

# An Insight on Needs Analysis for Developing Virtual Reality (VR) Technology in Learning Arabic Grammar: A Pilot Study for Arabic-VR Application

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**Abstract:** *The learning of Arabic grammar – which uses textbooks with lengthy details can be transformed into creative and innovative forms through the application of technological advancement. Worldwide educators from diverse backgrounds and cultures are well equipped with the recent teaching methods and tools widely used and accessible to guide and nurture the students in a productive and interactive classroom learning environment. Significant studies have indicated that virtual reality (VR) is one of the many technological applications facilitating learning. It is an emerging technology undergoing a rapid transformation in the educational world. However, there is still limited study about the use of VR in Malaysia for teaching and learning a foreign language i.e. Arabic. The usage of this technology has been less explored, particularly from the perspective of students at the university level. Generally, this study employed the Design and Development Research (DDR) methodology, and in the first phase of DDR i.e. the needs analysis phase. This phase used a questionnaire on the needs in developing the Arabic-VR Application. Therefore, a pilot study was first conducted to determine the content validity and reliability of the needs analysis questionnaire for developing the application in learning Arabic grammar. It was conducted on 4 experts and 30 students of various programs at Kolej Universiti Islam Perlis (KUIPs). They took Arabic Language (course code: DTU2022) as a compulsory subject at the Centre for Languages and General Studies, KUIPs in semester 1, session 2023/2024 of the academic calendar. Quantitative data were then analyzed using the Statistical Package for Social Science (SPSS) software version 23 to retrieve Cronbach's alpha value, frequency distribution, percentages, mean, and standard deviations. The results showed that all 37 items of the questionnaire of this pilot study had good internal consistency validity and reliability. Findings revealed a high need to develop the Arabic-VR application for learning Arabic grammar and a positive response to adopting technological tools i.e. VR for language learning as it was positively perceived to increase students' motivation towards learning Arabic grammar. It is hoped that the findings of this pilot study could benefit the readers and be used as a benchmark for the use of VR in learning Arabic grammar.*

**Keywords:** Virtual Reality (VR), Learning, Arabic Grammar, Needs Analysis, Pilot Study

## 1. Introduction

The objective of learning a language approach is to practice language proficiency without making mistakes (Abdul Hamid et al., 2020). This is similar to the teaching and learning (TnL) of Arabic which places a strong emphasis on grammatical acquisition. Abdul Karim et al. (2020) claimed that every language in the world, notably Arabic, is highly concerned with grammar to guarantee that the language is utilized correctly and accurately. Arabic grammar is a method of preserving speech and correct pronunciation and writing. It is not an intended goal, but rather one of the methods that helps learners speak and write in the proper language (Al-Dalimi, 2005). According to Jaffar and Sha'ari (2016), the grammar that serves as the foundation for the Arabic language rules determines whether it will serve its intended purpose.

According to Syed Ab Hamid et al. (2017), the inability to master the Arabic language as a whole is the result of failing to understand grammar well. At the same time, the TnL method of Arabic grammar still focuses on the explanation of the textbook by the teacher which limits two-way interaction. This is not in line with current developments, especially for Generation Z students who prefer interactive learning, innovation, and a variety of technology-based teaching aids. Zaini et al. (2019) pointed out that one factor contributing to this issue is the TnL methodology of Arabic grammar, which is synonymous with traditional method that mainly incorporates teacher-centered learning.

In this advanced era, language or linguistic learning using technological and technical innovations has become necessary and important. Although the natural characteristics of the Arabic grammar method are complex, it does not mean that mastery of it is limited. Teachers have practiced various teaching methodologies in TnL Arabic grammar. However, the selection of a creative and appropriate approach needs to be widely practiced in line with current technological developments. An interactive and innovative teaching approach is more suitable and popular with students in this current era as compared to traditional methods that only focus on the teacher.

One of the alternatives in practicing the approach is by using multimedia that acts as a teaching aid (Sallehin & Ab Halim, 2018). Nowadays, the use of multimedia can be practiced through the presentation of information through Virtual Reality (VR) technology. The use of VR technology in its various types and features has become widespread in all parts of the world and various fields, including the field of education. Information is presented in an interactive, colorful, three-dimensional, animated environment enhanced with sound effects. According to Shen (2017), VR technology has become one of the most popular tools for teaching and learning activities in various fields. Hence, the current researchers believe that the use of VR technology is one of the modern educational methods that should be implemented and not be ignored in the TnL process.

