# Powerpoint for Android Design Using Think Talk Write Model to Improve the Junior High School Students' Concepts Understanding

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## Abstract

As the development of Science and Technology also influence the development of learning media. Media learning is one of the determinants of student learning success. Utilization of android technology so far is not only used as a means of communication, or just entertainment but now can be developed for learning media. This research aims to develop powerpoint for android with Think Talk Write model to improve understanding of SMP students concept. The research method used is Research and Development and the type of research used is ADDIE. (1) Analyze, student needs analysis shows students need learning media. (2) Design, the products produced in this study media powerpoint for android. (3) Development, media developed then validated by 84% media experts, 82% material experts, and 85% design learning experts so it is said to be valid. (4) Implementation, student responses in class VII C achievement rate 89% are in the practical category. (5) Evaluation, the data in this study consists of preliminary data in the form of values obtained through pretest and final data in the form of values obtained through posttest. The result of the second posttest of the class is tested equality of two averages (right-t test) obtained $\alpha = 0.05$ obtained t_table = 1.669 and t_count = 3.251 because Since t_count> t_table then H0 rejected and H1 accepted, so it can be concluded learning using Powerpoint for Android with Think Talk Write model to improve concept understanding is said to be valid, practical, and effective than the conventional learning model.

Keywords: Powerpoint for Android, Think Talk Write, Understanding Concepts

## 1. INTRODUCTION

Mathematics is one of the subjects delivered to all students, from elementary school to high school, which aims to prepare them with the ability to think logically, analytically, systematically, critically, and creatively and to work together. In mathematics learning, many students consider it as a difficult subject [1]. This is because they do not understand most basic concepts in mathematics. Through understanding, the students can better master the concepts of the subject matters itself, not just by memorizing. By understanding a concept, the learning will be more meaningful for the students [2].

The ability of mathematical concepts understanding is one of the important goals in the learning. Kusmaryono [3] stated that the ability to understand concepts is a basis for thinking and solving a problem. The importance of understanding mathematical concepts can be seen in the first objective of mathematics learning according to the Ministry of National Education, i.e. understanding mathematical

concepts, explaining the interrelationships between concepts, and applying concepts or algorithms in a flexible, accurate, efficient and appropriate way to solve the problems. Based on these objectives, the students are expected to be able to understand the basic concepts of mathematics, so that they will be able to solve problems effectively.

The development of Science and Technology automatically also influences the development of learning media. Learning media are important factors for the students' learning success. The learning activities and processes include transferring information from learning sources to the receivers of information through certain models and media [4]. With the development of Android-based PowerPoint, the learning atmosphere becomes more interesting and attractive. Besides that, PowerPoint has the ability to import sounds, images and video files. In this case, the PowerPoint is modified in such ways that it can generate an .apk (Android Package) file. According to Rahadi [5] Android allows its users to install third-party applications, either obtained from application stores such as Google Play, Amazon Appstore, or by downloading and installing .apk files from other sites.

In the teaching and learning process, the students' ability to think creatively and active in learning becomes an important factor [6] There are several cooperative learning models that have recently been developed at schools, one of which is Think Talk Write. This model consists of three stages namely Think, Talk and Write [7]. Saputra [8] argued that Think Talk Write is a learning model that starts from the students' involvement in thinking or dialogue with themselves after the reading session, then talking and sharing ideas with their friends before writing. Therefore, through the Think Talk Write model, it is expected that it can improve the students' concepts understanding.

Based on the results of his research, Yudi [9] stated that after being applied, the Think Talk Write (TTW) is categorized as good, and the average score of the students' ability to understand mathematical concepts after applying TTW was 58.60. In addition, Giyarni [10] reported that the varied TTW learning model is an alternative method that can be used to improve the students' learning process. Buchori [11] stated that the use of mobile learning media is better than controlling classes using conventional learning techniques.

In the last few decades, technology has been rapidly developing, especially cell phones and mobile devices. Cell phone is one of the most widely used gadgets by the people. The use of mobile phones as the media for telecommunications today is still not utilized optimally through educational process. The use of mobile phones as learning media is certainly interesting and practical, because it can be accessed anywhere and anytime [12]. This shows the need to innovate presentation media that is not only be able to be operated on computers or laptops with the Windows operating system, but can also be operated on Android devices. Therefore, the

Powerpoint for Android as a medium of mathematics learning needs to be developed more.

