

CONFERENCE PROCEEDING

The Study on Awareness of Kolej GENIUS Insan Students About Educational Apps Used in Teaching And Learning

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ABSTRACT

Educational apps used widely since the pandemic hit the world. These apps have provided different kinds of activities that teachers can use in their classes. This engages students to improve their understanding in classes better. Therefore, this study has been done to identify the awareness of Kolej GENIUS Insan students about the existence of educational apps in teaching and learning. This study has been conducted using purposive and convenience sampling through an online survey of the Kolej GENIUS Insan students. The age of the students involved is between 12 until 17 years old. Based on the study that has been held, the result showed that all the respondents are aware of educational apps, and most of them have used educational apps. This survey has received a great response on awareness towards educational apps that have been used as an aid tool in teaching and learning.

Keywords: *education, educational apps, teaching and learning*

INTRODUCTION

The development of educational applications (apps) is growing exponentially. The portability of educational apps, the easy access of the educational apps, and the interactive and illustration made educational apps an effective learning and teaching medium (Bhatheja *et al.*, 2018). According to Karabatzaki *et al.* (2018), educational apps have been proven to increase students' engagement in the class and the class outcome quality increases. From these findings, we can take advantage of the effectiveness of educational apps in classes more. Educational apps can help students to understand the subjects through online fun visuals and activities. Educational apps are potentially more effective than normal live activities because of the easier access to the learning material and easier settings of the activities. The study aims to determine the awareness of Kolej GENIUS Insan students about educational apps used in teaching and learning.

METHODOLOGY



Figure 1. Flowchart of Methodology

Based on Figure 1, there are three stages to achieve the main objective of the paper. The first stage is the questionnaire development which consists of questions about the knowledge of the Kolej GENIUS Insan students about educational apps. The second stage is the survey that involved is between 12 until 17 years old. After that, the survey will be shared with all Kolej GENIUS Insan students. Finally, for the third stage, the analyse of the data has been done.

RESULTS AND DISCUSSION

Eighty-five (85) Kolej GENIUS Insan students responded to the online survey after it was distributed. The findings show that Kolej GENIUS Insan's students know educational apps, and most of them use them. Figures 2a) and 2b) indicate the number of students who took part in the online survey by age and gender. According to the data, pupils aged 13 and female gender are the most likely to engage in this online survey.

