International Journal of Learning, Teaching and Educational Research
Vol. 23, No. 9, pp. 121-140, September 2024
https://doi.org/10.26803/ijlter.23.9.7
Received Jul 24, 2024; Revised Sep 13, 2024; Accepted Sep 30, 2024

Evaluating Student Acceptance of Interactive Infographics Module for Arabic Grammar Learning Using the Technology Acceptance Model (TAM)

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Abstract. Arabic grammar learning textbooks are often associated with lengthy and unfocused information. Text-only content contributes to students' disinterest in learning and in-depth comprehension of a subject. Infographics have emerged as a substitute for traditional textbooks, offering a more engaging and straightforward way to deliver knowledge through basic technological applications. An interactive infographic module based on a website has been developed and practiced for students as an alternative to the problem. This study aims to identify the level of student acceptance of the interactive infographic modules based on the Technology Acceptance Model (TAM) and identify attitudes toward usage, readiness and behavioral intention for usage. A total of 72 students of Bachelor in Arabic Studiesat Universiti Sultan Zainal Abidin, Malaysia were involved as survey respondents. To gather information, a set of questionnaires was distributed and an infographic website module was developed. The quantitative study's data was descriptively analyzed

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using SPSS to assess how students accepted technology in terms of their attitude towards usage, readiness and behavioral intention for the module, and perceptions of its practicality and simplicity of use. The findings indicate that students who use technology have a high level of acceptability for the technology module and are prepared to continue learning Arabic grammar through the designed module because they see its advantages. The high ratings for these items indicate that the module improved their understanding of the material. The students' interaction with the module was clear and easy to understand. They believe that a website-based interactive infographic module is an effective tool for learning Arabic grammar. This module is designed to supplement classroom textbook instruction. This study is considered a contribution to the use of technology in learning courses with extensive syllabuses that require conveniently available and better-understood supplementary materials.

Keywords: Arabic grammar; interactive infographics; technology; Technology Acceptance Model (TAM); website

1. Introduction

Knowledge of the Arabic language in Malaysia began through the arrival of Islam to the archipelago by Arab traders, who spread the Islamic religion through the Arabic language. This can be seen with the pronunciation of shahadah (Faith) that needs to be professed in Arabic when embracing Islam. Starting from the words that were expressed, the teachings of Islam began to be conducted, especially in the implementation of worship such as prayer and remembrance. Subsequently, Arabic became the language of knowledge in parallel with the practical appreciation of Islam (Samah, 2013). Learning Arabic informally is the starting point for learning Arabic in depth.

The history of teaching and learning (TnL) Arabic is formally seen through the efforts of students who returned from the Middle East by opening huts to spread da'wah (Islamic preaching). It became the starting point for the development of Arabic language teaching and learning activities in depth. Arabic was taught in pondok (cottage) using a traditional approach that was more teacher-centered through the explanation method at that time (Ishak, 1995; Othman et al., 2013). Arabic grammar learning has a long history, having started with institutions or religious education centers introducing the language to students of religion. They adhere to the pondok learning system, which offers traditional instruction in Arabic and religion (Abdul Samat et al., 2017; Muhammad et al., 2006). Talaqqi or reading the book aloud with the teacher by the translation method was the learning strategy used during the period (Abdul Samat et al., 2017; Mat Teh, 2009). According to Abd Latif et al. (2021), the study system in the pondok as mentioned is a very important education in the life of the Malay community in obtaining religious knowledge. Starting from the system and methods in the study center of the pondok and religious institution, the TnL of Arabic language and the main branch of Arabic language knowledge, which is Arabic grammar, continues to develop at all levels of formal education, starting from primary schools through the J-Qaf programme up to higher educational institutions (Sahrir et al., 2022).

