

CHAPTER 2

LITERATURE REVIEW

2.1 Literature Review

In the context of this research and development, the analysis is carried out by studying related studies that have been carried out previously. This study with the title "Implementation of the ADDIE model in the development of android-based learning media in computer recognition learning" refers to previous studies related and explained based on (1) the problems raised, (2) research objectives, and (3) as well as research results:

Table 2. 1 Literature Review

No	Writer	Research Title	Method	Research result
1	(Khoir et al., 2020)	Development of Moodle-Based E-learning Learning Media in Research Methodology Courses	Research and Development (R&D) ADDIE development model	The resulting learning media is made with the help of the PowerPoint application as a material processor, Google slides as an editor for the created material file, and Moodle as an E-learning tool that will be used in learning activities.
2	(Suryadi et al., 2020)	Development of PMRI-Based Interactive Learning Media Using Macromedia Flash Professional 8	Research and Development (R&D) ADDIE development model	The result of this research is the creation of learning media using Macromedia flash PMRI is based on square and rectangular subject matter for grade VII SMP students.

Table 2. 2 Literature Review (Continued)

3	(Tampubolon, 2020)	Development of Interactive Game Media for Learning the Basics of Building Construction Techniques and Land Measurement in Vocational High Schools	Research and Development with the ADDIE development model	the results of this study based on questionnaire research on the media aspect obtained an average score of 4.05 in the good category. On the other hand, material experts get an average of 4.05 or good, and in the aspect of the content or get an average of 4.27 are very good. From the three assessments, it can be concluded that the learning media uses the Research and Development method.
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1. Research conducted by (Khoir et al., 2020) under the title "Development of Moodle-Based E-learning Learning Media in Research Methodology Courses" using research and development methods or Research and Development (R&D) with a 4D development model (Define, Design, Development, and Dissemination) (1) raises the problems that occur in research methodology courses or thesis preparation courses, where students lack the skills to put ideas into the thesis to be worked on, as well as lack of literacy and student experience in compiling scientific papers. In addition, from the analysis conducted with 32 students as respondents, it was found that 93.8% provided suggestions or suggestions for improvements in the learning process which were deemed less effective and innovative, namely by using the lecture method, so that many revisions occurred during the proposal seminar

according to data from the study program. (2) Therefore, this study aims to develop Moodle-based E-learning materials on research methodology subjects by using a more attractive media display, coupled with examples of certain questions and materials. (3) the results of the research carried out obtained a feasibility assessment from media experts and material experts of 78.4% (enough) and 81.54% (very feasible). From the results of the second feasibility test, it can be concluded that the use of the Research and Development (R&D) method is added with examples of certain questions and materials. (3) the results of the research carried out obtained a feasibility assessment from media experts and material experts of 78.4% (enough) and 81.54% (very feasible). From the results of the second feasibility test, it can be concluded that the use of the Research and Development (R&D) method is added with examples of certain questions and materials. (3) the results of the research carried out obtained a feasibility assessment from media experts and material experts of 78.4% (enough) and 81.54% (very feasible). From the results of the second feasibility test, it can be concluded that the use of the Research and Development (R&D) method

2. Research conducted by (Suryadi et al., 2020) with the title "Development of PMRI-Based Interactive Learning Media Using Macromedia Flash Professional 8" using the Research and Development (R&D) method of the ADDIE development model. (1) This research problem is based on concerns about the development of advanced technology, but it is not applied to the world of education because teachers or teachers have not been able to take advantage of existing technology. Currently, teachers only use print media or technology such as PowerPoint for PMRI subjects. (2) the purpose of this study is to determine the quality of valid and practical mathematics learning media and can present abstract material in the form of visualization, in the form of images, videos, animations, and sounds, which are by the PMRI approach which is closely related to everyday life. (3) The results of this study were PMRI-based interactive learning media which were assessed based on the validation of

material and media experts indicating that the media met the very valid criteria, with an average score of 4.22. Based on the practicality value obtained from the results of trials by teachers and students who got an average score of 4.45 with very practical criteria.

