

Designing Android-Based Learning Media for Student Engagement Using the *ISpring-Suite 10* Application

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Abstract: This study aims to apply Android-based learning media to high school students in grade XI using the spring application. The method used in this study uses the ADDIE method, which aims to create, develop, and produce a product. The results obtained from this study indicate that this Android application-based learning media is designed using Canva, Microsoft PowerPoint, Ispring Suite 10, and Website 2 APK builder, which are presented in several menus on the main menu page, namely learning objectives, learning materials, and evaluations. The learning objectives menu has several objectives for students studying the mechanical wave material. In the learning material menu, there are 3 choices of material presented for students to research and accompanied by animation. In the evaluation menu, there are 5 multiple-choice questions. The application of learning media on the mechanical wave material based on Android can help students, especially grade XI students, understand the material and make it easier for students to learn anywhere and anytime without having to bring books and not requiring an internet connection.

Keywords: Canva, Microsoft power point, Ispring suite 10, website 2 Apk builder, mechanical wave

Introduction

Generally, the learning process occurs through face-to-face activities between teachers and students in a learning environment (Halik & Aini, 2020; Kurniasari et al., 2020; Nurmaya et al., 2022). The learning process is carried out by inviting students to understand the material and concepts with the help of various learning facilities (Yuanta, 2020). However, the learning process cannot run normally during the current pandemic due to the implementation of social distancing (Indrawati, 2020). This policy requires all people to limit activities outside the home, including teaching and learning activities (Simanjuntak & Kismartini, 2020). With this policy, all schools are closed, and learning is carried out through an online learning model (Siregar, 2021). Online learning is one of the learning methods carried out using technology

(Herlina, 2020; Jayul & Irwanto, 2020; Salsabila et al., 2020; Zhafira et al., 2020).

Integrating technology into learning is one of the strategies to achieve learning goals because technology is no longer considered something new. This information is the fact that the use of mobile devices (smartphones, PDAs, or tablets) is familiar to students. Most high school students have cell phones that have more up-to-date features. Android is a proliferating smartphone today, so the development of learning media using Android is quite promising (Kartini, 2020). The development and advancement of technology in the modern era can penetrate the field of education, one of which is the Android application, because many students are currently using gadgets. Technological developments can be used to create learning media (Labibah, 2019).

Professional teachers must be able to use various learning media around them. According to

Munadi (2008), to realize quality education, one of the things that must exist is quality teachers. These qualified teachers can realize national education goals, namely those with pedagogical competence, personality competence, social competence, and professional competence (Law of the Republic of Indonesia No. 14 of 2005 concerning Teachers and Lecturers). For example, in carrying out pedagogical competence, teachers must have methodological abilities in designing and implementing learning. This includes mastery in the use of learning media (Yohanes, 2021).

Learning media is a tool to help teachers facilitate the delivery of material that is prepared in a planned manner, attracting and stimulating students to improve their understanding so that the goals that have been set can be achieved (Tazkia, 2012). The resulting media is monotonous with text and contains audio/visual multimedia elements and even animations, making it easier for students to understand the material. Puspitarini (2019) that the benefits of learning media include: (a) By using learning media, the learning process will be more interesting, so it is more interesting. It can motivate students to learn; (b) clarify the learning material so that students can easily understand and master the learning objectives; (c) The delivery of material in the learning process sometimes encounters several obstacles. Some obstacles teachers face are boring learning methods, and the media used not being attractive. One way to overcome this problem is to use technology as a medium in the learning process to show the feasibility of videos to motivate students. By using learning media, the learning process becomes more varied. The material is not only delivered orally so that students do not get bored quickly and are more effective and efficient; and (d) Students listen to the material delivered by the teacher and do more learning activities such as observing, doing, demonstrating, and others. The specialty of learning media can encourage experiential classrooms to foster student learning engagement.

Mobile learning is an exciting learning medium because students can use it anytime and anywhere. Mobile learning-based learning media is a unique learning medium because learning can be accessed

anytime and anywhere. This will foster students' interest in being able to pay attention to the material, make students permeate, and encourage the spirit of learning for lifelong learning (Lenggis & Supriyanto, 2016).

Android provides an even approach to application development, where one Android application that is formed can run on various features that use the Android system (Dewi, 2021). Android provides an open platform for developers to create apps. Android is a mobile device platform that provides developer development convenience for users, as expected. The Android system that supports the development of the application is expected to produce representative mobile learning-based learning media (Amirullah, 2018). Destiniar (2020) said that android-based learning media was declared feasible to be implemented in students' learning process. Android is inseparable from its open nature, making it easier for users to access various applications for free and pay (Tanjung, 2021). Currently, there are many applications provided by the Play Store that are easy for users to download onto their smartphones. However, until now, few physics learning media applications about mechanical waves have been available on the Play Store.