Based on the current situation mentioned before and considering the importance of using VR technology in the TnL field, this study aims to develop an Arabic-VR Application using Virtual Reality (VR) technology and its usability evaluation in learning Arabic grammar. Therefore, in this paper, the current researchers have conducted a pilot study to determine the content validity and reliability of the needs analysis questionnaire for developing Virtual Reality (VR) technology in learning Arabic grammar. The application is an Android smartphone application for educational learning played on a VR console as a new learning tool called the Arabic-VR Application. This application is based on VR technology. The person who uses VR equipment can "look around" the artificial world, move around it, and interact with virtual features or

items. The effect is created using a head-mounted VR device with a screen in front of the eyes. This application aims to increase students' motivation towards learning Arabic grammar in an environment that offers interactions, realistic visuals, spatial audio, animation, and 3D features.

## 2. Objective

To determine the content validity and reliability of the needs analysis questionnaire for developing Virtual Reality (VR) technology in learning Arabic grammar.

## 3. Methodology

The details of the employed research methodology of this research are presented below:

### Pilot Study

A pilot study will confirm viability and scalability and enable the testing of proposed processes and procedures. It will confirm the appropriateness and safety of any proposed tools and ensure that any working practice complies with organizational/statutory standards. The main purpose of a pilot study is to determine the validity and reliability of the survey instrument. In this paper, a pilot study was carried out using a quantitative approach by distributing research instruments to respondents. The sample involved in this pilot study was a total of 4 experts and 30 students which is considered an appropriate sample size to find the value of Cronbach's Alpha reliability score of the needs analysis questionnaire.

The number of respondents in this pilot study is sufficient because according to Cooper and Schindler (2011), the appropriate number of respondents in a pilot study is between 25 and 100 people. Meanwhile, Johanson and Brooks (2010) suggested a minimum number of 30 people for a pilot study whose purpose is for preliminary research or scale development.

The items of the instrument of this pilot test were adapted from the study by Amani (2019) and Abdul Rahman (2022). The instrument then has been modified by the current researchers and validated by 4 experts in the field of study.

### Cronbach's Alpha

The objective of this study is to determine the content validity and reliability of the needs analysis questionnaire for developing Virtual Reality (VR) technology in learning Arabic grammar. A needs analysis questionnaire was distributed to experts and students during the pilot study to assess their comprehension of developing Virtual Reality (VR) technology in learning Arabic grammar. Internal consistency for each component of the questionnaire was measured using Cronbach's alpha. Pallant (2007) stated that Cronbach's alpha is acceptable in a study if the score exceeds 0.7. Meanwhile, George and Mallery (2003) provided the rule of thumb for assessing the Cronbach's Alpha value for a dichotomous or Likert scale instrument, as shown in Table 1.

**Table 1: Cronbach's Alpha Interpretation**

<b>Cronbach's Alpha</b>	<b>Value</b>	<b>Internal Consistency</b>
	$\alpha \geq 0.90$	Excellent
	$0.80 \leq \alpha < 0.90$	Good
	$0.70 \leq \alpha < 0.80$	Acceptable
	$0.60 \leq \alpha < 0.70$	Questionable
	$0.50 \leq \alpha < 0.60$	Poor
	$\alpha < 0.50$	Unacceptable

Source: George and Mallery (2003)

The Cronbach's Alpha has a value between 0 and 1. The closer the Cronbach's Alpha value to 1, the greater the internal consistency of the item within the scale. According to George and Mallery (2003), Cronbach's Alpha value above 0.90 indicates excellent internal consistency, above 0.80 is good, above 0.70 is acceptable, above 0.60 is questionable, above 0.50 is poor, and below 0.50 is unacceptable.

## Research Design

Validity and reliability are crucial aspects to consider when developing an instrument. In developing an instrument, it is essential to ensure that the research design is valid and reliable. Validity ensures that the instrument effectively measures the specific function it intends to improve. While reliability ensures that the instrument produces consistent results over time and across various conditions. Reliability aims to determine whether the measurements give the same answer when it is used to measure the same concept to a population or sample or the same respondents (Marican, 2005). Although reliability is important for the study, it is not sufficient unless combined with validity (Taherdoost, 2016). By incorporating these principles into the research design, developers can ensure that the instrument is effective and dependable in enhancing the targeted function or operation. This study involves assessment studies aimed at estimating the validity and reliability of the needs analysis questionnaire for developing the Arabic-VR Application in learning Arabic grammar.