One part of the mathematics learning that is actually interesting but often makes difficult for the students is geometry, including rectangular. Rectangular is one of the mathematics topics for class VII. The students are quite weak in studying this material. One example, they have difficulty imagining the concept of a rectangle, so that they have difficulty describing its characteristics and ultimately they get difficulties to find the area or circumference, and also they still do not yet show good performance in solving story problems about the rectangular.

## 2. METHODS

The method used in this study was research and development, which consisted of the questions on how to hold research, design, produce, and test the validity of products that have been generated [13]. The development itself was defined in general as an attempt to improve technical, theoretical, conceptual, and moral skills of the students according to their needs through education and training. Development was a method used to develop a product through some determined stages in accordance with the analysis of effective learning design models used at the schools. From the definitions above, it could be concluded that development was a process of developing something and generating a new product.

The steps of the research or development process consisted of a study of product research findings that would be developed, developing products based on the findings, conducting field tests based with the setting in where the product would be applied, and revising the results of the field tests [14]. The model in this study was ADDIE model. It stands for Analysis, Design, Development or Production, Implementation or Delivery and Evaluations. The ADDIE model was developed by Dick and Carry to design a good learning system. In addition, this model could be used for various forms of product development such as models, learning strategies, learning methods, media, and learning materials.

This model consisted of five main stages namely (A)nalysis, (D)esign, (D)evelopment, (I)mplementation, dan (E)valuation. ADDIE model stages can be seen in Figure 1.
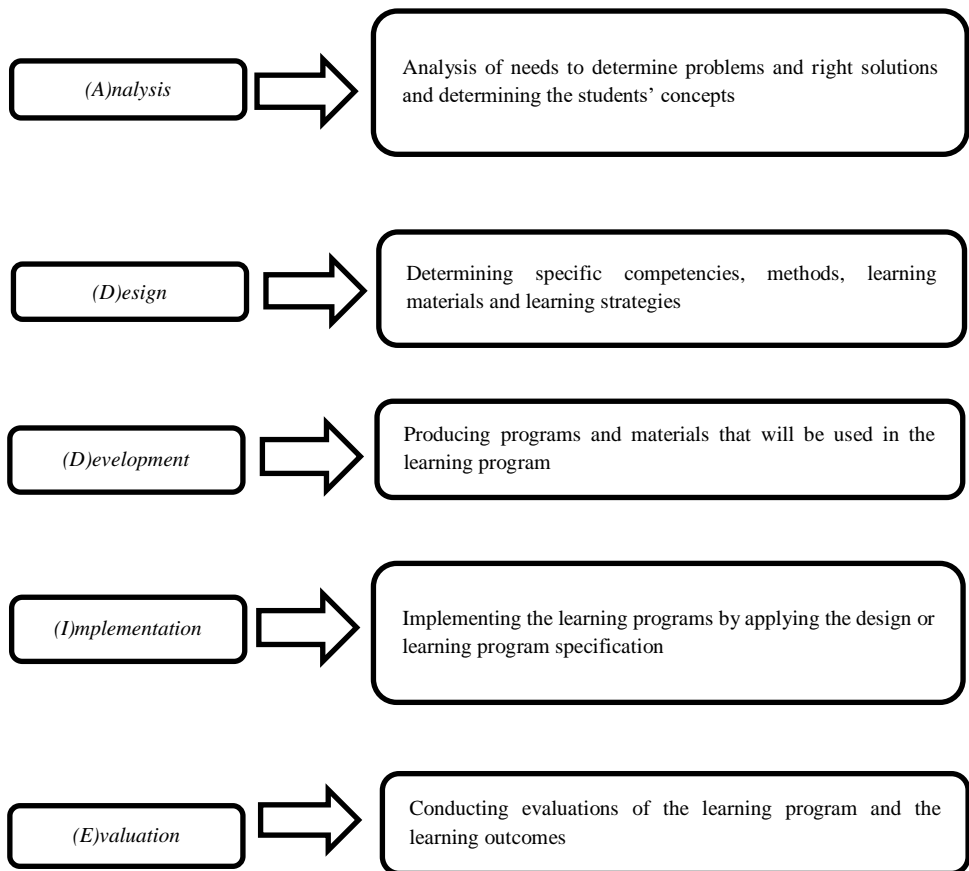
| (A)nalysis | → | Analysis of needs to determine problems and right solutions and determining the students' concepts |
| (D)esign | → | Determining specific competencies, methods, learning materials and learning strategies |
| (D)evelopment | → | Producing programs and materials that will be used in the learning program |
| (I)mplementation | → | Implementing the learning programs by applying the design or learning program specification |
| (E)valuation | → | Conducting evaluations of the learning program and the learning outcomes |

