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Exploring the Relationship between EFL Teachers' Technophobia, Teaching Enjoyment, and Teaching Effectiveness

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ABSTRACT

The purpose of the present study was to examine the relationship among EFL teachers' technophobia, teaching enjoyment, and teaching effectiveness in Iran. In light of rapid advancement and technology implementation in language education, teachers' attitudes toward technology may influence emotional experiences and instructional performance. To address the objectives of this study, a quantitative correlational design was employed to show whether EFL teacher technophobia is significantly related to teaching enjoyment, as well as teaching effectiveness. Data were gathered from 200 EFL teachers at language institutes, schools, and universities. Data were collected through standardized, validated questionnaires to measure technophobia, teaching enjoyment, and teaching effectiveness. Descriptive statistics were computed using SPSS to analyze the data. Additionally, to explore the direction and magnitude of associations among the factors, inferential data analysis, specifically Pearson correlation, was conducted. The results stated a significant, negative, and moderate relationship between technophobia and teaching enjoyment, which revealed that higher levels of technophobia are associated with lower levels of enjoyment. Moreover, a significant, negative, and moderate relationship between technophobia and teaching effectiveness was found. It revealed that higher levels of technophobia can cause lower levels of perceived teaching effectiveness. These findings indicated that emotional aspects have an important role in shaping teachers' performance in technology-based environments. This study highlighted the need for professional development to reduce technophobia and enhance technology integration. Addressing these challenges can enhance teaching quality, improve instructional satisfaction, and help teachers integrate technology effectively in EFL contexts.

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1. Introduction

Technology integration has transformed teaching and learning, particularly in EFL classrooms, by increasing learner engagement and improving instructional practices (Valizadeh, 2020; Xiao, 2022). Teachers' willingness and adaptation to using digital tools indicate their successful incorporation of technology, contributing to more interactive learning environments (Reddi & Raju, 2023). Despite these advantages, the advancement of digital technology has also introduced psychological barriers. Technophobia is considered one of the most important barriers, which is known as fear, anxiety y, and resistance toward using technology in an educational context (Reddi & Raju, 2023; Samir & Tabatabaee-Yazdi, 2023). Technophobia can negatively affect effectiveness in teaching, limit creativity in the teaching process, and reduce self-confidence among teachers (Beiki et al., 2020; Yang & Wang, 2024; Pahamzah, 2020). Previous findings have also suggested that technophobia is directly related to personality traits, age, gender, digital literacy, and prior experiences with technology (Abbasi & Tabatabaee-Yazdi, 2021; Ajlouni & Rawadieh, 2022). Moreover, teachers' job satisfaction and instructional well-being can be negatively affected by technophobia, while stress can be increased (Samir & Tabatabaee-Yazdi, 2023).

In contrast, another important factor influencing teachers' motivation, engagement, psychological well-being, and performance is foreign language teaching enjoyment, which refers to happiness, willingness, and a pleasant classroom environment (Dewaele & Li, 2024). Teachers who experience greater enjoyment feel more satisfied, resilient, motivated, enthusiastic, and creative, which is directly associated with engagement of the students and also educational outcomes (Derakhshan et al., 2022; Liu et al., 2021). However, technophobia is negatively related to stress and enjoyment, which means that it may increase stress and reduce teaching enjoyment, and also limit teachers' successful use of technology (Yang & Wang, 2024). Another important factor is teaching effectiveness, which is represented in teacher proficiency, classroom management, and students' learning outcomes (Sadeghi et al., 2020). Existing research has also emphasized that teachers' emotional intelligence, psychological well-being, and pedagogical competence can influence teaching quality and learners' success (Nikoopour & Esfandiary, 2017).

Several theoretical frameworks support the relationship among these variables. The Technology Acceptance Model explains that teachers' attitudes toward technology have a key role in shaping teaching practices (Yang & Wang, 2024). The Control-Value Theory of Achievement Emotions emphasizes that emotional factors such as enjoyment of teaching influence teaching effectiveness, and limited control over technology may reduce enjoyment (Pekrun, 2006). Based on Self-Efficacy Theory, technophobia negatively affects teachers' self-efficacy, whereas higher self-efficacy in technology integration contributes to greater levels of teaching enjoyment and effectiveness.

Although previous studies have investigated technophobia and teaching enjoyment separately, few studies have examined their relationship with teaching effectiveness, particularly in the Iranian EFL context. Previous research has mainly focused on psychological well-being, resilience, emotion regulation, and teacher enthusiasm (Derakhshan et al., 2022; Dewaele & Li, 2024), while the influence of both emotional and technology-related factors on teaching effectiveness remains unexplored. Furthermore, due to the increasing use of digital tools in education, particularly during and after the pandemic caused by COVID-19, the

importance of examining psychological barriers such as technophobia has been emphasized (Pahamzah, 2020; Ajlouni & Rawadieh, 2022). Paying attention to these issues is crucial because technophobia can cause limitations in teachers' flexibility, classroom innovation, and the engagement of students (Reddi & Raju, 2023; Abbasi & Tabatabaee-Yazdi, 2021).

Therefore, this study investigated the associations among Iranian EFL teachers' technophobia, teaching enjoyment, and teaching effectiveness. Specifically, it evaluated the extent of technophobia, teaching enjoyment, and teaching effectiveness, explored the relationships among these variables, and investigated whether technophobia and teaching enjoyment could predict teaching effectiveness. By addressing this gap, the research offers useful perspectives for teacher educators, curriculum developers, and policymakers aiming to reduce technophobia, enhance teaching enjoyment, improve teaching effectiveness, and promote a more supportive technology-integrated EFL classroom.

2. Literature Review

The rapid advancement of technology has transformed educational approaches and created new possibilities for both educators and students. However, the increasing use of technology in instruction, notably after the COVID-19 pandemic, has also introduced psychological challenges that influence teachers' emotional experiences and instructional performance (Reddi & Raju, 2023; Samir & Tabatabaee-Yazdi, 2023). Teaching enjoyment has been defined as a significant factor affecting teachers' well-being, motivation, and teaching quality (Dewaele & Li, 2024), while effective teaching can have a direct impact on students' learning outcomes (Sadeghi et al., 2020). To explain the relationship among these variables, several theoretical perspectives have been proposed. According to the Control Value Theory of Achievement Emotions, teachers who perceive greater control over their teaching tasks experience enjoyment, which positively influences motivation and instructional quality (Pekrun, 2006; Dewaele & Li, 2024). Similarly, Bandura's Self-Efficacy Theory (1997, as cited in Huang, 2022) suggests that teachers' beliefs in their teaching capabilities influence teaching well-being and effectiveness (Xiao et al., 2022). In addition, the Technology Acceptance Model (Davis, 1989) emphasizes that teachers' attitudes toward technology influence teaching enjoyment and instructional success (Reddi & Raju, 2023; Samir & Tabatabaee-Yazdi, 2023).

