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ICT Learning Media Design Using *Smart Apps Creator* at SMA N 1 Kapur IX

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Abstract

This research was motivated by problems found after direct interviews with ICT subject teachers at SMA N 1 Kapur IX Mr. Diki Putra Indri S.Kom on November 26, 2022 and 11 students. Based on these interviews, the authors identified problems, namely the disruption of the learning process due to power outages, many students already have an android but its utilization in the field of education is still limited, there is no android-based learning media at SMA N 1 Kapur IX. Based on the problem, the author designs ICT learning media so that it can be utilized validly, practically and effectively. The method used is Research and Development (R&D) with the PPE development model which consists of: Planning, Production, Evaluation. The resulting media was tested for validity, practicality and effectiveness using a product assessment questionnaire. The research results are presented in the form of ICT learning media accessed by android. The validity test of four experts resulted in a value of 0.89 which indicates validity. The practicality test involving three experts resulted in a score of 0.97 with a very high category. The effectiveness test, with one teacher and 31 students, produced a coefficient of 0.88 with a high effectiveness category.

Abstrak

Penelitian ini dilatarbelakangi oleh permasalahan yang ditemukan setelah wawancara langsung dengan guru mata pelajaran TIK di SMA N 1 Kapur IX Bapak Diki Putra Indri S.Kom pada tanggal 26 November 2022 dan 11 siswa. Berdasarkan wawancara tersebut, penulis mengidentifikasi masalah yaitu terganggunya proses pembelajaran akibat pemadaman listrik, banyak siswa yang sudah memiliki android namun pemanfaatannya dalam bidang pendidikan masih terbatas, belum adanya media pembelajaran berbasis android di SMA N 1 Kapur IX. Berdasarkan permasalahan, penulis merancang media pembelajaran TIK agar dapat dimanfaatkan secara valid, praktis dan efektif. Metode yang digunakan adalah Research and Development (R&D) dengan model pengembangan PPE yang terdiri dari: Perencanaan, Produksi, Evaluasi. Media yang dihasilkan diuji kevalidan, kepraktisan dan keefektifannya menggunakan angket penilaian produk. Hasil penelitian disajikan dalam bentuk media pembelajaran TIK yang diakses dengan android. Uji validitas empat orang ahli menghasilkan nilai 0,89 yang menunjukkan kevalidan. Uji kepraktisan yang melibatkan tiga orang ahli menghasilkan skor 0,97 dengan kategori sangat tinggi. Uji efektivitas, dengan satu guru dan 31 siswa, menghasilkan koefisien 0,88 dengan kategori efektivitas tinggi.

INTRODUCTION

As the name suggests, "learning media" refers to any form of media that can be utilized for educational purposes to engage and captivate students in the teaching and education process(Faqih, 2021). Students success in understanding the material presented in the classroom can be directly attributed to the utilization of engaging educational resources that have the potential to increase student enthusiasm and push towards the learning process. Educational media serves as a tool for teachers, reinforcing the strategies they are already implementing in the classroom (Fameska et al., 2023).Learning success is possible with the help of learning media(Ikhbal & Musril, 2020).

Educators can choose from a variety of learning media, such as images, video, audio, and others, to convey the intended message of the lesson to their students. If the object is believable, interesting, and fits a typical set of functions, then students can gain knowledge just by observing it(Gusman & Nurmalina, 2021). This means that Android-based media is a viable option for educational purposes. To find out how to utilize or improve the characteristics of Android owned by students so that it can be used for learning rather than just playing games or browsing social media. Based on the author's interview with students at SMA N 1 Kapur IX, almost all students have an android. Android utilization in learning is still limited as it is only used for searching the internet. The integration of Android-based learning media into learning has not been realized at SMA N 1 Kapur IX at this time.

Based on the results of the author's interviews with ICT subject teachers and 11 students at SMA N 1 Kapur IX, the author can conclude that in the learning process teachers use computers, projectors and the internet. When the media cannot be utilized, for example because the electricity goes out, but the problem that often occurs in teaching and learning activities is that the projector and computer cannot be used. Then another obstacle is the lack of computer equipment available in the computer laboratory such as 35 students in the class while the number of computers available is only 30 as a result there are several students who practice together.

