



## DEVELOPMENT OF PODTOON ANIMATED-BASED LEARNING MEDIA IN THE INTRODUCTION TO MACROECONOMICS COURSE

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#### ABSTRACT

*The development of teaching materials into film form and based on podcast media is a novelty. This step is an innovative idea to deal with relatively easy learning during the COVID-19 pandemic. This study aims to determine the level of feasibility and effectiveness of Poodton animated film-based teaching materials in the introduction to macroeconomics courses that can improve student learning outcomes. This study uses research and development (R&D) methods using the ADDIE model. This research was conducted on third-semester students taking an Introduction to Macroeconomics course in the economics study program in the 2023/2024 academic year. The data analysis technique used is quantitative data analysis techniques. The results of the research showed that the teaching materials developed received good ratings from experts with an average feasibility score of 4,21 which is in the appropriate category. In the practical test, students also gave a positive response with an average overall score of 5,80 entering the practical category as well as the effectiveness test using the t-test table for a significant level  $\alpha = 5\% = 0,05$  and  $df = 19$ , then  $t$  was obtained at  $t_{count} = 17,72$  and  $t_{tab} = 1,729$  with the conclusion that  $t_{count} > t_{tab}$  so that it can be said that there is effectiveness (significance). The development of teaching materials for introduction to macroeconomics courses based on Poodton animated films with a significance level of 5% is very effective.*

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### INTRODUCTION

Education in the digital era is education that must integrate Information and Communication Technology into all courses. Evolution of digital-era education, it allows students to gain abundant knowledge quickly and easily. Educators and students can find references more easily, encourage creativity and independence, as well as information storage media. Educators and students can find references more easily, encourage mastery of foreign

languages, encourage creativity and independence, as well as information storage media. Advanced innovation can likewise be helpful for changing human way of behaving including training and understudies, in finding, gathering, archiving, handling, and yet again moving showing materials on a case by case basis. Blending showing materials in the educational experience with advanced innovation can be seriously fascinating and give learning inspiration since blending showing materials isn't repetitive.

The globalization of education necessitates the integration of national and international education. Understudies should be furnished with sufficient capabilities so understudies can foster in a profoundly cutthroat computerized period. There are a few issues and difficulties confronting the universe of schooling in the computerized period, including the nature of training, the impressive skill of showing staff, culture (assimilation), learning procedures, difficulties to further develop the executives, and difficulties to logical and mechanical advances. Innovation in the realm of training is a framework that is utilized to help realizing so the ideal outcomes are accomplished.

In view of that, one of the forward leaps is to make fascinating instructing materials that are not just restricted to standard perusing also improvement showing matters will likewise be computerized based; that is, showing matters can be gotten to by means of the cell phone of understudies. The animation that will be used to create the learning materials for the introduction to macroeconomics will be evolved with a storyline based on the Podtoon app and is available without using the app. Due of its increased accessibility on student cellphones during both in-person and virtual meetings, this is currently seen as a pertinent hybrid learning option.

Study on the development of animated film-based learning media previously examined. Sutopo, Hadi (2008), Humairoh, Safira, and Maryam Isnaini Damayanti (2012), Dini Agatha, Nabiela (2013) the general consequences of this study affirm that the advancement of animated film-based teaching materials gives adequacy respect to understudy learning results. Moreover, it encourages understudy excitement for learning since learning is exceptional and viable through the grasp of student cell phone available on YouTube and Google Drive channels.

The development of this learning media is a newness. This move is a creative way to open the boundaries of space and study time for students. Podtoon-based learning animation videos are cartoon animation videos that may be utilized as educational material because of their appealing nature and ability to cover a variety of topics. The purpose of the development is to ascertain and analyze the impact of podtoon-animated film-based learning media in the introduction to macroeconomics courses that can enhance the results of students' learning, test and determine feasibility of podtoon-animated film-based learning media in the introduction to macroeconomics courses to improve student learning outcomes.