Like other languages spoken throughout the world, Arabic has its methodology. A language's syntax or technique helps to avoid mistakes when speaking or writing. Ismail et al. (2021) assert, however, that the Arabic grammar approach is more intricate and nuanced, involving multiple discussions to determine the precise meaning. Although several approaches to teaching Arabic grammar have been developed, there is ongoing disagreement over how well students have understood it. Zaini et al. (2019) state that teacher-centered learning is still a part of the traditional approaches used in TnL activities for Arabic grammar. When compared to employing technology, traditional methods of teaching entail lectures and minimal conversation, which makes learning less engaging and less likely to result in students mastering the material (Ismail, 2008).

Due to teaching methods that are static and traditional, especially for non-native students, the debate around the knowledge of Arabic grammar is very broad and occasionally unfocused (Abdul Samat et al., 2017; Che Mat & Ying Soon, 2010; Husin et al, 2017; Muhammad et al., 2006). According to Ahmid et al. (2018), Lubis et al. (2014), and Samah (2009), using traditional delivery methods, such as the translation method, to implement teacher-centered learning simply make students passive and unmotivated to learn. This predicament arises from professors' perceptions that their students are incapable of understanding texts, leading them to employ the translation method (Zaini et al., 2019).

Arabic textbooks contain detailed information and are presented in the form of long descriptions, which creates unfocused content. This situation contributes to the lack of student interest in continuing to learn the content of the book. When it comes to the content presentation of Arabic grammatical knowledge, Mat Jusoh et al. (2013) claim that the information is overly philosophical and complex. Using the Sharh Ibn 'Aqil textbook as an example, the material offered is lengthy and does not concentrate on the key points. Students find it difficult to absorb the textbook material in this setting and become bored rapidly. As a result, the part that instructional materials play is crucial in clarifying and improving learning measurement (Sjahrony et al., 2017).

The selection of learning materials must also be appropriate to the student's ability level which can attract interest and increase their motivation to use it (Sjahrony et al., 2017; Williams et al., 2002; Yusoff, 1999). Students become less interested in learning Arabic grammar when there are few and underutilized learning tools available. Because of this, Arabic is sometimes perceived as an unattractive language that is challenging to learn, enjoy, and comprehend (Che Hat et al., 2013; Nik Ali, 2020). The present generation of students no longer responds well to teaching strategies that only use textbooks and whiteboards (Ku Azizan et al., 2015). According to Samah (2012), the use of learning aids that are not appropriate and effective among students is a factor in the weakness of Arabic TnL. The use of reference books is also sometimes not suitable for the student's ability level. According to Jaffar and Sha'ari (2016), Arabic grammar books have different levels, which causes students to be unsure about the appropriate reading material to be used as a reference. The traditional approach, which is not suitable

for the development of technology is now a factor in the lack of interest of students to learn Arabic.

Diverse learning methods and the use of learning aids that suit the student's ability need to be considered (Jamaluddin & Baharudin, 2021). Along with the passage of time and the problems faced by students related to the mastery of knowledge, creative, innovative and dynamic teaching methods need to be practiced with expert initiatives and effectiveness. According to Mohamed et al. (2022), teachers need to be more creative and innovative in choosing appropriate and more effective methods in line with students' levels and interests. Technology-related knowledge is now a basic requirement that teachers need to emphasize (Ab Majid & Ismail, 2018).

These days, using technology has become essential, particularly in the realm of education. The widespread exposure of the present generation of students to technology is one of the causes propelling the use of technology in TnL (Osman, 2017). They are inextricably linked to multimedia and technology, to the point that they both serve as and draw attention to these things. This is because the computer application's material is scientific and appropriate for the advanced age we live in today (Che Hat, 2011). The application of technology not only facilitates the TnL process but also makes a great contribution to 21st-century learning (PAK21). Technology applications that focus on student-centered learning are an important foundation for PAK21 (Sahrir et al., 2020). The student's role is fully used in engaging with learning methods and understanding what is learned (Lubis et al., 2019). This does not mean that the role of the teacher is completely abandoned; rather, the teacher becomes a facilitator and is not completely dependent on traditional teaching methods.