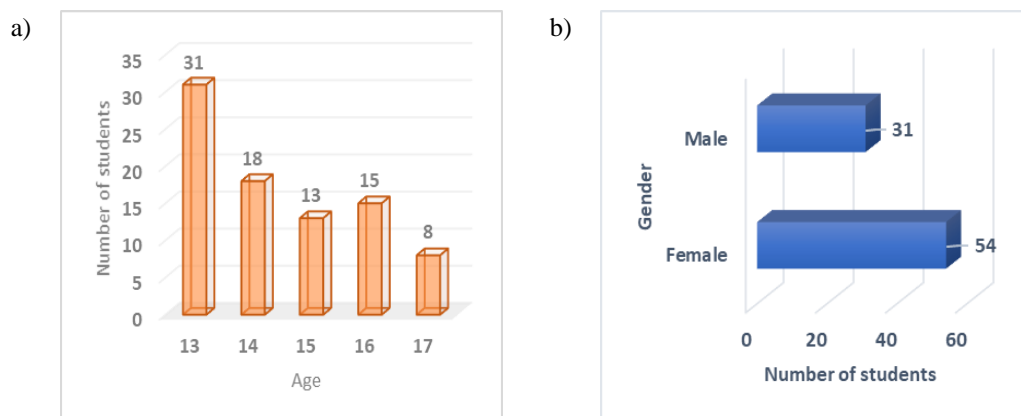


Figure 2. Student population by a) age and b) gender

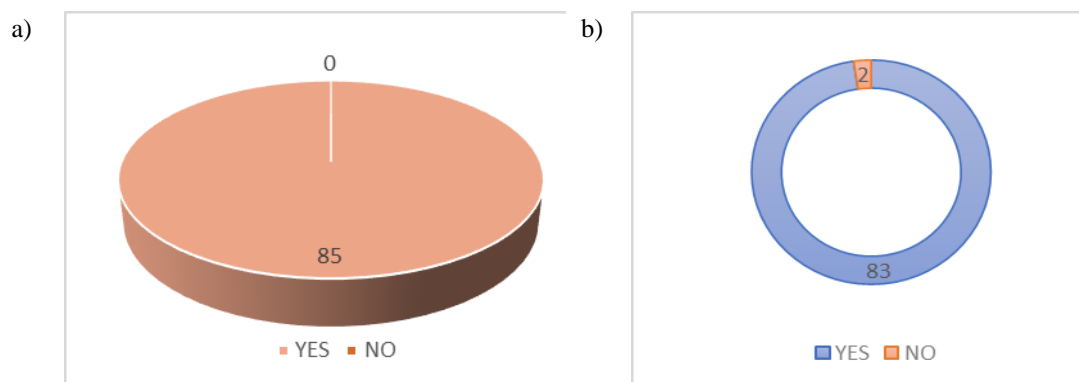


Figure 3. Number of students that a) aware of the existence of educational apps and b) uses educational apps

Figures 3a) and 3b) depict educational app awareness. Again, all respondents are aware that educational apps exist, and 83 out of 85 have accessed educational apps for educational purposes.

CONCLUSION

In conclusion, the analysis of the data shows that all of Kolej GENIUS Insan knows about the existence of educational apps. This study shows that the teaching method change from offline to online teaching changed the way teachers use the material, which is educational apps. Most of them used educational apps, which shows that teachers are trying to find an initiative solution to the normal activities. Therefore, the usage of educational apps is growing among students and teachers.

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Cryptography Exposure Among Secondary School Students

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ABSTRACT

Cryptographic methods of protecting information have recently become the basis for ensuring information security in almost all areas of public life. In this regard, there is a constant need for young talented personnel in this field of science. They could give a new impulse to its development, as well as provide a connection of cryptography with other areas of knowledge. Therefore, this study has been done to identify the awareness among secondary school students towards the concept of cryptography. This study has been conducted through a purposive and convenient sampling method among Kolej GENIUS Insan students via an online survey. The age of the students involved is between 12 and 17 years old. Based on the survey that has been held, the result showed 51.9% of students know about cryptography and 48.1% do not know about it. It can be concluded that cryptography has low exposure among secondary school students. Therefore, a lot of cryptography exposure programs need to be held among secondary students to increase their awareness of cryptography.

Keywords: *Cryptography, Cybersecurity, Education*

INTRODUCTION

Cryptography, which requires a particular algorithm, allowed parties to secure the privacy of data between two parties that involved transmission data between each other, increase data security and preventing it from being accessed by unauthorized parties (Atan & Kadir, 2020). This can assist in protecting the confidentiality of data and decrease the chance of it being interfered with by unauthorized parties (Maqsood *et al.*, 2017). The theory of cryptography has been taught to university students, which is a challenging task due to the lack of knowledge in mathematical concepts (Alghamdi & Younis, 2021). Furthermore, students are uninterested in learning cryptography because it is complicated to understand (Atan & Kadir, 2020). The awareness about the application and usage of cryptography must be introduced to young generations because its application is important and will be beneficial use for the future in data and telecommunications (Atan & Kadir, 2020). They need to be exposed to this field so that they can continue researching and advancing the current cryptography system. Throughout this way, the security of information can be maximized. This paper provides an overview of secondary school students' exposure to cryptography.

