The Pedagogy of Literacy Technology: Learners' Perception in ESL Reading Classrooms

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Abstract

Modern technologies have broadly contributed to effective language learning. However, in the many studies on technology integration in EFL classrooms, only some were conducted in Arabic scenery. This study is designed to investigate the perceptions of ESL (English second language) learners on the implications of reading technologies. Accordingly, the study was driven by three questions regarding 'what are the perceptions of ESL students on using technologies, prominent technologies support ESL literacies and the students' perceptions on the future of reading technologies. Hence, cross-sectional data was collected using a questionnaire adapted from the Technology Acceptance Model, circulated to 86 undergraduate participants in an Iraqi university in Anbar province, Iraq. The study found positive attitude toward using technology by ESL students. In addition, ESL learners have nominated prominent significances of technologies that contribute to developing their reading skills, such as computers, laptops, tablets, smart phones and interactive whiteboards. Lastly, the study identified an impact on the students' academic behaviour and their intents reading technologies. Significantly, the findings of this study offer theoretical and practical constructive feedback for both teachers and policymakers to identify the appropriate technologies to achieve the optimum language reading experience in ESL classrooms concerning EFL perceptions for better educational experience.

Keywords: Pedagogy; Technology; ESL Learners Perception; Education; Reading Literacy.

1. Introduction

Contemporary ESL learners are exposed to various technologies that allow them to communicate using linguistic skills while simultaneously developing linguistic abilities. While educators are considered as an essential factor in supervising the process of acquisition and application of language literacies. Mizusawa (2021) argues that to be a successful teacher worldwide, it is essential to evaluate instructional approaches for developing literacy skills that align with the demands of the contemporary fast-paced environment, where critical thinking and learning carry

a higher value than just rote learning. Mizusawa emphasizes that in modern society, how students in ESL classrooms explore technologies and utilize the knowledge they discover are crucial to the emerging type of education.

Communication technology has become increasingly important in today's technological era. It is realistic to assume that the overwhelming majority, maybe even all, of students have continuous access to some type of technology. Current technologies such as cell phones, tablets, and laptops have effortlessly assimilated into the everyday activities of the typical individual in Western society. Surviving without these technologies has become more complicated since most places and organizations assume that individuals possess these devices, causing their activities to depend heavily on them. Universities are also following this trend since they are aligning in the same way.

The problem of low reading literacy among ESL students is a widespread societal problem influenced by multiple factors and may be significantly affected by educational technology and instructional design. By doing research and investing in learning-development activities, educational technology may have a substantial impact on creating solutions supported by evidence in this particular problem area. Thus, it is crucial to investigate what perceived elements impact ESL learners' views towards the implementation of technology in reading classrooms, thereby offering insight on their attitude and acceptability towards the usage of technology (Khalaf, Zin, and Al-Abbas, 2022).

In line with the popularity of the English language, the Iraqi government has stressed the significance of ESL (English as a Second Language) by launching a number of projects spanning from elementary school to higher level education (Al-Obaydi, 2024). However, because learning a second language includes mastering four critical language skills listening, speaking, reading, and writing which is a difficult and demanding process, there are several challenges surrounding the process as shown through investigating ESL learning in Oman (Chinnathambi et. al, 2024). Reading skills can be difficult for ESL students for a variety of reasons, including limited exposure to the English language (Buehl, 2023), a lack of socialisation with individuals who have advanced language skills (Ghafar, 2024), and insufficient learning techniques and reading strategies (Sherwani et.al, 2022).

Hence, Huda and Hashim (2022) found that literacy-related technologies were consistently present in all the publications they examined in their educational technology studies. The vast majority of research on developing learning technology materials and practices is observed to focus on Western cultures, particularly Europe and the United States. Additionally, many products, tools, procedures, and designs assume a certain degree of literacy for specific learning contexts that may not apply to others. These assumptions concerning learners' groups and circumstances constitute substantial obstacles to accessibility, which become inherent characteristics and presumptions in learning platforms, resources, and systems, resulting in profoundly entrenched discrepancies.

