

DEVELOPING MULTIMEDIA TECHNOLOGY FOR EFL CLASSROOMS IN INDONESIA USING ADDIE MODEL: A LITERATURE REVIEW

Annisa Hafizah Gamal

Riau University, Indonesia

correspondence: annisa.hafizah7036@grad.unri.ac.id

<https://doi.org/10.37147/eltr.v7i1.162>

received 15 November 2022; accepted 26 December 2022

Abstract

Most academic learning situations involve multimedia learning since students encounter words and graphics, ranging from multimedia encyclopedias to online educational games to textbooks. Multimedia has become increasingly used to help learning and cognition. As technology advances, educators are required to be more creative when creating learning devices. Teachers and lecturers need to develop an instructional design that can address the needs of the students. ADDIE model is one of the most effective tools in developing educational products and other learning resources, including multimedia technology. This paper attempts to explore how multimedia in various levels of EFL classrooms in Indonesia are developed using the ADDIE model in particular. Nationally accredited articles were categorized based on similar themes to multimedia development using ADDIE model to be analyzed. Most of the articles showed a successful development and implementation of the media used in teaching reading, listening, writing vocabulary, and language functions. The multimedia: worksheets, websites, applications, cards, and videos, are mostly rated highly by the expert. The validity and practicality were also high. However, some of the articles did not mention the principles and details of the process of multimedia development.

Keywords: ADDIE model, curriculum and instructional design, EFL, multimedia

Introduction

The advancement of technology in education has brought the invention of various tools to be used in the process of teaching and learning. Mayer (2014) stated that developments in computer and communication technology have led to the emergence of graphical education as a form of multimedia learning. The use of multimedia technology in language education has created a favorable context for reforming and investigating English language teaching paradigms in the modern era, which is in line with the swift advancement of science and technology (Pun, 2014). In EFL classrooms, multimedia has been generally used by teachers as a part of their class to support the teaching and learning process.

Multimedia itself is displaying both words, such as spoken text or printed text, and pictures, such as illustrations, photos, animations, or videos (Mayer, 2014).



Most academic learning situations involve multimedia learning since students encounter words and graphics, ranging from multimedia encyclopedias to online educational games to textbooks. Multimedia has become increasingly used to help learning and cognition. It is used by teachers to design more vibrant and engaging language classes (Pun, 2014). Furthermore, by using multimedia, the class is not limited to merely teaching words and syntax but requires students to learn English through a variety of activities that foster their capacity for creative thinking (Li & Zhai, 2011).

As technology advances, educators are required to be more creative when creating learning devices (Bulan & Idhar, 2021). EFL teachers and lecturers need to be innovative when it comes to developing appropriate learning media which can support students' learning. In developing educational products and other learning resources, using an ADDIE process is one of today's most effective tools as it serves as a guiding framework for complex situations (Branch, 2010). ADDIE stands for *Analyze, Design, Develop, Implement, and Evaluate*. The process of ADDIE demonstrated the conceptual elements of instructional design. The model of ADDIE is widely used in developing multimedia for English teaching and learning due to its effectiveness, including in Indonesia. This paper aimed to explore the literature related to the development of multimedia using the ADDIE model for EFL classrooms in Indonesia.

Method

The inclusion criteria were set in selecting the suitable literature for this paper. The criteria are: (1) the data could be peer-reviewed journal articles, (2) the data could be retrieved from several online databases, such as Google Scholar and Education Resources Information Centre (ERIC) (3) the articles were accredited with minimal in the national level and (4) the articles are published in recent years, in the range of 2017 until 2022. The keywords that were used for searching the data include "multimedia development", "ADDIE model", "English teaching", and "Indonesia". Ten nationally accredited articles (Table 1) were categorized based on similar themes to multimedia development before being analyzed that are multimedia for vocabulary, listening, reading, and also video.