Mechanical waves are one of the essential materials in the introductory physics curriculum at the university level. In physics, few materials are based on mechanical wave materials, including electromagnetic, light, and sound. Although mechanical waves are a phenomenon that often occurs in daily life, students still find it challenging to understand this material (Küçüközer, 2010). According to Kennedy & DeBruyn (2011), the difficulty is understanding the concepts of fast propagation and superposition of waves and the motion of particles in mechanical waves. A mechanical wave is a wave whose propagation requires a medium. An example of a mechanical wave is a sound wave, a longitudinal wave (Sutrisno, 1979). The source frequency determines the propagation speed of a mechanical wave in a solid medium, the characterization of the material, and the environmental conditions. Every rigid body always has a self-frequency, and its harmonics are caused by the characterization of a

material, such as molecular density, porosity, and so on (Sutopo et al., 2009).

These mechanical waves are difficult for students to understand directly with simple methods and media. There needs to be a media with the development of applications from concepts that can describe more interesting mechanical geometry to facilitate students' understanding. Therefore, the media selected in this development research is based on an Android application entitled development of android-based learning media using *the i-spring suite 8 application* on mechanical wave materials for high school students class xi considering that the Spring Suite *application* has many features in it so that it will be helpful in the Physics learning process for students.

Materials and Methods

This research is a type of development research. The precision of the selection of the development model will result in the right product. One of the characteristics of the accuracy of the developed product is that the product can be appropriately applied and benefits its users. One of the media that pays attention to the primary stages of media development design that is simple and easy to understand is the ADDIE model (Purnamasari, 2020). ADDIE is a paradigm for developing a product applied to design learning. Designing learning using the ADDIE approach to improve students' critical thinking skills to become ethical librarians 102 by preparing a learning environment that can facilitate complex learning by involving the learning environment optimally by responding to many situations, interaction in context, and interaction between contexts (Dewi, 2018). ADDIE stands for Analysis, Design, Development or Production, Implementation or Delivery, and Evaluations (Anwari, 2020). The ADDIE model uses five development processes/stages, but the author uses only three stages in this learning medium, namely:

Stage of analysis

The first stage of the ADDIE model is the analysis stage. The purpose of the analysis stage is to find out the initial needs in developing this learning media. Development material

identification activities are carried out at this stage according to the curriculum and syllabus for teaching high school materials. In addition, a characteristic analysis was carried out by analyzing the syllabus in the applicable curriculum and teaching subjects.

Stage of development

The stage where the design that has been made is realized in natural form. The products are arranged according to the design made in the previous stage. This means that this stage is a stage in product manufacturing. The product design uses PowerPoint, Ispring, and Web, two APK builder applications. The elements collected in the design stage are assembled into a complete product according to the user interface created in the design stage.

Creating Android application-based learning media on *the website two APK builder* applications only consists of 6 steps. The process of making the application is as follows: (1) Choose a local HTML website because our published prototype is an HTML 5 file; (2). Then enter the name of the application, "Mechanical Wave," in the App Title column; (3) Choose an external storage location when the app is finished; (4) Inserting a logo for Mechanical Wave applications; (6) Insert the raw file of the published media application into an HTML file; (7) Click on Generate APK; after that, wait for a few minutes, and the application is finished being created. Furthermore, the file that has been created from the website 2 APK builder is installed on Android and will become an Android application

Results and Discussion

The product to be developed is an Ispring-based Android interactive application that can help educators and students learn. The following is the development plan for Android-based learning media: (1) Making a *storyboard* is a design or initial description of the learning media to be mad; (2) It was creating learning media using *Ms. PowerPoint* based on the *storyboard* that had been made; (3) Publish the file to HTML 5 using *Ispring*; (4) It turned HTML 5 files into applications that can be

accessed through Android using the Website 2 APK builder. The results of the design of android-based physics learning media on the "Mechanical Waves" material are as follows:

1. Part One



Figure 1. Home Page on the App: The start page or the initial display on the learning media has a "start" button to start the application.

2. Part Two



Figure 2. Main Menu : The main menu page contains sub-menus in the learning media. This page contains a list of menus that users can choose from.

3. Part Three



Figure 3. Learning Objectives: This page contains the learning objectives to be achieved.

