

Unleashing the Power of Learning Technology: Exploring the Nexus between EFL Education, Cognitive Processes, and Metacognition

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Abstracts: This study aims to explore the types of learning strategies used by language teachers in EFL classrooms. Additionally, it investigates how language teachers utilize technology to engage EFL students in cognitive and metacognitive activities that facilitate foreign language learning. The study employed a mixed-methods approach, involving 48 language teachers (29 males and 19 females) from two private universities in southern Amman. The participants were divided into two groups based on their specialty majors (English Language and Literature and English Language and Translation). They completed a survey and participated in a focus-group interview. The findings of the study indicated that language teachers in EFL classrooms found tablets and laptops to be the most effective learning strategies. Additionally, the study did not identify any statistically significant gender-related differences in the application of these strategies. However, it was observed that summarizing and evaluating were the most frequently utilized strategies by language teachers in EFL classrooms. Furthermore, the study highlighted that the absence of learning technology, such as tablets and laptops, in EFL classrooms has a negative impact on instructional delivery and consumes time. These learning technologies are considered cognitive tools that enhance language learning.

Keywords: Learning Technology, Cognitive Processes, Metacognition, EFL Activities.

1. INTRODUCTION

As technology has become an indispensable part of students' and teachers' everyday lives (Szeto, Cheng, & Hong, 2016), and because of the rapid integration of technology in the learning and teaching processes, the teachers' proper integration of technology in the classrooms has become necessary (Baser, Kopcha, & Ozden, 2016). Technology has been extensively employed to facilitate the learning of English as a Foreign Language (EFL) in academic settings by aiding in the provision of language input and output. The ability to seamlessly integrate learning activities within and outside the classroom is another benefit of technology (Looi et al., 2010). In academic settings, technology encompasses computers, data shows, laptops, tablets, cell phones and other gadgets (Shadiev & Yang, 2020). Thus, due to several features like messaging, recording, conversing, locating, and monitoring, technology may be seen as an assistant tool to help the learning process in language learning (Shadiev & Yang, 2020). For instance, language learners can generate written or spoken content using a virtual keyboard or an integrated microphone and share it with others for review and assessment.

Language learning is a complex cognitive ability (Leinhardt & Greeno, 1986). Thus, language teachers should engage students in cognitive and metacognitive activities to support language learning. Successful language teaching necessitates teachers' proper pedagogical knowledge and technological abilities, and foreign language learning is linked to the methods and approaches used in the classroom. According to Ondrakova and Tauchmanova (2019), a creative learning environment should be built with more information and more pertinent inputs while taking into account the students' prior language experiences. Teachers employ technology to increase students' language learning (Lin, 2010). This integration of technology in foreign language classrooms not only helps improve learning effectiveness (Sharp, 2017) but also develops teachers' teaching abilities (Sar & Bostancolu, 2018).

Nonetheless, such integration of technology in foreign language classrooms may lead to shortcomings. Hwang and Wu (2014) issued a warning about the complexity of learning environments produced by technological advances in the real world. Instructors' lack of expertise in technology integration in EFL classes is one factor. Chu (2014) further cautioned that in technology-assisted educational settings, students must concurrently engage with people, things, situations, learning content, and technology, and that puts pressure on both instructors and students due to time constraints and the volume of learning information that needs to be covered. Therefore, such settings may make it more difficult for language teachers to teach the syllabus and for students to learn and apply new information while using technology (Chen et al., 2017). For instance, students who are subjected to an excessive amount of cognitive load (Chu, 2014; Huang et al., 2013) exhibit negative feelings (Chen et al., 2017; Pishghadam et al., 2016) and are unsatisfied with their educational experience.

1.1. Statement of Problem

Despite the many advantages of integrating technology in academic settings, the majority of studies in this field noted that technology used to aid in learning was piloted and focused on game-based learning for EFL (see Hung et al., 2015b). These studies also highlighted topics unrelated to EFL students' cognitive and metacognitive processes, such as the evaluation of learning (AISoh & Zualkernan, 2017), anxiety related to learning (Chen et al., 2017), and learning new words (Lungu, 2016). Teachers and scholars must make sure that language learners develop cognitive and metacognitive abilities. The benefits of utilizing technology to speed up language learning, particularly with reference to language learners' cognitive and metacognitive activities, are, however, not well covered in the research.