Accordingly, the Iraqi government has emphasized the significance of ESL (English as a Second Language) under the prominence of the English language. This commitment is demonstrated via

numerous primary and higher education programmes (Altae, 2020; Barzinji, 2024). However, several difficulties arise concerning second language acquisition as learners are expected to proficiently acquire four fundamental language skills: listening, speaking, reading, and writing, which may be demanding and arduous. Reading skills constitute a significant challenge for second language learners due to their limited exposure to the English language (Mukhlif & Amir, 2017; Sherwani & Harchegani, 2022). Additionally, a lack of socialization, an inappropriate learning setting, a lack of concepts and structures, a lack of self-confidence, a fear of making mistakes, technological challenges, a lack of comprehension to use educational technology, and strict instructional materials (Ghafar, 2024).

Researchers, practitioners, policymakers, parents, and general public entities have shared concerns over implementing educational technologies. Although there have been disagreements and debates on the effectiveness of technology in teaching English as a Second Language (ESL) in educational institutions, most academics maintain the belief and consensus that technology may be effectively used as a cognitive aid in ESL classrooms (Jameer & Narra, 2024). They assert that technology is a potent instrument for improving ESL classroom instruction and learning, as the quantity of information and learning tools that students can utilize freely has increased compared to the past. Consequently, the role of a teacher has shifted from being a provider of information to being a guide who knows what pupils need to learn and how to facilitate their learning through technology (Parihar et al., 2024). According to Ng et al. (2023), literacy software has several essential characteristics that facilitate more straightforward and enjoyable learning, leading to increased intrinsic motivation among students. A prominent aspect is using technology to assist the process of acquiring vocabulary and achieving proficiency in a language.

Therefore, the review of existing literature on literacy in ESL classrooms revealed a necessity for more research exploring the effectiveness of technology in reading classes, particularly from the perspective of ESL learners. Such research can provide a more comprehensive understanding of the acceptability and preferences of technology in enhancing ESL reading literacy. Furthermore, it is crucial to comprehend the perceived elements that impact ESL learners' attitudes toward using technology. This knowledge provides insight into their behaviour and technology adoption in reading and other learning classes. Thus, the present study was driven by the following questions: -

1- What are the perceptions of ESL students on using technologies in reading classrooms?

2- What are the prominent technologies in reading classrooms?

3- What are the perceptions of ESL students on the future of reading technologies?

2. Literature Review

Technology is a comprehensive notion that includes several components, such as audio and video tools, the Internet, videotapes, language-related software, chat rooms, blogs, and social network sites. Universities and colleges have invested significantly in hardware, software, support, and

educational opportunities. Despite technology being taken into account in the literacy of the 21st century, many teachers need more excitement when it comes to using it in their instructional techniques (Ibrahim & Ismail, 2021). Couch (2023) asserts that educational technology is a promising trend specifically created to transform teaching and instruction methods in schools permanently. The language teaching and learning field has seen significant innovation and transformation in recent years, primarily due to the advent of the digital age of education and technology. The evolution of time has brought about a significant transformation in education, particularly in the domain of English as a Second Language (ESL) learning, with technology playing a crucial part (Zhao & Lai, 2023).

According to Werder and Otis (2023), the use of technology has caused a change in students' perspective on learning. Emerging technologies are revolutionizing both students' perception of learning and instructors' understanding of the learning and development of the literacy process (Mizusawa, 2021). The conventional approach to teaching has been adjusted and transformed via integrating technology, resulting in modifications to educational methods inside the classroom. Adopting technology in ESL reading classrooms has influenced the instructional methods teachers use. Modern teaching techniques prioritize critical thinking, problem-solving, and analytical skills over traditional memorization of information, facts, concepts, and principles. Jiang et al. (2021) stated that the integration of technology in the acquisition of languages has gained popularity due to its flexible nature, ability to create exciting and engaging material, and its capacity to enhance active learning experience. Hence, transitioning to contemporary instructional approaches empowers ESL students with the essential competencies required in the interconnected world.

