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A Needs Analysis: The Development of Year Five Science Mobile Application for Rural National School In Malaysia

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Abstract

Technological developments in the world are now rapidly developing. This development is not only concentrated in specific sectors but also in the education sector. Past studies have shown that teachers in Malaysia do not diversify their teaching methods in the classroom. Furthermore, students' interest and motivation are declining because teachers use only one method in learning and facilitation sessions. When this scenario continues, the desire of the Ministry of Education Malaysia (MOE) to make Malaysia a developed country in the field of Science and Technology is stunted. The purpose of this study was to identify the design requirements of the Science android application for year five students of national schools. UTAUT theory has been used as a basic model in this study. A survey study was conducted among 188 fifth-year students of rural national schools to examine whether there is a need to apply the use of Science mobile android application in rural national schools. Descriptive statistical analysis data obtained were analysed using SPSS software version 23. The data were interpreted based on mean values, percentages, and standard deviations. The overall findings of the study indicate that the majority of students (76.1%, n = 188) own at least one mobile device. The findings of this study prove that fifth-year students in rural national schools have access to technological requirements for M-Learning. The results show that there is a need to develop a Science mobile android application for M-Learning use among fifth-year students in rural national schools in Malaysia.

Keywords **:** *Mobile Learning, Mobile Application, Science, Primary School, Rural, Needs Analysis*

I. INTRODUCTION

Today, the use of mobile applications is a must in the daily life of the world community. its use is not just focused on communication matters only. It even covers the payment of utility bills, shopping online, watching favourite movies, presenting information, and so on. for the education sector, the use of mobile devices such as smartphones and laptops is an obligation for teachers to use them in the classroom. m-learning is a method of learning and simplification using mobile devices such as smartphones and laptops [1], according to [2] M-Learning is learning using wireless mobile devices that are not limited to geographical and time boundaries because the learning and facilitation process can take place anytime and anywhere.

The use of mobile devices as a learning platform in the classroom is a catalyst for connecting teachers, students, peers, and virtual materials on websites or learning applications for the learning and facilitation process. The findings of a study by [3] found that the use of mobile applications by students can stimulate logical and creative thinking. This is something that benefits teachers and students because of the learning and facilitation process because it can save time to complete the syllabus [4]. Furthermore, the use of mobile learning applications can create self-access learning without having to waste time copying notes given by teachers [5]. Pupils can also do learning and facilitation activities in groups and individually to implement online projects, obtain information, and notes on the website [6]. Therefore, the implementation of noble values such as independence and cooperation between peers can be nurtured since primary school.

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This development will automatically change the learning style, thought patterns, and pedagogy of teachers from one-way teaching to multilateral teaching. Students can not only communicate with teachers but also communicate with peers and learning materials. Teachers need to take this opportunity to hone their skills to explore the field of knowledge in information and communication technology (ICT) and apply it in the learning and facilitation process. The learning and facilitation process requires teachers to impart knowledge and perform planning, guidance, monitoring, supervision, assessment, and evaluation. A teacher also needs to have creativity in imparting knowledge to create conducive learning and wisely choose a teaching medium that is appropriate to the development of science and technology today.

This needs analysis study aims to identify the development needs of the Science mobile application according to the perceptions of rural national school students based on the UTAUT model.

This study will answer the following questions:

i) What mobile technology equipment is suitable for using Science android apps in national schools?
ii) What is the appropriate technology software in the Science android application in national schools?
iii) What mobile technology skills are appropriate for students to use in national schools?
iv) What are the appropriate learning activities to use in M-Learning Science in national schools?
v) What are the facilities available in the environment for M-Learning Science?

In conclusion, an effective and quality learning and facilitation process should emphasise appropriate pedagogical methods in delivering learning content. The latest teaching methods place more emphasis not only on writing, reading, and counting but also on the concept of reasoning, relating, and reflecting existing knowledge to actual learning. Therefore, teachers need to think of the best method in implementing effective learning and facilitation that has a positive impact on students.