1.2. Significance of the Study

The significance of this study is fourfold: first, the outcomes of this study will provide valuable support for future research on the utilization of technology by language teachers in EFL classrooms. Second, it will advance theoretical knowledge of the role of cognitive and metacognitive activities in language learning. Third, it will redefine metacognitive theory in the FLL context. Fourth, it will contribute to an understanding of the potential advantages and challenges associated with technology-enhanced learning of language skills and sub-skills.

1.3. Aims of study

The current study looks at the sorts of learning strategies used by language teachers in EFL classrooms. Furthermore, this study investigates how language teachers use technology to involve students in cognitive and metacognitive activities that aid in foreign language learning. Aligned with these aims, the study was guided by the following research questions:

- 1- What are the most effective technological tools that language teachers employ to foster the learning process in EFL classrooms?
- 2- What learning strategies do language teachers employ in EFL classrooms?
- 3- Does the gender of the language teachers project any statistically significant differences in the learning strategies used in EFL classrooms?

How do language teachers integrate technology to engage students in cognitive and metacognitive activities to foster students' language learning?

2. THEORETICAL BACKGROUND

2.1. Cognition and Metacognition

Learning includes two main components: the content and the actual learning process. Learners use cognitive methods to understand the content and metacognitive strategies to observe the entire learning process, intentionally or unintentionally (Tran & Hasegawa, 2020). Flavell who coined the metacognition theory in 1979, described it as "knowledge and awareness of one's cognition" (Buratti & Allwood, 2015). When learners engage in

cognitive activity, such as problem-solving, they also engage in metacognition. The more difficult the activity is, the sooner metacognition emerges. Flavell [15] determines that metacognition involves two components: (i) metacognitive knowledge entails recognizing objectives and sub-goals as well as selecting cognitive processes to utilize in achieving them; and (ii) metacognition experiences include an individual's subjective internal reactions to his own metacognitive information, objectives, or strategies.

For example, when FLLs are involved in a cognitive activity, such as learning an unfamiliar grammatical structure, their metacognition undergoes the following steps: Metacognitive knowledge encompasses three distinct types of information: (a) insights into learners themselves, including their strengths and weaknesses in language learning; (b) awareness of the task and its associated objectives, such as recalling grammar syntax and applying it in real-life contexts; and (c) cognitive strategies employed for learning the grammar lesson. Individuals' cognitive strategies for learning a foreign language improve progressively over time. In order to effectively reinforce knowledge, such techniques might include reading grammar syntax, practicing grammar drills to aid in long-term memory, and then practicing grammar syntax through memory recall rather than relying solely on written language. EFL students' metacognition continuously monitors and compares learning progress to the intended objectives. They could discover that the current cognitive strategy plan is not working as well as expected. The metacognitive experience serves to refresh their metacognitive knowledge and proposes alternative cognitive strategies to assist learners in achieving their desired objectives. Consequently, understanding how cognitive strategies function and how to effectively employ them within an academic setting is crucial for foreign language learning (FLL) (McCrudden & McNamara, 2017).

3. LITERATURE REVIEW

3.1. Portable Technology

No doubt portable technology provides an easy way to learn, allowing it to be accessed at any time and from any location (Kim et al. 2015), as well as establish a real-life learning environment in an already established setting rich in learning materials (Kim and Kim 2012). The term "portable technology" describes the use of wireless and mobile technologies in education. Cell phones, smartphones, computers, and tablets are examples of this technology (Park, 2011). According to Wang et al. (2009), such a technology facilitates both formal and informal learning.

Several studies have looked at how students use portable devices to learn EFL as well as other subjects (Hung, Young, et al., 2015; Hung et al., 2015b; Kim & Kim, 2012), and they have shown that these technologies can significantly aid in the learning process. For instance, in a study by Hung et al. (2015), a learning environment that is structured around the use of games was created using tablet PCs. Students in an elementary school participated in a game called "Crossword Fan-Tan." The students in the experimental group utilized tablet PCs as their primary learning tool, while those in the controlled group used markers on different colored papers. Furthermore, Hung et al. (2015b) examined the educational value of the game and discovered that low-achieving EFLs in the experimental group outperformed their peers in terms of attitude and learning performance. Kim and Kim (2012) employed a tool known as the "Digital Mind Map" to offer visual support to elementary school students while they were learning English vocabulary.