Figure 1. ADDIE model stages

## 3.  RESULTS AND DISCUSSION
### 3.1. Analyze

Before conducted the research, the writers firstly conducted some observations on the learning media used and analyzed the curriculum that would be developed through the materials. Based on the results of an interview with one of the mathematics teachers at SMP N 1 Pucakwangi, it is found that the students' motivation and interest towards mathematics is still very low, especially in rectangular topic, because this topic is considered difficult by most students and it is not interesting to learn. They only memorize the formulas without understanding the concepts of obtaining them, so that their ability to understand the concept is very low in rectangular topics and influences the learning outcomes.

Based on the observations that have been conducted at SMP N 1 Pucakwangi, the main problem found is that the students' concept understanding is still low. It can

be seen that if they are given a simple problem, they can solve it easily, but if they have been given more complex problems, they will get confused and feel difficult to understand the existing concepts.

The students' low ability to understand the concepts in mathematics is caused by several things. First, the learning method used by the teacher is still conventional. The teacher still uses the lecturing method, so that the learning is only teacher-centered. This causes the students to be less active because they have only to listen. Second, less use of the media is. The media commonly used by the teacher are in the form of props. The props are of course only used on certain materials, so that the utilization of media is also less optimal.

In this research, the media that will be developed is Powerpoint for Android. This media has many benefits because it is able to display various application programs such as slides, animations, graphics, audio and images. In addition, most teachers have already been able to create and use Powerpoint for the learning at school. Using Powerpoint for Android, it is easy for the teachers to create media presentations innovatively and attractively.

Based on the observations made at SMP N 1 Pucakwangi, most students have used Android-based cellphones, but this tool has not been yet fully utilized in the learning process. This shows the need to innovate the presentation media that is not only able to be operated on computers or laptops with the Windows operating system, but on Android devices. Therefore, the development of Powerpoint for Android as a medium of mathematics learning needs to be developed more. In this research, the media that will be developed is Powepoint for Android with rectangular topic for class VII students in semester 2 at the academic year 2017/2018.

### 3.2. Design
The product that will be generated in this research is Powerpoint for Android in rectangular topic for the VII grade Junior High School students. The following image is the product design that has been made.
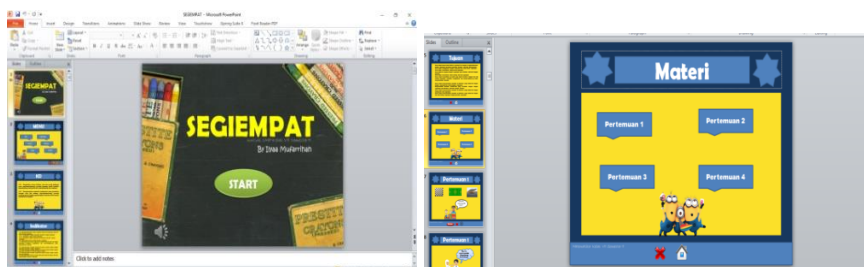

Figure 1. Powerpoint for android media

### 3.3. Development

On this stage, the expert validation is carried out on the product made. The learning media product, in the form of Powerpoint for Android using think talk write model to improve the junior high school students' concepts understanding in rectangular topic in mathematics learning as a result of this development is tested on the level of validity, practicality and effectiveness.

### 1) Results of Learning Media Validation

The media expert analysis is viewed from the aspects of: (1) application, (2) creativity, (3) innovation, and (4) visual communication. Based on the calculations, it is identified that the percentage = 84%, and after being converted to a scale conversion table, the percentage of achievement level of 84% is classified as good, so the learning media is worth testing. The general comment from validator 1 is that the media is good to provide the students with the convenience of learning through technology and should be given more varied images. Meanwhile the general comment from validator 2 is that the packaging into the APK will attract the students more because the development of technology has been followed by many school-age children.

### 2) Results of Learning Materials Validation

The media expert analysis is viewed from the aspects of: (1) application, (2) creativity, (3) innovation, and (4) visual communication. Based on the calculations, it is identified that the percentage = 84%, and after being converted to a scale conversion table, the percentage of achievement level of 84% is classified as good, so the learning media is worth testing. The general comment from validator 1 is that the media is good to provide the students with the convenience of learning through technology and should be given more varied images. Meanwhile, the general comment from validator 2 is that packaging into the APK will attract the students more because the development of technology has been followed by many school-age children.

