



An Empirical Study of Digital Literacy among Iraqi Kurdish EFL Teachers

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Received: 2024/10/21

Accepted: 2024/12/09

Abstract: This study aims to investigate the digital literacy of Iraqi Kurdish English as a Foreign Language (EFL) teachers. The study employed a quantitative approach with a sample of 418 participants, consisting of 228 females and 190 males, who teach English at Middle school, High school, and University levels. A targeted sampling was used to select the participants. A questionnaire designed by the Cambridge Assessment Center was used to explore the participants' digital literacy. It was designed based on the Cambridge English Digital Framework for Language Teachers. The gathered data were analyzed using an independent sample t-test to compare the digital literacy of male and female Iraqi Kurdish teachers, and a one-way ANOVA test to explore any significant differences caused by different academic levels of the participants. The results showed statistically significant differences between male and female teachers in all six categories, except the evaluating learning category which deals with assessing digital resources and tools for language teachers. The results of the ANOVA test showed that there was not any significant difference between the digital literacy of middle school and high school teachers. However, it was found that the university lecturers were significantly more competent users of digital literacy skills than the middle school and high school teachers. The results also revealed that in general the Iraqi Kurdish EFL teachers demonstrated an average level of digital literacy and thus suggested more educational and technological support for the teachers at various levels across the region.

Keywords: Digital Literacy, Digital Teacher, Iraqi Kurdish EFL Teachers, University Lecturers, High School Teachers, Middle School Teachers.

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Introduction

The development of foreign language learning and instruction is now necessary as digital technology is more widely used, especially in places with a lack of access to reliable resources and materials. Language learning and teaching have benefited greatly from modern digital tools. Online foreign language learning is the most widely used strategy for satisfying the demands of today's digital natives (Alakrash & Abdul Razak, 2021). The teaching of second and foreign languages, English in particular, is impacted by the employment of digital technologies. These technologies include modern learning management systems such as Blackboard and Moodle, autonomous and self-paced learning tools like Rosetta Stone and Duolingo, collaborative learning applications such as Google Classroom, and socio-constructivist target-language acquisition platforms like Flipgrid and Edmodo (Chang & Hsu, 2011).

For instance, it was discussed that the major cause of COVID-19's behind-scheduling is a lack of digital literacy among instructors and students (Ahmed et al., 2022). Thus, it is expected that digitally illiterate teachers may soon find it challenging to obtain internet information. Degirmenci (2021) argued that it is apparent that students in the 21st century are interested in technology, thus we as English language teachers must adapt to it. That is the reason why in the modern era of education, there is a growing emphasis on equipping educators with technological proficiency. This trend, essential for academic success, necessitates teachers to engage in technology to enhance their instructional methods, particularly in the context of teaching English (Iskandar et al., 2022).

Over the last few decades, technology has connected individuals in a completely new way across the world. Consequently, people worldwide have had to learn how to connect with one another to develop proficiency in utilizing emerging technologies. These combined abilities are commonly referred to as digital literacy (Khosrow-Pour, 2018). The concept of digital literacies has attracted considerable focus over time. It concerns the skill of engaging with digital information for learning, teaching, or everyday language use. Digital literacy encompasses a variety of skills that empower individuals to efficiently explore, assess, and generate digital materials. It involves proficiencies in employing digital tools, critical thinking, managing information, and communicating online. Digital literacy is essential for educators because it allows them to create engaging and meaningful learning experiences for their students. As time progressed, the scope of digital literacies was broadened to even encompass critical literacies, involving the capacity to evaluate the credibility of online sources (Reinders, 2022).

Despite the growing significance of digital literacy in the groundbreaking pedagogical environment, there is a lack of familiarity with digital literacy competency among Iraqi Kurdish EFL teachers across various academic levels (Muhammed & Ameen, 2021). As technology continues to transform global communication, it is crucial to evaluate and enhance the digital literacy skills of educators, who play a pivotal role in preparing students for this evolving landscape. The utilization of technological tools in the context of Kurdish EFL in Kurdistan, Iraq, has demonstrated considerable potential in enhancing language learning outcomes. Incorporating technology into language teaching in this region equips learners with communication platforms, environments for collaborative learning, and multifaceted educational resources (Hamamorad, 2016). To the best of the researchers' knowledge, there is a lack of information regarding the digital literacy competencies of Kurdish EFL teachers.

It is believed that evaluating the level of digital literacy will provide insights into their digital skills in various areas of teaching from presentation and teaching methodology to providing feedback and evaluations. The present study aims to investigate the digital literacy of Iraqi Kurdish EFL teachers at the middle school, high school, and university levels. It explores if factors such as gender difference and education level have any impact on the digital literacy of Iraqi Kurdish teachers. To this end, the study followed a quantitative approach and used an online distributed questionnaire developed by the [Cambridge Assessment English](#) based on the Cambridge English Digital Framework for Language Teachers. The questionnaire investigates the digital literacy skills of English teachers across six categories. The categories include issues raised in the areas of the digital world, digital classroom, digital teacher, designing learning, delivering learning, and finally evaluation of learning. Considering the above-mentioned issues, the researchers attempt to achieve answers to the following three research questions:

1. Is there a significant difference between male and female Iraqi Kurdish EFL teachers in their digital literacy competencies?
2. Does the digital literacy of the Iraqi Kurdish EFL teachers vary significantly at different academic levels?
3. To what extent do Iraqi Kurdish EFL teachers exhibit digital literacy skills across the levels of awareness, understanding, habitual, and mastery based on the Cambridge framework?

Literature Review

What is Digital Literacy?

In recent times, several ideas have been investigated in scholarly works regarding the learning of technology-related competencies. This involves both digital proficiency and digital literacy. As [Reinders \(2022\)](#), discussed digital literacy plays a central role in attaining digital competence, and digital proficiency is increasingly becoming a vital component of language educators' skill sets. This digital proficiency refers to the capacity to effectively engage with and generate digital content for the purposes of education, instruction, or simple language utilization. [Benali et al. \(2018\)](#) defined digital literacy as encompassing knowledge that is relevant to conventional literacy and media studies, while others approach this concept from varying perspectives. For example, [Carrington \(2020\)](#) contends that digital literacy entails the transformation of written content from its traditional printed form to a novel form of literacy (digitally mediated), which inherently features interactivity and openness.