Table 1. Articles analyzed related to multimedia development using the ADDIE model

Articles	EFL class	Multimedia developed	
Bulan & Idhar (2021)	junior high	Vocabulary	Noun Words Domino Card (NWDC)
Furwana & Syam (2021)	university	Listening materials	Worksheets in CD
Irawan (2021)	senior high	Listening materials	An executable file (.exe) in CD
Purwanti et al. (2022)	university	Video	Authentic interaction-based video clips
Rahman (2020)	junior high	Reading materials	Application for Android-based smartphone
Sari et al. (2021)	vocational high	Reading materials	PC or notebook software
Setiawan (2021)	university	Reading materials	Software
Sopian et al. (2019)	junior high	Reading materials	e-learning based website
Suprianti (2020)	elementary	Video	Powtoon animation video
Zaim et al. (2020)	senior high	Listening materials	Mobile-based authentic listening materials

Discussion

Using multimedia for EFL classrooms

Multimedia learning theory was developed by Richard Mayer under the grand theory of Cognitivism. Multimedia, according to Mayer (2014) is the presentation of the word (spoken text or written text) and pictures (illustrations, photos, animations, or videos). Alongside new technological advancements and theories of learning, the area of multimedia learning and cognition has also grown. The multimedia that is supported by technology covers the new realistic learning environment such as immersive virtual worlds and games, it also includes simulation environments, complex web conferencing tools, mobile applications, and social networking tools (Lajoie, 2014). Multimedia has become increasingly used to help learning and cognition.

In EFL classrooms, multimedia has been widely used to support the teaching and learning process. The advancement of technology in recent years has provided a variety of multimedia that can be used by teachers to support them in the teaching and learning process. Furthermore, the emergence of e-learning also contributes to the various multimedia tools that have been used to deliver content that looks similar to the regular classroom (Wiphasith et al., 2016). Pinter (2017) suggested the use of digital games, board games, and card games along with the support of electronic devices like Kindles or tablets in teaching English. These kinds of multimedia are suitable for students nowadays who are known as digital natives. Prensky (2001) introduced the term digital natives to address the generation who grow up with new technology and spent their lives surrounded by and using computers, video games, cell phones, and other tools of the digital age. Thus, as digital natives, young learners nowadays are familiar with the use of technology in their daily activities, including teaching and learning activities.

In using multimedia technology for English teaching, researchers elaborated several advantages that are: activating learning enthusiasm, optimizing the traditional teaching model, promoting students to cultivate innovative thinking, increasing information capacity in classroom teaching, developing students' communicative competence, providing opportunities for English teaching and learning outside the classrooms (Li & Zhai, 2011; Pun, 2014). However, there are also disadvantages to using multimedia technology as it might replace the key role of the teacher as facilitator, limits the communication between teachers and students, and costs a lot of money in providing the technology (Pun, 2014). From the literature reviewed, it is clear that the major goal of using multimedia technology in EFL classes is to motivate and encourage students' enthusiasm for learning the language. It is also used as an aid to support teachers in the language teaching and learning process.

Using ADDIE model in developing multimedia for EFL classrooms

ADDIE model is one of the effective tools for developing educational products and other learning resources, including multimedia technology (Branch, 2010). This process of instructional system design was first created in 1975 by the Centre for Educational Technology at Florida State University. ADDIE is the acronym for the process: *Analyze, Design, Develop, Implement, and Evaluate* (Figure 1). Every step of the ADDIE model can be repeated until it meets the expectation of the researcher and the objective of the development process. It

merely serves as a framework for complex situations and is used as a fundamental process for developing effective learning resources. The educational philosophy of the ADDIE model believes that intentional learning has to be student-centered, innovative, authentic, and inspiring. Branch (2010) further explained each stage of the ADDIE model as seen in Table 2.

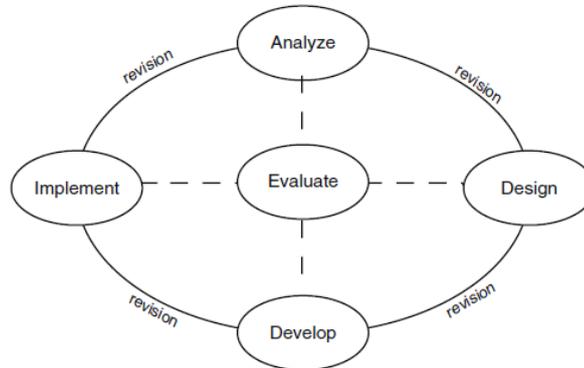


Figure 1. The ADDIE concept (Branch, 2010)

Table 2. Common instructional design procedures organized by ADDIE (Branch, 2010)