Technophobia can be described as fear or anxiety toward using technology and digital tools and has a potential impact on teaching and learning in educational settings (Abbasi & Tabatabaee-Yazdi, 2021). Several studies have reported that technophobia negatively affects teachers'perceived self-efficacy, teaching effectiveness, and innovation (Yang & Wang, 2024; Reddi & Raju, 2023). Personality traits, prior experiences with technology, age, limited digital literacy, fear of making mistakes, lack of training, and negative experiences are among the main factors contributing to technophobia (Ajlouni & Rawadieh, 2022; Samir & Tabatabaee-Yazdi, 2023; Boehme-Neßler, 2011; Salamzadeh et al., 2013). Furthermore, inadequate infrastructure and unsupportive school culture may reduce teachers' confidence in technology integration and negatively affect the learning environment, teaching quality, and instructional innovation (Khasawneh, 2018; Martínez-Córcoles et al., 2017; Osiceanu, 2015). Technophobia has become an important concern in EFL education due to the increasing use of digital tools and Computer-Assisted Language Learning (CALL) programs (Yang & Wang, 2024; Yu, 2022). Studies have also indicated that teachers who experience

technophobia do not integrate technology effectively in their classrooms, which can negatively affect technological adoption and teaching effectiveness (Pahamzah, 2020; Reddi & Raju, 2023).

Teaching enjoyment is known as a feeling of pleasure and satisfaction in the instructional process (Dewaele & Li, 2021). In EFL contexts, it is associated with teachers' enthusiasm, positive classroom atmosphere, students' engagement, self-efficacy, psychological well-being, and work engagement (Liu, Zhang, Zhao, & Jia, 2021; Xiao et al., 2022). Research has indicated that greater levels of teaching enjoyment contribute to greater resilience, motivation, creativity, and teaching quality (Derakhshan et al., 2022; Xiao et al., 2023). Enjoyment and enthusiasm as positive emotional states enhance teachers' self-efficacy and classroom engagement, whereas negative emotions such as stress reduce teachers' capabilities and learners' engagement (Dewaele & Li, 2021; Khajavy et al., 2018; Yang & Wang, 2024). Moreover, teaching enjoyment has been found to reduce burnout and promote supportive learning environments (Derakhshan et al., 2022). Previous studies have suggested self-efficacy, work engagement, perceived school environment, emotional well-being, resilience, and L2 grit as important predictors of teaching enjoyment (Xiao et al., 2022; Ju et al., 2023; Derakhshan et al., 2022). Both interpersonal factors, including relationships with students, colleagues, and administrators, as well as personal factors, including emotional awareness and self-efficacy, play important roles in improving teaching enjoyment (Xiao et al., 2023; Derakhshan et al., 2022).

Teaching effectiveness is another important factor of the educational process. Teachers' self-efficacy, educational skills, and emotional intelligence are significantly associated with the effectiveness of teaching (Tschannen-Moran & Hoy, 2001; Huang, 2022). Effective teaching enhances learners' motivation, engagement, and academic outcomes and is closely associated with teachers' work satisfaction and emotional well-being (Sadeghi et al., 2020; Derakhshan et al., 2022). Learners' engagement, higher teaching quality, enjoyment, and effectiveness are all increased by positive teacher-student relationships (Derakhshan et al., 2022; Xiao et al., 2022). In EFL settings, classroom management, pedagogical knowledge, interpersonal competence, emotional intelligence, and the ability to create supportive learning environments are significantly associated with teaching effectiveness (Sadeghi et al., 2020; Xiao et al., 2022; Nikoopour & Esfandiari, 2017).

Although previous studies have explored technophobia, teaching enjoyment, and teaching effectiveness separately, limited research has investigated the interplay among these variables, especially in the context of Iranian EFL education. It is important to understand how technophobia influences teachers' emotional experiences and instructional effectiveness. Examining the relationship among technophobia, teaching enjoyment, and teaching effectiveness can help reduce technological barriers, improve the well-being of teachers, and improve the quality of EFL instruction. Thus, in the present research, the following research questions were analyzed.

RQ1: Is there a significant relationship between EFL teachers' technophobia and their teaching enjoyment?

RQ2: Is there a significant relationship between EFL teachers' technophobia and their teaching effectiveness?

3. Research Methodology

3.1 Research Design

The present study used a quantitative correlational design to find out the statistical relationship among EFL teachers' technophobia, teaching enjoyment, and teaching effectiveness. As all the variables were gathered through standardized questionnaires and the data were statistically analyzed with no manipulations, this study was non-experimental. The predictive variable in this study was related to technophobia, and the other two variables were called outcome variables, which are teaching enjoyment and teaching effectiveness. This study aimed to explore the significant correlation among EFL teachers' technophobia, teaching enjoyment, and teaching effectiveness.

3.2 Participants

The participants were Iranian EFL teachers working at language institutes, schools, and universities. The sample consisted of both men and women instructors of varying ages, teaching experience levels, and educational qualifications. A convenience sampling method was used, and the number of participants was determined based on the requirements of the study.

3.3 Instruments

Three standardized instruments were employed for data collection in this study. The Technophobia questionnaire was designed by Martínez-Corcoles, et al. (2017). The questionnaire contains twelve items designed on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Foreign Language Teaching Enjoyment (FLTE), designed and first used by Proietti Ergun & Dewaele (2021), consists of a 9-item short form of the Foreign Language Enjoyment Scale that identifies the prediction of well-being and resilience in foreign language teaching enjoyment. It is designed on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Teacher Sense of Efficacy Scale was designed by Tschannen-Moran & Hoy (2001). It contains 24 items designed on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability and validity of these questionnaires have been established before, indicating that the present questionnaires are both valid and reliable. In addition, in our study, we assessed the reliability of the questionnaires in a pilot phase before the main study. The questionnaires were found to be reliable, and therefore we proceeded to use them in the present study.