It is possible to mention that the main concern in digital literacy research in education is how to better prepare future teachers to use digital technology efficiently and productively in the classroom ([Ahmed, 2023](#); [Care et al., 2018](#); [Falloon, 2020](#)). Historically, training programs for teachers have opted for stand-alone ICT courses or modules, which are often placed early in the certification process. These are offered with the understanding that providing students with the necessary knowledge and skills will enable them to fulfill course assessment requirements, such as creating technology-integrated learning units for practicum work in classrooms, and consequently, assist them in effectively utilizing digital technology in their future careers as teachers ([Gündüzalp, 2021](#); [Spante et al., 2018](#); [Taylor et al., 2020](#)).

The Digital Teacher Framework

The advent of digital technology has fundamentally revolutionized traditional teaching methodologies, leading to the emergence of the digital teacher concept. A digital teacher is an educator who can successfully integrate technology into their instructional practices to enhance learning outcomes. According to [Dede and Richards \(2012\)](#), the role of educators has evolved from traditional instruction to facilitating technology-mediated learning experiences. Digital teachers effectively utilize a diverse range of tools, including online platforms, educational applications, virtual reality, and artificial intelligence, to create dynamic and engaging learning environments.

In this regard, [Cambridge Assessment English](#) (<https://thedigitalteacher.com>) introduced The Cambridge English Digital Framework for Language Teachers in 2017. They

have established a system that assists teachers in moving from awareness of technology to a comprehensive understanding by segmenting the vast field of "digital" into six distinct categories (Bradbury, 2017; Cambridge Assessment English, 2017). Each of these categories focuses on a particular area of digital literacy in EFL teaching. It starts with the digital world, which implies enhancing proficiency in online surfing, safety, confidence, and productivity in digital well-being, and managing technology effectively beyond physical classrooms (Fisher et al., 2006). The second category is the digital classroom, which comprises integrating technological methodologies such as evaluating theories, assessing methodologies, and incorporating digital tools. These methodologies engage learners effectively in practicing language skills and working collaboratively. The third category is the digital teacher, which implies utilizing technology to improve professional development (Lawless & Pellegrino, 2007). Teachers get engaged with online teaching communities to access conferences, webinars, and blogs, enhancing teaching principles. Technology nurtures connections with broader educational communities, facilitating best support and practices. Furthermore, online learning engagement of learners assists personal development and profits professional development among peers. Designing learning consists of employing digital tools for effective education. In this category, the digital tools are assessed in line with their needs and functions in lesson plans and organizing content with the help of technology. Technology will be facilitated in several ways, such as user-friendliness and quality in accordance with the objectives of the assessment. Digital tools further adjust the plan of the course for blended learning and online learning (Bailey, 2023). Delivering learning with digital tools involves establishing support and a conducive learning environment. It is important to enable learners to engage with technology. Incorporating face-to-face teaching with digital tools changes the dynamics of learning circumstances. Evaluating learning, finally, includes digital tools to assess the progress of learners and adapt their learning experiences. The strengths, proficiency, and areas of improvement will be evaluated through diverse resources (Eyal, 2012). Teachers can create assessments and self-evaluation tasks through several tools and essential learning environments (Cambridge Assessment English, 2017).

Related Studies: Digital Literacy of EFL Teachers

A growing body of literature has investigated digital literacy and skills among EFL teachers. Benali et al. (2018) investigated the digital competence of 160 Moroccan English teachers. Their study attempted to identify the highest-performing competencies, such as selecting digital resources, teaching, and reflective practice. They found that the more experienced

participants demonstrated confidence and a higher level of digital competence in teaching. On the other hand, the less experienced participants demonstrated lower skill levels in digital assessment, personalization, facilitation, and self-regulated learning. In another study, [Zhang \(2023\)](#) studied the digital literacy of two thousand hundred and ten Chinese EFL teachers. Their findings revealed that there was no significant difference between the digital literacy of male and female teachers. They also found that digital literacy was not affected by factors such as gender, level of education, and experience. The findings mentioned lack of training and limited access to up-to-date textbooks as the main problems of the teachers and highlighted that positive attitude and access to technology are the influential factors promoting digital literacy among EFL teachers. Contrary to [Zhang \(2023\)](#), [Jiménez-Hernández et al. \(2020\)](#) investigated the digital literacy of Spanish EFL secondary school teachers. Their findings showed a significant difference between male and female EFL teachers. They discussed that male teachers had higher access to various types of technological tools and chances in teaching environments than female teachers. Along the same line, [Nugroho and Mutiaraningrum \(2020\)](#) also discussed that the lack of digital facilities was the factor that highly affected digital literacy and the success of the integration of technological devices in the teaching process of EFL classrooms.

Recently in the Kurdistan region of Iraq, a number of researchers investigated the digital literacy of EFL teachers. In one of these studies, [Muhammed and Ameen \(2021\)](#), investigated the challenges and obstacles of Kurdish EFL university learners of Salahaddin and Sulaimaniya regions. Their results demonstrated that the main issues were the lack of training and motivation in using digital tools for various teaching activities such as classroom rehearsals, assessment, and providing feedback. Other factors such as lack of infrastructure for online and digital services, and cultural factors such as the underestimation of online classes by the families were discussed to be among the challenges in the educational settings in this region. In another research, [Ali and Mohammadzadeh \(2022\)](#) studied the technological pedagogical content knowledge (TPCK) among 105 Kurdish EFL schoolteachers and university lecturers focusing on utilizing online learning platforms during the coronavirus outbreak. The results demonstrated that the Kurdish EFL teachers' pedagogical knowledge is higher than their technological literacy. However, it was found that the schoolteachers holding BA degrees displayed lower digital literacy levels than the university lecturers holding PhD or MA degrees.

Methodology

Design of the Study

The present study aimed to investigate the digital literacy competencies of Iraqi Kurdish EFL teachers using a quantitative method. Considering the research questions mentioned earlier, the study examined if there is a significant difference between the digital literacy of male and female participants. In addition, the effect of the education levels of the participants on their digital literacy and the digital literacy levels of the participants were studied and reported in detail.