### 3) Results of Learning Design Validation

The expert learning design analysis is viewed from the aspects of: (1) learning model, and (2) learning scenario. Based on the calculations of the results from validator 1 and validator 2, it is identified that the percentage = 85%, and after being converted to a scale conversion table, the percentage of achievement level of 85% is classified as good, so that the learning design is worth testing. The general comment from validator 1 and validator 2 is the adjustment of the images with rectangular and the use of powerpoint for android media with a think talk write model is apparently able to improve the understanding of concepts in mathematics learning, and it needs to be developed more to make it useful for learning in general.

The overall analysis of the experts concludes that the Powerpoint for Android learning media is suitable for use with necessary improvements. Thus, the mobile learning media is said to be valid to be used as a media for learning mathematics. This is in line with the research of Buchori et al. [12] who stated that the

development of mobile learning media with the TAPPS (Thinking Aloud Pair Problem Solving) Model is valid (feasible) to be used by the students by looking at the assessment of media expert validation and results from the assessment of material experts. The research os supported by Syed Hussain [15] stating that the use of Digital Game-Based Learning for Remedial Mathematics Students is appropriate to use. It can be seen from the students who use digital games as learning media and generate positive results on the students' learning motivation and outcomes.

### 3.4. Implementation
After the product is validated by the media and material experts the next step is to distribute the students response questionnaire in form of small group test. After getting the response percentage, the students meet good category, then followed by testing the learning media in learning activities within experimental class. After being spproved worthy testing by the media, material, and learning design experts, the researchers will use PowerPoint for android media using think talk write model to improve the students' ability to understand the concepts in mathematics learning in real situations within the classroom. This learning media is responded by 32 students of class VII C. The students respond to this media by filling out questionnaires given by the researchers to. Based on the calculations, it is identified that the percentage of 89%, and after being converted to a scale conversion table, the percentage of the 89% achievement level is in very good category.

The PowerPoint for android using talk write think model to improve the students' understanding of practical concepts has been effectively used, and this is seen in the experimental class students' response questionnaire. Based on the results of questionnaire analysis, the students' responses to PowerPoint for android with talk write writing model to improve the concepts understanding reach 89%. This is in line with a research conducted by Marfuah, et al. [16] who explained that the Development of Learning Media Using Powerpoint Accompanied by Visual Basic For Application on Distance Material in Geometry Topic for Class X is practical; this can be seen when the students use powerpoint learning media with visual basic for application, they can understand the problems in the form of determining the distance of geometry by just looking at the animated cube image. The research is supported by Buchori et al [17] entitled Mobilemath (Mobile Learning Math) Media Design with Seamless Learning on The Analytical Geometry Course model who stated that the Mobilemath (Mobile Learning Math) media is practically used. The results of the study show that the students are highly interested, as seen in the percentage level which reaches 89.25%.

### 3.5. Evaluation
After the learning activities have been conducted on the control and experimental class, the evaluation of the learning program and analysis of the effectiveness data is done. This is the fifth stage (last stage) of ADDIE *i.e.* Evaluate. The final data are analyzed using liliefors test to identify the data normality level from the both classes. For the control class $L_{table}$ based on liliefors table, with the significance

level is 5% and n=32 that it is obtained $L_{table} = 0,157$ and $L_{count} = 0,123$ , and because $L_{table} < L_{count}$ then $H_0$ is accepted. Meanwhile, for the xperimental one, based on liliefors tabe with the significance 5% and n =32 it is obtained $L_{table} = 0,157$ and $L_{count} = 0,134$. Because $L_{table} < L_{count}$ then $H_0$ is accepted. It can be concluded that both samples come from normally distributed population.

To find out whether there is a difference between the experimental class using Powerpoint for Android learning media and Think Talk Write model, and the control one that use conventional learning, it is used one-sided (right-hand) test. From the analysis, it is obtained the average value of the experimental class and the control one, with the number of 32 students for each class, tcount = 3,251. From the t-table distribution with dk = 62 and $\alpha$ = 5% it is obtained ttable= 1.669. Because tcount > ttable, then H0 is rejected and H1 is accepted, thus it can be concluded that learning process using Powerpoint for Android with Think Talk Write model to improve concepts understanding in rectangular topic is better than the conventional learning model.