## **METHODS**

This study took six months to complete at the Economics Study Program, Faculty of Economics, State University of Medan in the 2022/2023 academic year. The research subjects as data sources in this study were lecturers and students of economics in the third semester of the Introduction to Macroeconomics course for the 2022/2023 academic year. Lecturers who are the subject of this research are lecturers who teach the Introduction to Macroeconomics course at FE Unimed and lecturers who are in the KDBK economic education learning program.

The research design is Research and Development (R&D). Sugiyono (2016) says that research and development is a way to find out how well a product works and make it. In this study, the product produced is the development of animated podtoon-based media in the introduction to macroeconomics course.

Techniques for collecting data using questionnaires. Survey forms are utilized to evaluate media quality in light of material specialists, media specialists, and understudies. There are a few instruments required in this examination, beginning from the aid improvement cycle to the educational aid investigation procedures. The implement that is going to utilized in the exploration incorporate Clip Studio Paint (CSP), and Expert Validation Questionnaire.

The progress of podtoon animation-based learning media in the introduction to macroeconomics course has good quality if it meets the aspects of validity, practicality, and effectiveness.

### 1. Validity

A validation sheet is used by the validator to evaluate the developed product design. The Likert Scale is used to measure the outcomes of the appraisal of all features. The Likert scale is a few positive or negative assertions regarding an attitude object. In this study, the answers to the instrument items were classified into five choices. The average value is then converted based on a Likert scale conversion that has been adjusted to the instrument as follows:

Table 1. Validation Result Conversion Guide

Average Score		Category
4,20		Very good or very feasible
3,40	4,20	Good or feasible
2,60	3,40	Enough or feasible enough
1,80	2,60	Not good or not feasible
1,00	1,80	Very bad or very not feasible

### 2. Effectiveness

To examine the effectiveness of this learning media, the experiment conducted in small, limited groups with a before-after (one-to-one) experimental design using a paired sample t-test.

### 3. Practicality (Usability)

The practicality test for the development of poodton animation-based learning media was conducted to recognize the level of convenience, usability, and effectiveness of time by students. Known well that the outcome of this product practicality test were carried out by conducting usability tests in the field to 20 participants in the economics study program, Faculty of Economics, State University of Medan. This number is based on the minimum criteria for the usability test of the questionnaire method with users (Nielsen, 1993). Derived from outcomes of the tabulation, evaluation outcomes are converted into a range of scores and classifications as in the following table:

Table 3. Field Test Feasibility Classification

Average Score Range	Classification
>5,80 to 7,00	Very feasible
>4,60 to 5,80	Feasible
>3,40 to 4,60	Less feasible
>2,20 to 3,40	Not feasible

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This development research procedure adapts the ADDIE development model, including:

1. Analyze

At this stage, researchers identify problems and appropriate solutions. New learning media expects investigation to decide the practicality of the learning media applied. Things that are done at the analysis stage are: user analysis, curriculum analysis, analysis of facilities.

2. Design

Derived from finding, product design or design stage will then be carried out which includes: learning animation video media design, development of learning animation video media, application of instructional animated video media, and assessment of instructional animated video media.

3. Develop and Implementation

At the development step, the analyst realizes the design that has been made. To make a digital animated films some steps as follows: pre-production, production, and post-production.

4. Evaluation

At this step, an evaluation is made of the practicality and effectiveness of teaching materials and learning media that have been developed, by examining viability information, and eventual outcomes.

## RESULTS AND DISCUSSION

### 1. Analysis Stage ( Problem Potential)

First, user analysis where this analysis is adjusted to the lecturer's ability to master computers for classroom learning and student's mastery of the media for learning, because the users of this learning animation video media are students who like animation, with interesting shapes and interesting stories, then the researchers developed learning animation video media according to the characteristics and thinking stages of students who were at the imagination and creative thinking stage.

Second, curriculum analysis aims to determine which materials require teaching materials. One of the courses that is considered difficult in delivering the material is the Introduction to Macroeconomics course. This is due to the lack of examples and props that exist so students find it difficult to understand the contents of the material being taught. Besides that, lecturers also have difficulty making teaching aids or learning media so it is difficult to provide visual examples to students.