However, there is a mistaken belief among people that being digitally literate only involves being able to operate a computer. This leads to the assumption that by introducing computer technology into ESL classes, learners automatically become digitally literate (Tazijan et al., 2022). According to their perspective, being digitally literate entails more than just possessing technological proficiency; it necessitates the ability to assess an individual's choices critically. Subsequently, it pertains to gaining the knowledge and skill to utilize various technology tools for different purposes effectively. Digital literacy refers to an individual's competence to proficiently utilize technology to efficiently search and evaluate information, establish connections and collaborate with others, create and share original content, and utilize the Internet and technological tools to achieve diverse academic, professional, and personal objectives. How can technology be integrated into our ESL reading classes to foster the development of cultural, intellectual, positive, communicative, confident and creative learners among our students?

Maitlo et al. (2024) proposed that employing Information and Communications technology (ICT) is optimal for fostering learners' literacy in ESL reading classes. Michaelsen et al. (2023) argue that well-designed computer programs can provide an alternate strategy incorporating the practical aspects of traditional reading approaches. In other words, teachers can incorporate technology into their lesson plans to enhance the educational experience. Rubach and Lazarides (2021) propose three advantages of communication technology for learners in ESL reading classes. Firstly, the technology can deliver text in a precisely organized manner and can control

the timing of introducing new ideas and abilities based on the student's advancement in the programme. Secondly, technology can offer immediate audible feedback to the learner. Finally, the technology will continue diligently if the learner perseveres (Al-Ansi et al., 2021). Furthermore, enhancing reading literacy via technology integration facilitates student-centred or student-directed learning, which is one of the key advantages (Awidi & Paynter, 2024). De Souza et al. (2021) identification of active engagement in learning stimulates the acquisition of crucial learning abilities, including critical thinking, problem-solving, collaborative activities, and successful communication which incorporate with enhancement of reading skills in ESL classes.

While, Marks and Thomas (2022) indicated an increasing focus in the last 20 years on developing the technological infrastructure in higher education to facilitate and promote the use of technology, particularly in ESL reading classes aimed at enhancing learners' technical literacy. While the dearth of infrastructure was a significant issue for a considerable period, it may no longer be the case for developing nations. Nevertheless, it still prevents the complete realization of technology deployment. Other researchers indicated that ESL learners enhance their ability to engage with text proficiently through technology in the reading classroom, alongside implementing appropriate teaching practices (Buehl, 2023).

Samiei and Ebadi (2021) emphasised the potential of contemporary technology to alter lives, namely by improving learners' reading skills, whereas Google Interactive Classrooms were employed during the Covid-19 pandemic. Whereas reading technologies are utilised to generate interactive and collaborative projects, encourage debates, and offer students with timely feedback (De la Vall and Araya, 2023). Researchers indicated that integrating technology into reading lessons has dramatically enhanced students' learning experience, facilitated text comprehension, and fostered the development of reading abilities (Samiei & Ebadi, 2021; Svensson et al., 2021). Various technologies, including e-reading materials, electronic whiteboards, and artificial intelligence software, could enhance reading comprehension. In addition, incorporating multimedia and social media allows students to access material that facilitates text comprehension through graphics, audio, video, and animation (Hasin & Nasir, 2021).

Many nations that speak Arabic have not yet espoused or adjusted to using reading technologies in their classrooms. Whereas, Al-Maashani and Mudhsh (2023) stated "Studies concerning educational technology in the Arab countries paint a generally negative picture of the provision of educational equipment and materials in schools" (p. 291). The use of technology in the classroom desires further advancement across the Arab world. Certain prosperous nations on the Arab Peninsula often employ technology in reading classroom. For instance, in order to enhance student learning, the United Arab Emirates (UAE) has equipped several schools with a variety of reading technological applications and software. In order to strengthen their learners' literacies and organisational infrastructures. Furthermore, similar educational institutions in the Sultanate of Oman are depending more and more on literacy technologies to develop their ESL learners' reading skills (Al-Senaidi et al, 2022).