Then, based on the data of students' learning outcomes, the percentage of classical learning completeness of the experimental and control class is presented as follows:
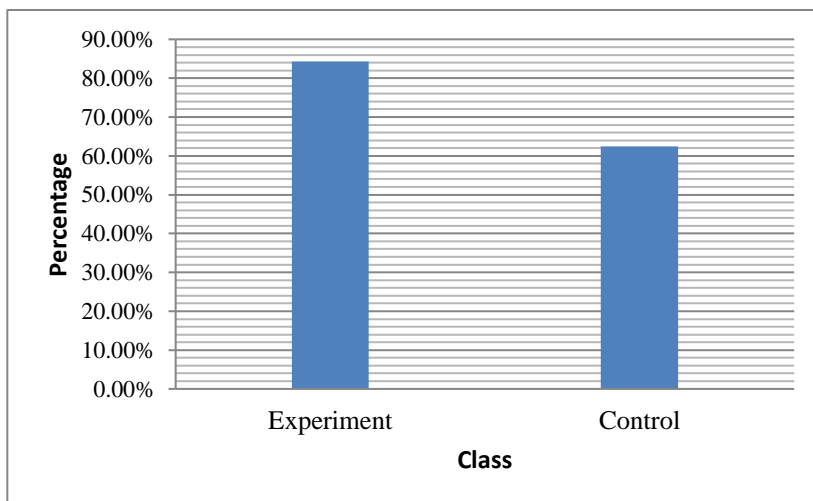


Figure 2. Percentage of Classical Learning Completenss

Based on figure 2, the experimental class classical learning completeness is 81%. Because classical completeness> 75%, the students' learning outcomes in the experimental class are classified as fulfilling the classical completeness. Meanwhile, the percentage of control class classical learning completeness is 73%. Because the classical completeness <75%, the learning outcomes of students in the control class do not yet meet the classical completeness. This shows that the average scores of experimental class are higher than the control one. Therefore, it can be concluded that the use of PowerPoint for android media using talk writing

model to improve the students' concepts understanding is more effective than conventional method. This is in line with Dahunsi research [18] who stated that PowerPoint is effectively used by the students in Nigeria.

The PowerPoint for android using talk write think model to improve the students' concepts understanding is practical to be used, and this is seen in the experimental class students' response questionnaire. Based on the results of the questionnaire analysis, the students are able to improve their concepts understanding as much as 89%. This is in line with a research conducted by Marfuah, et al. [16] who stated that the Development of Learning Media Using PowerPoint Accompanied by Visual Basic For Application on Distance Topic in Geometry for Class X Students is practically used, and this can be seen when they use powerpoint for the learning media with visual basic for application. The students are able to understand the problems in the form of determining the distance of geometry by just looking at the animated cube image. The research is supported by Buchori, et al [17] entitled Mobilemath (Mobile Learning Math) Media Design with Seamless Learning Model on Analytical Geometry Course stated that media Mobilemath (Mobile Learning Math) which is also a practical learning media. It can be seen from the results of the research that show the students are highly interested, as seen in the percentage level which reaches 89.25%.

The completeness level of students' concepts understanding in this research for the experimental class is 83% included as a very good category, while for the control class the average score is 73% classified as fair. So, that it can be seen that the students' concepts understanding with the think talk write model in the experimental class is better than using conventional approach applied the control class in rectangular topic.

## 4. CONCLUSION

The powerpoint for android media using think talk writing model is able to improve the students' concepts understanding developed using appropriate ADDIE which is applied in mathematics learning activities in rectangular topic. The percentage of material validation is 84%, media validation is 82%, and the learning design is 85%. Meanwhile, for the results of questionnaire analysis for the students of class VII C at SMP N 1 Pucakwangi, the learning process using PowerPoint for android android with think talk writing write model is able to improve students' understanding of concepts by 89%. Therefore, it can be concluded that this learning media is practically used. Based on the analysis of the t test (right side) t_count> t table is 3.251> 1.669, and H0 is rejected and H1 is accepted. It is also proved with the classical learning completeness for the experimental class is 84.3%, and for the control class is only 62.5%. This shows that the average experimental class is higher than the control one. So, the learning using Powerpoint for Android with Think Talk Write model effectively improves the students' concepts understanding in rectangular topic than the conventional learning methods.

## 5. REFERENCES

[1] Lestari, L., & Surya, E. (2017). The Effectiveness of Realistic Mathematics Education Approach on Ability of Students' Mathematical Concept Understanding. *International Journal of Sciences: Basic and Applied Research (IJSBAR), 34*(01), 91-100.