After that, Kim and Kim evaluated the class's satisfaction level and vocabulary learning progress, concluding that the "Digital Mind Map" method is a successful one for learning English vocabulary. According to the students, the "Digital Mind Map" helped them remember new words easily, find vocabulary terms quickly, and linked them to previously known phrases.

Two other studies discussed the advantages of using portable and fixed PCs in EFL reading courses (Lin, 2014; Oh et al., 2014). The studies revealed that EFL students in both the fixed PC and portable PC groups showed high levels of appreciation and motivation for reading, though the portable PC group's levels were higher than the fixed PC and traditional groups', which promoted learning autonomy.

In two more studies, portable PCs were examined in terms of collaboratively developed EFL learning. Lan et al. (2007) experimented on primary school EFL students. The study included two groups: one that learned in a regular EFL environment and another that learned with portable PCs. The results of the study indicated that students who engaged in learning activities using portable PCs demonstrated higher levels of attention during reading activities and exhibited greater cooperation compared to students who did not use PCs for learning. Shen and Chern (2014) had students read and write digital tales. The students and their instructors in this study had good opinions regarding utilizing portable PCs in the classroom for EFL instruction, indicating that portable PCs allowed students to study cooperatively, which increased their engagement.

Other studies highlighted EFL outside the classroom. Chen (2013) studied students' attitudes toward technology as well as how they use PCs as tools in non-structured learning settings, such as everyday life or personal interests. Chen (2013) asserts that portable computers are highly effective in creating a vibrant and collaborative learning environment for English as a Foreign Language (EFL) instruction. Besides, students expressed great satisfaction and a favorable attitude toward the use and efficacy of portable PCs as FLL tools. Shadiev et al. (2017) examined the effects of studying outside the classroom with and without portable computers on learning accomplishment and cognitive load and discovered that EFL students who used portable PCs outperformed those who did not. Furthermore, using portable PCs in learning activities placed a lesser cognitive strain on students than studying without technology assistance.

3.2. Learning Strategies

According to Oxford (2011), the use of Language Learning Strategies (LLS) can be categorized into various areas, including the main language skills (listening, reading, writing, and speaking) and language subskills (vocabulary and grammar).

3.3. Listening

Chang and Chang (2014) conducted a study on the English listening comprehension strategies employed by forty-eight Taiwanese college students using YouTube's caption manager platform. The researchers utilized metacognitive items from the "Strategy Inventory for Language Learning" (SILL) to evaluate the students' use of strategies such as planning, goal setting, organization, attention, effective learning opportunities, monitoring, and evaluation. The study took place on a college campus and spanned 16 weeks. The findings revealed that the students deliberately combined metacognitive listening strategies into their English learning process while watching YouTube videos. Students who reported using metacognitive strategies from the SILL exhibited notably higher performance on listening comprehension exams. These students enhanced their comprehension abilities by engaging in activities such as creating dictation tasks, observing their strategy usage, and considering the challenges they faced while listening.

Rahimi and Katal (2012) conducted a study using the "Metacognitive Awareness Listening Questionnaire" to examine the awareness of metacognitive listening strategies and the readiness to use English podcasts among 141 college students in Tehran. The study emphasized the importance of employing "problem-solving, planning, and evaluation, directed attention, personal knowledge, mental translation, and problem-solving" strategies to enhance listening skills and maximize the benefits of technology-based learning. Rahimi and Katal suggested that being aware of metacognitive listening strategies predicted the students' willingness to use podcasts for English language learning.

3.4. Reading

Dalton et al. (2011) created a web-based reading prototype to improve reading proficiency, which included embedded cues in digital texts. Seventy-five English fifth graders who spoke only one language and 31 bilingual students from the Boston region participated in the study, where Latinos made up the bulk of the school body. Students were taught six skills (prediction, questioning, clarifying, and summarizing, visualizing, and drawing connections) to their experiences or emotions and were divided into one of three groups: comprehension strategies

and vocabulary, or comprehension strategies and vocabulary combined. The study's findings showed that in terms of reading comprehension, the group getting both vocabulary and strategy education as well as the vocabulary-only group beat the group receiving only strategy teaching.