Third, the last is an analysis of the needs for existing facilities and infrastructure in the field. Researchers found that it has quite complete services in the guise of LCDs, computers, PCs, and cell phones so it supports conducting studying using learning animation video media.

### 2. Design Stage

Derived from the consequence of the analysis, the product design or design step will then be carried out which includes:

a. Learning Animation Video Media Design

The product design is carried out in two stages. First, choose and specify the software to be used. The software that will be used to create this learning animation video includes Podtoon, Pinnacle Studio, Format Factory, and Audacity. Second, designing and developing scripts in the form of flow charts and storyboards and making GBIM (Outline of Media Contents). The following are character images for learning animation video media:

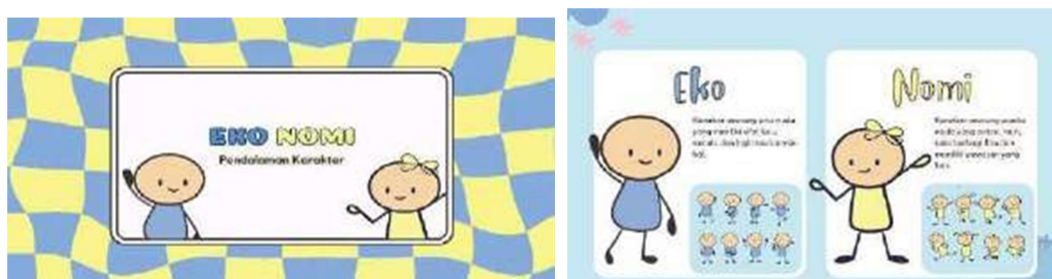


Figure 3. Character Animation

b. Development of Learning Animation Video Media

This production stage is turning the script into a program that contains text, sound, images, and animation. Before direct application in learning, the learning animation video media program is checked and validated. Product validation can be done by presenting experienced experts or experts, in this study media experts and material experts. After the product design has been validated through discussions with experts or other experts, weaknesses and deficiencies will be identified (Sugiyono 2009). These weaknesses are then tried to be overcome by improving the design, then made into a product.

c. Application of Learning Animation Video Media

This learning media trial was carried out to know every detail of the shortcomings and weaknesses of the finished program, and to see the effectiveness of the program when used by the intended target students. This trial was carried out on several students and was carried out in stages and alternately. After testing the product is successful and allows revisions that are not too important, then creation in the guise of learning animation video media is appealed in teaching and learning process.

d. Assessment of Learning Animation Video Media

This stage is a stage at which it is determined whether the item produced here case an animated video media for learning introduction to macroeconomics courses can increase enthusiasm and learning achievement or not. Product revisions are carried out if, in the trial use, there are weaknesses and deficiencies. In usage trials, researchers always evaluate product performance in terms of learning animation video media programs to find out the weaknesses that exist, so that they can be used for improvement and creation of new products.

1) Product Description:

The Industrial Revolution 4.0 made digital technology a medium for facilitating access and the world of work, as well as in the world of education the influence of digital technology has become a necessity in learning activities. Innovation and creativity are

not only for students who need to be developed but educators, in this case lecturers, must also have this competence. With digital technology-based learning, it makes it easier for students to find access to scientific information. As a result, this is the context for the existence of Poodton animated video-based learning media. Poodton's animated video is the most recent development for the universe of instruction, particularly for educators in the introduction to macroeconomics courses. Because it is based on Poodton's animated video, in addition to facilitating lecturers in the online learning process.