Participants and Context

A total of 418 university, high school, and middle school Iraqi Kurdish EFL teachers participated in the study. The participants are from the district of Sulaymaniyah, Kurdistan, Iraq. A targeted sampling was used to collect the participants. For the other two groups of middle school and high school teachers, the electronic system of the directorate of education was used to share the link of the Google Forms link. For the university lecturers, the survey was sent through email to a number of universities in the region.

Table 1. Demographic Profile of Participants by Gender and Academic Level

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	190	%54.5
	Female	228	%45.5
	Total	418	%100
Academic Level	Middle school	126	%30
	High school	116	%28
	University	176	%42
	Total	418	%100

Data Collection Tool

The present study used the digital teacher questionnaire designed by the Cambridge English Assessment Center based on the Cambridge English Digital Framework: The Digital Teacher (<https://thedigitalteacher.com>) to assess the digital literacy of the EFL Kurdish teachers. The framework for digital teachers invites educators to reflect on their methods and to share their expertise and best practices with other members of the professional community.

The questionnaire used in this study was composed of two sections. The first part requested demographic information from the participants including gender, years of teaching experience, and the teaching level, if they are middle school, high school teachers, or university lecturers. The second part of the questionnaire contained questions from the online questionnaire published by the Cambridge English Digital Framework for Language Teachers (<https://thedigitalteacher.com>). The questionnaire was a four-point Likert scale. Each question asked the participants to select between one of the options of basic ability, reasonable ability, good ability, and sophisticated ability in using and integrating digital tools in their teaching process. There were a total number of 58 questions in the second part of the questionnaire. The questions were divided into six categories of the digital world (12 questions), the digital classroom (10 questions), the digital teacher (5 questions), designing learning (13 questions), delivering learning (13 questions), and evaluating learning (5 questions).

The questionnaire divides the skills into four different levels of awareness, understanding, habitual, and mastery. In other words, those who receive the lowest grades and have selected the basic item are considered to be at the awareness level, and those who mainly selected the reasonable option in the questionnaire are at the understanding level. Those who select the good option more than the other three given options are at the habitual level, i.e. they use their skills on a routine basis and consistently. Finally, those who select the sophisticated options are considered to be at the master level and can professionally use digital tools.

Issues of Reliability and Validity

The questionnaire had a fair degree of internal consistency, according to the results, with a Cronbach's Alpha correlation coefficient of 0.978. This implies that the questionnaire is a trustworthy instrument for evaluating the relevant idea. The questionnaire's high Cronbach's Alpha coefficient suggests that its items have a strong correlation with one another and that administering it to the same participants more than time would probably yield consistent findings. Additionally, a high degree of sample adequacy for factor analysis that relies on shared variance among variables is indicated by the Kaiser-Meyer-Olkin (KMO) score of 0.907. According to [Vogt and Johnson \(2011\)](#), a KMO number that falls between 0.90 and 1.00 is exceptional. Regarding the validity, only Kurdish EFL teachers of the three abovementioned groups participated. The content validity of the test was ensured as it was designed by the experts of Cambridge University Press and Assessment Centre.

Data Collection Procedure

Firstly, a letter of request was issued to the General Directorate of Education in Sulaymaniyah to grant permission for the data collection from schoolteachers. The researchers also sought consent from university lecturers regarding the data collection. The questionnaire was distributed to participants using a Google Forms link, which is a widely used system used by the directorate of education. For the university lecturers, the link was sent via email and social media platforms. Data collection took place over a three-month period in 2023, from October to December. To ensure completeness, the data were carefully screened throughout the main data collection process. Great caution was taken in setting up the Google Forms link, making sure that every questionnaire required a response from the participants in the Google Forms link. A pilot study was conducted among 15 volunteer Iraqi Kurdish EFL teachers in order to check any possible mistakes in the questionnaire, estimate the time needed to complete the survey, and investigate the practicality of the data collection method.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) was used to analyze the collected data. A t-test was utilized to determine whether there was a significant difference between the mean scores of male and female participants in the employment of important concepts such as digital literacy, as it is appropriate for comparing the means of two independent groups. Moreover, a one-way ANOVA was used to compare the means of university, high school, and middle school teachers (academic levels), as it is suitable for analyzing differences among three or more independent groups.

Results and Discussions

Exploring Gender-based Variations in Digital Learning Preferences

This section examined if there is any difference between the digital literacy of female and male Iraqi Kurdish EFL teachers.

Table 2. Independent Sample T-test Comparing Digital Literacy of Female and Male Teachers

		N	Mean	SD	<i>t</i>	<i>df</i>	<i>Sig.</i>
Digital World	Female	228	29.32	7.3	-5.22	416	0.002
	Male	190	32.79	6.1			
Digital Classroom	Female	228	24.31	6.88	-3.26	416	0.031
	Male	190	26.41	6.17			
Digital Teacher	Female	228	11.99	3.62	-2.65	416	0.105
	Male	190	12.88	3.19			
Design Learning	Female	228	30.25	9.17	-3.33	416	0.198
	Male	190	33.16	8.53			
Delivering Learning	Female	228	28.96	9.42	-3.21	416	0.692
	Male	190	31.86	8.89			
Evaluating Learning	Female	228	11.32	3.84	-1.73	416	0.274
	Male	190	12	4.13			

P<0.05

Table 2 presents the results of the independent sample t-test for the gender-based variations of the Iraqi Kurdish EFL teachers. The results were compared over the six categories: digital world, digital classroom, digital teachers, design learning, delivering learning, and evaluating learning. A glance at the observed t-values clearly revealed that there were significant differences between the digital literacy skills of female and male participants among all the categories except the evaluating learning category.