Klapwijk and Toit (2009) conducted a mixed method study to improve reading comprehension strategy training integrated in technology-enhanced learning. The study targeted sixth-grade English language learners in Western Cape, South Africa. The educational strategy involved an online reading exam, an interactive multimedia lesson on CD-ROM, and a booklet to walk students through each stage of the session. The integrated method gave students engaged and dynamic learning opportunities by integrating technology into reading education. It made it possible for each student to study at their own speed while receiving immediate feedback to aid in the development of their knowledge. Additionally, the addition of audio and video components produced a more interesting and engaging atmosphere, which increased the kids' interest in reading exercises.

3.5. Writing

Two studies highlighted the importance of incorporating technology-enhanced learning environments and tools to support language learners in the writing tasks. These technologies provided students with various strategies and resources, fostering their metacognitive, cognitive, affective, and social skills in the writing process.

Yoon and Jo (2014) looked at the usage of the Lextutor free online corpus for writing mistake correction by four Korean college students. The four categories used by the researchers to group the students' learning strategies are affective (reducing anxiety and self-encouragement), cognitive (using materials, association, grouping, and translation), metacognitive (self-evaluation and monitoring), and social (seeking clarification from others). The most frequently used strategy among these four categories was the cognitive strategy.

Similarly, Tang, Xie, and Wang (2011) created a Wiki-based collaborative writing setting for an English subject course at a Chinese university. This setting had four sorts of tools that students could utilize to complete writing assignments: (1) online resource tags, (2) peer review and feedback; (3) semantic search, and (4) page histories. The researchers identified three learning strategies employed by the students: collaboration and exchanging information, peer evaluation, and observing the steps of the writing process. The evaluation results revealed that the implementation of a Wiki-based collaborative writing approach fostered student engagement, facilitated effective teamwork, and heightened responsiveness from the audience.

3.6. Speaking

The research on speaking strategies in the area of Technology-Enhanced Language Learning (TELL) is surprisingly limited, possibly due to the limited available technology for interactive speaking and speech recognition. However, Hung (2016) conducted a project in Taiwan asking 60 English as EFL students to upload a 3-minute video speech on Facebook to explore their speaking strategies over an academic semester. The findings revealed that modifying language for accuracy was most frequently used strategy. Constant practice was another prevalent strategy utilized by the learners. They also engaged in watching and analyzing oral comments made by their peers, taking notes of these comments for future improvements, and engaging in discussions with classmates to further enhance their speaking skills.

3.7. Vocabulary

The field of Technology-Enhanced Language Learning (TELL) has shown significant interest in studying vocabulary learning strategies. While grammar learning strategies are often combined with vocabulary learning strategies, there has been a stronger focus on vocabulary in TELL research.

Li (2009) performed research among Chinese-speaking ESL students in Canada to compare vocabulary acquisition techniques with and without technological help. Twenty-four high school students were tasked with reading ten short Aesop tales, five on paper and five on the electronic platform. Using (online dictionaries, taking

notes, guessing and inferring, summarizing and finding links, reading aloud, and discussing) were some of the tactics utilized in the electronic environment. According to the findings, students in the electronic condition tended to use higher-level cognitive and social skills, such as summarizing and participating in discussions. However, in the paper-based condition, students used fewer social techniques, such as asking for clarification on word definitions from the researcher or their colleagues. Technology can provide crucial assistance for vocabulary acquisition processes, allowing students to participate in a variety of cognitive and social tactics.

Smith and colleagues (2013) developed a game for vocabulary learning that used interference-based strategies to assist students in learning new vocabulary terms and drawing conclusions about a text for 57 intermediate-level Chinese students. The students participated in interference-based computer games to practice drawing inferences and connecting with the language. According to the study, the use of inference-based computer games encouraged deeper processing of language and increased recall among students. Moreover, students were able to digest the vocabulary more deeply and retain the learned words after implementing these tactics into the games.