3.4 Data Collection Techniques

Prior to collecting data, ethical consideration was received from the relevant research ethics committee. The questionnaires were distributed online via Google Forms and shared through educational networks, email lists, and social media groups where EFL teachers were active. Clear instructions were given to participants, and they were informed that their anonymity and the confidentiality of their responses would be kept. The expected time for completion of the entire questionnaire was approximately 15–20 minutes.

4. Results

4.1. Overview

This study was designed to explore any significant relationships among technophobia, teaching effectiveness, and teaching enjoyment. The study comprised two phases: pilot and

main. The pilot phase of the study included construct validity (exploratory factor analysis) of the three questionnaires and their reliability indices. The main study investigated any significant correlations among the three questionnaires. The results are discussed below.

4.2. Pilot Study

As it was mentioned above, the construct validity and reliability of the three questionnaires were probed during the pilot study. Table 1 shows the structure of the technophobia, teaching effectiveness, and teaching enjoyment instruments.

Table 1: *Structures of Technophobia, Teaching Effectiveness, and Teaching Enjoyment Questionnaires*

Sub-Sections	Items
Technophobia:	12 Items
Affective Technophobia	1, 3, 11
Cognitive Technophobia	4, 5, 6, 8, 12
Behavioral Technophobia	2, 7
Physiological Technophobia	9, 10
Teaching effectiveness :	24 Items
Efficacy in Student Engagement	1, 2, 4, 6, 9, 12, 14, 22, 24
Efficacy in Instructional Strategies	7,10, 11, 17, 18, 20, 23
Efficacy in Classroom Management	3, 5, 8, 13, 15, 16, 19, 21
Teaching enjoyment:	9 Items
Personal enjoyment	1, 2, 3
Enjoyment from student interaction	4, 5, 6
Positive classroom climate	7, 8, 9

4.2.1. Construct Validity of Technophobia Questionnaire

To examine the underlying constructs of the technophobia questionnaire, exploratory factor analysis (EFA) using the principal axis factoring method and Promax rotation was performed. Before presenting the findings from the EFA, a concise conceptual overview of the statistical technique is presented. To identify the underlying dimensional structure of a multi-item instrument, such as a questionnaire, EFA, which is a multivariate statistical method, was used. By examining patterns of correlations among observed variables—in this instance, the 12 items of the technophobia questionnaire—EFA identifies clusters of items that share common variance, thereby revealing a smaller set of unobservable constructs, or factors (Field, 2024; Harrison et al., 2021). Items that correlate strongly with one another, yet demonstrate weaker correlations with items in other clusters, are interpreted as indicators of the same latent factor. This data-driven process can help researchers move beyond item-level analysis, and it also helps them understand the broader theoretical dimensions captured by the instrument (Denis, 2021; Tabachnick & Fidell, 2019). The following sections delineate the sequential steps undertaken in the present analysis, including the assessment of statistical assumptions, decisions regarding factor extraction and rotation, and the interpretation of the factor solution.

4.2.1.1 Selection of Rotation Method

Following the initial factor extraction procedure, in order to improve the interpretability of the factor solution, a rotation procedure is used. Rotation adjusts the reference axes of the factors within multidimensional space (Watkins, 2021) to achieve a "simple structure,"

wherein each variable loads strongly on a single factor and weakly on all others. It is important to note that rotation does not alter the underlying relationships within the data; rather, it provides a clearer perspective for interpretation.

There are two primary categories of rotation: the first one is orthogonal rotations, which consider that extracted factors are uncorrelated, and the second one is oblique rotations, which allow for correlation between the factors. For the present analysis, an examination of the Component Correlation Matrix (Table 2) showed correlations between factors exceeding the ±.32 threshold, as suggested by researchers such as Grande (2016) and Dagdag et al. (2020). This finding suggested that the underlying factors of the technophobia questionnaire appeared to be interrelated. Thus, an oblique rotation method, specifically Promax rotation, was considered the most suitable method for this study.

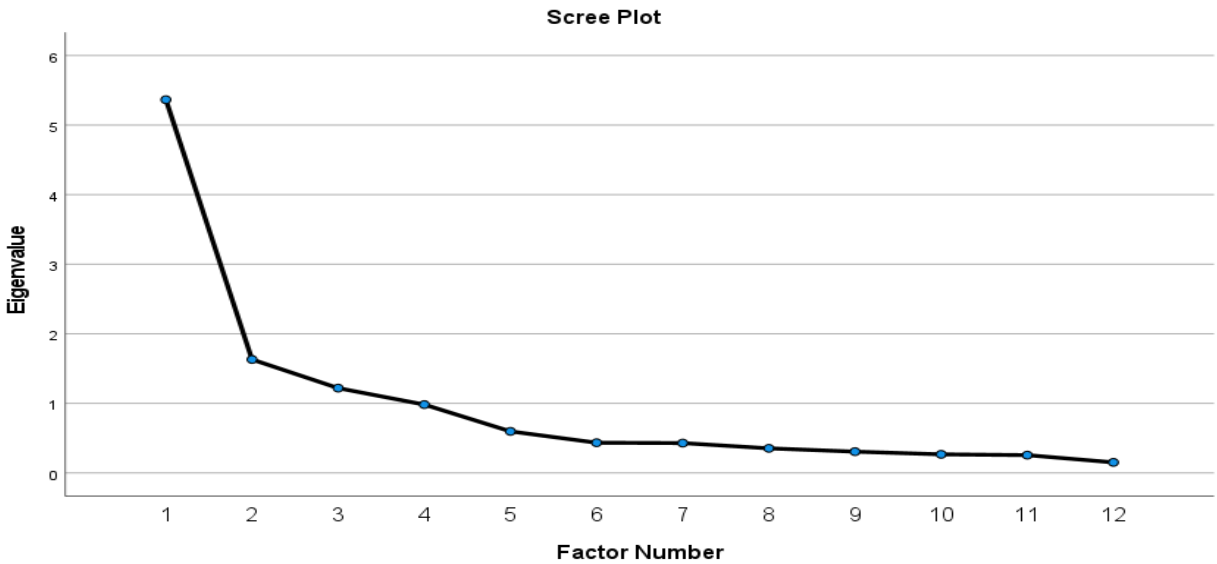
Table 2: *Component Correlation Matrix for Technophobia Questionnaire*

Component	1	2	3	4
1	---			
2	.382	---		
3	.369	.310	---	
4	.304	.340	.335	---

4.2.1.2 Factor Extraction

An important step in EFA involves determining the appropriate total number of factors to retain. The decision was based on Scree Plot 1. The plot indicated that four factors can be extracted as underlying constructs of the technophobia questionnaire.