Infographics are one technological solution to this issue that can be used as an alternative. The presentation of complex and detailed Arabic grammar textbooks can be enhanced through the utilization of infographic technology, which focuses on delivering information in a concentrated, engaging and interactive manner. In addition to emphasizing student-centered learning, the usage of infographics in TnL helps to communicate knowledge to students directly and in a straightforward graphic fashion (Krauss, 2012). Compared to traditional approaches, infographic material is easier to learn and retain (Wulandari et al., 2019). Additionally, using this approach can make it easier and more successful for students to understand a subject (Mohd Noh et al., 2017). Students' attention can be piqued by studying through graphic aspects as Che Lah (2007) claims. Learning proceeds more swiftly when information is seen graphically because the mind processes it faster (Kurniawan, 2020). Information can be obtained more quickly and easily if it is presented in an eye-catching graphic that emphasizes the choice of colors and language. An approach to aid in the comprehension of complex information is the integration of multimedia components into plain, targeted information.

2. Literature Review

2.1 Interactive Infographics

Infographics are an effective medium of information delivery because a variety of information is presented in the form of attractive graphics and is easy to understand by all types of readers. The advantage of infographics is also seen in its ability to explain information well compared to plain text and pictures. A study by Mohd Noh et al. (2017) found that students are more likely to comprehend information when utilizing effective visual communication and appealing graphic combinations. They argued that any information presented should emphasize the use of attractive colors alongside concise and easily understandable text, supported by relevant diagrams, charts, or tables, to create a systematic and effective delivery of information. According to Sweeper (2016), the use of visual data and infographics has become a crucial source for information delivery, serving as an effective teaching tool capable of accessing, manipulating, and utilizing complex statistical information, thereby becoming essential in daily life. Infographics can present intricate information in a holistic manner through large visuals, allowing designers to showcase their knowledge more effectively (Kibar & Akkoyunlu, 2015).

In line with the changes in methods of accessing information that influence the format of information delivery for the 21st-century or digital generation, visual knowledge resources accompanied by concise text are preferred by all (Ghode, 2012). Furthermore, interactive multimedia materials, including text, video, audio, and animations, can enhance students' information retention rates by over 30% compared to traditional methods (Aris et al., 2001). According to Baihaqi et al. (2023), infographics make it easier for readers to understand information without the need for detailed and in-depth analysis. The use of technology is a crucial component in the implementation of 21st Century Learning (PAK21) (Ali et al., 2018). The application of infographics in education is one method for practicing PAK21. Visual information is utilized to enhance retention in the learning process and the acquisition of knowledge. For instance, data presented visually through graphic illustrations effectively communicates relationships between ideas and facts (Cleveland, 1985). In this context, infographics represent a contemporary and popular form of visual information that can support learning activities. Infographics are designed to convey specific information to targeted audiences by transforming complex and abstract concepts into intuitive knowledge (Smiciklas, 2012). This function aligns with the current generation of students, who tend to focus more on visual elements for learning.

Research by Alwadei et al. (2023) indicates that infographics are effective tools for improving vocabulary acquisition in second language learners, as they support better retention and understanding over an extended period. Infographics can simplify complex language concepts, such as vocabulary and sentence structure, enhancing learners' comprehension. Additionally, the visual appeal of infographics increases engagement and motivation, making the language learning process more enjoyable and effective (Parveen & Husain, 2021).

According to Afify (2018), infographic presentations can be classified into three categories: static, animated, and interactive. There is a connection between these three categories of infographics. They start with information presented in a static form which is widely used in print and electronic media through social media nowadays. For greater impact, this static data is animated as a video with an extra soundtrack and other elements. Next, a menu display of information that may be interactively selected presents both kinds of infographics via the website.