II. LITERATURE REVIEW

Malaysia is a developing country that has aimed to become a developed country by 2025. The government has taken the initiative by encouraging the community and the national community to implement a digital culture in daily life, including in the education sector. With the existence of the Frog VLE Frog platform under the 1BestariNet scheme by Frog Asia Private Limited and YTL Communication Company has provided internet facilities in schools under the auspices of the Ministry of Education Malaysia (MOE). Encouraging the use of e-learning in learning and facilitation sessions in schools has opened up space in the culture of online virtual education being used in classrooms.

There are three main issues detected in the school [7], namely, first, there is no motivation among students to learn science. This will lead to the existence of negative perceptions of students towards the subject of science. According to students, Science subjects are difficult subjects to understand and challenge their minds because many Science concepts are abstract and foreign to them [8]. When this happens, the MOE's desire to reach 60% of students in the Science stream will not be achieved. If this continues, then the desire of the National Government of Malaysia to produce more Science and Technology experts will be stunted. This is something that needs to be taken seriously, so the role of teachers in schools should take the initiative to use mobile devices in learning and facilitation Science sessions to attract students. This is because students are made up of Generation Y and Z, who are so fanatical about mobile technology and applications. So this opportunity should be fully utilised by Science teachers.

Second, poor and unconducive class management [9]. The science learning environment is seen as very challenging for students [10]. Furthermore, with the large class size, the large number of students in one class as well as the limited time management also contributed to the problem. In a country like Malaysia, it is customary for a teacher to teach in a classroom of 25 to 35 people [11]. This large number of students inhibits teachers from applying effective teaching in a focused manner for each student [10].

Third, the ineffective use of teacher teaching methods [12]. The findings of previous studies found that many teachers in Malaysia do not prepare well to enter for learning and facilitation Science and Mathematics sessions [13]. The lack of qualified Science teachers adds to this problem [14]. This can affect the motivation and involvement of students to learn a subject [15]. The inability of teachers to explain concepts makes science learning complicated and affects students' interest in learning science [15].

Therefore, an effort must be made to prevent these problems from happening again. With the use of mobile applications, it is hoped that the lack of motivation, unconducive classroom management, and ineffective teaching methods of

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teachers can be eradicated. Efforts by teachers to change traditional teaching methods to collaborative and cooperative methods that involve the use of mobile application technology should be encouraged so that the continuity of science education in Malaysia can be elevated in dignity. Therefore, before developing an android application Science is something that should be a needs analysis study done on students in rural national schools. Students in the city have been exposed to the overflow of technology today while students in rural areas are also entitled to enjoy learning using mobile technology. Rural students should also be allowed to enjoy it. The purpose of this needs analysis study is to review their perceptions and needs related to the level of acceptance, readiness, and suitability to use mobile technology and application in learning and facilitation Science in national schools.

A. Need Analysis

According to [16], needs analysis is a study used to identify current needs and target groups. Meanwhile, [17] argues that needs analysis is an analysis for a specific group to solve a problem that needs to be addressed. Thus, in the context of this study, needs analysis aims to resolve issues that arise and identify the need to develop Science mobile applications in rural national schools. The prototype Science mobile application developed can work for teachers to diversify teaching methods and learning and facilitation Science sessions in rural national schools. It also helps Science teachers meet the needs of students to attract their interest in Science subjects through fun teaching methods. This needs analysis will use the survey research method using a survey method to identify the need for the development of Science mobile applications according to the perception of fifth-year students of rural national schools. Study participants were given a set of questionnaires to obtain immediate feedback on the development needs of this Science mobile application.