3.8. Grammar

There has been little research in the area of technology-enhanced grammar strategies (Chang, Lee, Su, & Wang, 2016; Cohen et al., 2011).

The impact of self-explanation as a grammar strategy in the field of Technology-Enhanced Language Learning (TELL) was investigated by Chang, Lee, Su, and Wang (2016). The study used a specific website for learning Chinese sentences online, where students were encouraged to use self-explanation to identify, analyze, and rectify any misunderstandings they might have had concerning Chinese sentences. The study indicated that the use of self-explanation as a grammar strategy in the web-based Chinese sentence-learning system had a positive impact on learning outcomes, specifically in improving grammar and sentence structure. Nevertheless, there were no notable differences in cognitive load between the experimental and control groups during the performance of the grammar tasks.

Moreover, Cohen et al. (2011) monitored Spanish grammar learning and usage strategies. They developed a website to track grammar strategies used by 15 Spanish language learners over two months. The website comprised two parts: one part provided strategies for specific grammar forms that learners identified as necessary for their learning, while the other part provided strategies to enhance learners' utilization of grammar strategies. Students reported improved performance in class, test scores, and writing projects. Some participants reported increased skill and confidence in employing grammatical forms with which they had previously difficulty. In general, the learners aided significantly from utilizing the grammar strategies website, demonstrating that depending on the strategies offered on the website aided their grammatical proficiency.

Reviewing related research suggests that most research concentrated on game-based learning for EFL (see Hung et al., 2015b), while others experimented in primary school settings. Moreover, little is known regarding how to use technology to promote the EFLs' cognitive and metacognitive abilities to facilitate language learning in a university setting, particularly in Jordan.

4. METHODS

4.1. Study Design

This study employs a mixed-methods approach, specifically an explanatory design, to structure the study and achieve the research aims (Creswell, 2002). The explanatory design seeks to initially gather quantitative data, which is then supplemented by qualitative data to complement and enhance the quantitative findings. For the quantitative data collection, a survey using a 5-point Likert scale was developed based on Lee's (2002) general recommendations to examine the language instructors' use of learning strategies in EFL classrooms. The survey addressed four cognitive strategies: organizing, summarizing, imagery, and elaboration, as well as three metacognitive strategies: planning, monitoring, and evaluating. Furthermore, a qualitative approach was used to

learn how language teachers integrate technology to engage students in cognitive and metacognitive activities to foster language learning, as well as to further expand on survey responses providing personal experiences and to answer the research questions. According to Creswell (2014), the use of a qualitative approach enables the investigation of a subject of interest that has received little attention in the literature. Besides, the utilization of a focus group interviews provides an opportunity for teacher participants to contribute their insights and expertise, thereby generating new knowledge in the field.

4.2. Validity, Reliability and Objectivity

A test was conducted to assess the internal reliability of each item grade and the overall grade of the scale. The research findings indicated that the correlation coefficients of the items ranged from 0.75 to 0.89. The statistical analysis revealed that the items were statistically significant at a significance level of $\alpha \leq 0.01$, indicating a high level of internal consistency within the scale. A panel of university professors with expertise in TESOL, TEFL, and applied linguistics rigorously reviewed the instruments to confirm their validity, and their comments were taken into consideration. Furthermore, this study collected data from two sources (surveys and focus group interviews). The researchers also evaluated the reliability of the scale using two methods: Split-Half analysis and Cronbach's Alpha. The results indicated that the Split-Half analysis yielded a reliability coefficient of 0.84, while Cronbach's Alpha coefficient was 0.89. These findings demonstrate a high level of internal consistency and reliability within the scale. Additionally, the reliability of the qualitative data was established through a thorough analysis of the collected data, following the guidelines proposed by Yin (1994). Finally, to maintain objectivity, the researchers remained unbiased and unaffected by the participants' responses during the interviews.

4.3. Data Sources

The researchers collected the data for this study through two sources, namely surveys and focus group interviews. Using multiple data sources enhances data validity (Yin, 2003). The survey method was chosen due to its capacity to reach a large sample of research participants (Bird, 2009; Weisberg, 2008). On the other hand, focus group interviews were conducted to validate the quantitative data, delve into in-depth details, and provide further explanations of the findings (Pamela, 2006).