## Respondents

This research focused on the Arabic Language course (course code: DTU2022), which is a compulsory subject for all students at KUIPs. This subject is offered in the first semester of the study plan provided by the Centre for Languages and General Studies. The sampling in this research was in the form of purposive sampling. This method was consistent with the research conducted based on readiness and accessibility in obtaining feedback from the participants. This study involves the sampling of experts to evaluate the content validity of the instrument and the sampling of students to assess the reliability of the instrument.

For this study, 4 experts were chosen using purposive sampling based on their specialized knowledge in the relevant field, or their expressed willingness to participate. The purposive sampling technique was used to select the experts based on their knowledge in a particular field or respondents wishing to be studied (Yahaya, 2007). The experts were selected to assess the validity of the needs analysis questionnaire for developing the Arabic-VR Application in learning Arabic grammar, and the utilization of purposive sampling ensures a targeted and representative selection of experts for this evaluation.

To evaluate the reliability of the needs analysis questionnaire, a pilot study was conducted on 30 students with similar characteristics to the actual study sample. They take Arabic Language course (course code: DTU2022) at the centre. The purpose of this pilot study was to assess the

content of the instrument and identify any possible errors. A pilot study was regarded as an essential requirement in advance of the main study as a means of ensuring trustworthiness and utility (Malmqvist et al., 2019). The number represented all students from various programs.

The respondents involved in the pilot study for the needs analysis questionnaire are as shown in Table 2 below:

**Table 2: Respondents for The Pilot Study**

No.	Purpose	Respondents	Frequency	Sampling Technique
1.	<b>Content Validity</b>	Expert	<b>4</b>	Purposive Sampling
2.	<b>Content Reliability</b>	Student	<b>30</b>	Purposive Sampling
	Foundation in Islamic Studies		1	
	Foundation in Muamalah		1	
	Diploma in Islamic Studies		10	
	Diploma in Islamic Banking		11	
	Diploma in Accounting		7	

## Data Collection

The questionnaire of this pilot study was distributed online to 4 experts via email. As for the students, the online questionnaire link was shared during a physical meeting with 30 students of various programs at Kolej Universiti Islam Perlis (KUIPs) after getting permission from their Deputy Rector (Academic & International). The questionnaire was distributed in November 2023 (semester 1, session 2023/2024 of the academic calendar). Students were given 3 days (19 – 22 November 2023) to respond to the questionnaire that had been developed.

## Instruments

This study employs two different questionnaires to assess different aspects of a needs analysis for developing the Arabic-VR Application in learning Arabic grammar. To evaluate the needs analysis questionnaire, a modified questionnaire adapted from the study by Amani (2019) and Abdul Rahman (2022) was distributed to the respondents.

There were 5 areas of focus in the questionnaire which are: (A) the demographic background of the respondents, (B) the motivation of learning the Arabic language, (C) the knowledge and needs of using the Arabic-VR Application in learning Arabic grammar, (D) the interface and features of Arabic-VR Application in learning Arabic grammar, and (E) the level of acceptance of the idea of the development of the Arabic-VR Application using VR technology in learning Arabic grammar among KUIPs students.

To evaluate the content validity of the questionnaire, the needs analysis questionnaire was given to experts in the field. These experts are typically individuals who have extensive knowledge and experience in the subject matter covered by the module. The purpose of this questionnaire is to ensure that the content of the questionnaire is accurate, relevant, and comprehensive.

To evaluate the reliability of the instrument of this pilot study, a needs analysis questionnaire was given to a total of 30 students. The collected data were analyzed using SPSS software Version 23 to determine the reliability coefficient, also known as Cronbach's alpha ( $\alpha$ ), as well as frequency distribution, percentages, mean, and standard deviations. The purpose of this process is to evaluate the reliability of the needs analysis questionnaire for developing the Arabic-VR Application in learning Arabic Grammar.



In summary, the validity process is used to ensure the accuracy and relevance of the needs analysis questionnaire's content, while the reliability process is used to evaluate the quality and effectiveness of the needs analysis questionnaire's content. These questionnaires provide valuable feedback to improve the Arabic-VR Application and ensure that it would meet the intended learning objectives.