According to the results, in the digital world category, there was a significant difference between the digital literacy of the female and male participants ($t(416) = -5.22, p = .002$). In this category, the mean score of female participants ($M = 29.32, SD = 7.30$) was significantly less than the male participants ($M = 32.39, SD = 6.10$). In the digital classroom category, the difference between the mean scores of the two groups was significant ($t(416) = -3.26, p = .031$). The mean score of the female ($M = 24.31, SD = 6.88$) and the male participants ($M = 26.41, SD = 6.17$) showed that the female group possessed slightly lower digital literacy skills in this category. In the same line with the previous two categories, in the digital teacher, the difference between the two groups' digital literacy was significant ($t(416) = -2.65, p = .105$). The mean score of female participants ($M = 11.99, SD = 3.62$) was lower than their male counterparts ($M = 12.88, SD = 3.19$). In the design learning category, similar to the previous categories, the difference between the digital skills of the female and male Iraqi Kurdish teachers was significantly different ($t(416) = -3.33, p = .198$) in that the male

participants ($M = 33.16$, $SD = 8.53$) showed meaningfully higher skill levels than the female ones ($M = 30.25$, $SD = 9.17$). In the delivering learning category, the difference between the mean scores of the two groups was significant ($t(416) = -3.21$, $p = .692$). The female participants ($M = 28.96$, $SD = 9.42$) illustrated lower digital skills than the male participants ($M = 31.86$, $SD = 8.89$). It is worth noting that in each of the categories mentioned above, the observed t-values exceeded the critical t-value of 1.966, indicating significant differences between male and female participants.

To put it in a nutshell, in the five categories of the digital world, digital classroom, digital teacher, design learning, and delivering learning, the female Iraqi Kurdish teachers showed a lower level of digital literacy in comparison to the male ones. However, no significant difference was observed in the digital literacy skills of the female ($M = 11.32$, $SD = 3.84$) and the male participants ($M = 12.00$, $SD = 4.13$) with the t-observed $t(416) = -1.73$, $p = .274$ being less than t-critical ($t(416) = -1.73$).

The higher digital literacy level of the male Kurdish teachers over the female teachers was in line with the findings of [Jiménez-Hernández et al. \(2020\)](#), who explored the digital literacy competencies of Spanish EFL secondary school teachers. They found that female teachers displayed lower competencies in comparison with their male counterparts. This difference might be related to higher motivation and positive attitudes of male teachers towards using technology and participating in training programs ([Adeoye, 2023](#)).

Academic Level Variations in Digital Literacy Competencies

In this section, the differences and similarities in the digital literacy skills of the three groups of middle school, high school, and university teachers were investigated separately in each of the six categories. Table 3 presents descriptive statistics of a post hoc comparison using the Tukey HSD test. It is worth noting that the descriptive information presented in Table 3 supports the representation of the one-way ANOVA test results shown in Table 4. Considering the data presented in both tables, the following results were found.

Table 3. Descriptive Statistics for Education Levels of EFL Teachers' Digital Literacy

		N	Mean	SD
Digital World	Middle School	126	29.46	7.76
	High School	116	29.19	7.25
	University	176	33.05	5.55
	Total	418	30.89	6.99

		N	Mean	SD
Digital Classroom	Middle School	126	23.67	6.95
	High school	116	23.81	6.52
	University	176	27.36	5.93
	Total	418	25.26	6.65
Digital Teacher	Middle school	126	11.57	3.83
	High school	116	11.97	3.57
	University	176	13.27	2.87
	Total	418	12.4	3.46
Design Learning	Middle school	126	29.52	9.37
	High school	116	29.74	9.03
	University	176	34.25	7.99
	Total	418	31.57	8.99
Delivering Learning	Middle school	126	28.19	9.99
	High school	116	28.43	9.42
	University	176	33	7.93
	Total	418	30.28	9.28
Evaluating Learning	Middle school	126	10.62	4.08
	High school	116	11.28	3.80
	University	176	12.59	3.83
	Total	418	11.63	3.98

* The mean difference is significant at the 0.05 level.

The descriptive statistics, shown in Table 3, revealed a similarity between the digital literacy of middle school and high school Iraqi Kurdish participants. As it is shown, in all the categories the means and standard deviations of these two groups were distributed within similar ranges. For instance, taking a look at the first category of the digital world, the mean score of middle school teachers is $M = 29.46$ and the standard deviation is $SD = 7.76$, which is statistically close to those of the high school teachers, $M = 29.19$ and $SD = 29.19$. However, a statistically significant difference is observed when considering the mean scores of university teachers, with $M = 33.05$ and $SD = 55.5$. The ANOVA test results presented in Table 4 support the difference between middle school and high school teachers with that of the university level group ($F(2,415) = 15.344, p < .001$). Interestingly, the similarity between the digital skills of middle school and high school teachers and the difference between the results of these two groups with that of university-level teachers was observed in all the other categories.

Table 4. One-way ANOVA Test Results for Differences in Digital Literacy Based on Educational Level

		ANOVA						
		The Sum of Squares	df	Mean Square	F	<i>F-critical</i>	<i>p</i>	
Digital World	Between Groups	1410.603	2	15.437	15.344	3.09	0.002	0.001
	Within Groups	18960.766	415					
	Total	20371.368	417					
Digital Classroom	Between Groups	1342.498	2	16.315	16.315	3.09	0.031	0.001
	Within Groups	17074.555	415					
	Total	18417.053	417					
Digital Teacher	Between Groups	242.448	2	10.601	10.601	3.09	0.105	0.001
	Within Groups	4745.628	415					
	Total	4988.077	417					
Design Learning	Between Groups	2179.531	2	14.338	14.338	3.09	0.198	0.001
	Within Groups	31542.67	415					
	Total	33722.201	417					
Delivering Learning	Between Groups	2248.812	2	13.86	13.86	3.09	0.692	0.001
	Within Groups	33667.877	415					
	Total	35916.689	417					
Evaluating Learning	Between Groups	305.831	2	10.055	10.055	3.09	0.274	0.001
	Within Groups	6311.432	415					
	Total	6617.263	417					

In the digital classroom category, the middle school teachers ($M = 23.67$, $SD = 6.95$) and high school teachers ($M = 23.81$, $SD = 6.52$) showed similar results, while both scored significantly lower than the university lecturers ($M = 27.36$, $SD = 5.93$). The ANOVA test result ($F(2,415) = 16.315$, $p < .001$) also indicated the difference between the academic groups in this category. Similarly, in the digital teacher category, a significant difference was observed between the results of middle school teachers ($M = 11.57$, $SD = 3.83$) and high school teachers ($M = 11.97$, $SD = 3.57$) and that of the university lecturers ($M = 13.27$, $SD = 2.87$). Such a difference was also shown in the ANOVA test results ($F(2,415) = 10.601$, $p < .001$). In the category of design learning, considering the means and the standard deviations of middle school teachers ($M = 29.52$, $SD = 9.37$), high school teachers ($M = 29.74$, $SD = 9.03$), and university lecturers ($M = 34.25$, $SD = 7.99$), the same significant difference among the digital skills of the groups was observed ($F(2,415) = 14.338$, $p < .001$). In a similar way, in the delivery learning category, the middle school ($M = 28.19$, $SD = 9.99$) and high school teachers ($M = 28.43$, $SD = 9.42$) showed considerably lower mean scores comparing the university lecturers ($M = 33$, $SD = 7.93$), ($F(2,415) = 13.860$, $p < .001$). Finally, in evaluating learning, the difference between the mean scores of university teachers ($M = 11.63$, $SD = 3.98$) on one hand, and the middle school ($M = 10.62$, $SD = 4.08$) and high school teachers ($M = 11.28$, $SD = 3.80$), on the other hand, was shown to be significant, similar to other categories ($F(2,415) = 10.055$, $p < .001$).