3. Research conducted by (Tampubolon, 2020) under the title "Development of Interactive Game Media for Learning the Basics of Building Construction Techniques and Land Measurement in Vocational High Schools" (1) raised the problem of learning methods that still apply the lecture method, as well as lack of interest or motivation. students in the learning process, the media used is still limited to blackboards and powerpoints, and teachers are not maximal in applying or utilizing technology in the learning process. (2) Therefore, this study aims to produce learning media for construction and soil surveying techniques in Vocational High Schools that are appropriate and toy the learning objectives. (3) then from the results of this study based on questionnaire research on the media aspect, an average score of 4.05 was obtained in the good category. At the same time, material experts got an average of 4.05 or good, and in the aspect of the content other a the n avge of 4.27, very good. From the three assessments, it can be concluded that the learning media using the Research and Development method with the ADDIE development model succeeded in producing appropriate learning media and in accordanith bythe learning media.

2.2 Research And Development (R&D)

Research and development is research that aims to produce a new product. In the world of education, new R&D products can be in the form of policies, learning models/media, applied technology, laboratory equipment, curriculum, modules, evaluation tools, etc. Research-based product development is generally carried out through product requirements analysis, product design, product design implementation, and evaluation. In each stage of development, the research process, research, and development methods are integrated according to the type of product being developed (Suryani & Rahayu, 2018).

2.3 ADDIE development model

The ADDIE model in designing a learning system using a systems approach is to divide the learning planning process into several steps, arranging the steps into a logical sequence (Januszkeski and Molenda 2008).

Developing a journal (Tegeh & Kirna, 2010:80) The research development model used in this study is the ADDIE model. The choice of this model is based on the fact that it is very easy to understand; In addition, this model was developed semantically and based on the theoretical basis of the developed learning design. This model consists of Analysis, Design, Development, Implementation, and Evaluation.

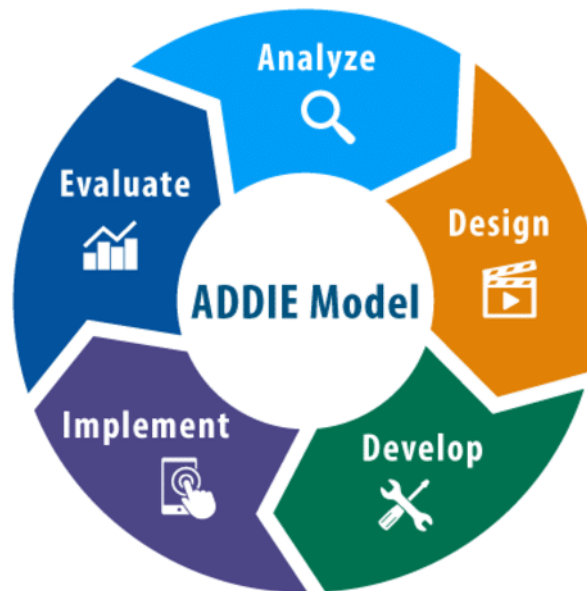


Figure 2. 1 ADDIE models

Source: (Dream, nd)

2.4 Android

Android is a mobile operating system; Android doesn't differentiate between core and third-party apps. The supplied application programming interface (API) offers access to hardware and data or system data itself (Ceryna Dewi et al., 2018).

Developed from the journal (Murya 2014,3), Android is a Linux-based operating system used for mobile phones such as smartphones and tablet

computers. Android provides an open platform for developers to create applications that are used by various mobile devices. Android has now become the most popular mobile operating system in the world. The development of Android can not be separated from the role of the giant Google. Android was originally founded by Andy Rubin, Rich Miner, Nick Sears, and Chris White in 2003.