After a thorough examination of existing literature on the integration of technology and reading skills in ESL classrooms, there needs to be more research to evaluate the effectiveness of

technology in ESL classes from the learners' point of view in higher education, specifically in terms of enhancing reading skills. Considering learners' viewpoints when using technology in the reading classroom is essential since this can provide valuable insights into their willingness to embrace technology. This study aims to overcome the existing gap by investigating the viewpoints of ESL learners about the incorporation of technology in the reading classroom and its influence on the learners' future academic behavior.

3. Method

This study followed the methodological design of Saunders et al. (2009) by adopting a deductive approach to draw the answers from the present research questions. Accordingly, a quantitative method using cross sectional survey questionnaire was the methodological choice to collect data and draw the research answers. Twenty-three questions, derived from Quadir and Zhou (2021) Technology Acceptance Model, were utilized in this study. These questions have been previously validated in small test sample before the main data collection and showed efficiency for implementation using the Five Likert scale. The questionnaire was designed into five sections: demographic data, ability to use technology, perception of technology, usefulness, and effects on academic behavior. The test sample was not included into the main data collection process.

The study examined students' perceptions of interacting with technology to get insight into the phenomenon. Thus, ninety undergraduate EFL learners from one of the Iraqi universities were the sample of the study. All participants were Iraqi nationality with mixed experience and proficiency in English. Their ages are between 23-25 years old. The respondents were in their third stage in English department. They were provided with information and instructions on the aim and nature of the study. They were further informed that their responses would be collected and kept private. Whereas, the respondents classified randomly into four groups and handled the questionnaire sample in four working days. Then, eighty-six samples only were selected to be the material of the present study, while four uncomplete responses were ignored. SPSS.26 (Statistical Package for the Social Sciences) was used to draw the descriptive analysis of the collected data and draft the conclusions through mean scores and standard deviation rates in tables and figures.

4. Results

The first step in the data analysis process was assessing the normality of the collected data to validate whether the collected responses were normally distributed or not. Accordingly, the study adopted Skewness and Kurtosis's (1986) assessment, which indicates that a value below 0 refers to the normal distribution of the responses within the Bell Curve.

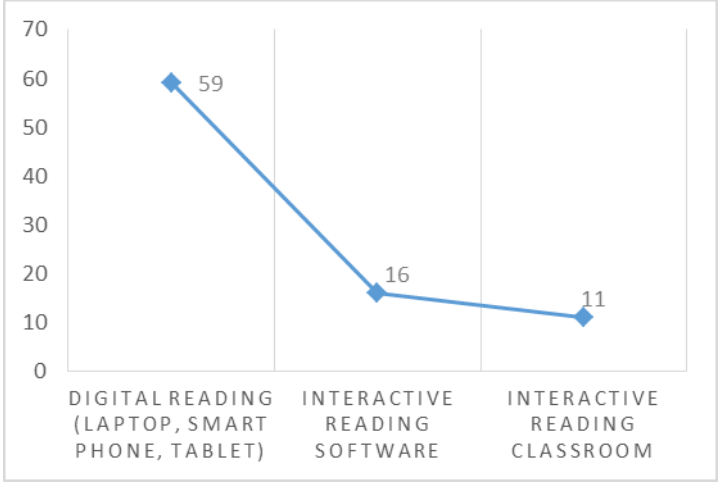
Table 1 displays the normality of the collected data with a normal degree of distribution.