B. The Unified Theory Of Acceptance And Use Of Technology (UTAUT)

The questionnaire given to the fifth year students of rural national schools is to look at the perspective of their acceptance and perception of the development of Science mobile applications. However, this Science mobile application can be a support and catalyst in the learning and facilitation process if the implementation aspect is less significant if students do not want to use it. Therefore, the items in this study questionnaire were constructed based on the Theory of Acceptance and Use of Technology (UTAUT) proposed by [18]. This theory describes the perceptions and intentions of a user to use information systems in human behaviour. This UTAUT theory highlights four primary constructs, namely Performance Expectations, Business Expectations, Social Influence, and Facility conditions that determine consumer intentions and behaviour [18], as shown in Figure 1.

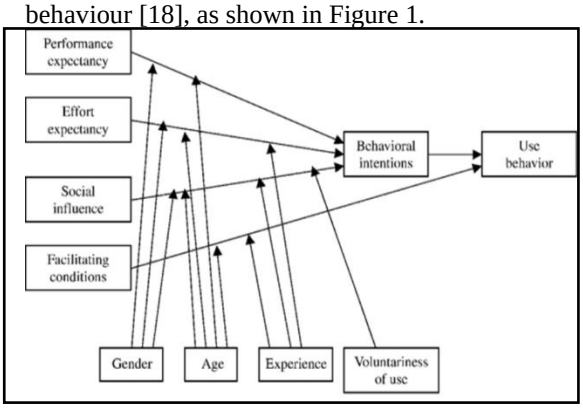

Figure 1: The Unified Theory of Acceptance And Use Of Technology Model

Based on the primary construct, this questionnaire item is divided into four main constructs namely: Performance Expectancy: In this needs analysis study, performance expectations are the level of confidence of a student to believe that the use of mobile applications will help them improve academic performance. Besides, it can also help fifth-year students to access and browse learning materials. This level of trust is expected to help students and teachers create an online virtual discussion opportunity, submit and upload assignments, answer interactive quizzes, and download learning materials [18].

Effort Expectancy: Expected effort refers to the desire of a fifth-year student to use mobile technology. In contrast, Self-efficacy is the real determinant of individual behaviour for absolute use and creates the desire to use a mobile device [18].

Social Influence: Refers to the influence that influences individuals who are interested in creating trust and as an incentive to use mobile technology. Social influence is also a determinant of behavioural intentions. In the context of this study, social influence is defined as a belief of a fifth-year student that encourages him to use mobile devices in learning to socialise with teachers, peers, and learning materials [18].

Facilitating Conditions: Facility situation is a situation where a fifth-year student believes the school and technical facilities will exist to support it using a system or environment in mobile learning [18].

III. RESEARCH METHODOLOGY

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In the needs analysis phase, the researcher used the survey method by using questionnaires as instruments in selected national schools. Selected national schools are located in rural locations. The distance between the city and the schools is more than 5 kilometres. In the needs analysis, the research instrument to be used is in the form of a questionnaire adapted from a study by [19] that has been modified. Before the needs analysis questionnaire is distributed, the researcher will validate the content first with the help of experts in the field of Science and Curriculum. In this phase of needs analysis, the respondents involved are a total of 188 people consisting of fifth-year students of rural national schools in a district in the State of Johor Darul Takzim.

The questionnaire used a five-point Likert scale of 1 = strongly disagree (SDi), 2 = disagree (D), 3 = Neutral (N), 4 = agree (A) , and 5 = strongly agree (SA). This questionnaire consists of 6 sections. Part A deals with the demographics of study participants which contains eight questions related to gender, race, experience using mobile devices, mobile devices used, activities using Information and Communication Technology (ICT), level of mastery of ICT use skills, and types of social media users. Part B deals with mobile technology equipment suitable for using Science mobile applications. Part C deals with appropriate technology software used in Science mobile applications. Part D deals with appropriate mobile technology skills for students to use. In comparison, part E on appropriate learning activities is used in mobile learning of science and part F on the facilities available in the environment for mobile learning of science.