MATERIALS AND METHODS/ METHODOLOGY

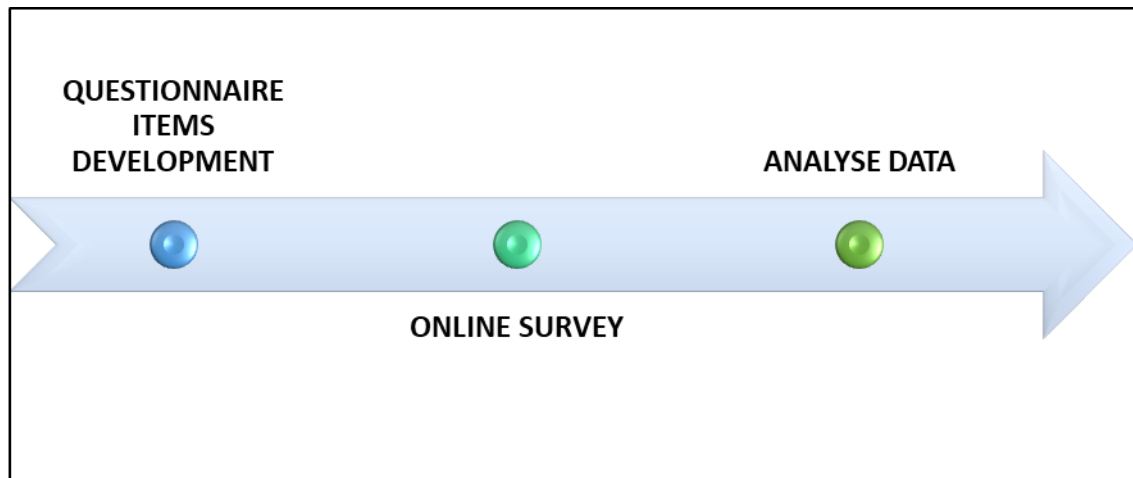


Figure 1. Flowchart of Methodology

This study has been done with three phases that shown in Figure 1. The first phase is questionnaire items which consist of three questions specifically about the knowledge on cryptography. The questions are arranged in order and selection answers are provided. The online survey has been done in the second phase by distributed among Kolej GENIUS Insan students age from 12 to 17 years old. The method used during this survey is purposive and convenient sampling. In the third phase, the data collected from the online survey has been analyzed.

RESULTS AND DISCUSSION

This questionnaire was answered by 104 Kolej GENIUS Insan students. According to the data, there are 38 students aged 13 years, 21 students aged 14 years, 14 students aged 15 years, 18 students aged 16 years, and 13 students aged 17 years. Based on gender, this survey has been participated by a female student. It is shown in Figure 2 (a) and Figure 2 (b).

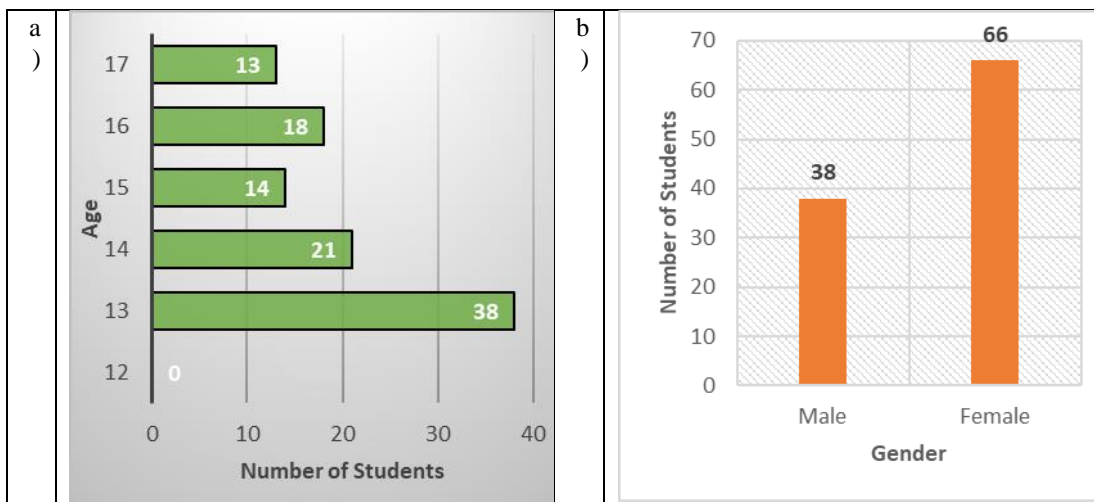


Figure 2. Student population by a) age and b) gender

Figure 3 illustrates the knowledge of the students about cryptography. It is shown that that 51.9% of students are familiar with the term cryptography, whereas 48.1% are unfamiliar.