[2] Agustan, S. (2016). Usage of Contextual Approach to Increase Student's Understanding in Learning Mathematics. IOSR Journal of Mathematics, 12(6): 118-122.

[3] Kusmaryono, I., & Suyitno, H. (2016, February). The Effect of Constructivist Learning Using Scientific Approach on Mathematical Power and Conceptual Understanding of Students Grade IV. In *Journal of Physics: Conference Series*, *693*(1), 1-11.

[4] Buchori, A., Rasiman, R., Prasetyowati, D., & Kartinah, K. (2015). Pengembangan Mobile Learning Pada Mata Kuliah Geometri Dengan Pendekatan Matematik Realistik Ditinjau Dari Kemampuan Berpikir Kritis Mahasiswa. *JINoP (Jurnal Inovasi Pembelajaran), 1*(2): 113-121.

[5] Rahadi, D. R. (2014). Pengukuran Usability Sistem Menggunakan Use Questionnaire Pada Aplikasi Android. *Jurnal Sistem Informasi, 6*(1): 661-671.

[6] Buchori, A. (2017). Pengaruh Strategi Pembelajaran Berbantuan Mobile Augmented Reality dan Motivasi Berprestasi Terhadap Hasil Belajar Kognitif dan Spasial Mahasiswa. *Disertasi dan TESIS Program Pascasarjana UM*.

[7] Susanto, D., Retno, D., & Saputro, S. (2017). The Comparison of Think Talk Write and Think Pair Share with Talking Stick Viewed from Students'independent Learning Eighth Grade Students of Junior High School. In *Proceedings Education and Language International Conference*. Semarang, Indonesisa. May 7th, 2017.

[8] Saputra, H., (2013). Peningkatan Kemampuan Komunikasi Matematik Siswa Melalui Model Pembelajaran Kooperatif Tipe Think-Talk-Write. *Sains Riset, 3*(1): 1-6.

[9] Paradita, Y. (2016). Penerapan Strategi Think Talk Write (TTW) Terhadap Kemampuan Pemahaman Konsep Matematika Siswa Kelas VIII SMP Negeri Muara Beliti. STKIP-PGRI Lubuklinggau.

[10] Giyarni, D. (2016). Peningkatan Hasil Belajar IPA Melalui Model Pembelajaran Think-Talk-Write Bervariasi pada Siswa Kelas VIII. H SMP Negeri 2 Banyudono Semester 1 Tahun Pembelajaran 2013/2014. *BIOEDUKASI, 9*(1), 11-17.

[11] Buchori, A., & Setyawati, R. D. (2015). Development Learning Model of Charactereducation Through E-Comic In Elementary School. *International Journal of Education and Research, 3*(9), 369-386.

[12] Buchori, A., Rahmawati, N. D., & Baedowi, S. (2016). Pengembangan Mobile Learning dengan Model TAPPS Pada Materi Barisan dan Deret Kelas X Semester I di SMA Nasima Semarang. *Jurnal Kajian Pembelajaran Matematika, 2*(2): 1-7.

[13] Sugiyono. (2015). *Metode Penelitian dan Pengembangan*. Bandung: Alfabeta.

[14] Setyosari, P. (2012). *Metode Penelitian Pendidikan Dan Pengembangan.* Jakarta: Kencana Prenada Media Group.

[15] Hussain, S. Y. S., Tan, W. H., & Idris, M. Z. (2014). Digital game-based learning for remedial mathematics students: A new teaching and learning approach In Malaysia. *International Journal of Multimedia Ubiquitous Engineering, 9*(11), 325-338.

[16] Marfuah, S., Zulkardi, Z., & Aisyah, N. (2016). Pengembangan Media Pembelajaran Menggunakan Powerpoint Disertai Visual basic for Application Materi Jarak Pada Bangun Ruang Kelas X. *Jurnal Gantang, 1*(1), 45-53.

[17] Sunandar, A. B., Rahmawati, N. D., & Kusdaryani, W. (2017). Mobilemath (Mobile Learning Math) Media Design with Seamless Learning Model on Analytical Geometry Course. *International Journal of Applied Engineering Research, 12*(19), 8076-8081.

[18] Dahunsi, T. O. (2014). Effectiveness of Microsoft Power Point on the Academic Achievement of Students in FCT, Nigeria. *group, 35*(1), 9.