	Analyze	Design	Develop	Implement	Evaluate
Concept	Determine the probable reasons for a performance gap	Verify the expected performances and the suitable testing methods	Generate and validate the resources	Prepare the learning setting and engage the learners	Assess the quality of the instructional products before and after implementing it
Common Procedures	<ul style="list-style-type: none"> . Validate the performance gap . Determine instructional objectives . Verify the target audience. . Specify the resources needed. . Select possible delivery methods (including cost estimate) . Compose a project management strategy. 	<ul style="list-style-type: none"> . Compile a task inventory . Formulate performance goals . Come up with testing methods . Calculate the return on investment 	<ul style="list-style-type: none"> . Produce content . Decide on or create supporting materials . Create student guidance . Create teacher guidance . Carry out formative revisions. . Conduct a Pilot Test. 	<ul style="list-style-type: none"> . Get the teacher ready . Make the student ready 	<ul style="list-style-type: none"> . Set evaluation criteria . Choose evaluation tools . Carry out evaluations.
	<i>Analysis Summary</i>	<i>Design Brief</i>	<i>Learning Resources</i>	<i>Implementation Strategy</i>	<i>Evaluation Plan</i>

The flexible guidelines of the ADDIE model aid instructional designers in creating efficient support materials (Nadiyah and Faaizah, 2015). However, Dong (2021) elaborated that using ADDIE can be a resource-intensive process and require time to devote to designing and developing new content. Dong (2021) further explained three sources of constraints in using the ADDIE model which are time, personnel, and budget. In 10 reviewed literature from Indonesia that conducted research in developing multimedia by using the ADDIE model in this paper, one article used only the three first steps of the ADDIE model. Suprianti (2020) developed a prototype product of an animation video using the analysis, design, and development stages without continuing to the next two steps. Even so, other articles use the 5 stages of the ADDIE model in the process of developing multimedia.

Recent studies in Indonesia

Developing multimedia for listening in EFL classrooms

In the articles that were analyzed in this paper, three articles deal with the development of listening materials and worksheets at the level of university and senior high school.

Irawan (2021) attempted to design and develop multimedia-based English listening materials for senior high school students. The researcher used the 5 stages of the ADDIE model in the process. In the *Analyze* stage, he found out that the students need listening materials that encourage them in the autonomous process of learning. Thus, the research tried to develop multimedia-based material in the form of a .exe file that covers the aspects of multimedia such as screen design, interaction, feedback, navigation, color, text, graphic, animation, audio, and video. The result showed that the product is valid and suitable to be used for the students in listening activities.

At the university level, similar research in developing listening worksheets is conducted by Furwana & Syam (2021). In this research, the students mostly addressed the difficulty in expressing ideas because of too much complex vocabulary, advanced grammar, and the speed of the listening materials. So, the researcher proposed the development of an appropriate listening worksheet using the five stages of the ADDIE model. The final product of the worksheet consists of 14 units and each unit consists of four-five various tasks.

Another article that proposed the development of multimedia for listening is administered by Zaim et al. (2020). In the research, they attempted to develop mobile-based authentic listening material for senior high school students. The students in the analysis phase also mentioned similar problems with the available listening materials. The final product of this research is an android application that contains the authentic listening materials which have been edited and the exercises.

In the three articles, the researchers followed the ADDIE model processes. Only Irawan (2021) illustrated the process in a flowchart. Both Irawan (2021) and Furwana & Syam (2021) had Compact Disc (CD) as the final product. However, there is a lack of detail on how the multimedia is developed, and whether it uses a certain principle of multimedia design. Meanwhile, Zaim et al. (2020) provided the steps for developing the listening materials. All of the research findings show that multimedia are valid, practical, and can be used in listening activities.

Developing multimedia for reading in EFL classrooms

Related to the development of multimedia for reading skills or activities, Sari et al. (2021), Setiawan (2021), and Sopian et al. (2019) proposed research at three different levels of EFL classrooms. Three of the research focus on developing multimedia for different reading texts. The need analysis of the students in three levels of classrooms found the same problems: the students have difficulty in reading comprehension, have low reading skills, and seldom use interactive multimedia in learning reading.

To address these problems, the researchers continued the next stages of the ADDIE model before finally getting the final product. At the level of junior high school, Sopian et al. (2019) developed an e-learning-based local-folklores website using coding programs and a database to teach the narrative text. The researcher included the use of video, narrative texts, and tests in the design of the website. While Sari et al. (2021) used a computer-based design that consisted of recount text and was designed by Adobe Professional CS 6. The final product is launched as a PC or notebook software for interactive media. Setiawan (2021) had similar stages as Sari et al. (2021) but used Microsoft Powerpoint to design the narrative text material before being converted into the form of software.