Table 1. Normality Distribution

Time	No.	Mean	Std. Deviation	Skewness	Kurtosis
Survey Questionnaire	86	2.177	.441	-.273	-.692

After validating the normality of the collected data, the process moved to analyse main data that showed the findings on the ESL learners' perceptions of technologies in reading classrooms. The first section of the survey questionnaire showed higher preference of 69% from the responses, to use digital reading materials (laptops, smartphones, etc.), and 18% to use artificial intelligence. In addition, 13% of the responses prefer the interactive smart and whiteboards with an average of three years of usage in ESL classrooms. Figure 1 displays the number of respondents who showed higher tendency of the learners to use smart reading material that may allow them to practice reading at any time anywhere. These findings present clear answer for the second research question regarding the type of technology used in reading classes.

Figure 1. Respondents' tendency of digital reading



In addition, Table 2 displays a descriptive analysis of the questionnaire's second section regarding the respondents' perceptions of the efficiency of technology. At the same time, the results of the descriptive analysis showed a higher recognition of technological efficiency of (M=3.683).

Table 2. ESL Students' Perceptions of Technology

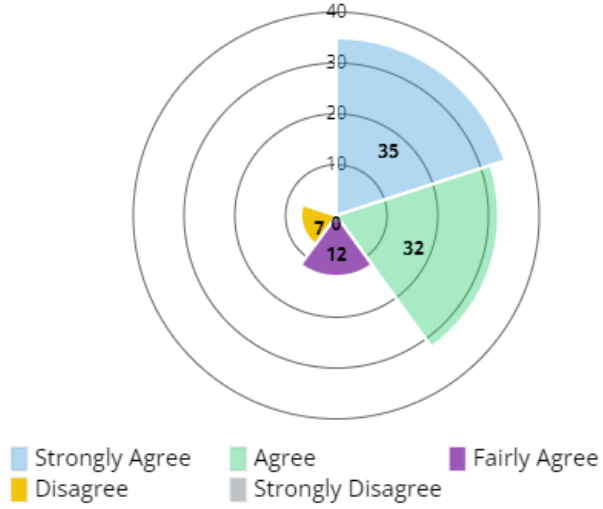
No.	Mean	Std. Deviation	Std. Error Mean
86	3.683	.489	.018

* 1-2.13 Low perception, 2.14-3.27 Moderate perception, 3.28-5.0 High perception.

More in-depth analysis showed that 82% of the responses perceived the efficiency of technology in fostering reading literacies in ESL classrooms. On the other hand, 2% of the respondents showed contradictory opinions. These findings signify the applicability and progress of

technologies in our educational system that improve reading literacies (M=4.19, SD 1.18). Figure 2 shows the exact number of respondents related to this phenomenon. These indications present secondary answer for the first research question regarding the respondents' perception on using technologies.

Figure 2. Respondents' perception on efficiency of technology in reading classes



Correspondingly, 69% of the respondents showed contentment with using technologies that help them to score better during reading lessons due to the implications of technology on developing their reading skills. These conclusions are indicated in the statistical analysis (M=3.87, SD=1.14). While 65% of the respondents agreed that technology enables them to engage in reading and understanding texts (M=3.61, SD=1.11). Besides, 42% of the respondents showed a positive attitude toward using various technologies in reading classrooms (M=3.72, SD=1.15). To conclude, 77% of the respondents showed an impact of technology on their attitude to be part of the ESL communities (M=3.42, SD=1.10).

Table 3. Ability to Use Technology

No.		Mean	Std. Deviation	Std. Error Mean
86		4.342	1.121	.108

* 1-2.13 Low ability, 2.14-3.27 Moderate ability, 3.28-5.0 High ability.

Table 3 showed a higher ability of the respondents to use technologies in ESL reading classrooms (M=4.34, SD=1.12). It was found that 75% of the responses find it easy to use technology in performing their tasks and identifying required information in their reading classrooms (M=4.24, SD= 1.21). Besides, 71% of the respondents indicated an ability to use technologies inside and outside reading classrooms (M=4.10, SD=0.97). This finding related to the respondents' answers regarding the fast and easy processes to look for the required knowledge using technology. On

top of that, 72% of the respondents showed an ability to be classified as skilful users of technologies in reading classrooms (M=3.92, SD= 1.21). Moreover, 71% of the respondents indicated an ability to set preferences for the required technologies that fit their necessities for reading tasks (M=3.84, SD=0.97).