4.3. Data Collection

The survey was developed online using Google Forms to provide easy access and allow participants to complete the survey remotely, thereby eliminating any geographical constraints. The survey was divided into two sections: (a) items to gather personal background details from the participants and (b) items to evaluate the cognitive and metacognitive activities used by language teachers in EFL classrooms. The survey employed a five-point Likert scale to collect participant responses, which were subsequently analyzed and utilized to address the initial three research questions.

Once the survey was analyzed and the cognitive and meta-cognitive activities language teachers employed in EFL classrooms were identified, the teacher participants were interviewed collectively according to their major through the Zoom application. Each focus group interview had an average duration of around 25 minutes. The interviews were conducted in a focus group format, as described by Merriam (1998). These focus group interviews served the purpose of not only consolidating the quantitative data but also guiding the data analysis process and providing insights for addressing the fourth research question.

4.4. Participants

The survey included 48 language teachers from two private universities in southern Amman. The participants held a Ph.D. and taught EFL courses in the departments of English Language and Literature and English Language and Translation. The researchers contacted the participants by WhatsApp and email and requested that they participate in the study. After obtaining their consent, the survey was sent to their email addresses and delivered to their WhatsApp accounts. The participants were divided into two groups based on their majors. The first group (English Language and Literature) consisted of 26 language instructors (16 males and ten females), whereas the

second group (English Language and Translation) consisted of 22 language teachers (13 males and nine females). They were also assured that they had the option to withdraw from the study at any point, and their identities and affiliations would remain confidential as pseudonyms would be used instead.

4.5. Data analysis

This study performed statistical analyses using the Statistical Package for the Social Sciences (SPSS Inc.) software. Additionally, the two focus group interviews were audio-recorded with the teachers' approval and then thoroughly transcribed and coded using Strauss and Corbin's (1998) open-coding analysis technique. The codes were then categorized, and codes with related meanings were combined. A framework of pre-established categories was used to describe findings that were relevant to the study topics.

5. FINDINGS

RQ 1: What are the most effective technological tools that language teachers employ to foster the learning process in EFL classrooms?

Table (1): one sample test to find out the most effective learning technology tools.

learning technology tools	Mean	St.dev	t	Sig
Tablets	4.21	0.66	0.81	0.00*
Laptops	4.13	0.72	0.95	0.00*
Smart Boards	3.97	0.87	0.98	0.00*
Cell Phones	3.76	0.99	1.03	0.00*
Digital interactive whiteboards	3.59	1.14	1.38	0.00*

*Significant at ($\alpha \leq 0.01$)

Results in Table 1 show that the technology tools that are most effective in learning are “tablets and laptops,” with a mean of 4.21 and 4.13, respectively, while the technology tools that are least effective in the learning process are Cell Phones and Digital interactive whiteboards, with a mean of 3.76 and 3.59, respectively.

RQ 2: What learning strategies do language teachers employ in EFL classrooms?

Table (2): one sample test for learning strategies

Variable	Dimensions	Mean	St.dev	t	Sig
Cognitive activities	Summarizing	3.91	0.76	0.94	0.00*
	Elaboration	3.84	0.82	0.98	0.00*
	Imagery	3.49	0.95	1.37	0.00*
	Organization	3.53	0.98	1.31	0.00*
	Total	3.61	0.91	1.28	0.00*
Metacognitive activities	Evaluation	3.66	0.88	1.10	0.00*
	Monitoring	3.38	1.03	1.55	0.00*

	Planning	3.45	0.90	1.48	0.00*
	Total	3.40	0.87	0.99	0.00*

*Significant at ($\alpha \leq 0.01$)

Table 2 demonstrates that language teachers frequently use cognitive and metacognitive activities in their EFL classes. According to the participants' responses, the summarizing activity received the highest score among the cognitive activities (mean = 3.53), while the imagery activity received the lowest score. According to the participants' responses, the evaluation activity was the most successful metacognitive activity, whereas the planning strategy was the least successful.

RQ 3: Does the gender of the language teachers' project any statistically significant differences in the learning strategies used in EFL classrooms?

Table (3) t-test to find out the difference between learning strategies based on gender.