### Data Analysis and Interpretation

Data analysis for this pilot study used Statistical Package for Social Science (SPSS) software version 23 for analysis. The analysis performed in this pilot study was only descriptive. For demographic data (Component A), researchers only look at percentage and frequency values. Meanwhile, the researchers look at Cronbach's alpha value, frequency distribution, percentages, mean, and standard deviations for the constructs in Components B, C, D, and E. In this pilot study, to measure the items of the questionnaire, 5 levels of the Likert scale were employed by the researchers, which are: 5 (Strongly Agree), 4 (Agree), 3 (Less Agree), 4 (Disagree), and 1 (Strongly Disagree). The mean scores and standard deviations were analyzed and the mean interpretation scales were obtained from Rebecca Oxford, (1990) as shown in Table 3.

**Table 3: Mean Interpretation Value**

Mean score	Value	Interpretation
	4.5 – 5.0	Very High
	3.5 – 4.5	High
	2.5 – 3.4	Average
	1.5 – 2.4	Low
	1.0 – 1.4	Very Low

Source: Rebecca Oxford (1990)

## 4. Results and Discussions

The results and discussions of this study are presented below:

### Reliability

In this pilot study, the results of the value of Cronbach's Alpha reliability score of each item of the instrument are presented below, as shown in Table 4:

**Table 4: Value of Cronbach's Alpha Reliability Score**

Component	Item	No. of Item	Cronbach's Alpha Value	Internal Consistency
B	The Motivation of Learning the Arabic Language	13	0.766	Acceptable
C	The Knowledge and Needs of Using the Arabic-VR Application in Learning Arabic Grammar	6	0.753	Acceptable
D	The Interface and Features of Arabic-VR Application in Learning Arabic Grammar	12	0.864	Good
E	The Level of Acceptance of the Idea of Development of the Arabic-VR Application Using VR Technology in Learning Arabic Grammar Among KUIPs Students	6	0.906	Excellent
<b>OVERALL</b>		<b>37</b>	<b>0.890</b>	<b>Good</b>

The Cronbach's Alpha value for every component is shown in Table 4. The results of this pilot study were analyzed using SPSS software version 23. The instrument consists of 37 items that

were categorized into four main components namely the motivation of learning the Arabic language, the knowledge and needs of using the Arabic-VR Application in learning Arabic grammar, the interface and features of the Arabic-VR Application in learning Arabic grammar, and the level of acceptance of the idea of the development of the Arabic-VR Application using VR technology in learning Arabic grammar among KUIPs students.

Overall, Cronbach's alpha analysis showed that all 37 items of the questionnaire of this pilot study had good internal consistency reliability which is 0.890. The score indicates that this instrument can be adopted in this study because Pallant (2007) stated that Cronbach's alpha is acceptable in a study if the score exceeds 0.7. Meanwhile, all the components in this pilot study's instrument have values above the acceptable internal consistency reliability. Therefore, this research demonstrates a good reliability coefficient of the needs analysis questionnaire.

### Component A: The Demographic Background of The Respondents

The results are shown in Table 5 below:

**Table 5: The Demographic Background of The Respondents**

No.	A: The Demographic Background of The Respondents	Frequency, (N: 30)	Percentage (100 %)
		N	%
A1	<b>AGE</b>		
	18	16	53.3
	19	5	16.7
	20	3	10.0
	21	2	6.7
A2	<b>GENDER</b>		
	Male	19	63.3
	Female	11	36.7
A3	<b>NATIONALITY</b>		
	Malaysian	30	100.0
	Non-Malaysian	0	0.0
A4	<b>YEAR OF STUDY</b>		
	Year 1	26	86.6
	Year 2	2	6.7
	Year 3	2	6.7
	Year 4	0	0.0
A5	<b>PROGRAMME</b>		
	Foundation in Islamic Studies	1	3.3
	Foundation in Muamalah	1	3.3
	Diploma in Islamic Studies	10	33.3
	Diploma in Islamic Banking	11	36.7
	Diploma in Accounting	7	23.3
A6	<b>Do you have smartphone?</b>		
	Yes	30	100.0
	No	0	0.0
A7	<b>If the answer is "Yes", please select the type of smartphone operating system that you have.</b>		
	Android	15	50.0
	iOS	15	50.0
A8	<b>Please select the level of smartphone knowledge and skills that you have.</b>		
	Basic	15	50.0
	Intermediate	13	43.3
	Advance	2	6.7