Table 4. Usefulness of Technology

No.	Mean	Std. Deviation	Std. Error Mean
86	3.945	.458	.144

* 1-2.13 Low ability, 2.14-3.27 Moderate ability, 3.28-5.0 High ability.

Table 4 shows the usefulness of technology for ESL respondents in reading classrooms. In contrast, 72% of the respondents showed a tendency for the facilitating role of technologies in fastening the learning process with (M=4.22, SD=0.90) that shows higher usage of technology in reading classes during the learning process. This conclusion relates to the previous responses, with an additional 74% showing positive implications for the technologies on the learning process (M=4.24, SD=0.91). In addition, another 58% of the respondents agreed that implementing reading technologies contributes to developing their reading skills. Lastly, 65% of respondents indicated that using technologies in reading classrooms contributed to their self-education and independent learning process (M=3.52, SD=0.81).

Table 5. Effects on Academic Behaviour

No.	Mean	Std. Deviation	Std. Error Mean
86	3.420	.378	.119

* 1-2.13 Low effects, 2.14-3.27 Moderate effects, 3.28-5.0 High effects.

Table 5 displays the analysis of the last section of the survey concerning the implications of technological implementation in ESL classrooms on the respondents' academic behaviour. The analysis showed that 79% of the respondents intend to use more technologies during their study (M=4.43, SD=0.89). These findings resulted from the confidence that 81% of the respondents showed in using technologies in reading classes. This finding matches the intent of the respondents to use technologies repetitively in reading classes, where 76% of the respondents agree with the statement (M=4.12, SD=0.93). Equally, 74% of the respondents intend to use technologies in other ESL classrooms. This finding validates respondents' intent on combining technologies to develop literacies within independent student-centred learning contexts (M=3.98, SD=0.81). However, only three of the total number of respondents did not agree with the statements mentioned in the section on technological effect on academic behaviour. These conclusions display clearly the future implications of using technologies in ESL reading classes that contribute to answer the last research question.

5. Discussion

Analysis of the collected data aims to generate knowledge to answer the questions of the present research regarding the perceptions of ESL students on using technology in reading classrooms. The qualitative analysis of data normality showed the credibility of collected data to generate the

answers on the research phenomena, especially in the context of undergraduate students in Iraq. In comparison, the descriptive analysis of data on students' perception of the use of technology indicated a higher level of confidence (M=3.683) for the students in performing their reading tasks through the use of technologies. Besides, the findings indicated higher use of technologies in reading classrooms. These findings confirm the conclusions reported by Abdul Razak et al. (2020), who found that the implementation of technology contributes to building a "conducive environment for effective teaching and learning" (p.79). Similarly, the findings of the present investigation contribute to Ali et al. (2024) who found that EFL students positively perceived the implementation of technologies through intensive and extensive reading approaches. As a result, a higher impact on the development of their reading skills was noticed after implementing these approaches that complement each other.

In a similar vein, the respondents of this study showed enjoyment in using technologies in reading classrooms. This sense contributes to fostering their literacy skills toward further engagement in learning activities. In addition, the respondents showed an attitude toward combining and implementing different technologies that fit necessities in reading classrooms. These findings, in line with the conclusions drawn in Couch (2023), revealed that using various technological tools in ESL classrooms can ensure a promising future for the generations to succeed in a creative and collaborative learning environment. Likewise, the conclusions of the present research agreed with Ibrahim (2017) reported the positive impacts of implementing multimedia technology in EFL classrooms, motivating students to be positively engaged in learning practice and accomplish the target tasks. Moreover, the findings are identical to Awidi and Paynter (2024), where the implementation of digital technology helps students to actively participate in classroom activities and collaborate with other students towards technology and availability.