The Smart Apps Creator (SAC) program was used in the creation of this Android-based educational media. Smart Apps Creator (SAC) is a desktop application for developing apps for iOS and other platforms without the need to write any code. Files can be saved in HTML5, exe, or apk format with this program. Since SAC does not consume data packets while learning, it is a viable option when not connected to the internet. The program is useful because it can be used at any time, even in places where there is no internet access or phone service(Faqih, 2021). With the background mentioned above, the author expresses interest in conducting research with the title "ICT LEARNING MEDIA DESIGN USING SMART APPS CREATOR AT SMA N 1 KAPUR IX".

METHODS

1) Type of Research

   The researchers in this study used a methodology derived from the research and development domain, commonly referred to as R&D. Research and development (R&D) is a strategic approach to conducting research aimed at the creation and evaluation of product effectiveness(Fransisca & Putri, 2019). Research methods used to produce certain products, and test the effectiveness of these products(Putri et al., 2023).Product development using this research strategy usually involves several iterations in which the product is refined based on established standards and criteria before finally giving birth to a completely new version of the product.

2) Development Stage

The research that has been conducted, researchers use Richey and Klein's development model, namely PPE. The PPE model for media development can be broken down into three distinct phases:

Planning, is the process of preparing for the creation of the product. The act of creating a physical object from a drawn blueprint is known as production or manufacturing. Evaluating how well the produced item matches the specified criteria is *evaluation*(Fransisca & Putri, 2019).

The following are the details of the stages in developing the PPE model.

a) Planning

The activity of making a design of the product to be made or called Planning is an initial literature search activity. The initial literature search contains activities in making product plans ranging from determining classes, determining materials, determining learning objectives, to product design.

b) Production

After the planning stage, the next stage is the production stage. Making learning media using *smart app creators in* accordance with class XI ICT subjects SMA N 1 Kapur IX is one of the actions taken at this stage, adding questions about class XI ICT material. Then the result of this stage is in the form of ICT learning media that can be accessed using Android.

c) Evaluation

The evaluation stage consists of several activities, including:

a. Testing

The testing procedure uses *black box*. *Testing* in which the input and output of the software are directly observed is called black box testing or behavioral testing. The functional specifications of the program can be tested by the tester by defining a set of input conditions. Before being released to the public, educational materials must go through this type of testing to identify any issues.

b. Validity Test

Before conducting tests on learners, the current validity stage aims to assess the feasibility of recently developed educational media products. The teaching materials that have been created undergo a validation and feedback process that involves the expertise of someone who has expertise in the fields of materials, linguistics, and media. The current research stage uses a validity questionnaire instrument.

The questionnaire responses obtained from the validity test were analyzed using the Aiken's V statistical formula which is used in the following way(Fransisca & Putri, 2019):

$$V=\sum s/[n(c-1)]$$

Table 1. Criteria for Determining Aikens V Validity (Ramadani & Efriyanti, 2022)

Percentage %	Criteria
0,6<	Invalid
>=0,6	Valid

a. Practicality Test

The quality of the learning product should be established once its validity has been established. The results of user or user evaluations are used to establish practicality. A product passes the practicality test if it is not difficult for the average person to understand and use.

When discussing practicality in the context of development research, it is important to consider whether experts and practitioners agree that the developed model can be used theoretically in the field and whether the model has reached a "good" level of implementation. The kappa moment was used to analyze responses to a questionnaire on product usability as follows(Ramadani & Efriyanti, 2022):

$$K=(p-pe)/(1-pe)$$

Table 2. Criteria for Determining the Practicality of Moment Kappa

Interval	Category
0,81 - 1,00	Very High
0,61 - 0,80	High
0,41 - 0,60	Medium
0,21 - 0,40	Low
1,01 - 0,20	Very Low
≤ 0,00	Not Practical

b. Effectiveness Test

ICT learning media that have been tested for validity and practicality by experts were then tested on a limited basis to ICT subject teachers and students of SMA N 1 Kapur IX who acted as respondents. Respondents evaluated the efficacy of the study by completing a pre-designed questionnaire. The purpose of this phase is to collect comments and ideas from respondents on how they can improve their use of learning media. Their feedback will be used to make adjustments to the product and ensure that it meets users' needs.