Scree Plot 1: *Number of Factors to be extracted for Technophobia Questionnaire*



4.2.1.3. Assessment of Sampling Adequacy and Sphericity

Prior to interpreting the factor solution, the dataset was evaluated for its suitability. As presented in Table 3, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy provided an index of .80. According to Field (2024), this value is considered "meritorious," showing a high percentage of common variance among the items and that the sample of 86 respondents is more than adequate for a stable analysis of factors. Furthermore, Bartlett's test of sphericity was important ($\chi^2(66) = 530.64$, $p < .001$). This result verifies that the

correlation matrix (see Appendix I) significantly departs from an identity matrix, which means there are adequate correlations between the items to proceed with factor extraction. An identity matrix, in which all variables are uncorrelated, would make EFA inappropriate.

Table 3: *KMO and Bartlett's Test for Technophobia Questionnaire*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.820
Bartlett's Test of Sphericity	Approx. Chi-Square	530.643
	df	66
	Sig.	.000

4.2.1.4 Total Variance Explained and Factor Loadings

The outcomes of the factor extraction are briefly discussed in Tables 4 and 5. Table 4 shows the four extracted factors and their cumulative contribution to explore the total variance within the dataset. Collectively, the total variance of these four factors accounted for 66.31%. As noted by Hair et al. (2014), "in the social sciences, where data are often less accurate, considering an approach that represents around 60 percent of the total variance (and in some instances even less) is satisfactory" (p. 109). Recent research also supported this cutoff point. (e.g., Shrestha, 2021; Sigudha & Maritz, 2023).

Table 4: *Total Variance Explained for Technophobia Questionnaire*

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.366	44.714	44.714	5.031	41.928	41.928	4.284
2	1.631	13.595	58.308	1.295	10.791	52.719	3.547
3	1.220	10.165	68.473	.971	8.088	60.806	2.730
4	.983	8.192	76.666	.661	5.510	66.317	2.620
5	.598	4.982	81.648				
6	.435	3.624	85.271				
7	.430	3.581	88.852				
8	.354	2.951	91.803				
9	.307	2.556	94.359				
10	.268	2.233	96.592				
11	.257	2.138	98.729				
12	.152	1.271	100.000				

Extraction Method: Principal Axis Factoring.

Table 6 shows the Pattern Matrix, which involves the factor loadings reflecting the unique association between each questionnaire item and its primary factor. As The Jamovi Project (2022) recommended, a factor loading of .40 or above was determined as the cut off point for considering an item's contribution to a factor as meaningful. All 12 items in this analysis indicated loadings above this cutoff, which supports that each item made a significant contribution to its assigned construct.

The reliability and convergent validity of the construct are involved in this analysis. Composite Reliability (CR) and Average Variance Extracted (AVE) were examined for each of ten factors. All CR values were above .70 (Hair et al., 2014), showing that the items in each factor consistently measured the same underlying construct, thereby demonstrating strong

internal reliability. Similarly, all AVE values surpassed the .50 benchmark (Garson, 2016), signifying that each factor explained a satisfactory amount of variance in its constituent items, which provides robust support for convergent validity. The specific results for each factor were as follows:

- Factor 1 (Cognitive Technophobia, Items 4, 5, 6, 8, 12), CR = .890, AVE = .785,
- Factor 2 (Affective Technophobia, Items 1, 3, 11), CR = .846, AVE = .801,
- Factor 3 (Behavioral Technophobia, Items 2, 7), CR = .818, AVE = .813, and
- Factor 4 (Physiological Technophobia, Items 9, 10), CR = .759, AVE = .782.

Table 5: *Pattern Matrix for Technophobia Questionnaire*

	Factor			
	1	2	3	4
First Factor = Cognitive, CR = .890, AVE = .785				
PH5	.861			
PH8	.806			
PH4	.785			
PH6	.759			
PH12	.712			
Second Factor = Affective, CR = .846, AVE = .801				
PH3		.860		
PH1		.859		
PH11		.685		
Third Factor = Behavioral, CR = .818, AVE = .813				
PH2			1.027	
PH7			.598	
Fourth Factor = Physiological, CR = .759, AVE = .782				
PH9				.784
PH10				.780

4.2.1.5 Cronbach's Alpha Reliability Indices

Cronbach's alpha reliability indices for the technophobia questionnaire and its four components are shown in Table 6. The overall questionnaire demonstrated a reliability index of .884. The reliability indices for its four components were; affective (α = .855), cognitive (α = .885), behavioral (α = .798), and physiological (α = .785). A number of scholars (Tseng et al., 2006; Dörnyei & Taguchi, 2009; and Harrison et al., 2021) believe that instruments should have Cronbach's Alpha reliability indices equal to or higher than .70. Thus, it can be concluded that the technophobia questionnaire and its four components showed satisfactory levels of reliability.

Table 6: *Cronbach's Alpha Reliability Statistics for Technophobia Questionnaire and its Components*

	Cronbach's Alpha	N of Items
Technophobia Questionnaire	.884	12
Affective	.855	3
Cognitive	.885	5
Behavioral	.798	2
Physiological	.785	2

In summary, EFA confirmed a four-factor model for the technophobia questionnaire. The Cronbach's alpha reliability indices above .70 supported the reliability of this instrument.

4.2.2. Construct Validity of Teaching Effectiveness Questionnaire

To explore the underlying constructs of the Teaching Effectiveness Questionnaire, exploratory factor analysis (EFA) using the principal axis factoring method and Promax rotation was performed. The following sections delineate the sequential steps undertaken in the present analysis, including the assessment of statistical assumptions, decisions regarding factor extraction and rotation, and the interpretation of the factor solution.