Looking at these three types of infographics, interactive infographics have various applications for user interaction. According to Möcander and Shen (2023), interactive infographics are an infographic format that is interactive based on static infographics provided. Users or readers can access various information in one place and this allows them to access information bilaterally (Dur, 2014). According to Loosen et al. (2020), the use of interactive infographics is considered the latest technology in presenting information. The information is displayed in a two-way fashion that highlights the aspect of user interaction; that is, certain information is available upon the user's request, such as when they scroll around the page, click on menu items, move the page, or do other interactive actions. The user interacts with the system by choosing the information they desire from the menu. The information they require is based on what they can see on the accessible menu display. Golubnycha (2022) asserts that interactive infographics provide users the autonomy to choose how they want to learn new information, allowing them to look for certain elements and interpret them in a way that interests or makes sense to them.

Additionally, this kind of infographic typically has more content with a variety of digital applications that entice viewers to connect further and incorporate more engaging and adaptable information-finding features (Ahmed Ismaeel & Al Mulhim, 2021). Making infographics interactive rather than merely static in form can boost their impact when utilized in online learning, according to Tarkhova et al. (2020). With the interactive elements found in interactive infographics, users can interact with the information and the feature can also attract them to explore the information further. They can also access information according to their needs and circumstances (Lankow et al., 2012). Alsheri and Ebaid (2016) explained the characteristics of interactive infographics as follows:

i. Data is arranged based on specific standards to display a pattern or subject
ii. The reader finds the content engaging since it combines dynamic text with vibrant images.
iii. A wide range of data is condensed and compiled into a single multimedia resource.

The use of interactive infographics that combine static and animated information allows readers or students to focus on only one source of information. This criterion can make it easier for them by reducing the need to access many resources, while also producing interactive content through the website that attracts their interest and encourages them to continue deepening and exploration.

2.2 Technology Acceptance Model (TAM)

TAM is a theory adapted from the Theory of Reasoning (TRA) (Ajzen & Fishbein, 1980) and introduced by Davis (1989) to explain the acceptability factors of technology use. This theory looks at the aspect of readiness and intention in accepting and using technology in teaching. People who have a positive attitude towards information technology have a higher acceptance towards the use of the technology, compared to people who have a negative attitude towards the technology (Fecira & Abdullah, 2020). The TAM model also states that when a new technology is introduced, there will be factors that affect the decision regarding when and how the technology is used (Hassan et al., 2021). Based on this model, two variables are the key factors in the acceptance of a technology, namely perceived usefulness and perceived ease of use (Abdullah et al., 2021). According to TAM, the use of information technology by a user derives directly or indirectly from the Behavioral Intention (BI), Attitude Towards Usage (AT), Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of the system (Ghani et al., 2019). The figure below shows the conceptual framework of the Technology Acceptance Model (TAM).

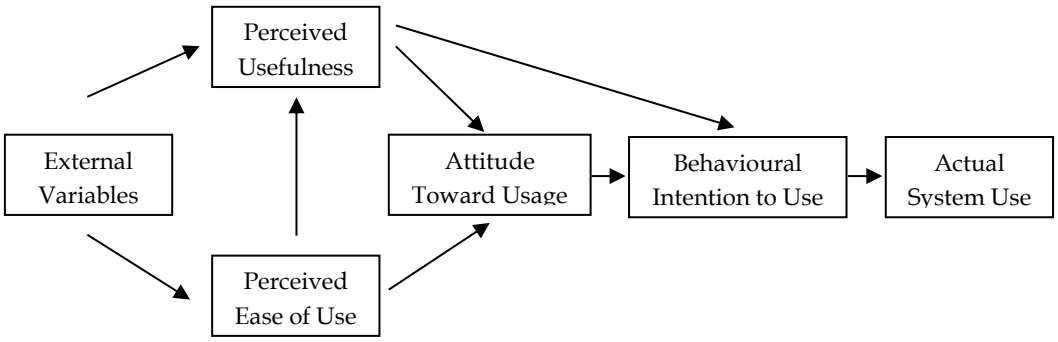

Figure 1: Technology Acceptance Model

The Perceived Usefulness element explains a person's belief that using a technology-based system will improve its performance (Rahayu et al., 2017). As for the Perceived Ease of Use element, it means a person's belief that the use of technology makes it easier for users. Attitude Toward Usage describes the user's interest or lack of interest towards using the developed technology. Behavioral Intention to Use, on the other hand, describes the user's readiness and intention to use technology from a motivational aspect.