Variable	Dimensions	Gender	N	Mean	St.dev	t	α
Cognitive activities	Summarizing	Male	29	3.86	0.69	5.10	0.09
		Female	19	3.66	0.76		
	Imagery	Male	29	3.54	0.93	3.68	0.20
		Female	19	3.59	0.98		
	Elaboration	Male	29	3.83	0.75	5.31	0.26
		Female	19	3.57	0.77		
	Organization	Male	29	3.74	0.73	3.22	0.07
		Female	19	3.55	0.68		
Metacognitive activities	Emotional	Male	29	3.49	0.63	5.08	0.11
		Female	19	3.21	0.66		
	Monitoring	Male	29	3.61	0.82	4.08	0.06
		Female	19	3.66	0.87		
	Planning	Male	29	3.31	0.72	4.25	0.08
		Female	19	3.38	0.74		
	Total	Male	29	3.71	0.64	5.06	0.13
		Female	19	3.35	0.60		

* Significant at ($\alpha \leq 0.05$)

Table 3 shows that there are no gender-related statistically significant differences in terms of the application of learning strategies and their dimensions (cognitive and metacognitive activities) that language teachers use in EFL classrooms. The t-values were greater than 0.05 and ranged between 0.06 and 0.26.

5.1. Qualitative Data

The teacher participants were interviewed collectively according to their major through the Zoom application. Each focus group interview had an average duration of around 25 minutes and explored the following topics: the various types of technology employed by language teachers in EFL classrooms, as well as the specific strategies and approaches they utilize when employing such technology to foster student engagement in cognitive and metacognitive activities for language learning. The focus group interviews played a dual role in the study. Firstly, they served to consolidate the quantitative data. Additionally, they provided valuable guidance for the data analysis process and made a significant contribution to addressing the fourth research question.

RQ 4: How do language teachers integrate technology to engage students in cognitive and metacognitive activities to foster students' language learning?

The majority of the language teachers in the both majors reached consensus that all types of technology are cognitive tools and they use to foster language learning in FLL classrooms. One teacher participant noted:

Luckily, we have a Wi-Fi in classrooms, and most students bring their tablets and personal computers; I have my students listen to some literary excerpts, and sometimes I have them see some parts of the playsthen I assign them some parts to role play or write summaries (interview one).

Another teacher further said *“once my students finish their translation tasks, I always have them share their work to evaluate and self-correct their works....it saves my time and infuses autonomy in my students”* (interview two). Moreover, the language teachers in the both majors believed that some types, though related, were less effective in FLL classrooms. For example, they described students’ cell phones as distractive cognitive tools. One teacher commented *“cell phones are only allowed in my class if the digital interactive whiteboard or the computer and data show are not available. They seem to distract my students and divert their attention from the given tasks’* (interview two).

Furthermore, the language teachers in the both majors believed that the summarizing activity was the most common cognitive activity they assign their EFLs to do inside and outside the classroom. One teacher noted that *“I always ask my students summarize the Drama and Novel lessons to make sure they understand the main objectives, then we go over the objectives to help them assess their understanding of the lessons* (interview one)”. Others talked about the accessibility of using technology in FLL classes; one teacher said: *“my students take pictures to what I write on the board and record my translation....this saves time and allow them to focus on the given tasks* (interview two)”. The teachers added that once their students manage to summarize the given tasks, they allow them to compare their work and consequently self- evaluate their performance. One teacher said: *“I let some of my students read their translations aloud, so the rest can check their work accordingly* (interview two). Another teacher added *“before we begin a paragraph writing lesson, we do brainstorming. One student comes up with an abstract idea and students add to that idea* (interview one)”.

In addition, the language teachers in both majors described technology as cognitive tools which absence in EFL classrooms impacts delivery and consumes time. One teacher said:

When students use their tablets or laptops with headsets to translate a given speech, I feel they are not only more focused than if they were listening collectively, but they also submit their work at once. This saves me time and makes them feel like real translators (interview two).

Another teacher added *“all I have to do is share a YouTube link to the part of the play I want to teach; they see it, summarize it, and then evaluate their responses* (interview one)”.