The analysis was conducted on questionnaires filled out by subject teachers, students, and lecturers to assess the effectiveness of the media. Researchers analyzed the effectiveness test questionnaire using a statistical formula known as the G-Score developed by Richard R. Hake(Ramadani & Efriyanti, 2022):

$$<g> =((\%<sf>-\%<si>))/((100-\%<si>))$$

Each indicator on the test sheet must meet the following criteria [42]: "High-g" The effectiveness of a system can be said to be high if (<g>) > 0.7

"Medium-g" effectiveness is considered medium when the value is 0.7 > (<g>)

> 0.3

"Low-g" effectiveness is considered low when (<g>) < 0.3

RESULT

The aim of this research is to develop educational media in its final form. The current stage of the research process involves utilizing the R&D research model along with Richey and Klein's development model, also known as the PPE model. At SMA N 1 Kapur IX, researchers used the *Smart Apps* developer to create educational media for ICT subjects, with the following procedure:

1. Planning

   In the planning stage is the planning stage of the learning media. In this phase, decisions about product features and specifications are made. The product of SMA N 1 Kapur IX's smart apps creator is ICT learning media.

   a. Initial research

      1) Literature Study

         The study relies heavily on books and scholarly journals published on the subject matter. In addition to traditional print sources such as books and journals, students of ICT-related subjects can also benefit from learning the theories and concepts behind the creation of learning materials.

      2) Field Study

         To collect data for this study, the author conducted interviews regarding ICT learning media. In this case, the author interviewed an ICT educator and eleven students majoring in ICT/I at SMA N 1 Kapur IX.

         The author concludes that computers and projectors are the learning media used for ICT subjects from the responses to the interviews. The obstacle that often occurs in the media used by teachers is the frequent occurrence of power outages resulting in the media used cannot be used so that the learning process does not go well. Then another obstacle is the lack of computer equipment in the computer laboratory room such as 35 students in the class while the number of computers available is only 30. Meanwhile, ICT learning media using *smart apps creator* which can be used via *android* gets a good response by teachers and students. This learning media design is designed using *smart apps creator software* as the main software. To support the design of this learning media, the *Canva* application is used.

         In making this learning media using *fishbone diagram* analysis. Japanese national Kaoru Ishikawa is credited with developing the *Fishbone diagram* as a teaching tool. A cause and effect diagram, also called an Ishikawa diagram, is a *Fishbone diagram of a* fish(Ramadani & Efriyanti, 2022). The use of *Fishbone diagrams* to help figure out what might be happening and how to fix it. Identify the underlying cause, and then discuss some of the consequences. When problems arise during activities using this method, all participating students have the opportunity to provide input and suggestions for solutions. *Fishbone diagram* is used to analyze the following factors when creating learning media:

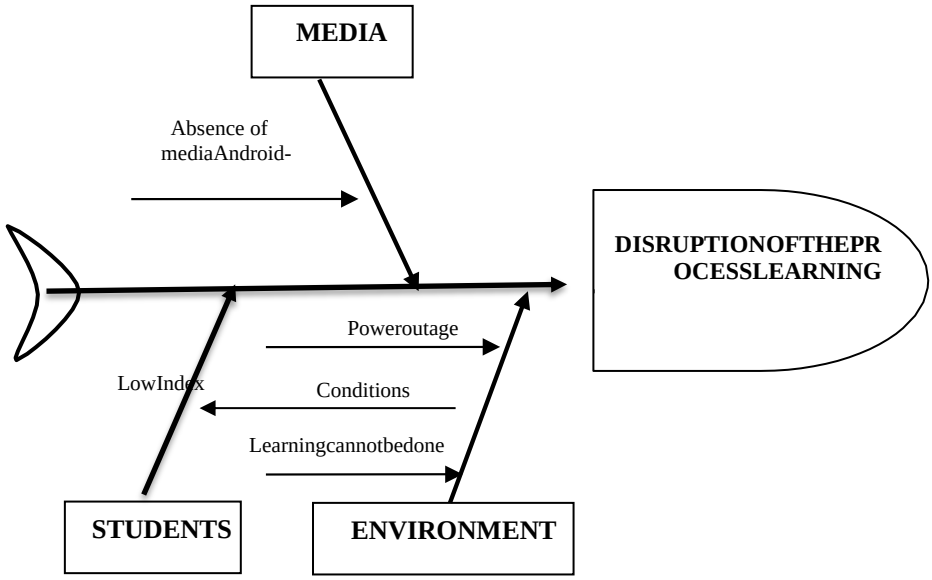

Figure1 *Fishbhone Diagram*

Based on Figure4.1 above, it can be explained that why the disruption of the learning process of ICT subjects at SMA N 1 Kapur IX, the cause is apower outage which results in the learning process cannot be carried out. This requires the author to find asolution to the problem, namely finding new learning media that is considered to attract students' interestin participating in the learning process.

b. Design

1) Navigation Structure Design

a) Menu Navigation Structure

The menu navigation structure, or menu flow, used as the ICT learning media design is depicted in the figurebelow:

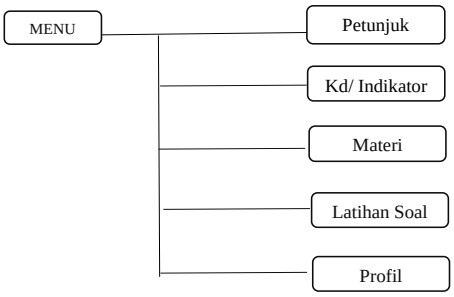

Figure 2 Material Navigation Structure

The navigation structure described in Figure 4.2 illustratesthe arrangement of elements when entering the main menu. Some elements contained in the system include the guide button, kd/indicator, material, practice questions, and profile.

b) Material Navigation Structure

At SMA N 1 Kapur IX, the navigation structure material is the flowof information presented in the ICT learning media. The navigation structure of the ICT learning media design is depicted in the figure below:

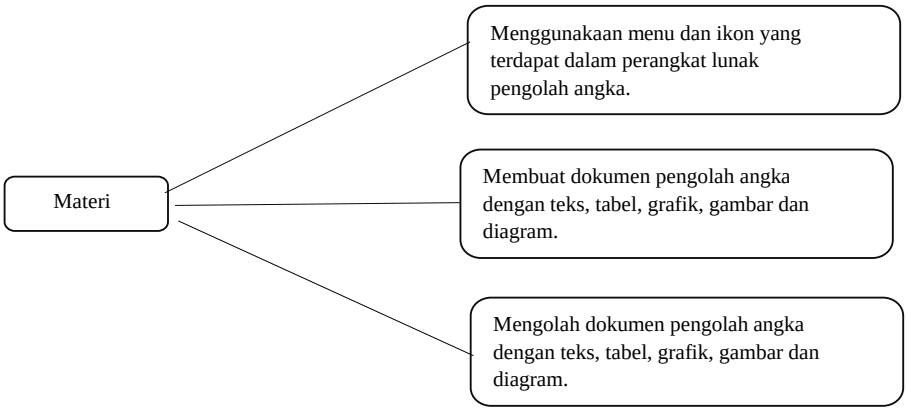

Figure3 Material Navigation Structure

2) *Storyboard* Design

The presentation of educational media is often planned with the helpof *storyboards*. A synopsis of the scene, visual form of design, sound,and description of the *storyboard* layout*. The* table below provides a basic outline for a *Storyboard*:

Table 3. Learning Media Storyboard

Scane	**Description**
*Scane*1	Intro
*Scane*2	Menu
*Scane*3	Instructions
*Scane*4	Kd/Indicator
*Scane*5	Material
Scane6	Practicequestions
Scane7	Profile

The above *storyboard for* each menu can be further developed in the following way:

1. In *scane*1there is an opening*scane* for learning media
2. In *scane* 2 there is a main menu that describes a menu in which there are sub menus such as instructions, kd/indicators, material, sample questions and profiles.
3. In*scane*3 there is an instruction menu that displays instructions on the function of the buttons.
4. In the fourth *scene* there is a kd/indicator menu that displays the kd/indicator display contained in the learning media.
5. In *scane*5 there is a material menu that displays ICT

learning materials that are in accordance with thekd /indicator

6. In *scane 6* there is a practice question menu that displays questions that are in accordance with the material.
7. On *scane* 7 there is a profile menu that displays the profile of the learning media design maker.