Table 1: Interpretation of Mean Score of Year Five Student Consent

Mean Score	Stage
$1 \leq M \leq 1.66$	Low
$1.67 \leq M \leq 3.33$	Moderate
$3.34 \leq M \leq 5.00$	High

IV. RESULT

A. Demographics of Study Participants

The data distribution of study participants is described in table 2 on gender, race, the experience of using mobile devices, mobile devices used, activities using Information and Communication Technology (ICT), level of mastery of ICT use skills, and types of social media users. The study found that most of the needs analysis study participants were male (57.4%), Malays (94.7%), with mobile devices (76.1%), and experienced between 9 to 11 years (49.5%). The results of this study showed that most students use smartphones (54.8%) for learning activities (53.7%) with a moderate level of proficiency (34.0%) and frequently use WhatsApp (60.1%).

The data obtained were analysed using descriptive statistics using SPSS software version 23. Descriptive statistics were used in this study because the data generated can be considered relevant to describe the level of perception and acceptance of fifth-year students of rural national schools on the construction of Science mobile applications. Besides, it is also able to provide information directly and quickly [20]. The descriptive statistics used were frequency, percentage, mean and standard deviation. Interpretation of Mean Score based on [19] is as follows: mean score 0.00-1.66 is at a low level, a mean score between 1.67 - 3.33 is at a medium level while a mean score between 3.33 to 5.00 is at a high level. This analysis was used to show the composition of study participants on demographic characteristics and interpretation of mean scores to determine the agreement of fifth-year students in rural national schools on the need for construction of Science mobile applications. Table 1 shows the interpretation of the mean score of student consent used in this study.

Table 2: Demographics of Study Participants

	Number	Per cent
Gender		
Male	108	57.4
Female	80	42.6
Race		
Malay	178	94.7
Chinese	1	0.5
Indian	2	1.1
Others	7	3.7
Experience using a mobile device		
1 to 4 years	56	29.8
5 to 8 years	39	20.7
9 to 11 years	93	49.5
Mobile device ownership		
Yes	143	76.1
No	45	23.9
Activities using ICT		
Find information	86	45.7
Social Media	32	17.0
Watch videos online	70	37.2
Learning	101	53.7

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Download Learning Materials	25	13.3
Chat	23	12.2
Others	9	4.8
Mobile devices used		
Cell phone	49	26.1
Smartphone	103	54.8
Tablet	46	24.5
Laptop	73	38.8
Personal Digital Assistant (PDA)	7	3.7
Others	31	16.5
Level of mastery and skills of using ICT		
Unskilled	16	8.5
Less skilled	41	21.8
Moderate	64	34.0
Skillful	53	28.2
High skilled	14	7.4
Type of social media		
Facebook	79	42.0
Instagram	87	46.3
Twitter	12	6.4
Blog	14	7.4
Telegram	14	7.4
Whatsapp	113	60.1
WeChat	20	10.6
Others	12	6.4

B. Mobile Technology Equipment Suitable For Using Science Mobile Applications (Facilitating Conditions)

Based on the findings of the study in the table 3 and it can be concluded that fifth year students of rural national schools are more likely to choose to use equipment such as Laptops (Mean = 3.79, SD = 0.956). Followed by Smartphones (Mean = 3.71, SD = 0.973) and Chromebooks (Mean = 3.61, SD = 1.149). However, students are less likely to use equipment such as cellphones (Mean = 3.45, SD = 1.086) and Personal Digital Assistants (PDA) (Mean = 3.22, SD = 1.115).