DISCUSSION AND CONCLUSION

Technology has become an indispensable component of education in general and FLL in particular. Administering an online survey to 48 EFL teachers from two private universities in Amman, and conducting two focus group interviews, the findings revealed that language teachers integrate different types of technology to foster language learning through cognitive and metacognitive activities. First, the finding that tablets and laptops are the most effective technological tools that language teachers employ to foster the learning process in EFL classrooms agrees with previous research (Chen, 2013; Chern, 2014; Lan et al., 2007; Lin, 2014; Oh et al., 2014; Shadiev et al., 2017), which found portable technology such as tablets and personal laptops are very effective educational tools in EFL classrooms as they fostered EFLs’ collaborative learning and enhanced their motivation and appreciation towards language learning. One aspect that may contribute to such a finding is that tablets and laptops have larger displays, more potent memory, and faster data processing rates, which make them potentially superior to other portable types of technology devices such as cell phones or PDAs. Moreover, tablets and laptops are more accessible than desktops, which facilitates continuous use and learning inside and outside the classroom. Furthermore, tablets and laptops are less distracting than cell phones.

Second, the finding that the summarizing activity was the most common cognitive activity, and that evaluation was the most effective metacognitive activity language teachers assign their EFLs to do inside and outside the classroom corresponds with (Lee, 2002; McCrudden & McNamara, 2017; Oxford, 1990; Tran & Hasegawa, 2020) who found that summarizing involves periodically synthesizing what has been heard to verify that it has been retained, and that evaluation verifying comprehension after finishing a language activity, or assessing language output. The nature of assignments and activities language teachers assign their EFLs may contribute to such a finding. For example, in the department of English and Literature, students are usually given written or visual excerpts to summarize and apply in real-life contexts. Similarly, at the department of English Language and Translation, students are usually given written texts or listen to speeches to translate. Once they finish their assignments, not only do they evaluate their work, but they also undergo peer evaluation.

Third, the finding that technology itself is a cognitive tool and that language teachers use it to engage students in cognitive and metacognitive activities to foster EFLs' language learning through summarizing, elaboration, and evaluation supports earlier research. (Buratti & Allwood, 2015; Flavell, 1979; McCrudden & McNamara, 2017; Tran & Hasegawa, 2020), which highlighted the effective role of technology in EFL classrooms. One aspect that may contribute to such a finding is that the nature of the subjects covered in EFL classrooms dictates the use of different types of technology to engage students in cognitive and metacognitive activities to foster EFL students' language learning. EFLs read many books and write many papers and reflections. Besides, EFLs are assigned individual and teamwork assignments. Thus, portable technology facilitates such collaboration and enhances EFLs' language learning.

The findings of this study offer several implications for Flavell's metacognition theory, and educators. First, this research redefined metacognition theory from the perspective of language teachers at two private universities in Jordan. By using technology in their classrooms, the language teachers helped the EFL students realize their strengths and weaknesses in language learning, the activity and related goals, such as recalling grammar syntax and applying it in real-life contexts, and cognitive strategies for learning this grammar lesson. Consequently, EFL students' metacognition continuously monitors and compares learning progress to the intended objective, and they learn if their current cognitive strategy plan is not working as well as expected. The metacognitive experience now refreshes EFL students' metacognitive knowledge and provides them with alternative cognitive strategies to help them reach their intended objective.

Second, novel forms of learning challenge language learners (Oxford & Lin, 2011); thus, the affordability of new technology and resources for language learning has expanded considerably and exceeded language teacher training. Cognitive and metacognitive activities should be incorporated into the technology-enhanced language learning program. Language instructors' increasing knowledge and devotion to helping their students acquire an awareness of and proficiency in using a foreign language. This necessitates altering language teacher education programs. Language teachers working in digital environments must possess the knowledge and abilities to recognize technical characteristics unique to new technologies that can feasibly incorporate cognitive and metacognitive activities into EFL. They must also develop a technology-enhanced pedagogy with a language learning orientation for their students.

The study does, however, have a few limitations. It would be advantageous to study a larger number of language teachers from other universities because the sample size was small and restricted to two sites. Another limitation concerns the interviews, they were conducted in focus groups with just one interview per participant, which may not have been enough for them to explain how they use technology to engage EFL students in cognitive and metacognitive activities that support learning a foreign language. As a result, additional participant focus groups should have been conducted.

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