size-fits-all approach cannot be applied to English teachers, as noted by Lau and Yuen (2013), because their needs are individual and cannot be generalised. Consequently, support tailored to teachers' psychological, behavioural, and personal characteristics is needed (Decker &

Rimm-Kaufman, 2008; Feng et al., 2023) to enhance confidence (through the enhancement of PK and TK) in online English teaching and minimise obstacles leading to more desirable and pleasant online teaching experiences. On the other hand, it is worth noting that levels of the components of TPACK – TK, PK, and CK vary within a teacher and among teachers (Abubakir & Alshaboul, 2023; Fathi & Yousefifard, 2019). Therefore, a personalised approach would be the best way to meet individual needs. Regardless, the key takeaway is that significant differences in intrinsic barriers must be interpreted in conjunction with existing research, which offers both support and counterpoints. When blended, overall teaching experience (TE), online teaching experience (OTE), and attendance at preparatory training (PT) showed a significant main effect (lower), indicating that these elements together have an impact, as observed in Buabeng-Andoh (2012). The need for in-service English teachers to improve their technical skills for more successful online teaching was emphasised long ago (Jones, 2002; Gulbahar, 2008). The idea has evolved into a contemporary demand where technology is not an addition, but a prerequisite set of teaching requirements (Dahabiyeh et al., 2022).

The responses to hypotheses two, three, and four agree with the current literature. The lack of teachers' training, knowledge of online instruction, and interaction in online language-teaching courses has been confirmed as a perceived barrier (Bollen et al., 2022). Ineffective interaction and communication are recognised obstacles due to the complexity of online instruction (Ko & Rossen, 2017; Özüdođru & Simsek, 2021), which is characterised by the absence of non-verbal cues and spontaneity. Put differently, the results illustrate that the teachers who rated their PK, TK, or CK highly tended to report lower levels of stress, classroom management difficulties, and problematic teacher-student interactions online. Observing negative correlations confirms that the three elements of TPACK (pedagogical, technological, and content knowledge) have a substantial impact on teachers' perceived intrinsic barriers (IB). Advancing the elements of TPACK enhances and enables online teaching by reducing barriers related to teachers' personal and interpersonal challenges. Kaisar and Chowdhury (2020) argued that pedagogical skills improve overall interaction. The results highlight a strong negative relationship between teachers' knowledge domains and their perceived intrinsic barriers, indicating that greater content and pedagogical confidence reduced anxiety about lesson planning and discipline. In contrast, stronger technology skills reduced anxiety about technical failures and digital teaching strategies. These relationships are intuitive and corroborated by prior studies. For example, Dong et al. (2020) found that teachers' TPACK and computer self-efficacy negatively predicted their technostress (a specific form of anxiety related to technology). Teacher training was in high demand even earlier (Jones, 2002; McAlister et al., 2005; Gulbahar, 2008). Adapting to fast-paced trends in teaching is both demanded (Chai et al., 2013; Voogt et al., 2013) and desired to set a good example for students (Tondeur et al., 2012; Saubern et al., 2020) who are primarily digital natives.

Moreover, Kay (2007) observed that emotional responses, such as anxiety and discomfort, act as obstacles to technology adoption and are closely linked to lower TPACK self-confidence. Thus, our finding of negative correlations resonates with the idea that boosting teachers' integrated knowledge will directly reduce their perceived internal obstacles. In the current research, the reasons for these results are explained: professionals with richer TPACK are equipped with the needed targeted skills. Nevertheless, moderate stress levels among faculty during the pandemic were reported by Mosleh et al. (2022). They advocated urgent professional development to 'enrich faculty with online teaching skills' (p. 1). On the other hand, they also highlight nuance: while one might expect a linear drop in stress with increased online experience, they found that those teachers with high online experience (7–10 years) reported more stress, possibly due to heightened expectations. This statement demonstrates that all factors of online English teaching are interwoven and cannot be observed in isolation.

Next, classroom management in the virtual environment showed a similar pattern. Teachers scoring high on PK reported fewer management issues online. This result echoes Adsız and Dinçer (2025), who found that challenges in online classrooms included low student participation, and they recommended continuous training in technology literacy and online pedagogy to address these challenges. In other words, managing an online class effectively requires new strategies aligned with TK and PK. Teachers confident in PK (e.g., knowing how to promote engagement or structure discussions) and TK (e.g., knowing which interactive tools to use, how to monitor breakout rooms, etc.) were able to maintain control and engagement more easily. These management issues align with intrinsic barriers (e.g., doubts about one's classroom skills) and were mitigated by strong pedagogical and technological knowledge.

Finally, the barrier of teacher-student interaction (or perceived lack thereof) also correlated negatively with TPACK. Another major issue identified by Adsız and Dinçer (2025) is a lack of interaction in online classes. Our analysis found that teachers who scored high on TPACK components felt more confident about maintaining meaningful interaction. In contrast, a teacher low in this domain may feel unable to compensate for the distance of the medium, perceiving the classroom as silent or unresponsive. Thus, the negative correlation indicates that as TPACK increases, the perceived deficit in interaction decreases. This finding further implies that strengthening TPACK may be a powerful way to reduce teachers' intrinsic barriers. Ward and Benson's (2010) work reinforces the point that the support should be institutionalised. They argue that institutions must provide sustained professional development and support so that instructors can effectively utilise technology to deliver content and pedagogy. In practical terms, our findings suggest that professional development should not treat technology, pedagogy, and content as separate entities but rather as an integrated whole. Such courses scaffold PK, TK, and CK simultaneously, resulting in lower perceived intrinsic barriers. Stepping forward, we suggest that individualised training tailored to teachers' specific needs concerning PK, TK, and CK levels, based on

their psychological, behavioural, and personal characteristics, and led by the institutions (schools) would be the most effective (Decker & Rimm-Kaufman, 2008; Feng et al., 2023) in overcoming the intrinsic barriers (IB).

VI. CONCLUSION

The current investigation underscores three points. First, the initial analysis confirms the TPACK premise that PK, TK, and CK are coiled and cannot be observed in isolation and that corresponds with the observed obstacles in online English instruction. Second, demographic and experiential factors affect teachers' intrinsic barriers: age and general experience show mixed effects (some senior teachers felt more challenged), while explicit online teaching experience and formal training consistently reduce perceived barriers. These findings largely align with prior studies (both supporting and contradictory) about age and experience in technology adoption. Third, crucially, each component of TPACK was negatively associated with stress, online pedagogical management and control, as well as the relationship and interaction between students and teachers. This finding suggests that professional development programs which build teachers' TPACK are likely to lower those barriers. By contrast, a lack of knowledge and practice of online instruction tends to coincide with lower TPACK.

Educators and policymakers should prioritise professional development in online ESL/EFL contexts, focusing on the development of pedagogical strategies, content adaptation skills, and technological fluency simultaneously while respecting teachers' characteristics and needs. Such an approach, consistent with the TPACK framework, will equip teachers to effectively manage classroom challenges, engage students virtually, and mitigate anxiety, ultimately enhancing the quality of online language instruction.

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