In a research conducted by Rahman (2020), the researcher attempted to develop an application called ComicQu to improve the reading and writing skills of junior high school students. Similar problems were found in the result of the need analysis: the need for modern media and the lack of English skills, especially in arranging words and understanding dialogue. The researcher used the SuperMii application to design characters and the Canva platform to add dialogue. The final product is an application for Android-based smartphones.

The multimedia developed in the three first research showed a high level of validity and practicality. They are also effective in improving the students' achievement and can be used to assess their reading comprehension. While in the research conducted by Rahman (2020), received a Very Good score from ELT experts and a Good score from IT experts. The app also improved the reading-writing skills of the students. The process of developing all multimedia followed the stages of the ADDIE model and the researchers gave detail on how they did the research.

Developing videos for EFL classrooms

Among the analyzed literature, the development of video for EFL classrooms was found in two articles. The first one was conducted by Purwanti et al. (2022) at the level of university and the other one by Suprianti (2020) at the elementary school level. Both used the ADDIE model in the process of instructional design. However, Suprianti (2020) only used the *Analyze*, *Design*, and *Develop* stages, meaning that the ADDIE model is incomplete.

Purwanti et al. (2022) used the ADDIE model in developing videos that contain authentic interaction-based video clips to learn request and apology speech acts. The analysis phase indicated that the lecturers need to develop the videos to reach the learning objectives. In the design phase the objectives, learning content, instructional strategies, type of activities, the content of videos, selection of authentic interactions from TV talk show programs, blueprint material, and evaluation plan were determined. The implementation resulted in the improvement

of students' knowledge. Furthermore, the researcher mentioned that the videos can be developed for skill courses and content courses.

In the other article by Suprianti (2020), the researcher used three steps in the ADDIE model to develop the prototype product of the Powtoon animation video for elementary students. The development was based on the analysis result that students were familiar with smartphones or laptops, need variation in English classes and teachers did not have ICT-based English learning media. The prototype product consists of pictures and animation in the form of Powtoon Videos which students can watch and play the game in it.

Both of the video development was rated by experts. Suprianti (2020) got Excellent results and Purwanti et al. (2022) received a very high extent rate. The weakness of Suprianti's (2020) study is clear that the research did not finish the last two steps of the ADDIE model which were crucial to finding out whether the videos were able to improve students' English.

Developing Multimedia for Vocabulary in EFL Classrooms

The research administered by Bulan & Idhar (2021) attempted to develop a media that helps students to improve their understanding and mastery of certain materials. The research also used the ADDIE model in the process of developing the instructional design. In the analysis phase, the students were found to have inadequate vocabulary mastery. Thus, the researcher develop the Noun Words Domino Card (NWDC) which received a Very Feasible score from the experts. The findings showed that the NWDC eventually was effective in improving the students' vocabulary mastery. This article showed a clear process of the ADDIE model and provided examples of the NWDC as the final product of the research.

Conclusion

Multimedia has become increasingly used to help learning and cognition. In the reviewed articles, the ADDIE model has been used to develop multimedia for EFL classrooms at various levels: from elementary to university levels. Most of the articles showed a successful development and implementation of the media used in teaching reading, listening, writing vocabulary, and language functions. The multimedia: worksheets, websites, applications, cards, and videos, are mostly rated highly by the expert. The validity and practicality were also high. It indicates the success of the reviewed research in developing multimedia for the different levels of EFL classrooms. Even though the ADDIE model has some constraints in terms of time, personnel, and budget, most of the research completed the five stages of the ADDIE model. Only one research did not complete the whole stages of ADDIE. This finding implies that the ADDIE model is possible to be carried out by instructional designers, especially in developing multimedia for EFL classrooms. However, some of the articles did not mention the principles and details of the process of multimedia development. It is expected in the future that more research using the ADDIE model can be conducted in a more detailed manner and larger scope, addressing the needs of a larger population of EFL classrooms in Indonesia.