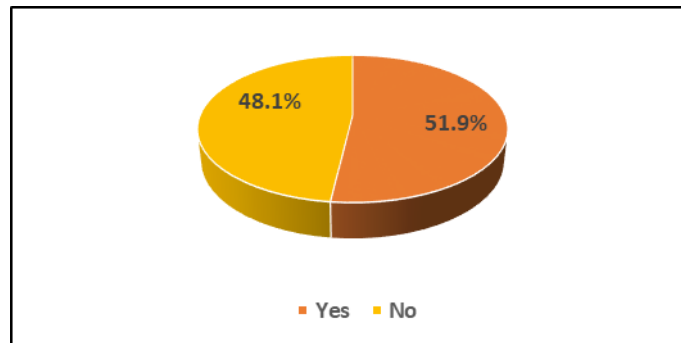


Figure 3. Percentage of Student Knowledge Towards Cryptography

CONCLUSION

This study can be concluded that cryptography is not well-known among secondary students. Cryptography modules must be conducted and provide them a comprehension of cryptography to increase their knowledge. Students should also realize the importance of cryptography that is being used in real life.

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Satisfaction of Kolej GENIUS Insan Students in Learning History Subject

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ABSTRACT

In Malaysia, History subject is mandatory in the curriculum of each secondary school syllabus. However, the History subject requires visual implementation for better comprehension. This study has been conducted to identify the satisfaction and understanding among students from Kolej GENIUS Insan in learning History by a conventional method. This study has been driven by method purposive and convenient sampling using the online survey through Google Form. The age of the students involved in this online survey is between 12 until 17 years old. Our finding shows that 43.5% of the students do not enjoy learning conventionally. Also, 38% of the students' comprehension is below average. In conclusion, the satisfaction of students from Kolej Genius Insan in knowing History subjects is not satisfied. Hence, new implementations such as virtual reality implementation with gaming approach may increase their satisfaction and comprehension of history subjects.

Keywords: *History, cryptography, education 4.0, virtual reality*

INTRODUCTION

Creating immersive and aesthetic auditory spaces in virtual reality primarily focuses on enhancing the user's quality of an interactive experience by utilizing a sophisticated combination of advanced immersive audio techniques and tools (Summers & Jesse, 2017). As we know, the subject of History is boring because, in addition to learning specific facts, definitions, time and historical events, learners have to memorise all facts in the textbook. The lack of imagination in teaching History has caused students to get bored and lose interest in the topic (Taranilla *et al.*, 2019). Using traditional teaching methods is one of the factors. The conventional approach is an inefficient and monotonous teaching method and is still commonly used in schools (Ahmad *et al.*, 2019).

The current study supports this finding that a new innovative approach is needed to increase students' comprehension, reasoning, and networking (Nurcahyo *et al.*, 2018). By changing the method of traditional teaching, the solution to overcome this problem. One of the alternative approaches is to supply the material by implying the principle of virtual reality with a gamification approach. This study aims to review students' satisfaction and find a new method to enhance the education of History subjects.

METHODOLOGY

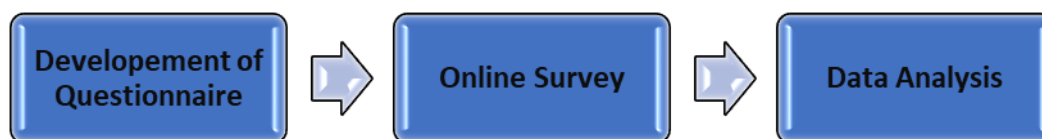


Figure 1. Flowchart of Methodology

There are three stages in conducting the research. The first stage is the development of sets of questionnaires through Google Form to achieve students’ satisfaction and comprehension. Next, the second stage is the process of purposive and convenient sampling. The final stage is the data analysis from the output by the students’ review.

RESULTS AND DISCUSSION

The result shows that a high number of students does not satisfied by learning in a conventional method. Instead, the majority of the students think Virtual Reality should enhance History education. Figure 2 illustrates the percentage of enjoyment and comprehension in learning History in a conventional method, also their perception of VR implementation.