Table 3: Mobile Technology Equipment Suitable For Using Science Mobile Applications (Facilitating Conditions)

Statement	**SDi**	**D**	**N**	**A**	**SA**	**Mean**	**SD**
Laptop	4 (2.1)	18 (9.6)	31 (16.5)	95 (50.5)	40 (21.3)	3.79	.956
Cellphone	10 (5.3)	31 (16.5)	37 (19.7)	84 (44.7)	26 (13.8)	3.45	1.086
Smartphone	4 (2.1)	22 (11.7)	34 (18.1)	93 (49.5)	35 (18.6)	3.71	.973
Tablet	14 (7.4)	26 (13.8)	37 (19.7)	80 (42.6)	31 (16.5)	3.47	1.144
Personal Digital Assistant	13 (6.9)	40 (21.3)	48 (25.5)	66 (35.1)	21 (11.2)	3.22	1.115
Chrome book	13 (6.9)	23 (12.2)	28 (14.9)	85 (45.2)	39 (20.7)	3.61	1.149
Netbook	14 (7.4)	25 (13.3)	35 (18.6)	88 (46.8)	26 (13.8)	3.46	1.116
Total Average						**3.53**	**.537**

C. Appropriate Technology Software Used In Mobile Science Applications (Social Influence)

Based on the findings of the study in table 4 and it can be concluded that fifth-year students of rural national schools are more likely to choose software such as Website (Mean = 3.64, SD = 1.103) and WAP (Mean = 3.39, SD = 1,130). However, students do not choose software such as WhatsApp (Mean = 3.10, SD = 1.292) and WeChat (Mean = 2.76, SD = 1.133). These findings also show that most students are more in agreement that mobile technology is suitable for use in the teaching and learning of Science (Mean = 3.84, SD = 188).

Table 4: Appropriate Technology Software Used In Mobile Science Applications (Social Influence)

Statement	**SDi**	**D**	**N**	**A**	**SA**	**Mean**	**SD**
Email	14 (7.4)	52 (27.7)	33 (17.6)	76 (40.4)	13 (6.9)	3.12	1.117

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WAP	9 (4.8)	40 (21.3)	38 (20.2)	71 (37.8)	30 (16.0)	3.39	1.130
Website	10 (5.3)	23 (12.2)	31 (16.5)	85 (45.2)	39 (20.7)	3.64	1.103
Telegram	18 (9.6)	36 (19.1)	33 (17.6)	77 (41.0)	24 (12.8)	3.28	1.193
WhatsApp	24 (12.8)	49 (26.1)	27 (14.4)	61 (32.4)	27 (14.4)	3.10	1.292
WeChat	26 (13.8)	58 (30.9)	51 (27.1)	41 (21.8)	12 (6.4)	2.76	1.133
Mobile technology is suitable for use in the teaching and learning of Science	15 (8.0)	15 (8.0)	15 (8.0)	84 (44.7)	59 (31.4)	3.84	1.188
Mobile learning is suitable for implementation in Science subjects in national schools	10 (5.3)	19 (10.1)	20 (10.6)	90 (47.9)	49 (26.1)	3.79	1.102
Mobile learning will be an alternative method to traditional learning	8 (4.3)	33 (17.6)	35 (18.6)	82 (43.6)	30 (16.0)	3.49	1.087
Total Average						**3.38**	**.552**

D. Appropriate Mobile Technology Skills Used By Students (Performance Expectations)

Based on the findings of the study in table 5 it can be concluded that the fifth-year students of rural national schools are more likely to choose skills such as downloading learning materials (Mean = 3.65, SD = 1.046). Followed by video application (Youtube) for learning (Mean = 3.61, SD = 1.204) and use mobile application for learning (Mean = 3.60, SD = 1.093). However, students do not choose skills in M-Learning such as blog sites for learning aids (Mean = 3.30, SD = 1.146) and use email (Mean = 3.30, SD = 1.113).