References

- Branch, M. B. (2010). *Instructional design: The ADDIE approach*.
- Bulan, A., & Idhar, I. (2021). Developing noun words domino card (NWDC) learning media to improve English vocabulary mastery of junior high school students. *VELES Voices of English Language Education Society*, 5(2), 192–205. <https://doi.org/10.29408/veles.v5i2.4028>
- Dong, H. (2021). Adapting during the pandemic: A case study of using the rapid prototyping instructional system design model to create online instructional content. *Journal of Academic Librarianship*, 47(3), 102356. <https://doi.org/10.1016/j.acalib.2021.102356>
- Furwana, D., & Syam, A. T. (2021). “Listening is hard”: ADDIE model on the development of English listening worksheets. *Language Circle: Journal of Language and Literature*, 16(1), 52–60. <https://doi.org/10.15294/lc.v16i1.30355>
- Irawan, Y. (2021). Developing multimedia-based English listening material for Islamic senior high school. *Ta'dib*, 24(1), 1–8. <https://doi.org/10.31958/jt.v24i1.2033>
- Lajoie, S. P. (2014). Multimedia learning of cognitive processes. *The Cambridge Handbook of Multimedia Learning, Second Edition, May*, 623–646. <https://doi.org/10.1017/CBO9781139547369.031>
- Li, Y., & Zhai, Q. (2011). Analysis of deficiencies and countermeasures of using computer multimedia in English teaching. *Advances in Intelligent and Soft Computing*, 108, 141–147. https://doi.org/10.1007/978-3-642-24775-0_22
- Mayer, R. E. (2014a). Cognitive theory of multimedia learning. *The Cambridge Handbook of Multimedia Learning, Second Edition, May*, 43–71. <https://doi.org/10.1017/CBO9781139547369.005>
- Mayer, R. E. (2014b). Introduction to multimedia learning. *The Cambridge Handbook of Multimedia Learning, Second Edition*, 1–24. <https://doi.org/10.1017/CBO9781139547369.002>
- Nadiyah, R. S., & Faaizah, S. (2015). The development of online project based collaborative learning using ADDIE model. *Procedia - Social and Behavioral Sciences*, 195, 1803–1812. <https://doi.org/10.1016/j.sbspro.2015.06.392>
- Pinter, A. 2017. *Teaching young language learners*. Oxford: Oxford University Press.
- Prensky, M. (2001), Digital natives, digital immigrants part 1. *On the Horizon*, 9(5), 1-6.
- Pun, M. (2014). The use of multimedia technology in English language teaching: A global perspective. *Crossing the Border: International Journal of Interdisciplinary Studies*, 1(1), 29–38. <https://doi.org/10.3126/ctbijis.v1i1.10466>
- Purwanti, I. T., Prawati, A., & Aruan, R. R. (2022). Developing educational videos containing authentic interaction video clips for teaching language functions. *EDUKATIF: Jurnal Ilmu Pendidikan*, 4(4), 5582–5594.
- Rahman, N. S., & Hermayawati, H. (2019). *Designing a comicqu application for VIII graders' reading – Writing Assessment*. *JELE: Journal of English Language and Education*, 5(2), 83–90.

- Sari, N., Mirizon, S., & Inderawati, R. (2021). Developing learning media of recount texts for vocational high school students. *English Review: Journal of English Education*, 9(2), 263–276.
- Setiawan, H. (2021). Developing interactive multimedia for teaching reading comprehension on narrative texts based on South Sumatera local culture. *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature*, 9(2), 632–641. <https://doi.org/10.24256/ideas.v9i2.2161>
- Sopian, S., Inderawati, R., & Petrus, I. (2019). Developing e-learning based local-folklores for eighth graders. *English Review: Journal of English Education*, 8(1), 101. <https://doi.org/10.25134/erjee.v8i1.1813>
- Suprianti, G. A. P. (2020). Powtoon animation video: A learning media for the sixth graders. *VELES Voices of English Language Education Society*, 4(2), 152–162. <https://doi.org/10.29408/veles.v4i2.2536>
- Wiiphasith, H., Narumol, R., & Sumalee, C. (2016) The design of the contents of an e-learning for teaching M.5 English language using ADDIE model. *International Journal of Information and Education Technology*, 6(2), 127-131. <https://doi.org/10.7763/IJiet.2016.V6.671>
- Zaim, M., Refnaldi, R., & Elfiona, E. (2020). Developing mobile based authentic listening materials for senior high school students. *Ta'dib*, 23(1), 1-10. <https://doi.org/10.31958/jt.v23i1.1794>