**Table 5: The Demographic Background of The Respondents (Continued)**

<b>A9</b>	<b>Data / internet capability of your smartphone.</b>		
	Wifi	3	10.0
	Hotspot	1	3.3
	4G/LTE	26	86.7
	Unify/Streamyx	0	0.0
<b>A10</b>	<b>Have you ever studied Arabic before continuing your studies at KUIPs?</b>		
	Yes	15	50.0
	No	15	50.0
<b>A11</b>	<b>If the answer above is “Yes”, please state how long have you been studying Arabic.</b>		
	1 – 3 Years	5	16.7
	4 – 6 Years	6	20.0
	7 – 9 Years	4	13.3
	No	15	50.0
<b>A12</b>	<b>Please state the level of Arabic language knowledge that you have.</b>		
	Basic	25	83.3
	Intermediate	5	16.7
	Advance	0	0.0
<b>A13</b>	<b>How would you rate your knowledge of Arabic?</b>		
	Excellent	0	0.0
	Very Good	0	0.0
	Good	10	33.3
	Fair	11	36.7
	Poor	9	30.0
<b>A14</b>	<b>Do you have knowledge of Arabic grammar?</b>		
	Yes	24	80.0
	No	6	20.0
<b>A15</b>	<b>If the answer above is “Yes”, what is your source of reference?</b>		
	Teachers / lecturers	14	46.7
	Friends	2	6.7
	Books	3	10.0
	Internet	5	16.7
	No	6	20.0
<b>A16</b>	<b>Do you face difficulty in learning Arabic grammar?</b>		
	Always	19	63.3
	Rarely	11	36.7
	Never	0	0.0
<b>A17</b>	<b>Do you have experience in doing Arabic grammar exercises while learning Arabic?</b>		
	Yes	25	83.3
	No	5	16.7
<b>A18</b>	<b>According to your experience learning Arabic, have you found any resources specifically teaching Arabic grammar?</b>		
	Yes	15	50.0
	No	15	50.0

Table 5 above shows the demographic background of the respondents involved in this study. Based on the aspect of age, it was found that most of the respondents involved were 18 years old, which is a total of 16 people (53.3%), followed by respondents aged 19 years old, 5 people (16.7%), 20 years old, 3 people (10.0%), 21 years old, 2 people (6.7%) and 22 years old, 4 people (13.3%). Next, based on the aspect of gender, most of the respondents involved were



19 male respondents (63.3%) and 11 female respondents (36.7%). Next, based on the aspect of nationality, it was found that all the respondents involved were Malaysian, a total of 30 people (100%). Next, based on the aspect of the year of study, it was found that most of the respondents involved were in year 1, 26 people (86.6%), and year 2 and year 3, 2 people for each year (6.7%). Next, based on the aspect of the programme of study, it was found that most of the respondents involved were from the Diploma in Islamic Banking programme, 11 people (36.7%), Diploma in Islamic Studies programme, 10 people (33.3%), Diploma in Accounting programme, 7 people (23.3%), and Foundation in Islamic Studies programme and Foundation in Muamalah programme, 1 people for each programme (3.3%). Next, all the respondents have smartphones, 30 people (100%). Next, based on the aspect of the operating system of their smartphone, it was found that 50% (15 people) of the respondents involved were using Android, and another 50% (15 people) were using iOS. Next, 15 people (50%) have basic, 13 people (43.3%) have intermediate, and 2 people have advanced level in smartphone knowledge and skills. Next, based on the internet capability of smartphones, 26 people (86.7%) depend on 4G/LTE, 3 people (10%) depend on Wifi, and 1 person (3.3%) depends on Hotspot. Next, half of the respondents; 50% (15 people) have studied Arabic before, while the other half (50%) have never studied Arabic before continuing studies at KUIPs. Of those who have studied Arabic before, 6 people (20.0%) have been studying Arabic for 4 – 6 years, 5 people (16.7%) for 1 – 3 years, and 4 people (13.3%) for 7 – 9 years. Next, 25 people (83.3%) have basic, and 5 people (16.7%) have an intermediate level of Arabic language knowledge. Next, 24 people (80%) have knowledge of Arabic grammar, and 6 people (20%) do not have it. Of 24 respondents with knowledge of Arabic grammar, for the item on their source of reference for learning Arabic grammar, 14 people (46.7%) referred to their teachers/lecturers, 5 people (16.7%) referred to the internet, 3 people (10.0%) referred to books and 2 people (6.7%) referred to friends. Next, 19 people (63.3%) always face difficulty in learning Arabic grammar, and 11 people (36.7%) rarely face it. Next, 25 people (83.3%) have experience in doing Arabic grammar exercises while learning Arabic, and 5 people (16.7%) never experience it. Finally, 15 people (50.0%) have found resources that specifically teach Arabic grammar in learning Arabic, while another 15 other people (50%) have not found it.