Table 5: Appropriate Mobile Technology Skills Used by Students (Performance Expectations)

Statement	**SDi**	**D**	**N**	**A**	**SA**	**Mean**	**SD**
Access the internet for obtain information	9 (4.8)	26 (13.8)	32 (17.0)	94 (50.0)	27 (14.4)	3.55	1.051
Use emel	8 (4.3)	45 (23.9)	44 (23.4)	64 (34.0)	27 (14.4)	3.30	1.113
Used social media to chat	13 (6.9)	29 (15.4)	35 (18.6)	87 (46.3)	24 (12.8)	3.43	1.109
Use social media to communicate	15 (8.0)	27 (14.4)	29 (15.4)	74 (39.4)	43 (22.9)	3.55	1.216
Blog site for learning aids	11 (5.9)	41 (21.8)	45 (23.9)	62 (33.0)	29 (15.4)	3.30	1.146
Video application (Youtube) for learning	10 (5.3)	34 (18.1)	25 (13.3)	70 (37.2)	49 (26.1)	3.61	1.204
Upload material learning	15 (8.0)	27 (14.4)	38 (20.2)	77 (41.0)	31 (16.5)	3.44	1.161
Download	9	19	35	90	35	3.65	1.046

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learning materials	(4.8)	(10.1)	(18.6)	(47.9)	(18.6)		
Use mobile applications for learning	11 (5.9)	22 (11.7)	33 (17.6)	88 (46.8)	34 (18.1)	3.60	1.093
Total Average						**3.49**	**.553**

E. Appropriate Learning Activities Used In Mobile Science Learning (Effort Expectations)

Based on the findings of the study in table 6 it can be concluded that the fifth-year students of rural national schools are more likely to choose learning activities such as to receive teacher instructions (Mean = 3.90, SD = 1.200). Followed by group discussions (Mean = 3.81, SD = 1.200) and Interactive quiz (Mean = 3.80, SD = 1.232). However, students chose less Science mobile learning activities such as send an email (Mean = 3.23, SD = 1.178) and send a message (Mean = 3.18, SD = 1.236).

Table 6: Appropriate Learning Activities Used in Mobile Science Learning (Effort Expectations)

Statement	**SDi**	**D**	**N**	**A**	**SA**	**Mean**	**SD**
Interactive quiz	14 (7.4)	20 (10.6)	20 (10.6)	69 (36.7)	65 (34.6)	3.80	1.232
Search for information in internet	16 (8.5)	19 (10.1)	29 (15.4)	76 (40.4)	48 (25.5)	3.64	1.209
Give feedback online	11 (5.9)	32 (17.0)	43 (22.9)	77 (41.0)	25 (13.3)	3.39	1.096
Send a message	17 (9.0)	48 (25.5)	37 (19.7)	56 (29.8)	30 (16.0)	3.18	1.236
Send an email	14 (7.4)	42 (22.3)	47 (25.0)	56 (29.8)	29 (15.4)	3.23	1.178
Communication on social media	12 (6.4)	29 (15.4)	27 (14.4)	89 (47.3)	31 (16.5)	3.52	1.130
Watch a learning video	18 (9.6)	32 (17.0)	18 (9.6)	77 (41.0)	43 (22.9)	3.51	1.277
Make training online	14 (7.4)	25 (13.3)	33 (17.6)	74 (39.4)	42 (22.3)	3.56	1.189
Group discussions	12 (6.4)	20 (10.6)	24 (12.8)	68 (36.2)	64 (34.0)	3.81	1.200
Read learning notes	13 (6.9)	22 (11.7)	27 (14.4)	73 (38.8)	53 (28.2)	3.70	1.197
Receive teacher instructions	13 (6.9)	16 (8.5)	19 (10.1)	69 (36.7)	71 (37.8)	3.90	1.200
Quick Respond Code activity (QR code)	15 (8.0)	30 (16.0)	49 (26.1)	61 (32.4)	33 (17.6)	3.36	1.177
Total Average						**3.55**	**.621**

F. Facilities Available In The Environment For Mobile Science Learning (Facility Condition)

Based on the findings of the study in table 7 it can be concluded that the students of rural national schools are more likely to choose facilities such as computer lab (Mean = 4.01, SD = 1.082). Followed by internet access point (Mean = 3.98, SD = 0.978) and internet facilities (Mean = 3.88, SP = 1.133). However, students do not choose the facilities available in the environment for M-Learning Science such as Personal Digital Assistant (PDA) (Mean = 3.25, SD = 1.191) and cell phone (Mean = 3.06, SD = 1.204).