3) *Interface* Design

This teaching media has been developed for SMA class XIsemester two. The learning media design is made simple and can beaccessed on *android* so that students are interested in learning. Here isan example of ICT learning media design.

Table4 *Interface Design*

Scane	***Visual***	***Image***	**Audio**
1	Media Pembelajaran TIK	*Background*	*Music*
2	*Music on/of* Petunjuk KD/Indikator Materi Latihan Soal Profil	*Background,* Tombol	*Music*
3	Petunjuk Kembali	*Background,* Tombol	*Music*

4	KD 3.6 KD 3.7 KD 3.8 Kembali	*Background, Music* Tombol
5	Materi 3.6 Materi 3.7 Materi 3.8 Kembali	*Background, Music* Tombol
6	Skor Latihan	*Background, Music* Tombol
7	Profil Kembali	*Background, Music* Tombol

2. Production
   a) Background and Object Creation

      Making objects in the form of images - the images used are made using the help of Canva. The objects that have been created are then saved in "png" format. Objects are created by adding triangular and line-shaped elements and then adjusting the color.

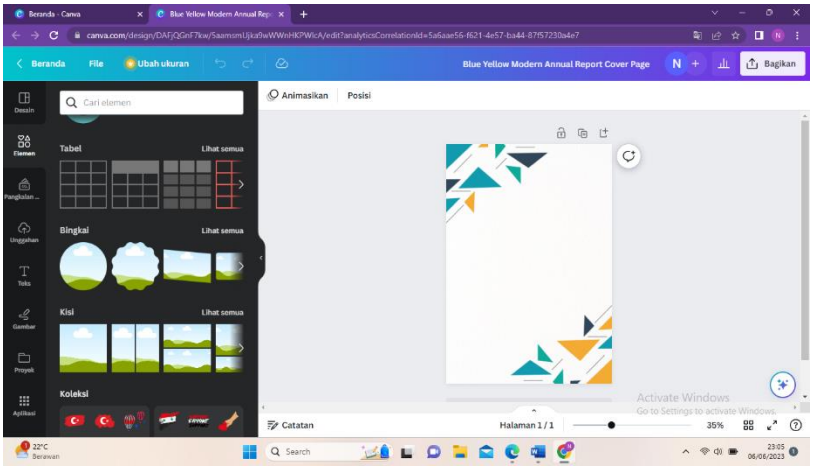

Figure 4 Creating Objects Using *Canva*

Objects are created by adding wave elements and adding *background* colors.

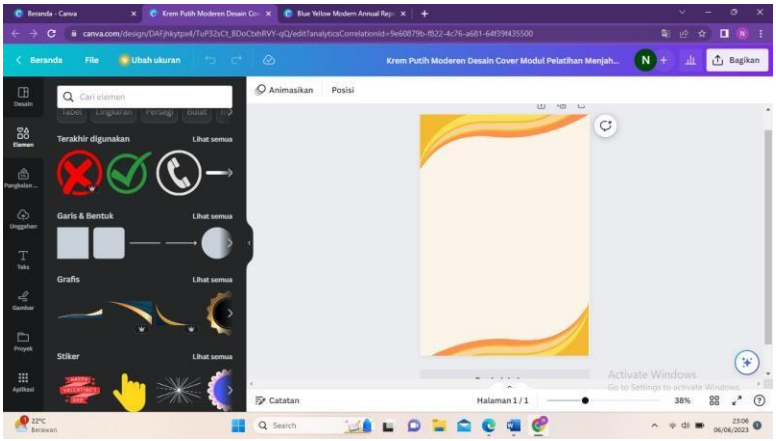

Figure 5 Creating Objects Using *Canva*

b) Main Menu Page Creation

Page creation for the main menu is made using *smart apps creator* by inserting objects that have been made with *canva* into the main menu *layout*. Navigation buttons that have been made using *canva are* also inserted and the layout is adjusted based on the previous design.

The first step in making the main menu page is to *insert* all the objects that have been designed using *Canva* by clicking the *insert* sub menu then *image* Please select the desired image to be inserted and then press *open and* adjust the image layout according to the *interface* design that has been made. After all objects are inserted then add commands to each instruction button, kd / indicator, material, practice questions, profile by clicking the *insert* sub menu then add *hotspots*. After each menu has been added *hotspot* then add commands by clicking the *interaction* sub menu, click *touch,* on the *object* select the *hotspot you* want to add commands to then click *switch page and* select the destination page.