The Technology Acceptance Model (TAM) offers a robust framework for understanding how students and educators adopt educational technologies. By focusing on perceived usefulness and perceived ease of use, educational technology designers and educators can better facilitate the integration of new tools, ultimately improving learning outcomes. In the case of adopting infographic modules for teaching Arabic grammar, ensuring that students perceive the tool as both effective and easy to use will significantly influence its success in the classroom. This study applies the TAM model as a basis to obtain student data related to their acceptance of web-based interactive infographic modules in learning Arabic grammar. This module combines technological

elements that aim to facilitate students' understanding in learning complex Arabic grammar content.

3. Research Objectives

The web-based interactive infographic module that was developed was used by the students, and this study focuses on their views on the module based on the Technology Acceptance Model (TAM). The following objective was formulated for this study:

- Assessing students' technology acceptance of web-based interactive infographic modules based on the Technology Acceptance Model (TAM).

The objective aims to answer the following questions:

i. What are the students' views on the usefulness of using the module?
ii. What are the students' perceptions of the ease of use of the module?
iii. What are the students' attitudes towards using the module?
iv. What are the students' intentions and readiness towards using the module?

4. Methodology

The development of web-based interactive infographic modules in learning Arabic grammar utilizes the Design and Development Research (DDR) approach (Richey & Klein, 2007). This approach was selected because the produced modules will be evaluated specifically about usability and will undergo a module development procedure that includes the Needs Analysis Phase, the Design and Development Phase, and the Usability Evaluation Phase.

4.1 Needs Analysis Phase

This phase's implementation aims to determine the requirements for creating an interactive infographic module for learning Arabic grammar that can be accessed via a website. This is a crucial stage since it allows for the identification of the research questions and the development of modules (Mohd Jamil & Mat Noh, 2020). To determine the needs for creating this module based on the opinions of the students, questionnaire instruments are utilized. The results will then serve as a foundation for the module's design.

4.2 Design and Development Phase

This phase is the next main phase to obtain validity and reliability in designing and developing modules. The module developed is the result of expert consensus on module design elements through the Fuzzy Delphi technique. Before testing the usability and validity of the module are evaluated by experts.

4.3 Usability Evaluation Phase

This phase involves students' views related to the usability of the module. This study uses the TAM model as a basis for building a questionnaire instrument to obtain students' views on the developed module. This phase became the focus of this study by using quantitative research to obtain the necessary data related to students' views on the acceptance of technology in the use of interactive infographic modules in learning Arabic grammar.

4.4 Research Sample

The respondents involved in this phase consisted of 72 Bachelor's Degree students of Arabic Studies students who took the Ibn 'Aqil Syntax Text Study course in the third semester. The type of sampling carried out in this study is purposive sampling, which involves selecting a sample based on the researcher's knowledge and is believed to be able to provide information relevant to the research question. The students accessed the website before receiving the questionnaire and utilized an interactive infographic module to learn Arabic grammar.

4.5 Research Instrument

The research instrument used in this phase involves a set of questionnaires built based on the TAM model. This questionnaire instrument was adapted from previous research (Masrom, 2007) and modified to suit the specific context of the current study. This questionnaire instrument consists of five parts, namely Respondent Demographics, Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Usage (ATU) and Behavioral Intention to Use (BIU). There are 14 items in four main constructs that are distributed to the respondents. Before the questionnaire was distributed to the respondents, three experts were consulted to validate this questionnaire. Furthermore, a pilot study was conducted to gain reliability. The result of the pilot study shows the value of Alpha Cronbach is .897, in which is considered acceptable for this study.