2) Product print screen:

a) The following is an initial display of a digital-based comic-based animated video which may be reached via YouTube with a link:

<https://www.youtube.com/@putrisariijsilaban8022/about> and Google Drives [https://drive.google.com/drive/folders/1sGz1vO2GAnIq\\_-ZxFKdZHpWhVPFvVvWC?usp=share\\_link](https://drive.google.com/drive/folders/1sGz1vO2GAnIq_-ZxFKdZHpWhVPFvVvWC?usp=share_link)

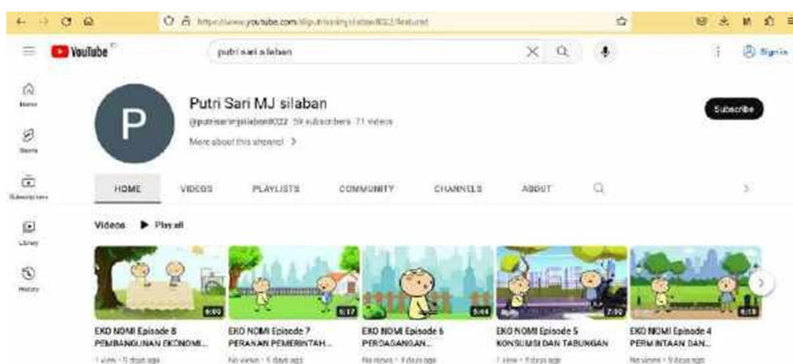


Figure 4. Animated YouTube video display

b) Afterward, there is as of now material comprising of 8 sections in 8 episodes directly accessible without using a registration account on YouTube or Google Drive, perusers/understudies are allowed to get to every part (material) that has been uploaded on YouTube. The material consists of basic concepts of macroeconomics, development of macroeconomics National income, aggregate demand and supply, consumption and saving international trade, the role of government in Macroeconomics, and development of economy and economic growth.

### 3. Development & Implementation Stage

The development carried out by researchers is to make learning media products based on digital comics. The product is implemented in the form of learning material that can be accessible via cellphones and PCs. The researcher realizes the design that has been created throughout the development stage. There are various processes involved in creating a digital comic:

a. Development Stage

At the development step, the researcher realizes the design that has been made. To create a digital animated film, various steps as follows:

1) Pre-production:

- a) The concept, namely designing and categorizing objects to be animated,
  - b) Scenarios, plotting, and scripts from teaching materials into animated dialogues,
  - c) Formation of character, determine cast in animation,
  - d) storyboards,
  - e) Initial dubbing, voice-over of female and male characters,
  - f) Music and sound FX.
- 2) Production:
- a) Layouts,
  - b) key motion,
  - c) In Between,
  - d) backgrounds,
  - e) scanning,
  - f) coloring.
- 3) Post-production:
- a) composite,
  - b) editing,
  - c) renderings,
  - d) Transferring films into various media in the form of YouTube and Google Drive.
- b. Implementation
- Expert validation of Poodton animation-based material is carried out by experts, validation is carried out so that Poodton animation-based teaching materials can be used or valid. In addition, validation aims to obtain information, analysis, and recommendation for the teaching materials being expanded.

1) Validation 1

In stage 1 validation, the media was assessed by material experts and media experts to determine the feasibility of the material being made and the feasibility of the media being developed. Input also, ideas from material specialists and media specialists serve as basis for improving the media.

a) Material expert assessment

Materials for episodes 1-9 introduction to macroeconomics from the media were assessed by Dr. Dede Ruslan M.Si as material expert. The following is the result:

Table 4. Material Expert Test Results

No	Assessment Aspects	Rating Score
1	Material	4,30
2	Language	4,17
Average Score		4,23

In the material aspect, the average score is 4,30, which in the conversion table is categorized as very feasible. Whereas in the linguistic aspect, the average score is 4,17. It falls under the heading of decent. Overall the average score of all aspects is 4,23 and is categorized as very feasible. Derived from the outcomes of the material expert test, it is necessary to revise it so that it can be validated in the very feasible category and proceed to the media validation stage.

b) Media expert assessment

Digital comic learning media was assessed by Dr. Arwansyah, M.Pd as a media expert. The following is the result of an assessment of the media that has been made:

Table 5. Media Expert Test Results

No	Assessment Aspects	Rating Score
1	Visual	4,22
2	Integration	4,18
	Average Score	4,2

In the table of the results of the media expert's assessment, the average score is 4.2, which in the conversion table is categorized as very feasible. Furthermore, the research continued with the assessment by the course lecturer in validation 2.