The higher development of digital literacy among university teachers may be attributed to the higher research demands placed on university lecturers, which necessitate greater use of digital tools and resources, ultimately fostering their digital literacy (Zhang, 2023). The university lecturers employ digital technology and digital tools, for example using Kahoot or Quizzes to assess the learners or explain new topics, write academic papers, prepare presentations, or provide feedback. The results supported the findings of Muhammed and Ameen (2021) and Ali and Mohammadzadeh (2022), who investigated the digital literacy of EFL teachers in the Kurdish regions of Iraq. It was discussed that there is hardly any educational policy for developing digital literacy of teachers in the context, thus teachers lack sufficient training and do not have access to technological devices in the educational environments, specifically in the middle schools and high schools.

Taken together, these findings emphasize the need for targeted professional development and training programs aimed at improving the digital literacy skills of middle and high school teachers. Enhancing access to technological resources and equipping

educators with advanced training opportunities could help bridge the gap in digital literacy competencies across different educational levels.

Kurdish EFL teachers' levels of digital literacy

This section shows the levels of digital literacy among the Iraqi Kurdish EFL teachers in each of the six areas of the digital world category, digital classroom, digital teacher, designing learning, delivering learning, and evaluating learning. As it was discussed earlier, the options of the questionnaire asked the participants to choose if their digital skills were at basic, reasonable, good, or sophisticated levels. Accordingly, if the option of basic abilities is most frequently selected, the digital literacy and digital skills of a participant are at the awareness level. In case the option of reasonable is selected the most, the participant is considered to be at the understanding level. The frequent selection of the option of good implies that the participant is at the habitual level, i.e., the digital skills are used on a routine basis and consistently. Finally, Selecting the sophisticated option more than the others indicates that the skills are at the master level and the participant can professionally use and integrate digital tools in their teaching process.

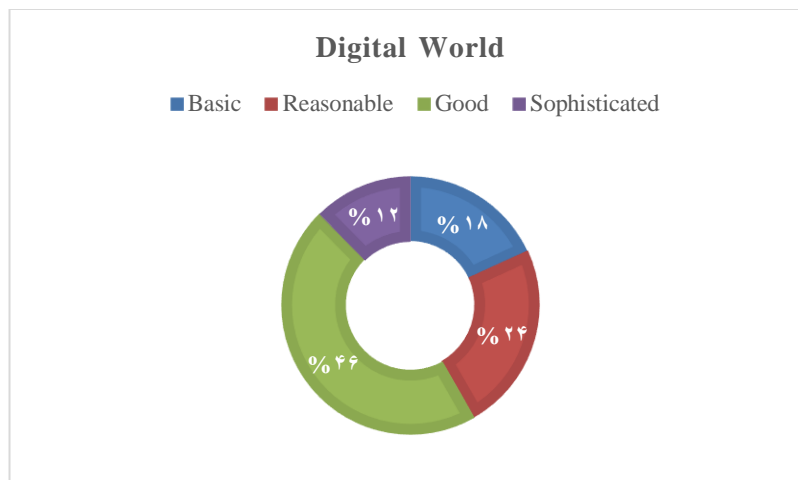


Figure 1. The Digital Literacy Levels in the Digital World Category

The digital world category deals with the digital skills related to the knowledge of the effective use of digital tools, the knowledge of digital legal issues, digital safety in the online environment as well as the ability to manage online information. Figure 1 shows the levels of digital literacy among the Kurdish participants. As it is shown, nearly half of the participants, around 46%, could be considered good users of digital tools. It is clear that for this group of teachers, the effective and safe employment of digital tools has changed into a life habit.

One-fifth of the participants, 24%, showed sophisticated abilities to produce, manage, and use digital devices. However, it is shown that the remaining 30%, including 12% with basic and 18% with reasonable abilities, were only aware of such issues or thought that they had limited information and understanding of the digital world around them.

The diversity in the digital literacy levels of the Kurdish EFL teachers could be basically attributed to the issue of access to innovative digital tools in language learning and teaching contexts which can impact the teacher's capabilities to utilize digital devices since not all the teachers have similar access (Nugroho & Mutiaraningrum, 2020; Zhang, 2023). There are educational institutions that lack the necessary digital infrastructure to aid teachers. Teachers, schools, and educational institutions from lower socioeconomic backgrounds might have less personal access to digital tools and internet connections, restricting the teachers' capability to improve and practice their digital skills inside and outside the classroom.