4.6 Data Analysis

For this investigation, quantitative data analysis was used. SPSS Version 23 is used for data analysis when dealing with quantitative data. The researcher used descriptive analysis to determine the mean and standard deviation. The results of descriptive analysis are used to determine the level of student technology acceptance of the developed modules.

5. Findings

5.1 Research Respondents' Demographics

The study respondents involved 72 students and their gender was analyzed descriptively involving frequency and percentage using the SPSS software Version 23. The analysis of the respondents' gender background is presented in Table 1.

Table 1: Research respondents' gender

Gender	Frequency	Percentage	Overall percentage
Male	16	22.2	22.2
Female	56	77.8	100
Total	72	100.0	

A total of 72 respondents were involved in the Usability Evaluation phase. As shown in Table 1, the gender analysis of the respondents shows that a total of 16 respondents are male (22.2%) while the remaining 56 respondents are female (77.8%).

For data analysis involving four constructs in the usability evaluation phase questionnaire, this study used SPSS software version 23. The mean and standard deviation were used for descriptive analysis. The level of technological adoption for the interactive infographic module in learning Arabic grammar was ascertained using the findings of the descriptive analysis. The level of student agreement was determined by analyzing the mean score and standard deviation. As shown in Table 2, the mean interpretation scale was derived from Nunnally and Bernstein (1994).

Table 2: Mean interpretation value

Mean score	Interpretation
1.00 – 2.00	Low
2.01 – 3.00	Moderate
3.01 – 4.00	Moderately high
4.01 – 5.00	High

Source: Nunnally dan Bernstein (1994)

5.2 Perceived Usefulness

This section recorded an item-by-item analysis to get respondents' views on their perceived usefulness towards the module. Table 3 shows the mean score and standard deviation of each item in this aspect.

Table 3: Analysis of perceived usefulness

	B: Perceived usage usefulness	Mean	SD	Interpretation
B1	The interactive infographic website module improved my learning comprehension.	4.71	.488	High
B2	The interactive infographic website module helped me build my own understanding.	4.69	.493	High
B3	The interactive infographic website module gives me space to think critically when understanding the content.	4.67	.531	High
B4	I find the interactive infographic website module very useful in self-learning.	4.69	.493	High
	Average	**4.69**	**.501**	**High**

Based on Table 3 above, the interpretation of the data shows that the usefulness of using the module based on the students' point of view is at a high level, which is at an overall mean value of 4.69 and a standard deviation of .501. This shows the usefulness of using the module is at a high level. The item with the highest mean score is 'The interactive infographic website module improved my learning comprehension' (M=0.471, SP=.488), followed by the item 'The interactive infographic website module helped me build my understanding' and 'I find the interactive infographic website module very useful in self-learning', which recorded a mean value of 4.69. The item with the lowest mean value is 'The module of the interactive infographic website gives me space to think critically when understanding the content' with a value of (M=4.67, SP=531).

5.3 Perceived Ease of Use

This section recorded an item-by-item analysis to get respondents' views on the Ease of Use of the module. Table 4 shows the mean score and standard deviation of each item in that aspect.

Table 4: Analysis of perceived ease of use

	C: Perceived ease of use	Mean	SD	Interpretation
C1	I found the interactive infographic website module easy to use.	4.72	.510	High
C2	My interaction with the interactive infographic website module is clear and easy to understand.	4.76	.459	High
C3	I find it easier to access information by using the interactive infographic website module.	4.71	.542	High
C4	I find the navigation aspects from each category in the module titles to be easy and smooth'	4.75	.467	High
	Average	**4.74**	**.495**	**High**

Based on Table 4 above, the interpretation of the data shows that the Ease-of-Use aspect of the module based on the students' point of view is at a high level, which is at an overall mean value of 4.74 and a standard deviation of .495. The item with the highest mean score is 'My interaction with the interactive infographic website module is clear and easy to understand' (M=0.476, SP=.459), followed by the item 'I find the navigation aspects from each category in the module titles to be easy and smooth' (M=0.475, SP=.467) and 'I find the interactive infographic website module easy to use' (M=0.472, SP=.510). The item that recorded the lowest mean value was 'I find it easier to access information by using the interactive infographic website module' with a value of (M=4.71, SP=542).