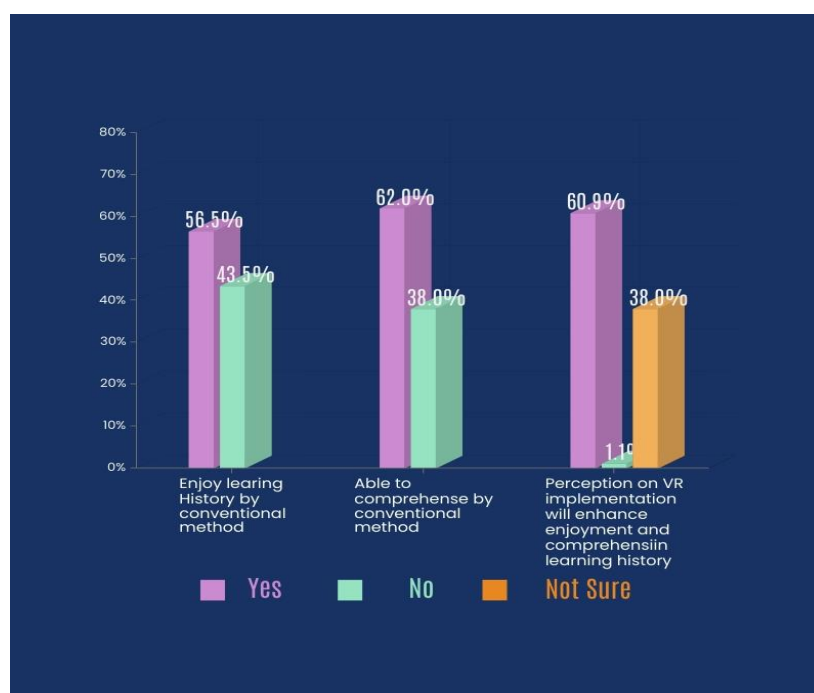


Figure 2. Mean score of the item validation

The result report that the conventional method of learning history is not being enjoyed by 43.5% of the students involved. Among the students, a high percentage of 38% is not able to comprehend history subjects. Next majority of the students, with a ratio of 60.9%, agree that Virtual Reality implementation with gamification approach in learning history shall enhance their satisfaction in learning History subject.

CONCLUSION

Based on the review, many students cannot comprehend History subject through the conventional method, but they also do not enjoy being educated. Hence, new implementations such as virtual reality implementation with gamification approach in education shall enhance the education of History Subject.

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Implementation of Practice-Based Learning Model (PrBL) Using STREAM-Based Approach in Madrasah Aliyah of 2 Model Pekanbaru

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ABSTRACT

Learning in the 21st century prioritizes the development of student learning activities in increasing potential and preparing a quality educated workforce. Industrial revolution 4.0, learning focuses on the ability to adapt to technological developments and updates. In facing these challenges, learning is utilized massively along with learning outcomes by applying the Practice-Based Learning Model Using STREAM based approach (Science, Technology, Religiosity, Engineering, Arts, and Mathematics). This method focuses on problem-solving, collaboration, creativity, communication, and critical thinking skills. Through this approach, students are expected not only to have intelligence academically but also socially so that able to stimulate optimal development. The research method used is descriptive qualitative with data sources teachers, headmaster, and students in Madrasah Aliyah of 2 model. Data collection techniques are observation, interviews, and documentation. The implications of this research are very beneficial for students' motor development, increasing students' interest in learning, creative problem solving, cognitive development, and social attitudes. This study aims to describe the application of the STREAM approach to student activities and learning outcomes.

Keyword: *Development, Learning Activity, PrBL, STREAM*

INTRODUCTION

21st-century learning should be relevant to the challenges and demands of real life, including the ability to work together, problem-solving skills, self-control, critical thinking skills, mastering technology, and being able to process information and communicate effectively. This is by Law No. 20 of 2003 concerning the purpose of national education, namely developing capabilities and shaping the character and civilization of a dignified nation to educate the nation's life. In the process of implementing learning, students should be able to encourage themselves as individuals and citizens who are faithful, productive, creative, innovative, and able to contribute to the life of society, nation, state, and world civilization.