### Component B: The Motivation of Learning the Arabic Language

The results are shown in Table 6 below:

**Table 6: The Motivation of Learning the Arabic Language**

	<b>B: The Motivation of Learning the Arabic Language</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
B1	I want to get the best grades in university.	4.90	0.403	Very High
B2	I want to succeed in the exam.	4.90	0.403	Very High
B3	I learned Arabic because it is a compulsory subject at university.	3.87	1.074	High
B4	I want to get the best job in the future.	3.90	0.305	High
B4	I learn Arabic because I want to get to know Arab culture better.	3.77	0.971	High
B6	I learned Arabic because it is useful when reading the Quran.	4.63	0.615	Very High
B7	I learned Arabic because I felt embarrassed in front of my friends.	3.00	1.313	Average
B8	I learn Arabic because I want to understand the content of Arabic books.	4.10	1.094	High
B9	I learned Arabic because I want to talk to Arabs.	4.10	1.029	High
B10	I learned Arabic because my parents wanted me to learn it.	3.20	1.186	Average
B11	I learn Arabic because it is the language of the Quran.	4.53	0.730	Very High
B12	I learned Arabic because it is interesting.	4.17	0.791	High
B13	I am learning Arabic because I want to master many foreign languages.	4.10	0.923	High
<b>Overall</b>		<b>4.09</b>	<b>0.833</b>	<b>High</b>

Based on Table 6 above, the interpretation of the data showed that the motivation to learn the Arabic language among the students was at a high level, with an overall mean value of 4.09 and a standard deviation of 0.833. This result showed that students are in high motivation to learn the Arabic language. 4 items were at very high value and the highest value was the item with “I want to get the best grades in university” and “I want to succeed in the exam”. Both items with a value ( $M= 4.90$ ,  $SD= 0.403$ ), followed by the item with “I learned Arabic because it is useful when reading the Quran” with value ( $M= 4.63$ ,  $SD= 0.615$ ), and lastly item with “I learn Arabic because it is the language of the Quran” with value ( $M= 4.53$ ,  $SD= 0.730$ ).

7 items were at a high value. The item with “I learned Arabic because it is interesting” with value ( $M= 4.17$ ,  $SD= 0.791$ ), the item with “I learn Arabic because I want to understand the content of Arabic books” with value ( $M= 4.10$ ,  $SD= 1.094$ ), the item with “I learned Arabic because I want to talk to Arabs” with value ( $M= 4.10$ ,  $SD= 1.029$ ), item with “I am learning Arabic because I want to master many foreign languages” with value ( $M= 4.10$ ,  $SD= 0.923$ ), item with “I want to get the best job in the future” with value ( $M= 3.90$ ,  $SD= 0.305$ ), item with “I learned Arabic because it is a compulsory subject at university” with value ( $M= 3.87$ ,  $SD= 1.074$ ), and lastly item with “I learn Arabic because I want to get to know Arab culture better” with value ( $M= 3.77$ ,  $SD= 0.971$ ).

There were 2 items at an average value. The item “I learned Arabic because my parents wanted me to learn it” with value ( $M= 3.20$ ,  $SD= 1.186$ ), and lastly item “I learned Arabic because I felt embarrassed in front of my friends” was the lowest with a value ( $M= 3.00$ ,  $SD= 1.313$ ).