4. Part Four



Figure 4. Sub Chapter Material: A page that contains sub chapters of material that can be used by users.

5. Part Five



Figure 5. Wave Properties and Animation: The material page contains material that respects the properties of waves..

6. Part Seven

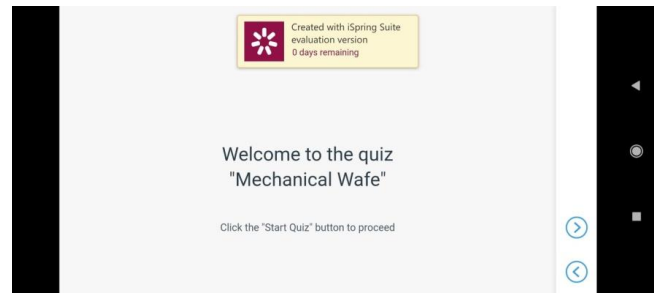


Figure 6. Cover Quiz :The start page before starting the Quiz.

7. Part Eight

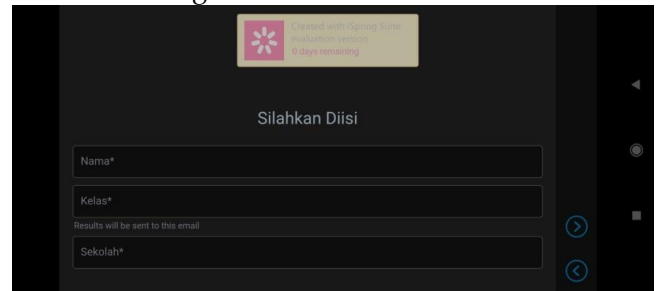


Figure 7. Identity Page: This page contains the identity of the student that must be filled in before answering the quiz questions.

8. Part Nine

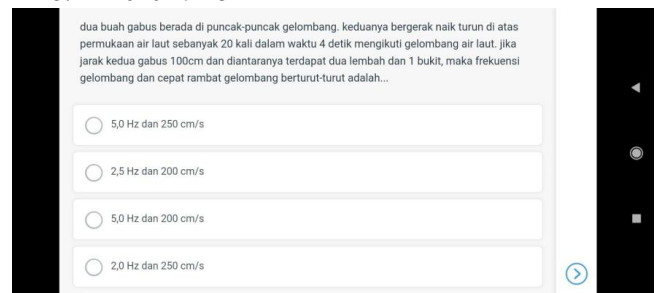


Figure 8. Quiz Questions: Quiz question pages, quizzes in the form of multiple-choice questions where students just click on the answer that they think is correct

Discussion

The researcher designed an interactive learning media application that was submitted to high school students in grade XI as an Android application. This media was built to make it easier for students to learn anywhere and anytime without carrying books. This encourages students

to use study time other than at school. Learning using Android-based media can attract students' attention. Students become interested in the various creative and interactive animations and displays created through the medium. Android-based media is developed in physics using the material "Mechanical Waves" for grade XI students. This media uses *the Ispring* application. *The ispring application* has a wide selection of features, one of which is the creation of quizzes that can make it easier for teachers to create Android-based learning media. In creating Android-based learning media, *ispring* is used, as are other applications such as *PowerPoint*, *Canvas*, and *Website Two APK builders* (NCTM, 2020). Based on the media analysis needed in the creation of Android application-based learning media, namely Microsoft PowerPoint to create a primary display of media, *ISpring Suite 9* to make the display of materials and quizzes more attractive, and *website two apk builder* to turn learning media into an android application which can later be accessed through an android smartphone (Destiniar, 2021).

Creating android-based learning media generally requires special skills, namely understanding programming languages. However, researchers use a more straightforward method in this research and development. The creation of learning media in this study uses Microsoft PowerPoint, which is then exported into HTML5 format using *the I-Spring application*. According to Sumargono et al. (2019), *I-Spring* can create a product that can support *effective e-learning* programs through integration with *I-Spring Quizmaker* and *I-Spring Kinestics*. *Ispring suite-10* software is also appropriate because it has many advantages, including creating types of learning content by combining quiz, video, voice, simulation, dialogue, interaction, and screen recorder features in one learning medium (Stevani, 2022). In this case, *the Ispring Suite 10* software can convert presentation files into flash files. Thus, *Ispring Suite 10* software is a platform that is very suitable for developing Android-based learning media (Umam, 2021).