5.4 Attitude toward Usage

This section consists of an item-by-item analysis to evaluate the students' attitudes towards the use of the module. Table 5 shows the mean score and standard deviation of each item in that aspect.

Table 5: Analysis of perceived attitude towards usage

	D: Attitude	Mean	SD	Interpretation
D1	I like the idea of an interactive infographic website module.	4.74	.475	High
D2	I have a positive attitude towards the interactive infographic website module in learning Arabic grammar.	4.75	.436	High
D3	I believe the interactive infographic website module is a good idea for learning Arabic grammar.	4.78	.419	High
	Average	**4.76**	**.443**	**High**

Based on Table 5 above, the interpretation of the data shows that the aspect of students' attitude towards using the module based on the students' point of view is at a high level, which is at an overall mean value of 4.75 and a standard deviation of .460. This shows their attitude towards the use of the module is at a high level. The item with the highest mean score is 'I believe the interactive

infographic website module is a good idea for learning Arabic grammar' (M=0.478, SP=.419), followed by the item 'I have a positive attitude towards the interactive infographic website module' in learning Arabic grammar' (M=0.475, SP=.436). The item with the lowest mean value is 'I like the idea of an interactive infographic website module' (M=0.474, SP=.475).

5.5 Readiness and Behavioral Intention for Usage

This section presents an item-by-item analysis to examine the students' readiness and intention to use the module. Table 6 shows the mean score and standard deviation of each item in that aspect.

Table 6: Analysis of readiness and intention of use

	E: Readiness	Mean	SD	Interpretation
E1	I want the approach of using an interactive infographic website module to be implemented for each course.	4.81	.399	High
E2	I will use the interactive infographic website module frequently for learning Arabic grammar.	4.82	.387	High
E3	I will use this module as a reference in learning Arabic grammar.	4.82	.387	High
	Average	**4.82**	**.391**	**High**

Based on Table 6 above, the interpretation of the data shows that the aspect of students' readiness and intention to use the module based on their point of view is at a high level, which is at an overall mean value of 4.82 and a standard deviation of .391. This outcome shows the students' readiness and intention to use the module is at a high level. The items with the highest mean score is 'I will use the interactive infographic website module frequently for learning Arabic grammar' (M=0.482, SP=.387) and 'I will use this module as a reference in learning Arabic grammar' (M=0.482, SP=.387). The item with the lowest mean value is 'I want the approach of using an interactive infographic website module to be implemented for each course' (M=4.81, SP=399).

6. Discussion

The results show that the mean for all four constructs is at a high level. This shows that students' acceptance of the interactive infographic website module in learning Arabic is high. For the first construct, which is the perception of the module's Usefulness, students agree that the module produced can improve their understanding of Arabic. Students' comprehension can be enhanced by providing them with more focused and visually appealing content. In their study, Che Ibrahim et al. (2021) discovered that the use of interactive multimedia, which incorporates graphics, video, and other elements, can enhance students' comprehension of the material being taught and further empower them to express what they have learned. In addition, the usefulness of the module is also evaluated by students so that they can think critically in understanding the content displayed. According to Bhat and Alyahya (2023), interactive elements in information can enhance focus and attraction as well as improve critical thinking skills. The division of topics arranged on different pages interactively allows them to think and select the necessary information. They also agreed that the module

used can build self-understanding after making conclusions about the content presented. Students also think that the module produced is very useful in self-learning. The use of websites that can be accessed at any time and place allows self-directed learning to occur. The extent of self-directed learning readiness in using online technology is highly important for attaining academic success. In this context, self-directed learning readiness is defined as the learner's preparedness to learn independently (Lasfeto & Ulfa, 2020).