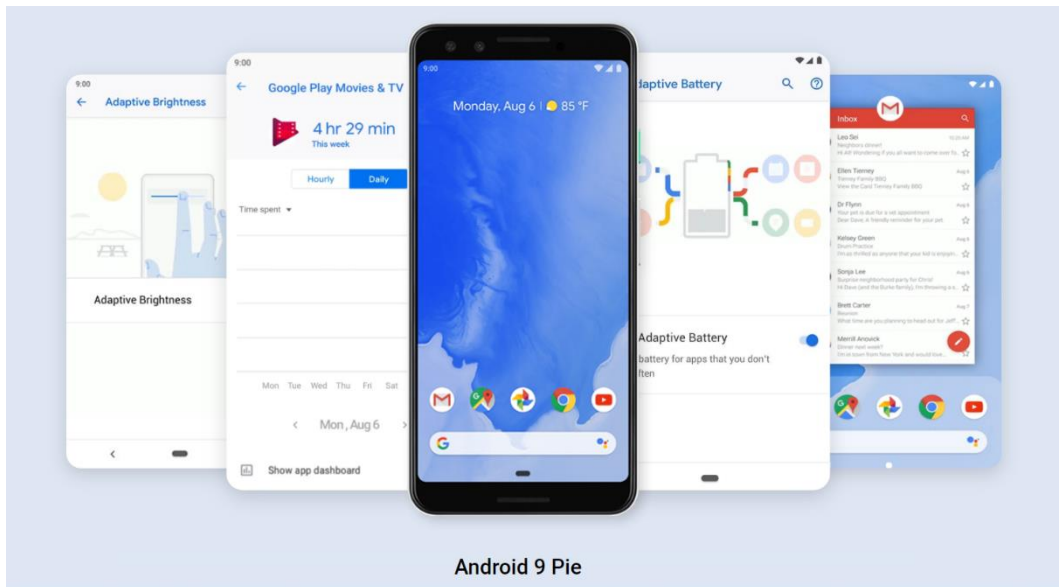


Figure 2. 2 Android Version 9.0 (Pie)

Source:(Android 9, 2021)

2.5 Unity

Unity is a widely used game engine, and Unity also provides game development features on various platforms, namely Unity Web, Windows, Mac, Android, iOS, Xbox, Playstation, and Wii. Unity also provides a wide selection of programming languages for developing games, including JavaScript, C#, and NoScript. Although three programming languages are provided, most developers use JavaScript and C# as the languages used to develop their games. Unity supports both 2D and 3D game creation but places more emphasis on 3D. Game development places more emphasis on design and visual appearance than programming (Hanggoro et al., 2015).

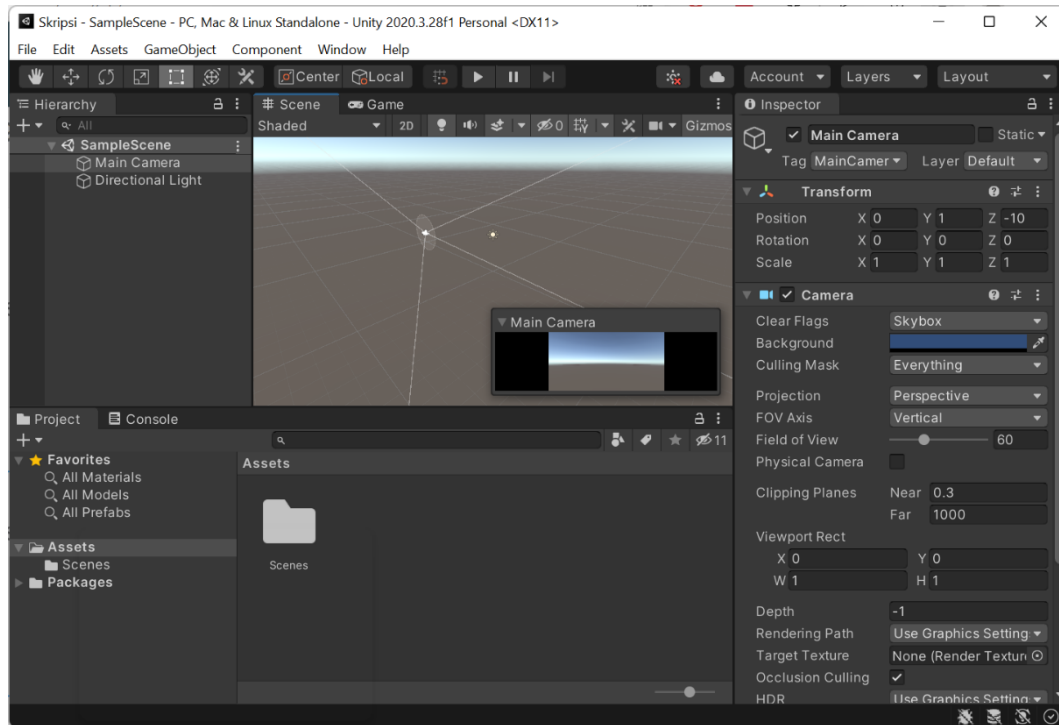


Figure 2. 3 Unity

2.6 Visual Code Studio (Code VS)

Visual studio code is a lightweight and powerful text editor created by Microsoft for multi-platform operating systems, which means it is also available for Linux, Mac, and Node.js versions as well as other programming languages with the help of plugins that can be installed through the visual studio code marketplace such as C++, C#, Python, Go, Java, etc. Visual Studio Code provides many features, including Intelligence, Debugging, and extension features that add text editor capabilities. These features will continue to evolve and add visual code versions. Visual code version updates are also done regularly every month, which distinguishes visual code from other text editors. Text editors like visual code are also open source (Permana & Romadlon, 2019).