4.2.2.1 Selection of Rotation Method

The EFA for the teaching effectiveness questionnaire was explored using Promax rotation. As shown in Table 7, the components of the correlation matrix were all above ±.32 (Grande, 2016; and Dagdag et al., 2020). This finding indicated that the underlying factors within the teaching effectiveness questionnaire were likely interrelated. Consequently, an oblique rotation method, specifically Promax rotation, was considered the most suitable method for this study.

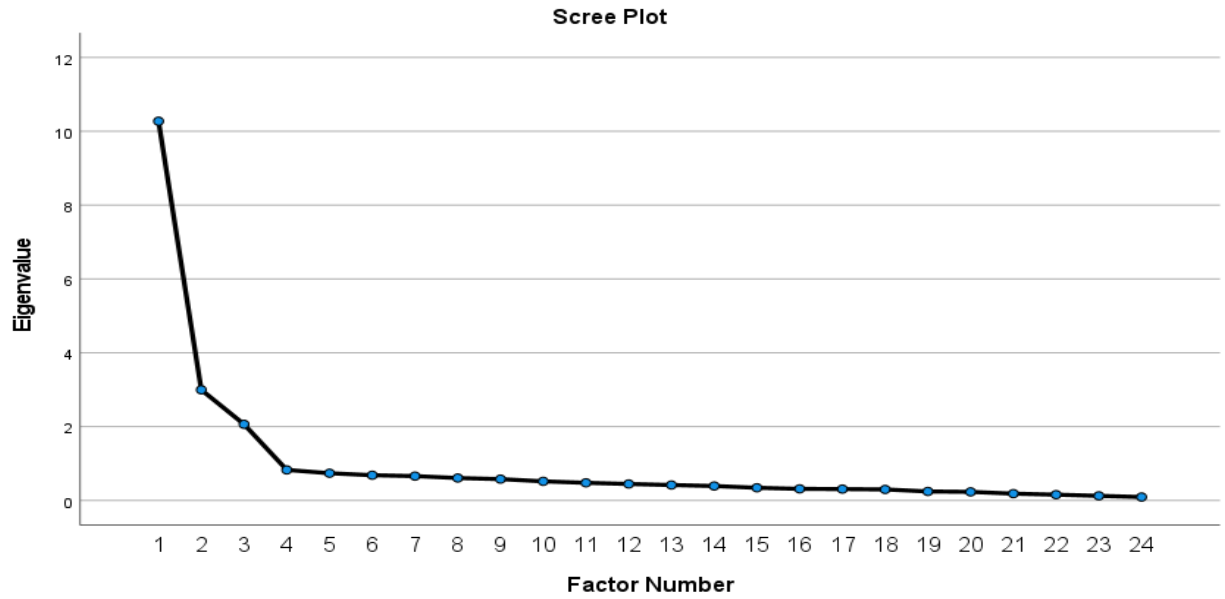
Table 7: *Component Correlation Matrix for Teaching Effectiveness Questionnaire*

Component	1	2	3
1	---		
2	.407	---	
3	.555	.414	---

4.2.2.2 Factor Extraction

An important step in EFA involves determining the appropriate quantity of factors to retain. The decision was based on Scree Plot 2. The plot indicated that four factors can be extracted as underlying the teaching effectiveness questionnaire.

Scree Plot 2: *Number of Factors to be extracted for Teaching Effectiveness Questionnaire*



4.2.2.3. Assessment of Sampling Adequacy and Sphericity

Prior to interpreting the factor solution, the dataset was evaluated for its suitability. As presented in Table 8, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy provided an index of .883. According to Field (2024), this value is considered "meritorious," showing a high percentage of common variance among the items and that the sample of 86

respondents is more than adequate for a stable analysis of factors. Furthermore, Bartlett's test of sphericity was significant ($\chi^2(276) = 1341.77$, $p < .001$). This result verifies that the correlation matrix (see Appendix I) significantly departs from an identity matrix, which means there are adequate correlations between the items to proceed with factor extraction. An identity matrix, in which all variables are uncorrelated, would make EFA inappropriate.

Table 8: *KMO and Bartlett's Test for Teaching Effectiveness Questionnaire*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of Sphericity	Approx. Chi-Square	1341.772
	df	276
	Sig.	.000

4.2.2.4 Total Variance Explained and Factor Loadings

The outcomes of the factor extraction are briefly discussed in Tables 4.9 and 4.10. Table 9 presents the four extracted factors and their cumulative contribution to explore the total variance within the dataset. Collectively, the total variance of these four factors accounted for 58.90%. As noted by Hair et al. (2014), "in the social sciences, where data are often less accurate, considering an approach that explains around 60 percent of the total variance (and in some instances even less) is satisfactory" (p. 109). This threshold is also supported by contemporary research (e.g., Shrestha, 2021; Sigudha & Maritz, 2023).

Table 9: *Total Variance Explained for Teaching Effectiveness Questionnaire*

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.274	42.808	42.808	9.871	41.131	41.131	7.985
2	2.998	12.493	55.301	2.589	10.788	51.918	6.888
3	2.064	8.599	63.900	1.676	6.984	58.902	7.462
4	.828	3.451	67.351				
5	.738	3.077	70.428				
6	.685	2.853	73.281				
7	.661	2.752	76.033				
8	.609	2.536	78.569				
9	.579	2.413	80.981				
10	.519	2.162	83.143				
11	.479	1.995	85.139				
12	.448	1.865	87.003				
13	.419	1.745	88.748				
14	.392	1.634	90.382				
15	.344	1.434	91.817				
16	.315	1.313	93.130				
17	.309	1.287	94.417				
18	.299	1.246	95.663				
19	.245	1.021	96.684				
20	.233	.972	97.656				
21	.185	.773	98.428				
22	.158	.656	99.085				
23	.126	.524	99.609				
24	.094	.391	100.000				

Table 10 presents the Pattern Matrix, which involves the factor loadings reflecting the unique association between each questionnaire item and its primary factor. As The Jamovi Project (2022) recommended, a factor loading of .40 or above was determined as the cutoff point for considering an item's contribution to a factor as meaningful. All 24 items in this analysis indicated loadings above this cutoff, which supports that each item contributed significantly to its assigned construct.