Results also showed that the respondents could use technologies in reading classrooms (M=4.342), which resulted in an ability to find the required information through the reading process. This is validated by the claims of Michaelsen et al. (2023), who revealed that team-based learning using technological tools resulted in an interactive learning practice that has evolved from expanding engagements with technology. Identically, these findings approved through 72% of the respondents who agree that using technologies in reading classrooms expands their professionalism as users of contemporary technology. In addition, the findings on the ability to use technology were contradicted with the reports of Altameemi and Al-Slehat (2021) that learners' ability to use learning technologies does not depend on their academic qualifications or scientific discipline. In addition, the present investigation denied the statement of Al-Maashani and Mudhsh (2023) who indicated that EFL learners and teachers must be competent users in using technologies, especially in language learning.

Likewise, the results on the usefulness of technology showed a positive indication in the reading classroom (M=3.945). The respondents illustrated that their technology usage led to several positive outcomes, including enhanced reading abilities, improved quiz or test results, and more convenience in the reading process. Accordingly, these findings in verified the conclusions of Hasin and Nasir (2021) who showed similar indications from learners in using technologies to

improve their reading performance. The findings are further supported the previous studies that found higher implications of technologies in developing learners' reading comprehension abilities and reading skills (Al-Obaydi et al., 2024; Bin Abdul Samat, 2020).

The last part of data analysis concerned with the effects of technological implementation on the academic behaviour of the respondents. The findings showed technologies' positive effects on the respondents' class behaviours. These effects resulted in high confidence in using technologies in reading classrooms (M=3.420). Besides, the respondents intended to use various technologies that contributed to high results for their learning experience. These findings line up with the suppositions of Jameer and Narra (2024) who identified the positive impact of technologies in improving linguistic skills, understanding and motivation among language learners. Relatively, the present study's findings showed that 74% of respondents highlighted an intent to use technologies in other academic classrooms which are consistent with the findings presented by Ghory and Ghafory (2021) on the usability of learning technologies to transfer knowledge and retrieve it from learners. Finally, the findings displayed respondents' perception of the future of technology, whereas 79% of responses showed intent to combine technologies with other educational tools for advanced learning experiences, that can offer further powerful tools for language learning (De la Vall & Araya, 2023).

6. Conclusion

This study focused on learners' perception of reading technology, especially in undergraduate ESL reading classrooms in Arabic context 'Iraqi higher education'. The study was driven by three questions, concerning respondents' perceptions of using technology, prominent types of technologies, and learners' perceptions on the future of technologies. Accordingly, the findings showed that ESL learners had shown high attitude toward using technology in reading classrooms, which resulted from their ability and understanding of the usefulness of reading technologies. These findings answered the first research question. In addition, the learners have nominated prominent technologies to answer the second research question that contribute to develop their reading skills, such as digital reading materials (computers, laptops, tablets and smartphones), reading software, and interactive whiteboards. Furthermore, the study identified the impact of using technologies on academic behaviour and their intents, while some learners showed higher intent to combine technologies for a better reading experience. Besides, others added further intent to use technologies in other academic classrooms. All these findings lead to an indication of high pedagogy of technologies in the ESL learning experience and answer the last research question.

Theoretically, the present investigation contributes to the previous literature through suggesting alternative strategies on investigating the efficiency of technologies in developing leaners' academic literacies. Besides, the current research offers a dual route model by implying learner's perspectives on active engagement in reading practice which confirmed by interactive reading and transactional reading theories. Practically, the findings can aid teachers and policymakers on learners' attitudes toward implementing technologies in ESL classrooms for better interactive

learning experiences. Additionally, it is beneficial for teachers to identify appropriate technological tool to achieve the optimum language learning experience, particularly in reading classrooms. However, the stated implications of the present investigation, but data was collected by implementing cross-sectional survey on sample size, which can be stated as the main limitation of the present investigation. Thus, future researches are required on large number of ESL learners, different research context, using other methods and longitudinal practice may lead to a detailed understanding and additional findings on this phenomenon.

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