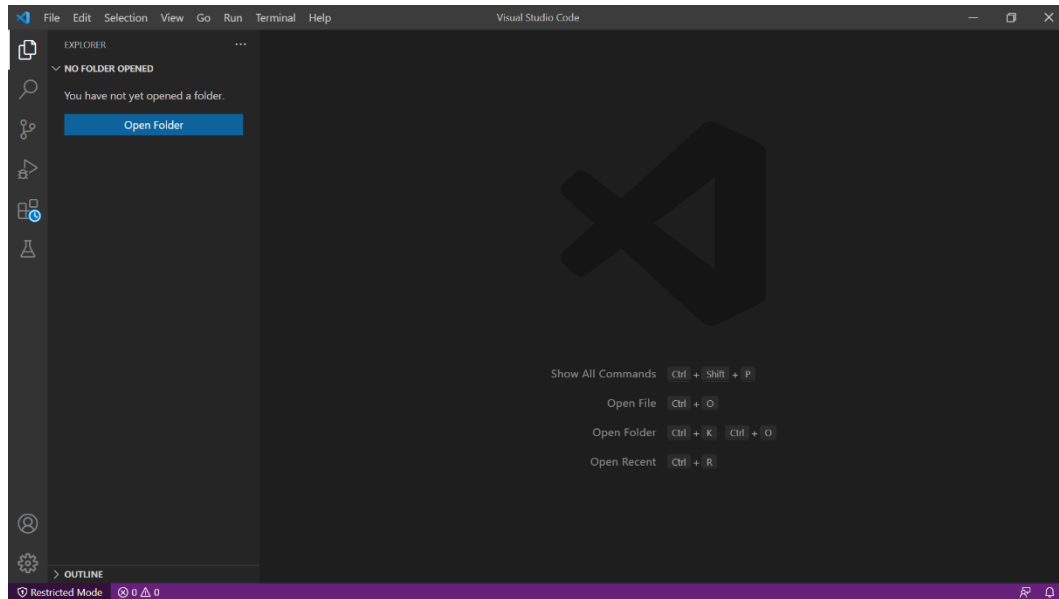


Figure 2. 4 Visual Code

2.7 Interactive Learning

Interactive learning media is media to help the learning process, which contains content such as videos, graphics, images, audio, and the like. With this in mind, it serves as a means to provide visual experiences to students in the context of learning motivation, clarifying the material provided, and making abstract and complex concepts simpler and easier to understand. (Khoir et al., 2020).

Developed from a journal (Suryadi et al., 2020),development of interactive learning media with very attractive designs as well as music and moving animations so that students are motivated to study individually or in groups.

2.8 Corel Draw

Corel draw is a computer application program that serves to describe objects with a high degree of accuracy and image resolution for large-size printing purposes. CorelDraw is software for creating vector-based graphic designs. CorelDraw is software created by CorelDraw for drawing and designing vector objects (Aldin, 2021).