CR and AVE indices are shown in Table 10, which reports construct reliability and convergent validity of each factor. All CR values were above .70 (Hair et al., 2014), showing that the items within each factor repeatedly measured the same underlying construct; thereby, strong internal reliability is demonstrated. Similarly, all AVE values surpassed the .50 benchmark (Garson, 2016), signifying that each factor explained a satisfactory amount of variance in its constituent items, which provides robust support for convergent validity. The specific results for each factor are presented below:

- Factor 1 (Efficacy in Student Engagement, Items 1, 2, 4, 6, 9, 12, 14, 22, 24), CR = .915, AVE = .736,
- Factor 2 (Efficacy in Classroom Management, Items 3, 5, 8, 13, 15, 16, 19, 21), CR = .911, AVE = .747, and
- Factor 3 (Efficacy in Instructional Strategies, Items 7, 10, 11, 17, 18, 20, 23), CR = .908, AVE = .764.

Table 10: *Pattern Matrix for Effectiveness Questionnaire*

	Factor		
	1	2	3
First Factor = Efficacy in Students' Engagement, CR = .915, AVE = .736			
EF1	.811		
EF2	.811		
EF22	.807		
EF6	.781		
EF14	.764		
EF9	.700		
EF24	.696		
EF12	.629		
EF4	.626		
Second Factor = Efficacy in Classroom Management, CR = .911, AVE = .747			
EF21		.823	
EF5		.820	
EF8		.811	
EF15		.797	
EF16		.759	
EF19		.711	
EF13		.677	
EF3		.581	
Third Factor = Efficacy in Instructional Strategies, CR = .908, AVE = .764			
EF20			.826
EF10			.803
EF7			.794
EF18			.793
EF17			.774
EF23			.684
EF11			.677

4.2.2.5 Cronbach's Alpha Reliability Indices

Table 11 shows the Cronbach's alpha reliability indices for the effectiveness questionnaire and its three components. The overall questionnaire demonstrated a reliability index of .941. The reliability indices for its three components were: efficacy in students' engagement (α = .920), efficacy in instructional strategies (α = .918), and efficacy in classroom management (α = .914). A number of scholars (Fryer et al., 2018; and Harrison et al., 2021) believe that instruments should have Cronbach's Alpha reliability indices equal to or higher than .70. Thus, it can be concluded that the teaching effectiveness questionnaire and its three components enjoyed "appropriate" reliability indices.

Table 11: *Cronbach's Alpha Reliability Statistics for Teaching Effectiveness Questionnaire and its Components*

	Cronbach's Alpha	N of Items
Effectiveness Questionnaire	.941	24
Efficacy in Students' Engagement	.920	9
Efficacy in Instructional Strategies	.918	7
Efficacy in Classroom Management	.914	8

These high reliability indices for teaching effectiveness might be indications of redundancy of items. To check for lack of redundancy of items, the average among the items should be computed. If the average among the items falls within the range of .15 to .50 (Clark & Watson, 2016), it can be concluded that the data did not contain redundant items. As shown in Appendix II, the average correlation among the items was .401. Thus, it was found that the teaching effectiveness questionnaire did not contain redundant items.

In summary, EFA confirmed a three-factor model for the teaching effectiveness questionnaire. The Cronbach's alpha reliability indices above .70 supported the reliability of this instrument.

4.2.3. Construct Validity of Teaching Enjoyment Questionnaire

To explore the underlying constructs of the teaching enjoyment questionnaire, exploratory factor analysis (EFA) using the principal axis factoring method and Promax rotation was performed. The following sections delineate the sequential steps undertaken in the present analysis, including the assessment of statistical assumptions, decisions regarding factor extraction and rotation, and the interpretation of the factor solution.

4.2.3.1 Selection of Rotation Method

The EFA for the teaching enjoyment questionnaire was explored using Promax rotation. As shown in Table 12, the components of the correlation matrix were all more than ±.32 (Grande, 2016; and Dagdag et al., 2020). This finding indicated that the underlying factors within the teaching enjoyment questionnaire were likely interrelated. Consequently, an oblique rotation method, specifically Promax rotation, was considered the most appropriate method for this study.

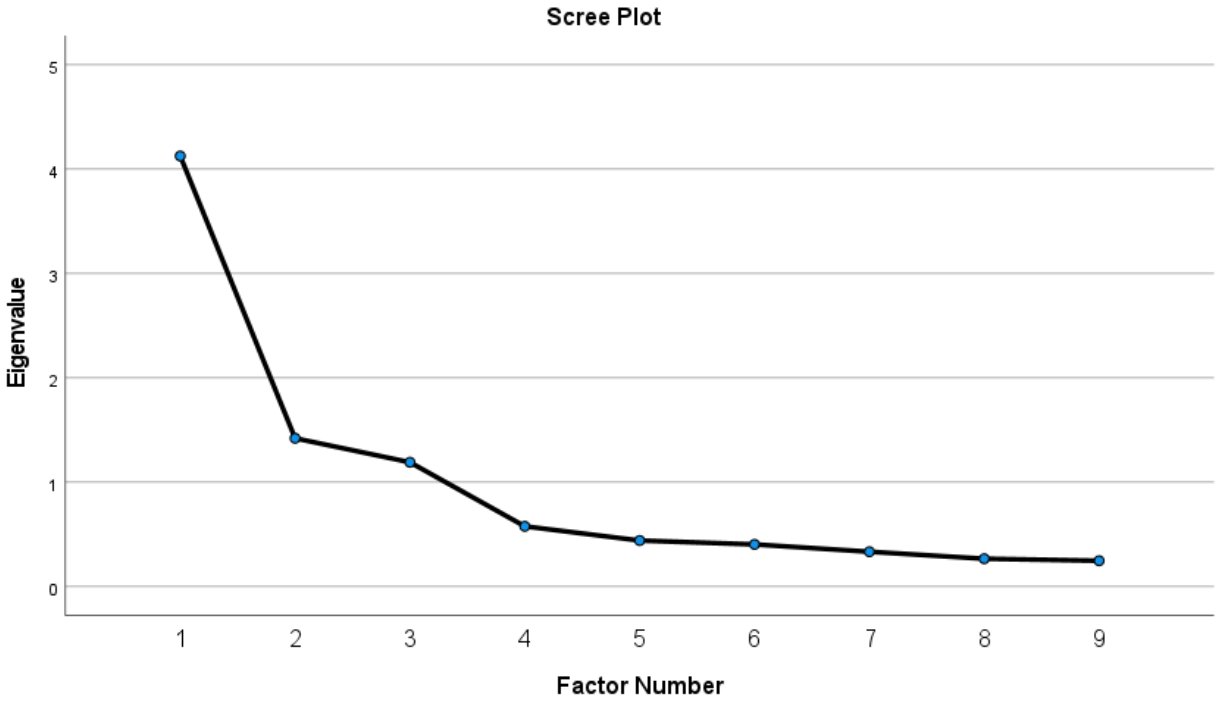
Table 12: *Component Correlation Matrix for Teaching Enjoyment Questionnaire*

Component	1	2	3
1	---		
2	.340	---	
3	.425	.403	---

4.2.3.2 Factor Extraction

An important step in EFA is deciding how many factors should be retained. The decision was made by consulting Scree Plot 3. The plot suggested the extraction of four factors underlying the constructs of the teaching enjoyment questionnaire.