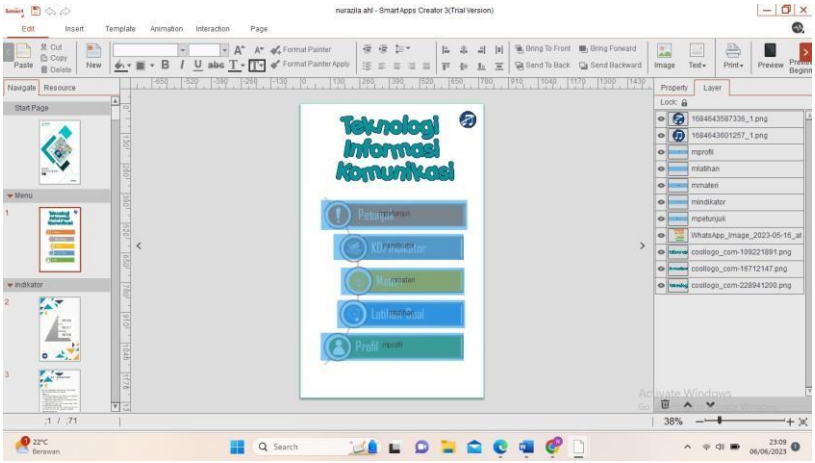

Figure 6 Main Menu Page Creation

c) Learning media display

1) Main menu display

The main interface page displays various interactive elements in the form of buttons that provide access to various sections, including instructions, kd/indicators, material, practice questions, profile, backsound on/off. Each button goes to its respective page such as the instructions button to the instructions page, kd/indicators button to the kd/indicators page, material button to the material page, practice questions button to the practice questions page and profile button to the profile page.

Figure 7 Main Menu Display

2) Instructions menu display

The instructions menu contains instructions for using the buttons available on the learning media.

Figure 8 Display of Instructions Menu

3) Kd/indicator display
   The kd/indicator menu contains kd, indicators and learning objectives starting from KD 3.6, KD 3.7, KD 3.8.

Figure 9 Kd / Indicator Display

4) Material display
   On the material display menu there is material in accordance with the syllabus and lesson plans, namely KD 3.6, KD 3.7, and KD 3.8.

Figure 10 Material Display

5) Exercise questions display
The practice questions menu consists of objective questions that are in accordance with the material given in the material and there are scores obtained by students.

Figure 11 Problem Exercise Display

6) Profile view
On the profile menu there is an author profile.

Figure 4.12 Profile View

3. Evaluation
1) Testing

Testing is the process of executing the media to find errors. Ifsomething goes wrong, the media is fixed, and if everything goessmoothly, the next step is media distribution. To detect bugs in the functionality, interface, data structure, and performance of the media, testers use a *blackbox* approach.

In the *testing* phase of the *blackbox* approach*, the* software interface is tested to ensure that the media functions operate as expected (i.e. input is received correctly and output is correct) and the integration works properly.

Table 5 *Testing*

No.	Data	What to expect	Observation	Conclusion
1	*Scane*	Display the *scane*	Can display the *scane*	Success
2	*Text*	Display*text*	Can display *text*	Success
3	Image	Display image	Can display images	Success
4	Video	Display video	Can display videos	Success

Various tests show that the ICT learning media for SMA N 1 Kapur IX made with *smart apps creator* works as expected. At

this stage of *testing there* are no links that do not run well, all links tested are successful.

2) Product validation test results

The assessment of the feasibility of giving questionnairesto ICT learning media at SMAN 1 Kapur IX was carried out usingthree questionnaires, specifically on the dimensions of content,language, and visual presentation. For the material aspect, itwas conducted by one teacher who teaches ICT at SMA N 1 Kapur IX, then, the language questionnaire was conducted by an Indonesian language instructor, while the design aspect was conducted by a pair of lecturers. The material validation questionnaire sheet resulted in a score of 0.94 which was assessed by Mrs. Niska Dugus Selli S.Pd. Similarly, the linguistic questionnaire was evaluated by Mrs. Piwi Sartika S.Pd and scored 1. The design questionnaire was analyzed using the Aiken statistical formula, obtaining a final score of 0.89. Dr. Supratman Zakir M.Pd, M.Kom and Mrs. Gusnita Darmawati S.Pd, M.Komeach contributed 0.75 points to this score. This indicates that the learning media has high validity.