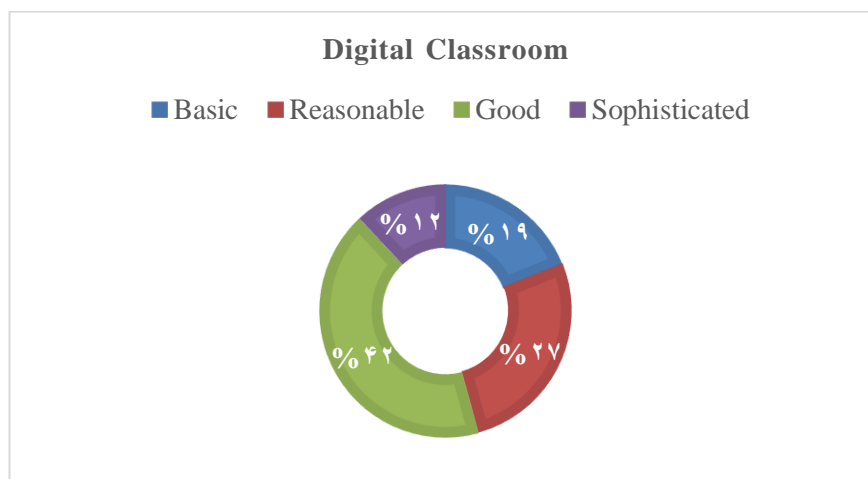


Figure 2. The Digital Literacy Levels in Digital Classroom Category

The digital classroom category addresses the digital tools and resources for language learning. It deals with the successful implementation of teaching methodologies and approaches in the classroom. It also deals with the familiarity of language teachers with digital tools and resources and their ability to organize and deliver language learning in a successful way, and of course the effective use of digital tools for such purposes. Figure 2 demonstrates that 42% of the Kurdish English language teachers were at the habitual level, and 12% at the mastery level, practicing digital tools on a daily basis with ease. These teachers demonstrated high professional competency with a comprehensive knowledge of second and foreign language teaching theories and practices. They were capable of adapting

educational online platforms, or applications and conducting complicated tasks suitable for various teaching approaches in face-to-face or online classrooms.

Nevertheless, around a quarter of the participants, 27%, were shown to be at an understanding level of digital literacy. These teachers displayed limited knowledge about the approaches and theories in language teaching and their presentation and use in online educational platforms or applications. Finally, about 19% of the teachers were only aware of or only basic users of digital tools. They seemed to lack the required knowledge of how they could embed these tools in their teaching process and offer diverse effective teaching tasks using technological devices.

As illustrated, 54% of the participants, including 12% who were at the mastery level and 42% who were at the habitual level seemed to be able to integrate and use digital tools successfully in their classrooms. This might be related to the basic components of the digital classroom category which encompasses familiarity of the teachers with theories and methodologies of teaching and learning, the general language proficiency of teachers as well as the knowledge of using online tools such as online dictionaries in the classrooms. In other words, 54% of the Iraqi Kurdish participants seemed to have been able to develop digital literacy skills along with their knowledge of teaching theories.

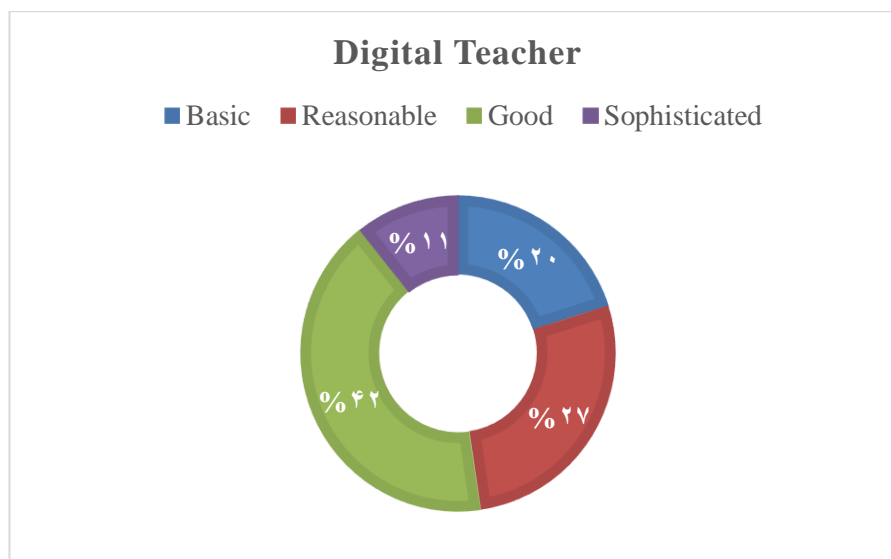


Figure 3. The Digital Literacy Levels in the Digital Teacher Category

The digital teacher category deals with the ability of teachers to effectively use technology to extend professional growth and broaden the perspectives of teachers toward the concept of being a professional technology user. In this category, the eagerness of teachers to

develop their skills in using or being involved in webinars, online conferences, online courses, and their willingness to share such professional experiences with other colleagues are evaluated. Figure 3 illustrates the digital literacy levels of the Kurdish teachers in the digital teacher category. As it is shown, more than half of the participants, about 53%, including 42% good users and 11% sophisticated users, were respectively at the habitual and mastery levels.

Yet, the second half of the participants, around 47%, fell at the levels of understanding or simply being aware of digital literacy skills. This group of teachers seemed to avoid using digital tools for their professional growth and might not be active members of the professional communities of digital teachers. They appeared to shy away from using digital technologies in material development and self-evaluation. They might not even have positive attitudes towards technology and its employment in teaching and learning environments (Zhang, 2023).

To motivate this group of teachers, administrative authorities are suggested to offer intensive professional development programs in educational centers and schools. The program development courses should comprise the employment of digital tools, digital cooperation, and integrating instructional practices with technological applications such as webinars, workshops, and training to make especially the middle school and high school teachers familiar with such concepts and eventually encourage them to use the technological devices for their own professional growth.