Table 7: Facilities Available In The Environment For Mobile Science Learning (Facility Condition)

Statement	**SDi**	**D**	**N**	**A**	**SA**	**Mean**	**SD**
Desktop	17 (9.0)	31 (16.5)	18 (9.6)	83 (44.1)	39 (20.7)	3.51	1.243
Laptop	12	27	13	78	58	3.76	1.215

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	(6.4)	(14.4)	(6.9)	(41.5)	(30.9)		
Chrome book	14 (7.4)	27 (14.4)	42 (22.3)	67 (35.6)	38 (20.2)	3.47	1.181
Netbook	10 (5.3)	33 (17.6)	35 (18.6)	68 (36.2)	42 (22.3)	3.53	1.172
Personal Digital Asisstant (PDA)	13 (6.9)	47 (25.0)	37 (19.7)	62 (33.0)	29 (15.4)	3.25	1.191
Tablet	14 (7.4)	33 (17.6)	21 (11.2)	62 (33.0)	58 (30.9)	3.62	1.288
Cell phone	19 (10.1)	52 (27.7)	36 (19.1)	60 (31.9)	21 (11.2)	3.06	1.204
Smart phone	12 (6.4)	23 (12.2)	25 (13.3)	64 (34.0)	64 (34.0)	3.77	1.222
Hotspot	9 (4.8)	28 (14.9)	46 (24.5)	57 (30.3)	48 (25.5)	3.57	1.161
Computer lab	7 (3.7)	18 (9.6)	13 (6.9)	79 (42.0)	71 (37.8)	4.01	1.082
Server	8 (4.3)	35 (18.6)	46 (24.5)	56 (29.8)	43 (22.9)	3.48	1.158
Blueto oth	8 (4.3)	36 (19.1)	43 (22.9)	73 (38.8)	28 (14.9)	3.41	1.088
Router	9 (4.8)	40 (21.3)	28 (14.9)	69 (36.7)	42 (22.3)	3.51	1.190
Wireless network	15 (8.0)	34 (18.1)	41 (21.8)	59 (31.4)	39 (20.7)	3.39	1.225
Local access network	14 (7.4)	21 (11.2)	45 (23.9)	66 (35.1)	42 (22.3)	3.54	1.172
Internet facilities	10 (5.3)	19 (10.1)	16 (8.5)	82 (43.6)	61 (32.4)	3.88	1.133
Internet access point	7 (3.7)	10 (5.3)	19 (10.1)	95 (50.5)	57 (30.3)	3.98	.978
Total Average						**3.57**	**.534**

V. DISCUSSION

Findings from the first research question regarding mobile technology equipment suitable for use in Science applications in primary schools indicate that respondents prefer to use laptops, smartphones, and chrome books. This is because there are facilities at home and at school to use all three mobile devices. This can be seen through the findings to use a variety of mobile technology equipment for use in learning using mobile applications.

Today's learning methods have shifted to learning using modern mobile technology. This shows a positive perception of the use of technology and can reduce the use of traditional learning methods. The findings of the study also explain that students can be encouraged to use mobile devices in the search for information and use it in learning and facilitation Science sessions either at home or at school. Therefore, students have shown awareness of the need to use mobile devices that lead to the need for 21st Century Learning. This is also emphasised in the Malaysian Education Development Plan of the seventh shift in utilising ICT resources in school learning (MOE, 2014).