One of the software teachers are familiar with in learning activities is Ms. PowerPoint, which can be integrated with *iSpring*. The integration of *iSpring* with Ms. PowerPoint will be beneficial for physics

teachers in creating learning materials. By using *iSpring*, students do not need to record the material delivered in class, and they can bring a teacher's PowerPoint presentation file that not only contains the lecture designed by the teacher before teaching but also contains a recording of the teacher's explanation, both visually and graphically. In addition to presentation materials, *iSpring* allows teachers to fill PowerPoint slides with quizzes or exercises, either in multiple-choice tests or essay tests. In the quiz questions, teachers can provide feedback regarding students' answers. The use of *iSpring* for the preparation of learning media has been carried out by Sastrakusumah et al. (2018), who stated that the application of interactive learning media assisted by *iSpring* presenters can improve the critical thinking skills of grade XI students.

The selection of Microsoft PowerPoint, which was upgraded through *I-Spring* and *APK Builder* in this research and development because it has several advantages, including easy and repeatable to use; in addition, the combination with *I-Spring* and *APK Builder* makes Microsoft PowerPoint livelier and more varied because it is exported into HTML5 format. This HTML5 format is the primary material used in Android applications. Converting HTML5 format into an Android application (apk) can be done using the *APK Builder* application (Handayani & Diar, 2020).

Website 2 APK Builder Pro is a software that allows users to convert files into Android applications easily. The *software* is a Java-based application designed to turn *an online HTML 5 website* into a mobile application (Ibrahim, 2019). Therefore, first, install Java before installing the website tool *two apk builder*. The *website 2 APK builder feature* contains a local HTML web that developers can fill in to create *PowerPoint* files and *Ispring Suite 10* into *APK* format. The advantages of *Website 2 APK Builder Pro* are that it is very responsive in HTML 5, can convert *PowerPoint ispring suite* ten files to *apk* format, is easy to operate on, and Android can be used offline (Endiawan, 2020). The creation of learning media in this study uses Microsoft PowerPoint, which is used to create a primary display and insert the material, which is then upgraded with *the I-Spring* application into HTML 5 format. The next step is to

convert HTML 5 into an Android application using the Website 2 APK Builder software. After being changed, it is only installed using a new Android smartphone that can be operated. At the design stage, the process of making the initial design of learning media called a *storyboard* is carried out. A *storyboard* is a plan or initial description of the learning media to be created. The *storyboards* included the start page, menu page, learning objectives, materials, quiz start page, student identity page, and quiz question page. In creating learning media, accompanying music or background sound is also added to make the learning media more enjoyable. The media also has learning videos that clarify or strengthen students' understanding of the material.

After the *storyboard-making* process is complete, the next stage is to create learning media with Ms. PowerPoint based on the *storyboard* that has been created. The result of the creation with Ms. PowerPoint will be called Prototype 1. After the creation of Prototype 1 with PowerPoint is completed, the file is published in HTML5 form. The results of Prototype 1 can be seen in Figure 1. Next, it converts the prototype one file in the form of an HTML5 file into an application that can be accessed via Android.

Conclusions

Based on the results of the research and discussion, it can be concluded that this study produces interactive learning media that can be used through Android smartphones in physics subjects with the subject of mechanical waves packaged in the form of an application (apk) that can be used without an internet connection or *offline (stand-alone)*. The development plan for Android-based learning media is to create a learning application that contains learning objectives, learning materials, teaching video animations, and learning evaluations. This android-based interactive learning media application has been designed and made using *Canva*, *Microsoft PowerPoint software*, *ispring suite 10*, and *the website2 apk builder*, which produces *output* in the form of an application so that it can be run on Android *smartphones*. The

creation of learning media in this study uses Microsoft PowerPoint, which is used to create a primary display and insert the material, which is then upgraded with *the application* into HTML 5 format. The next step is to convert HTML 5 into an Android application using the Website 2 APK Builder software. After being changed, it is only installed using a new Android smartphone that can be operated.

The application of learning media on android-based mechanical wave material can help students, especially grade XI students, understand the material and make it easier to learn anywhere and anytime without having to carry books or an internet connection. The resulting learning media products are image displays and button features that can be accessed as desired. Hopefully, this application can help teachers explain lessons, especially lessons related to mechanical wave material. Several obstacles are faced when developing Android-based learning media using Ispring. First, you cannot use the pro version of Ispring because of the limited cost, so there is still a watermark on the media. Second is the less stable network because the ispring application is an online application that can be used if connected to the internet. Another obstacle that can hinder the use of ispring learning media is the cost of accessing the internet. Android-based learning media needs to be implemented in the learning process because this media does not require an internet network and is very easy for learners to use.

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