### Component C: The Knowledge and Needs of Using the Arabic-VR Application in Learning Arabic Grammar

The results are shown in Table 7 below:

**Table 7: The Knowledge and Needs of Using the Arabic-VR Application in Learning Arabic Grammar**

	C: The Knowledge and Needs of Using the Arabic-VR Application in Learning Arabic Grammar	Percentage (100 %)	
		Yes	No
C1	I know about Virtual Reality (VR) Application.	48.0	52.0
C2	I want to know more about Virtual Reality (VR) Application.	93.7	6.3
C3	I think it is necessary to develop a Virtual Reality (VR) Application for learning Arabic (grammar).	93.7	6.3
C4	I want to learn how to use a Virtual Reality (VR) Application in my learning process.	93.3	6.7
C5	I am ready to use the Virtual Reality (VR) Application if KUIPs implement it now.	89.7	10.3
C6	I want to produce a learning product based on a Virtual Reality (VR) Application.	90.0	10.0

Based on Table 7 above, more than half (52.0 %) of the respondents do not know about the Virtual Reality (VR) Application, while the other half (48.0 %) have knowledge about this application. Meanwhile, most of them (93.7 %) want to know more about Virtual Reality (VR) Application and only a few (6.3 %) were not interested to find out more about it. Furthermore, most of them (93.7 %) think it is necessary to develop a Virtual Reality (VR) Application for learning Arabic grammar and only a few (6.3 %) do not think it is necessary. Besides that, most of them (93.3 %) want to learn how to use a Virtual Reality (VR) Application in the learning process while only a few (6.7 %) do not want to learn how to use it. Then, most of them (89.7 %) would be ready to use the Virtual Reality (VR) Application if KUIPs implemented it now, while only a few (10.3 %) are not ready to use it. On top of that, most of them (90.0 %) want

to produce a learning product based on a Virtual Reality (VR) Application and a few of them (10 %) do not want to produce it.

### Component D: The Interface and Features of Arabic-VR Application in Learning Arabic Grammar

The results are shown in Table 8 below:

**Table 8: The Interface and Features of Arabic-VR Application in Learning Arabic Grammar**

	<b>D: The Interface and Features of Arabic-VR Application in Learning Arabic Grammar</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
D1	I would like the Arabic-VR Application to have an individual registration before starting the teaching and learning process.	4.17	1.020	High
D2	I would like the Arabic-VR Application to be in bilingual mode (Arabic-English).	4.53	0.776	Very High
D3	I would like the duration of learning Arabic (grammar) using the Arabic-VR Application to be more than 10 minutes for each learning session.	3.90	1.269	High
D4	I would like the Arabic-VR Application can be used without the need for an internet network connection.	4.23	0.971	High
D5	The content delivery method of watching visual videos in the Arabic-VR Application is suitable for me.	4.13	0.937	High
D6	The content delivery method of answering visual exercises in the Arabic-VR Application is suitable for me.	4.10	1.062	High
D7	I would like the Arabic-VR Application to be available for free.	4.60	0.724	Very High
D8	I would like the Arabic-VR Application to be in landscape / horizontal orientation.	4.53	0.629	Very High
D9	I would like the Arabic-VR Application to be in portrait / vertical orientation.	3.27	1.507	Average
D10	I would like the Arabic-VR Application to be in a colorful form.	4.53	0.776	Very High
D11	I would like the Arabic-VR Application to have an option button for multimedia elements.	4.40	0.932	High
D12	I would like the pictures in the Arabic-VR Application to be in static mode.	4.07	0.907	High
<b>Overall</b>		<b>4.21</b>	<b>0.959</b>	<b>High</b>

Based on Table 8 above, the data interpretation showed the students' desires for the interface and features of the Arabic-VR Application in learning Arabic grammar. Their desires were at a high level, with an overall mean value of 4.21 and a standard deviation of 0.959. This result showed that students have a desire for the development of Arabic-VR Application.

4 items were at a very high value and the highest value was the item with "I would like the Arabic-VR Application to be available for free" with a value (M= 4.60, SD= 0.724), while the other 2 items which are "I would like the Arabic-VR Application to be in bilingual mode (Arabic-English)" and "I would like the Arabic-VR Application to be in a colorful form" share the same value with a value (M= 4.53, SD= 0.776), followed by the item with "I would like the Arabic-VR Application to be in landscape / horizontal orientation." with value (M= 4.53, SD= 0.629).