The second research question on the appropriate technology software in the science android application in primary school showed that the respondents chose to use the website and WAP technology in learning using mobile devices. Besides, respondents are also very willing to use mobile technology in learning and facilitation Science in national schools. The findings also show that respondents strongly agree that mobile devices and technologies are used in learning and facilitation science in rural national schools. The findings also show that respondents strongly agree with mobile learning through M-Learning in rural national schools and can be an alternative method to traditional learning in Science subjects. Therefore, respondents' perceptions of learning using technology and mobile applications create a change of mindset in education in Malaysia, leading to 21st Century Learning. For that, the learning and facilitation Science method needs to be based on mobile technology skills.

Based on the findings of the third research question, which is the appropriate mobile technology skills used by students in national schools. Skills in M-Learning such as downloading learning materials, and using mobile applications, are seen as a platform for students for application in learning and facilitation science in rural national schools. The tendency to skills in using mobile technology can be applied as a medium in the delivery of learning and facilitation activities because it has advantages that do not exist in the delivery medium in existing learning. Thus, the findings of the study show that M-Learning in the

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subject is an alternative method for the possibility of being implemented as a method of support to the teaching of teachers who have been conventional and teacher-centred only.

The fourth research question on appropriate learning activities to use in M-Learning Science in national schools. Respondents prefer to accept teacher instructions, group discussions, and interactive quizzes. This is because receiving teacher instructions and discussing with teachers and peers online is more comfortable because there are no time and place boundaries. Teachers and students can communicate directly quickly and easily. Interactive quizzes can also be given in the chat room; teachers only provide hyperlinks to interactive quizzes that have been generated for students to answer either at school or home. Besides, monitoring from parents can also be applied because teachers can inform the current academic progress of their children through online discussion sessions through the WhatsApp or Telegram application group.

Thus, the development of this mobile technology indirectly creates a more flexible learning environment in terms of time, place, and pedagogy. Mobile device technology allows users to create more extensive collaborations. Mobile device technology enables individuals to convey information and interact with users virtually and online. In other words, mobile technology is capable of acting as a facilitator in the learning and facilitation process.

Findings from the fifth research question regarding the facilities available in the environment for M-Learning Science. Based on the findings of the study showed that the respondents strongly agreed and chose a computer lab and internet access centre in the school, followed by internet facilities in the environment. As internet facilities and mobile devices in rural schools are also provided then access to online learning resources can be applied. Also, students can share mobile devices with siblings and parents at home. This is because mobile devices, in particular, that use the Android platform, are cheaper in terms of price. Besides, internet data plans provided by telecommunication companies can now be easily obtained at a low cost, either post-paid or pre-paid. Therefore, this integration in the national education system is a manifestation of the awareness of the strengths of information and communication technology and its ability to empower and form a generation of information technology literate since childhood.

Based on the discussion of this needs analysis, it can be concluded that there is a need to conduct a mobile application development study for M-Learning Science for year five in rural national schools. This study has added value to the study of the use of teaching technology in rural primary school science subjects, especially the rural national school streams in Malaysia.

VI. CONCLUSION

Based on the findings from the needs analysis shows that there is a need to produce mobile applications for science subjects in year five in the context of rural national schools in Malaysia. Furthermore, teaching methods based on technology and mobile devices are gaining attention in preserving the field of digital education. This is in line with the demands of practice in the lives of Generation Y students who make technology and mobile devices implemented in their daily activities. Therefore, teachers need to take this initiative and opportunity to be used as much as possible to create a mobile technology-based M-Learning Science environment in rural national schools. The proposal to build a mobile application should be implemented as an alternative method for teachers to be applied to have a positive impact on the quality of learning and facilitation of science to create an environment that is digital, active, conducive, and interactive. The result will help build a more technological environment to produce a generation of creative and information technology literate, in turn, can bridge the digital divide between rural and urban communities. This relevance can be evidenced from the findings of the study related to the acceptance of M-Learning in the overall findings that the respondents of fifth-year students of rural national schools firmly accept M-Learning using mobile devices and applications as a field to support alternative learning to make science learning in primary schools more attractive in line with the rapid development of mobile technology today.

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