Scree Plot 3: *Number of Factors to be extracted for Teaching Enjoyment Questionnaire*



4.2.3.3. Assessment of Sampling Adequacy and Sphericity

Prior to interpreting the factor solution, the dataset was evaluated for its suitability. As presented in Table 13, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded an index of .800. According to Field (2024), this value is considered "meritorious," showing a high percentage of common variance among the items and that the sample of 86 respondents is more than adequate for a stable factor analysis. Furthermore, Bartlett's test of sphericity was significant ($\chi^2(36) = 337.92$, $p < .001$). This result verifies that the correlation matrix (see Appendix I) is significantly different from an identity matrix, meaning the correlations among the items are sufficient to proceed with factor extraction. An identity matrix, in which all variables are uncorrelated, would make EFA inappropriate.

Table 13: *KMO and Bartlett's Test for Teaching Enjoyment Questionnaire*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.800
Bartlett's Test of Sphericity	Approx. Chi-Square	337.921
	Df	36
	Sig.	.000

4.2.3.4 Total Variance Explained and Factor Loadings

The outcomes of the factor extraction are briefly discussed in Tables 14 and 15. Table 14 presents the three extracted factors and their cumulative contribution to explaining the total variance within the dataset. Collectively, these three factors accounted for 63.76% of the total

variance. As reported by Hair et al. (2014), "in the social sciences, where data are often less accurate, considering an approach that explains around 60 percent of the total variance (and in some instances even less) is satisfactory" (p. 109). This threshold is also supported by contemporary research (e.g., Shrestha, 2021; Sigudha & Maritz, 2023).

Table 14: *Total Variance Explained for Teaching Enjoyment Questionnaire*

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	4.125	45.831	45.831	3.765	41.832	41.832	2.852
2	1.420	15.780	61.611	1.061	11.787	53.619	2.711
3	1.190	13.223	74.834	.913	10.147	63.766	2.795
4	.576	6.403	81.237				
5	.440	4.891	86.129				
6	.403	4.479	90.608				
7	.333	3.699	94.307				
8	.266	2.954	97.261				
9	.246	2.739	100.000				

Extraction Method: Principal Axis Factoring.

Table 15 presents the Pattern Matrix, which involves the factor loadings reflecting the unique association between each questionnaire item and its primary factor. As The Jamovi Project (2022) recommended, a factor loading of .40 or above was determined as the cutoff point for considering an item's contribution to a factor as meaningful. All nine items in this analysis indicated loadings above this cutoff, which supports that each item contributes significantly to its assigned construct.

Table 15: *Pattern Matrix for Enjoyment Questionnaire*

	Factor		
	1	2	3
First Factor = Personal Enjoyment, CR = .832, AVE = .789			
ENJ1	.824		
ENJ2	.798		
ENJ3	.744		
Second Factor = Enjoyment from Students' Interaction, CR = .826, AVE = .779			
ENJ4		.883	
ENJ5		.815	
ENJ6		.638	
Third Factor = Positive Classroom Climate, CR = .809, AVE = .749			
ENJ7			1.041
ENJ9			.627
ENJ8			.578

Table 15 (above) also demonstrates CR and AVE indices which represents construct reliability and convergent validity of each factor. All CR values were above .70 (Hair et al., 2014), showing that the items in each factor consistently measured the same underlying construct, thereby demonstrating strong internal reliability. Similarly, all AVE values surpassed the .50 benchmark (Garson, 2016), signifying that each factor explained a satisfactory amount of

variance in its constituent items, which provides robust support for convergent validity. The specific results for each factor were as follows:

- Factor 1 (Personal Enjoyment, Items 1, 2, 3), CR = .832, AVE = .789,
- Factor 2 (Enjoyment from Students' Interaction, Items 4, 5, 6), CR = .826, AVE = .779, and
- Factor 3 (Positive Classroom Climate, Items 7, 8, 9), CR = .809, AVE = .749.

4.2.3.5 Cronbach's Alpha Reliability Indices

Cronbach's alpha reliability indices for the enjoyment questionnaire and its three components are presented in Table 16. The overall questionnaire demonstrated a reliability index of .829. The reliability indices for its three components were: personal enjoyment (α = .829), enjoyment from students' interaction (α = .829), and positive classroom climate (α = .814). A number of scholars (Tseng et al., 2006; Dörnyei & Taguchi, 2009; Fryer et al., 2018; Harrison et al., 2021) believe that instruments should have Cronbach's Alpha reliability indices equal to or higher than .70. Thus, it can be concluded that the teaching enjoyment questionnaire and its three components demonstrated "appropriate" reliability indices.

Table 16: *Cronbach's Alpha Reliability Statistics for Teaching Enjoyment Questionnaire and its Components*

	Cronbach's Alpha	N of Items
Enjoyment Questionnaire	.851	9
Personal Enjoyment	.829	3
Enjoyment from Students' Interaction	.829	3
Positive Classroom Climate	.814	3

In summary, EFA confirmed a three-factor model for the teaching enjoyment questionnaire. The Cronbach's alpha reliability indices of greater than .70 supported the reliability of this instrument.