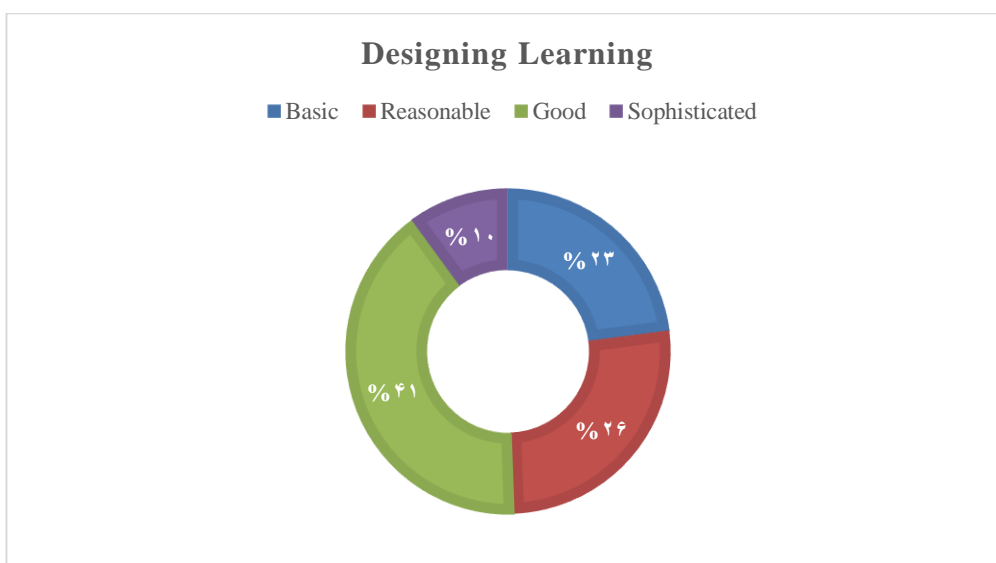


Figure 4. The Digital Literacy Levels in the Designing Learning Category

In the design learning category, the ability of teachers to use digital tools and resources for successful learning is investigated. It deals with the capabilities of teachers to use digital tools and resources, their skills in how to incorporate them into lesson and course planning, and how to effectively use them in the organization of educational materials. As shown in Figure 4, In this category, more than half of the participants, 51%, used the digital tools regularly or even mastered the required skills. Obviously, the participants were familiar with digital resources and seemed to be proficient enough to select and organize the appropriate digital resources for their teaching as well as developing teaching materials for online, blended, or even face-to-face classes.

On the contrary to the first groups, 49% of the participants were at the awareness level, 23%, and 26% at the understanding level in designing digital tools and applying them in their teaching environment. They seemed to lack the required knowledge and training in the employment of technological devices for various teaching activities such as lesson planning, course planning, and developing materials for their classrooms.

To address and enhance the digital designing skills of Iraqi Kurdish teachers, it is suggested to have continuous professional development courses for teachers to upgrade their level of using digital tools. Furthermore, it is necessary to provide access to digital platforms and resources to design educational tasks in their educational programs. These digital tools can help teachers enhance their skills. Teachers could be provided with resource libraries such as tutorials, guides, and templates that can easily be reached. Moreover, promoting the incorporation of digital design into instructional practices can be beneficial for creating interactive presentations, designing lesson plans, and making digital assignments.

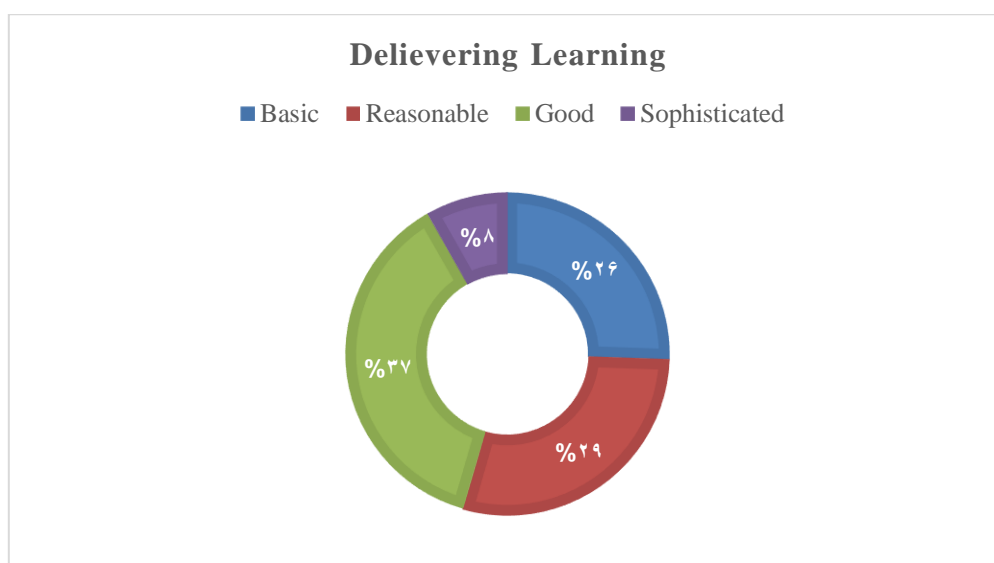


Figure 5. *The Digital Literacy Levels in the Delivering Learning Category*

The category of delivering learning seeks to find out if teachers are comfortable with digital tools and resources and if they feel empowered enough to use them for developing materials and providing feedback in both face-to-face and digital environments to foster a pleasant learning environment. The teachers are expected to create an effective environment to enable their students to feel autonomous when it comes to using technology for education. Figure 5 offers insights into the digital literacy levels of Iraqi Kurdish teachers in this category. As shown, 8% of the participants are master users of digital skills in educational settings and 37% of the participants are at the habitual level, showing a good level of understanding of using digital tools for providing feedback options such as focusing on error correction.

On the contrary, it can be seen that 26% of the participants displayed basic digital literacy skills and 29% had reasonable skills in delivering learning using digital tools. These two groups, together, encompassed 55% of the total. These participants might not be familiar with the way digital tools are used to improve the quality of learning through designing digital activities involving software programs to design tasks or providing effective feedback on the conducted classroom activities. It is needless to say the digital literacy of teachers in this category highly depends on the facilities provided by the educational centers. Lack of appropriate infrastructure for providing digital services in EFL settings, and the insufficient training of the teachers in using technological tools in different teaching activities are among the main challenges that not only the Iraqi Kurdish teachers but also the students are encountering (Muhammed & Ameen, 2021).