Focuses on the 21st century generation through changing the national curriculum to a 2013 curriculum based on 21st-century learning (Direktorat Dikdasmen Kemdikbud., 2014). In the 2013 curriculum, the demands on each competency cover 3 domains, namely the realm of knowledge, the realm of attitudes, and the realm of skills. This curriculum also seeks to improve the balance, continuity, and linkage between hard skills and soft skills (Permendikbud No. 103., 2014) So that the learning process carried out can bring up 18 character values, namely: religion, honest, tolerance, discipline, hard work, creative, independent, democratic, curiosity, the spirit of nationalism and nationalism, love for the homeland, respect for achievement, communicative, love peace, love to read, care for the environment, care

about social and responsibility. This value can appear in students if the teacher can explore students by inviting students to be actively involved in learning that is creative, interesting, fun, innovative, and contemporary so that students want to participate and play an active role.

Based on the results of research conducted by (Owen *et al.*, 2020). Active learning is learning that can optimize all potential and abilities of students and strive for a more meaningful learning process by integrating scientific concepts, knowledge, and skills in the learning process. Research showed the results of learning activities have 4 indicators including student and teacher interaction, student activeness in learning, student enthusiasm for the learning provided, ability to overcome problems and student active participation during learning (Dimiyati & Mudjiono, 2006; Susanti *et al.*, 2017).

Integration of STEAM (Science, Technology, Engineering, Art, and Mathematics) is a learning approach that integrates science, technology, engineering, art, and mathematics into chemistry learning. , fun and foster students' soft skills such as cooperation, tolerance, communication, and empathy. Learning with STEAM integration refers to constructivism learning theory (Yakman, 2012) where students will actively build their knowledge through fun learning experiences. Students will actively create strategies independently for their learning process. This STEAM approach directs students to have skills, namely problem-solving skills, critical thinking skills, and collaboration skills (Messier, 2015).

The chemistry learning process should build understanding to be meaningful to students and involve students actively and creatively as well as developing students' soft skills. Therefore, the STEAM approach was chosen as an approach to build students' understanding of chemistry and explore students' creativity which usually does not appear in learning. With the STEAM approach to chemistry learning, can stimulate students' creativity and soft skills, as has been applied in learning in the 2013 curriculum.

The results of observations of students and the learning process at Madrasah Aliya 2 Pekanbaru Model, oriented to theory and memorizing concepts, students do not do practical work effectively, so they are not allowed to analyze a problem, identify, conclude an action based on problems in daily life. Research shows that the chemistry learning process in schools does not encourage students to play an active role and think critically about problem-solving. Implementation of PrBL in learning so that students play an active role in identifying problem-solving and improve scientific thinking skills (Agustina *et al.*, 2020).

Research reveals that linking religious aspects to science-related learning can develop and encourage students to define and relate the relationship between science and life according to the implications (Agustina *et al.*, 2017; Natsir 2013). From the human point of view they cannot integrate science and religion, they cannot progress and develop. When only one aspect is developed, there will be an imbalance. Religion is the main of achieving the purpose of science. Aspects of art and mathematics as a major role in improving science learning and developing students' creativity. has not been revealed a STREAM-based approach to learning activities.

The purpose of this study was to identify improving the quality of student learning by using the STREAM-based PrBL learning model on acid-base material in class XI MIA Madrasah Aliyah 2 Pekanbaru Model. Acid-base material is very close to everyday life and requires students to understand concepts and memorization seems unattractive and difficult to understand, the hypothesis in this study combined with

STREAM-based PrBL can improve students' critical thinking skills and creativity in practicum. The application of STREAM-based PrBL can help students to understand and experience the scientific identification process so that students develop students' skills to apply their knowledge, affecting student learning achievement and can motivate learning.

METHODOLOGY

Method and Design Research

The research using a descriptive qualitative which aimed to implementation of practice-based learning model through a stream-based approach towards students learning activities of class XI MIA Madrasah Aliyah 2 Model Pekanbaru. The research design used data collection techniques are observation, interviews, and documentation. This research was conducted in 3 meetings. The implementation of the PrBL model using STREAM-Based approach focuses on acid and base practice that were related to aspects of religion.