Moreover, for the perceived Ease of Use of the module, the majority of students agreed that their interaction with the module was clear and easy to understand. The content of the module is organized systematically and the information contained in the module is simple and combines static and animated elements. According to Abdul Hamid et al. (2024), interesting and simple infographic information makes learning easier to understand and faster. Students also think that navigating through every section in the title is simple and easy. Since every page on the website has a menu button of its own, the students agreed that utilizing the website is simple. They pointed to the module's user-friendly display and the availability of information on every subject.

From the aspect of attitude towards the module usage, students generally agree with the idea of producing the module. They believe that a website-based interactive infographic module is a good idea for learning Arabic grammar. According to Parveen and Husain (2021), infographics are very helpful for students in learning complex topics such as language learning. The visual approach presented on a centralized website can provide them with the assurance to demonstrate the intricate and detailed content of Arabic grammar. They appreciate the effort put into creating an interactive infographic website and are also in favor of using the generated components.

For the Readiness and Behavioral Intention to use module constructs, the overall mean recorded is the highest compared to other constructs. This indicates that they are prepared to utilize this module regularly and at any time as a learning resource. This module is designed to supplement classroom textbook instruction. This module's development process follows several phases that are directed by pertinent models. The website produces interactive infographic modules, which have consequences or add to the process of developing modules based on interactive infographics. This module's development is likewise grounded in theory and models. Practically, this module can attract students' interest in understanding complex information and further facilitate their understanding of the content due to the simple, interesting and interactive infographic features.

Rusli (2014) developed the Arabic learning website FunArabic.webnode.com to explore student engagement and effectiveness in learning Arabic through technology. Using both qualitative and quantitative methods, including observation, interviews, and questionnaires, the study found that 114 secondary students responded positively to using technology for language learning. Similarly, Alrwele (2017) conducted a quasi-experimental study with 165 female students in Saudi Arabia, examining the impact of infographics on student

achievement and perceptions. The results showed significant improvement in the treatment group's performance, with nearly 90% of students reporting positive effects on their thinking and life skills due to the use of infographics. Additionally, Rezaei and Sayadian (2015) investigated the role of infographics in learning English grammar among 60 Iranian EFL students. Their experimental study revealed that infographics were highly effective in improving grammar learning, as demonstrated by pre- and post-test analysis using SPSS. Together, these studies highlight the effectiveness of educational technologies, such as websites and infographics, in enhancing language learning and student engagement.

The findings from this study align with previous research, which has shown that the use of technology enhances student engagement and effectiveness in learning the Arabic language (Rusli, 2014). Additionally, technology has a positive impact on students' performance during learning sessions (Alrwele, 2017).

7. Conclusion

By consolidating knowledge onto a single platform, interactive infographic modules are thought to offer an alternative in the field of education. This development facilitates the teacher's creation of interactive, centralized content that students can access by visiting a single website. Since students now live in a time where technology is used daily, their acceptance of the usage of technology-based courses is no longer a problem. Infographics, in particular, have the potential to be a digital tool for learning Arabic grammar that can be used by people of different backgrounds and study levels. The results suggest that integrating interactive infographic modules into curriculum development offers significant benefits. These tools centralize learning content, making it more accessible and interactive, and can accommodate learners from diverse backgrounds and study levels. Since students are already familiar with technology, future curricula can focus on leveraging this familiarity to enhance engagement and deepen learning. Infographics, particularly for complex subjects like Arabic grammar, simplify difficult concepts and improve both student engagement and performance. Future educational design should embrace technology-driven visual tools to enhance learning outcomes across various subjects.

8. References

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