7 items were at a high value. Item with "I would like the Arabic-VR Application to have an option button for multimedia elements" with value (M= 4.40, SD= 0.932), item with "I would like the Arabic-VR Application can be used without the need for an internet network connection" with value (M= 4.23, SD= 0.971), item with "I would like the Arabic-VR

Application to have an individual registration before starting the teaching and learning process” with value ( $M= 4.17$ ,  $SD= 1.020$ ), item with “The content delivery method of watching visual videos in the Arabic-VR Application is suitable for me” with value ( $M= 4.13$ ,  $SD= 0.937$ ), item with “The content delivery method of answering visual exercises in the Arabic-VR Application is suitable for me” with value ( $M= 4.10$ ,  $SD= 1.062$ ), item with “I would like the pictures in the Arabic-VR Application to be in static mode” with value ( $M= 4.07$ ,  $SD= 0.907$ ), and lastly item with “I would like the duration of learning Arabic (grammar) using the Arabic-VR Application to be more than 10 minutes for each learning session” with value ( $M= 3.90$ ,  $SD= 1.269$ ).

Finally, 1 item was at an average value. The item with “I would like the Arabic-VR Application to be in portrait / vertical orientation” with value ( $M= 3.27$ ,  $SD= 1.507$ ) was the lowest value.

**Component E: The Level of Acceptance of the Idea of Development of the Arabic-VR Application Using VR Technology in Learning Arabic Grammar Among KUIPs Students**  
The results are shown in Table 9 below:

**Table 9: The Level of Acceptance of the Idea of Development of the Arabic-VR Application Using VR Technology in Learning Arabic Grammar Among KUIPs Students**

	<b>E: The Level of Acceptance of the Idea of Development of the Arabic-VR Application Using VR Technology in Learning Arabic Grammar Among KUIPs Students</b>	<b>Mean</b>	<b>SD</b>	<b>Interpretation</b>
E1	Using the Arabic-VR Application will make the teaching more interesting.	4.43	0.679	High
E2	Using the Arabic-VR Application will increase my motivation to learn Arabic grammar.	4.43	0.626	High
E3	Teaching using the Arabic-VR Application will be fun.	4.40	0.675	High
E4	Using the Arabic-VR Application would be a very good idea in teaching.	4.23	0.858	High
E5	I have a positive attitude towards the use of Arabic-VR Application in learning.	4.07	0.907	High
E6	The Arabic-VR Application should be used in KUIPs.	4.53	0.681	Very High
<b>Overall</b>		<b>4.35</b>	<b>0.738</b>	<b>High</b>

Based on Table 9 above, the interpretation of the data showed that the level of acceptance of the idea of the development of the Arabic-VR Application using VR technology in learning Arabic grammar among KUIPs students was at a high level, with an overall mean value of 4.35 and a standard deviation of 0.738. This result showed that students accepted the idea of the development of this application. The item “The Arabic-VR Application should be used in KUIPs” was at a very high value with value ( $M= 4.53$ ,  $SD= 0.681$ ). The rest of the items were at high value. The item “Using the Arabic-VR Application will make the teaching more interesting” with value ( $M= 4.43$ ,  $SD= 0.679$ ), followed by the item with “Using the Arabic-VR Application will increase my motivation to learn Arabic grammar” with value ( $M= 4.43$ ,  $SD= 0.626$ ), followed by the item with “Teaching using the Arabic-VR Application will be fun” with value ( $M= 4.40$ ,  $SD= 0.675$ ), the item with “Using the Arabic-VR Application would be a very good idea in teaching” with value ( $M= 4.23$ ,  $SD= 0.858$ ), and lastly item with “I have a positive attitude towards the use of Arabic-VR Application in learning” with value ( $M= 4.07$ ,  $SD= 0.907$ ).

## 5. Conclusion

The design of the needs analysis questionnaire for developing the Arabic-VR Application in learning Arabic grammar subject has been successful, with a content reliability coefficient ( $\alpha = 0.890$ ) showing an acceptable level of internal consistency for the scale. Therefore, this research demonstrates the good reliability coefficient of the needs analysis questionnaire. This questionnaire can serve as a valuable resource and guide for teachers and students involved in TnL of the Arabic language, particularly for Arabic educational technology topics i.e. in the use of VR technology.

The current researchers hope that future studies will focus more on investigating the effectiveness of using VR technology for learning Arabic grammar by conducting experimental studies including pre-test, post-test, as well as t-test.

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