3) Product practicallity test results

Three people, including one computer lecturer and two ICT teachers, participated in the practicality test which yielded results. After calculating the practicality sheet from the computer lecturer, Mrs. Dr. Liza Efriyanti S.Si, M.Kom, the two ICT subject teachers, Mrs. Niska Dugus Selli S.Pd and Mrs. Yelmi Septria S.Pd.I, scored 0.98 and 0.98, respectively. The kappa moment formula used to calculate the final score is 0.97; the practicality value is in the range of 0.81 - 1.00 indicating a very high category.

4) Effectiveness test results

The high effectiveness criteria resulted in a final score of 0.97 for the product test conducted with one ICT subject teacher, Mr. Diki Putra Indri M.Kom, and thirty-one students from class XI MIPA 3. Using data from only one ICT subject teacher and thirty-one students, we achieved an overall effectiveness score of 0.93, placing us squarely in the top quartile.

DISCUSSION

This research uses smart apps creator to produce information and communication technology (ICT) learning media for class XI semester 2 at SMA N 1 Kapur IX. ICT learning media was developed to help students who take ICT subjects. This learning media provides several menus, namely instructions, kd/indicators, material, practice questions, and profile.

This ICT learning media designed to support learning is expected to make students more enthusiastic in learning ICT, can improve students' ability to understand the subject matter, and also serves to arouse students' interest in ICT-based teaching. Attached to this thesis is a questionnaire the author developed and administered to collect data on the reliability, applicability and efficacy of the ICT teaching materials. This data supports the research findings.

This study aims to compare research conducted by Salman Alfarisi Salimu and Agustinus Eko Setiawan in 2022 entitled "Designing Android-Based Learning Media in ICT Subjects" with existing relevant research. Both studies focus on the development of ICT learning media using the Android platform. There are differences in the location of the author's research conducted at SMA N 1 Kapur IX in class XI compared to previous research conducted in class X. In addition, the methods used in both studies are different. Furthermore, the second research conducted by Silvia Afrianti and Hari Antoni Musril in 2020 with the title "ICT Learning Media Design Using Autoplay Media Studio 8 Application at SMA N Muhammadiyah Padang Panjang". This research produces learning media in the form of video tutorials using autoplay. This research has similarities, namely the same - both produce ICT teaching media, the difference lies in the application and research methods used.

Furthermore, the third research by Julsyam Fitra, Hasan Maksum in 2021 with the title "The Efficacy of Utilizing Android-Based Mobile Learning Media in Poetry Education". The research that has been done certainly aims to develop interactive learning media that utilizes Powtoon, which can be used by teachers in conventional classroom environments and digital learning environments. This research both discusses learning media in ICT subjects, the difference is in the applications used.

Furthermore, the fourth research conducted in 2022 by Anggi Fradila, Liza Efriyanti, Supratman Zakir, and Hari Antoni Musril entitled "Adobe Animate-Based Learning Media Design in Grade XI ICT Learning at SMAN 4 Pariaman". The purpose of this study was to develop a reliable, useful, and efficient blueprint for Adobe Animate-based ICT learning support media. Similar to the process of making ICT learning media, the difference lies only in the tools and techniques used.

CONCLUSION

The author draws the conclusion that ICT learning media is designed using smart apps creator, which produces apk files that can be loaded on Android and used by teachers and students anytime and anywhere, based on the results and discussions that have been presented in the previous chapter. This aims to produce learning media that is valid, effective and practical.

The results of the validity test were carried out with four testers using the Aiken's V formula obtained a final value of 0.89, so that the learning media was declared valid. The results of the practicality test were carried out with three testers using the kappa moment formula and obtained a final value of 0.97 which is included in the very high category and lies between 0.81 to 1.00 with. The practicality test was conducted by one ICT teacher and thirty-one students with a score of 0.93 on a high effectiveness scale.

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