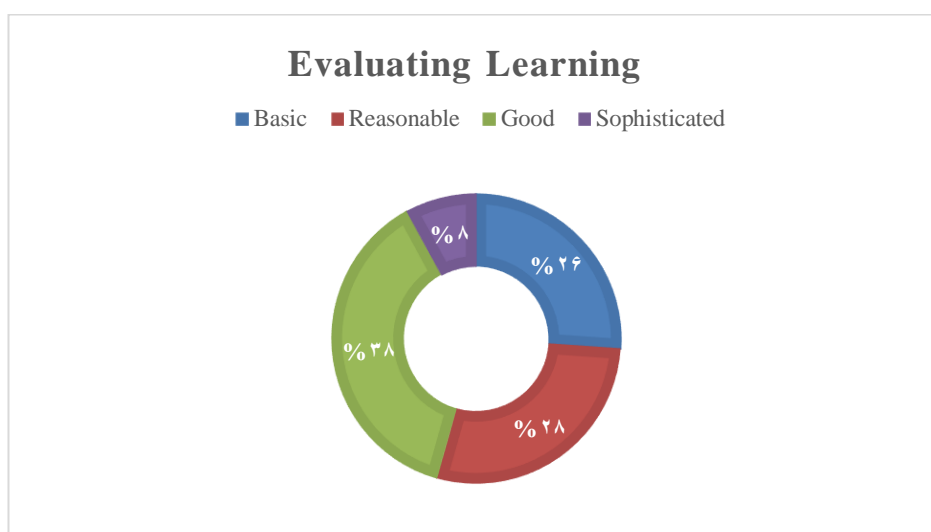


Figure 6. The Digital Literacy Levels in the Evaluating Learning Category

The evaluating learning category deals with the competencies of the teacher in using digital technologies and resources to evaluate learning. This includes using digital tools to design tasks and tests to assess students' success and progress and to determine their specific needs. Figure 6 illustrates the digital literacy levels of the Kurdish teachers in the evaluating learning category. Around 38% of the teachers showed to be at the habitual level in using digital tools and services for evaluation and assessment purposes. For instance, they were able to use an internet quiz or word processing program to design exams and peer or self-evaluation activities. Only 8% of the teachers developed sophisticated skills and mastered the employment of digital technology for different evaluation and assessment purposes. However, it can be seen that more than half of the Kurdish teachers, 54%, had only basic or reasonable digital evaluation learning skills. In addition, 26% of the participants only possessed basic digital evaluation skills and had inadequate knowledge of the use of digital tools for assessing and evaluation purposes. The remaining 28% were familiar with the skills and their knowledge was restricted to understanding the tools at the basic levels.

Limited digital literacy of more than half of the participants in the evaluation area could be a serious concern for the authorities and teacher trainers. In this regard, the following strategies are suggested to aid teachers in improving their confidence and skills. First, offering continuous professional development courses to upgrade the teachers' digital skills. This improvement can be conducted by integrating practical sessions, real-world applications, and providing online skills for 21st-century teachers. Second, supplying digital resources such as tablets, laptops, software, and computer labs to expedite teaching and assessing language processes. Third, creating an encouraging environment for language teachers to utilize digital applications.

To put it in a nutshell, the findings revealed a diverse range of digital literacy competencies among Kurdish EFL teachers across six key areas. While many teachers demonstrated confidence and proficiency in utilizing digital tools for tasks such as classroom management, lesson design, and professional development, a significant number face challenges in effectively integrating these tools into their teaching practices. In some cases, teachers possess strong digital skills and incorporate them into their daily routines, showcasing an ability to adapt and innovate in both face-to-face and online environments. However, others lack the necessary knowledge or access to resources, limiting their ability to design and deliver digital learning activities or evaluate student performance effectively. This disparity is often influenced by unequal access to technological resources and infrastructure, highlighting the need for professional development opportunities and enhanced support to

ensure that all teachers can develop their digital literacy skills in an appropriate and high level of competence.

Conclusion

This study examined the digital literacy competencies of Iraqi Kurdish EFL teachers using the Cambridge Digital Teacher questionnaire. The results demonstrated significant variations between male and female teachers across all categories except for evaluating learning. In the areas of the digital world, digital classrooms, digital teachers, designing learning, and delivering learning, the female Kurdish teachers showed lower digital literacy compared to their male counterparts. However, no significant difference was observed in the digital literacy skills of female teachers in the evaluating learning category, where the male teachers displayed lower levels of digital literacy. It was discussed that the difference may be associated with the higher motivation and more positive attitudes of male teachers towards the employment of digital tools in EFL classrooms ([Jiménez-Hernández, et al., 2020](#)).

In addition, the findings revealed that there were differences in the digital literacy of teachers from various academic levels. The University lecturers exhibited higher digital skills compared to the middle school and high school teachers. This difference may be associated with the nature of university-level work, which often involves greater engagement with technological devices for academic studies or research activities. University lecturers may have more opportunities to immerse themselves in the digital world and interact extensively with digital tools, especially during their master's or doctorate programs ([Zhang, 2023](#)). In contrast, middle school and high school teachers may have fewer opportunities or less time to integrate advanced technological tools into their professional practices, which could result in relatively limited digital skills among these groups ([Muhammed & Ameen, 2021](#)).

The investigation into the digital literacy levels of the Iraqi Kurdish EFL teacher participants revealed that approximately half of them were habitual and consistent users of digital tools in their language teaching practices. These teachers have integrated the use of digital tools into their routines, demonstrating a consistent application of technology in their classrooms. However, the other half of the participants exhibited only basic or limited digital literacy competencies, indicating a need for targeted interventions to enhance their skills. To improve the digital skills of this group, continuous professional development courses are essential to help teachers develop their digital skills with international standards. Additionally, providing access to digital resources, such as tablets, laptops, software, and computer labs, would support teachers in integrating technology into the teaching and

assessment processes more effectively. Creating a supportive environment that encourages language teachers to utilize digital applications is equally important. The responsibility for facilitating this transformation lies with the government and educational institutions. They must ensure adequate provision of digital resources, such as reliable internet access, well-equipped computer labs, and necessary digital tools, to empower teachers and promote the effective use of technology in language teaching (Lawless & Pellegrino, 2007).

The thorough analysis of digital literacy competencies across different categories offers valuable, detailed insight for curriculum designers, educators, and policymakers looking to improve digital literacy. In fact, analyzing the categories separately provided a more detailed picture of the areas where the needs of the teachers lie. For instance, training programs may include workshops and training activities, on specific categories of evaluation and delivering knowledge to assist the teachers to overcome their shortcomings and develop their both teaching and technological skills.

This study enriches the literature on the integration of technology and education, with a focus on the need for educators to stay up to date with digital advancements. Narrowing down the gap in digital competencies among teachers at different educational levels is essential to guarantee that all students have fair access to high-quality education. This study provides important insights for educational practitioners and policymakers by illuminating the present level of digital literacy among Iraqi Kurdish EFL teachers. In order to provide inclusive, productive, and engaging learning environments, it is still critical for educators to have digital literacy skills as the digital landscape changes.

Finally, the study had a number of limitations. The sample size is relatively small, which hinders the generalizability of the study's findings. Another limitation is related to the researcher's lack of time and budget, which prevented us from accessing English language teachers from various regions within the study area.

Declaration of Conflicting Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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