RESULTS AND DISCUSSION

Implementation of STREAM approach in students learning activities

The PrBL model is carried out using the STREAM approach where the observation sheet and the evaluation rubric product are made by observing student learning activities. Aspects of student activity in learning include student collaboration in practice, interactive student participation between educators or teachers. The assessment of students' creative products during learning is based on aspects of the PrBLmodel using a STREAM-based approach. The data obtained were then analyzed qualitatively through the steps of data reduction, data presentation, and concluding. Data reduction is obtained from observation and the product scorecard is reduced by summarizing, selecting and focusing the data according to the research objectives. Data presentation is done after data reduction. Data obtained from observation sheets and product evaluation sheets are then presented in the form of narrative tables and descriptions. Finally, the reduced and presented data table is used to draw conclusions into 3 aspects of student activities. The results can be seen in Table 1.

Table 1. Results Observation of Student Activities

No	Class Code	1	2	3	Average	Final
1	XI MIA 1	80	87.5	92.5	88,44	(Good)
2	XI MIA 2	81.5	89.9	94	86.67	(Very well)
3	XI MIA 3	82.5	91.6	96.5	89.48	(VeryGood)
	Average				90.47	(VeryGood)

PrBL is a learning model that invites students to contribute actively both individually and in groups, because through collaboration in groups, students will be involved in the process of investigation and problem solving (Astutidkk, 2019). The PrBL model that will be carried out is with a STREAM-based approach, students do not receive all knowledge from the teacher, but students who play an active role in seeking information about the material being studied. Learning begins with reading Al-Quran

verses related to the material and associated with life problems. Students discuss in groups to find information that allows them to offer solutions to the problems they face. During the discussion process, students are given laptops as study aids to learning more about the solutions they offer (Azizah *et al.*, 2020).

The role of teachers and technology during the learning process can improve students' social attitudes. This can be proven by the activeness of students in discussions, starting from the session to express opinions and ideas about the material to be discussed and the practice that will be done, the enthusiasm of students in learning continues to increase and this is evident from the results of table 1 above which shows that the overall activity of the PrBL model using the STREAM-based approach in three classes of Madrasah Aliyah Negeri 2 Model of the Pekanbaru achieved a score of up to 88.44 (Azizah *et al.*, 2020).

PrBL creative product using STREAM-based approach

The process of realizing students' creative product designs can be observed based on the elements in the STREAM aspect contained in the PrBL stage model. The first aspect concerns students' scientific knowledge about acids and bases, especially the manufacture of vinegar and soap in scientific activities.

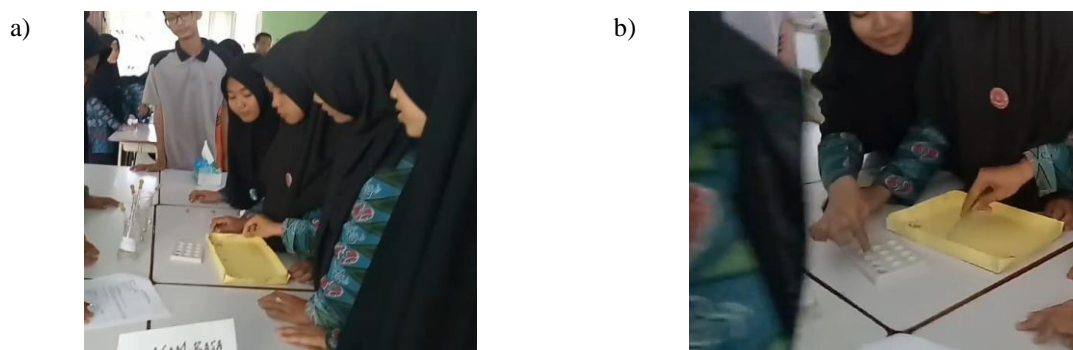


Figure 1. Science Aspects in Vinegar and Soap (a) manufacturing products (b)

Science is a systematic thought process in which knowledge is taken based on existing theories, laws, and facts to find solutions to the problems at hand (Tabiin, 2020). In this aspect, the students of Madrasah Aliyah Negeri 2 Model Pekanbaru, especially class XI MIA 1-3, showed good teamwork to create solutions to the problems given, and of course, the teacher explained the material first. The PrBL model with a STREAM-based approach identifies problems by discussing, arguing with each other to overcome the problems given. (Azizah *et al.*, 2020) then in the next step, students validate the data and information by connecting to the Internet related to acid-base practices, especially vinegar and soap making which is shown in Figure 2.



Figure 2. Aspects Technology of Acid and Base Practice