4.3. Main Study

As it was mentioned earlier, the current study was designed to probe any significant relationships among technophobia, teaching effectiveness, and teaching enjoyment. To probe the null hypotheses raised in the present study, Pearson correlation was performed. Prior to discussing the results, the normality of the data will be probed using skewness and kurtosis indices (Table 17). Skewness and kurtosis indices probe relative symmetry and peakedness of the distribution of the data collected for this study. Although a value of zero for a set of data is considered as being perfectly normal, practical values within the acceptable ranges of ±2 are acceptable (Bachman, 2005; Bae & Bachman, 2010; and George & Mallery, 2020). According to the results presented in Table 17, the data met the assumption of normality.

Table 17: *Skewness and Kurtosis Indices of Normality*

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Technophobia	75	.750	.277	.769	.548
Teaching enjoyment	75	-.403	.277	.316	.548
Teaching effectiveness	75	-.215	.277	.734	.548

4.3.1. Reliability Estimates

Cronbach's alpha reliability indices for technophobia, teaching effectiveness, and teaching enjoyment are shown in Table18. The three questionnaires demonstrated reliability indices of .940, .932, and .908, respectively. These reliability indices can be considered as "appropriate" according to a number of scholars (Tseng et al., 2006; Dörnyei & Taguchi, 2009; Fryer et al., 2018; Harrison et al., 2021), who believe that instruments should enjoy Cronbach's Alpha reliability indices equal to or higher than .70.

Table 18: *Cronbach's Alpha Reliability Statistics for Main Study*

	Cronbach's Alpha	N of Items
Technophobia	.940	12
Teaching Effectiveness	.932	24
Teaching Enjoyment	.908	9

4.3.2. Exploring First Null-Hypothesis

The first null hypothesis stated that there was no significant relationship between EFL teachers' technophobia and teaching enjoyment. Table 19 shows the results of the Pearson correlation to probe any significant relationship between technophobia and teaching enjoyment. The results ($r (68) = -.30$, showing a moderate effect size, $p < .05$) indicated that there was a significant, negative, and moderate relationship between technophobia and teaching enjoyment. Therefore, the first null hypothesis was rejected.

Table 19: *Pearson Correlation between Technophobia and Teaching Enjoyment*

		Teaching Enjoyment
Technophobia	Pearson Correlation	-.300**
	Sig. (2-tailed)	.009
	N	75

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

4.3.3. Exploring Second Null-Hypothesis

The second null hypothesis indicated that there was no significant relationship between EFL teachers' technophobia and teaching effectiveness. Table 20 shows the results of Pearson correlation to probe any significant relationship between technophobia and teaching effectiveness. The results ($r (68) = -.398$, showing a moderate effect size, $p < .05$) indicated that there was a significant, negative, and moderate relationship between technophobia and teaching effectiveness. Therefore, the second null hypothesis was rejected.

Table 20: *Pearson Correlation between Technophobia and Teaching Effectiveness*

		Teaching Effectiveness
Technophobia	Pearson Correlation	-.398**
	Sig. (2-tailed)	.009
	N	75

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

5. Discussion

The aim of the current study was to investigate the relationship among EFL teachers' technophobia, teaching enjoyment, and teaching effectiveness. Using a quantitative

correlational design and descriptive statistical analysis, the results showed that teachers with greater levels of technophobia tended to report lower levels of teaching enjoyment and teaching effectiveness.

The findings showed a significant, negative, and moderate relationship between technophobia and teaching enjoyment, indicating that teachers who feel fear or anxiety toward using technology experience lower levels of enjoyment. This finding supports findings from previous research showing that negative emotional factors reduce professional satisfaction (Agogo & Hess, 2018; Yang & Wang, 2024). Based on the Control-Value Theory of Achievement, the amount of control people have over tasks can influence emotional states such as enjoyment (Pekrun, 2006). When teachers cannot manage technological tools effectively, they feel anxiety rather than enjoy using them. Research also suggests that there is a positive association between resilience, emotional regulation, and teaching enjoyment (Derakhshan et al., 2022), while Xiao et al. (2022) and Dewaele & Li (2021) emphasized that negative emotions such as technophobia are negatively related to teachers' enthusiasm, motivation, and engagement in the classroom.

The findings also revealed a significant, negative, and moderate association between technophobia and teaching effectiveness, showing that teachers who are uncomfortable integrating technology and feel greater levels of technophobia consider themselves less effective in their teaching. As emphasized in previous studies, the findings of the current study show the negative influence of technophobia on teaching quality (Reddi & Raju, 2023; Pahamzah, 2022). According to Self-Efficacy Theory, teachers who feel less confident in using technology may have lower self-efficacy, which reduces the effectiveness of teaching (Huang, 2022; Tschannen-Moran & Hoy, 2001). In addition, technophobia may limit instructional creativity and technology integration, and as a result classroom interaction and students' engagement can be reduced (Abbasi & Tabatabaee-Yazdi, 2021; Valizadeh, 2020; Samir & Tabatabaee-Yazdi, 2023). On the whole, these findings indicate that technophobia is associated with both teachers' emotional states and professional performance (Derakhshan et al., 2022).

However, a completely negative impact of technophobia has not been indicated in all studies. Al Mulhim & Almulhem (2024) reported that techno-anxiety can exist alongside techno-satisfaction, indicating that teachers may teach effectively despite having stress about integrating technology. Similarly, Jang et al. (2024) identified different teachers' profiles and found that adequate institutional support, resources, and training can help teachers integrate technology successfully and effectively. These findings indicate that contextual factors play an important role in experiencing technophobia.

In conclusion, the importance of addressing both emotional and technological challenges in EFL education was emphasized in the findings of this study. By reducing technophobia, teachers feel more confident, experience greater enjoyment, and improve their teaching effectiveness.

6. Conclusion

The current study explored the association among EFL teachers' technophobia, teaching enjoyment, and teaching effectiveness by investigating how emotional states and technological factors may influence the teaching process in the EFL educational setting.

The findings suggest that teachers' emotional experiences and attitudes toward technology are closely related to teaching effectiveness. Technophobia may act as a barrier that limits the quality of instruction, while teaching enjoyment as a positive factor improves teaching effectiveness. These results emphasize that pedagogical knowledge, alongside teachers' emotional well-being, confidence in using technology, and positive attitudes toward technological tools, are all important in instructional effectiveness.

In conclusion, teacher education and professional development programs should pay particular attention to increasing teaching enjoyment and reducing technophobia. Teaching practices and educational outcomes in EFL classrooms can be improved by supporting teachers both emotionally and technologically.

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