Figure 2. 5 Corel Draw

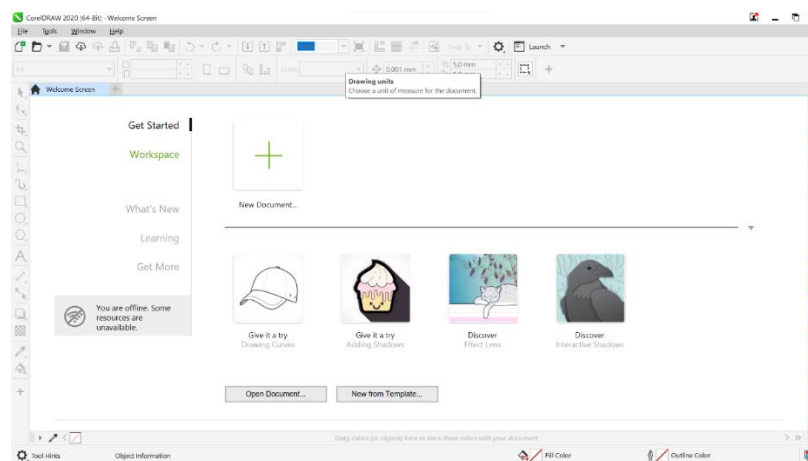


Figure 2. 6 Corel Draw








2.9 Flow chart

A flowchart is a systematic presentation of the process and logic of information handling activities or a graphic depiction of the steps and sequence of procedures of a program. A flowchart is a chart that logically shows the flow in a program or system procedure. Flowcharts are used primarily for communication and documentation aids (Soepomo, 2013).

A flow chart is a chart that shows the flow used to help describe or explain the stages in each logical process that will be made, to facilitate the creation of interactive learning media so that each flow or stage of the work process on this interactive learning media is easier to understand and easier for users. and the

researchers themselves. To go through every groove in this interactive learning medium (Savitri et al., 2020).

Table 2. 3 Flowchart symbols

NO	Symbol	Name	Function
1.		Terminator	The start or end of a program (Procedure).
2.		Output/Input	Process input or output regardless of device type.
3.		Process	Computer operational processes.
4.		Decision	To show that a certain condition leads to two.
5.		Flow	Represents the flow of a process.
6.		Predefined process	Represents storage conditions for processing to provide an initial price.
7.		Offline Connectors and Connectors	A connection connects a process to another process on the same page and a Connection connects from one process to another process on another page.








Source:(Nurhaliza Khesya, 2021)

2.10 Use Case

Use cases are techniques that capture the functional requirements of a new system or a modified system. Each use case consists of one or more scenarios that describe how the system interacts with other users or systems to achieve certain business goals. This technique does not explain how the system works

internally or how it is implemented. Shown are Steps performed using software (Artina, 2006).

Table 2. 4 Use Case Notation








NO	Symbol	Name	Function
1.		<<extend>>	Extends are additional relations between use cases.
2.		<<include>>	including the relationship between two cases for an event to occur.
3.		Dependency	dependency, Changes in one element affect other elements.
4.		Generalization	generalization is the relationship between the general element and the specific element, and the direction of the arrow indicates the direction of the general use case.
5.		Association	The association is a line drawing that interacts between the actor and the use case in question.
6.		use case	It is a symbol that describes a unit for exchanging messages between units and actors.
7.		Actor	Wrong representation of system users such as humans or devices and is a type of entity that is outside the system to do something

Source:(Baharuddin et al., 2020)

2.11 Activity Chart

Activity diagrams or activity diagrams describe the genre of work or activity based on a system or business process that starts from logging in to using logout. This activity diagram describes a series of genres based on activities that are used to describe activities created in operations, so they can also be used for other activities such as use cases or interactions (Listiono et al., 2021).

Table 2. 5 Activity Diagram Notation

NO	Symbol	Name	Function
1.		Swimming	Shows the division of activities that perform activities or processes in the system.
2.		Fork or Join	Indicates the merging of 2 activities into one or decomposition.
3.		Control Flow	Shows activity flow.
4.		Activity	Shows the activities performed by the system.
5.		Decision	Shows branching relationships for activities that have one or more options.
6.		Initial State	Indicates the starting point for starting an activity from the system.
7.		Final State	Indicates the endpoint of the running activity flow of the system.

Source:(Hutabri & Putri, 2019)

2.12 Blackbox

The program that will be made in this study is the best sales selection system program, namely Blackbox Testing, where the test aims to see that the program is the same as the program's task without knowing the program code

used. The first stage of testing using Blackbox Testing is to identify the input and then test it so that we find out where the error is. Testing using Blackbox Testing is a test that is used to complement the previous test, namely Whitebox Testing so that the applications we make have good quality and the time used will be more effective so that it can be profitable for the company (Mustaqbal, Firdaus, & Rahmadi, 2015).

There are several ways to test Black Box Testing, one of which is using the Equivalence Partitions technique. Equivalence Partitions is a test based on entering data on every form in the best sales selection system, each input menu will be tested and grouped based on its function, whether it is valid or invalid (Hidayat & Muttaqin, 2018). In this research, there are several stages, starting with determining the Test Case to be tested, then dividing it into several input and output partitions. This is done to obtain test documentation (MZ, 2016).