2) Validation 2

Validation in phase 2 was carried out by Dr. Khairani Matondang, M.Pd., as an introduction to macroeconomics practitioners at the Faculty of Economics, Unimed. The assessment carried out by the lecturer includes an assessment of learning materials and media. Coming up next are the outcomes of lecturer's assessment for Introduction to Macroeconomics course on the development of Poodton animation-based teaching materials:

Table 6. Lecturer Assessment Results on Material

No	Assessment Aspects	Rating Score
1	Material	4,20
2	Language	4,15
	Average Score	4,17

The table shows the average score of the learning material assessment of 4,17. Based on the value conversion table, the learning material is included in the feasible category.

Table 7. Lecturer Assessment Results on Media

No	Assessment Aspects	Rating Score
1	Visual	4,30
2	Integration	4,20
	Average Score	4,25

In the table, it shows the average score of the learning media assessment of 4,25 where in the conversion table the value is included in the very feasible category. In addition, subject lecturers also want the physical form of media as an alternative to learning when there is no internet connection. The following is a summary of all aspects assessed in validation 1 and 2.



Table 8. Summary of Expert and Lecturer Tests

No	Aspect	Material Expert	Media Expert	Lecturer	Average	Category
1	Material	4,30	-	4,20	4,25	Very feasible
2	Language	4,17	-	4,15	4,16	Feasible
3	Visual	-	4,22	4,30	4,26	Very feasible
4	Integration	-	4,18	4,20	4,19	Feasible
Overall average					4,21	Very feasible

Based on the average validation test of 2 experts and 1 lecturer, an average validation of 4,21 in the conversion table is categorized as very feasible. It can be concluded that the development of animated film-based teaching materials is very feasible to try out. Based on the validation results and suggestions for improvement, the researchers made revision improvements, and after the improvements were carried out field trials.

#### 4. Evaluation Stage

##### a. Effectiveness

To test the effectiveness of this learning media, a trial will be conducted in small, restricted bunches utilizing a before-after (one-to-one) experimental design using a paired sample t-test. Examining the effectiveness of Podtoon animation-based learning media was conducted on a small sample of 20 students who had completed Introduction to Macroeconomics courses. This before-after experimental design tested the effectiveness of teaching materials based on Podtoon animated films on learning outcomes before and after treatment using teaching materials based on Podtoon animated films so that the research hypothesis was tested using the t-test (Sugiyono, 2019).

$$t = \frac{85,6 - 70}{\frac{3,97}{\sqrt{20}}}$$

$$t = \frac{15,6}{0,88}$$

$$t = 17,72$$

By way of the t-test table for the significance level  $\alpha = 5\% = 0,05$  and  $df = 19$ , the t in the table is obtained, namely  $t_{tab} = 1,729$ . Comparing  $t_{count}$  with  $t_{tab}$ :  $t_{count} > t_{tab} \rightarrow 17,72 > 1,729$ . Conclusion: The value of  $t_{count} > t_{tab}$ , so it is said that there is a significant influence (significance) on the development of learning media for introduction to macroeconomics based on podtoon animation with a significance level of 5%.

##### b. Practicality Test (Usability)

The practicality test for the development of Poodton animation-based learning media was completed to know the degree of comfort, ease of use, and adequacy of time by understudies. The findings were carried out by conducting usability tests in the field to 20 participants in the economics study program, Faculty of Economics, State University of Medan. This number is based on the minimum criteria for the usability test of the questionnaire method with users (Nielsen, 1993). Here are the outcomes of the usability test on learning media:

Table 9. Usability Test Results

No	Assessment Aspects	Average Score	Decision
1	Media usability	5,82	Very feasible
2	Media quality	5,79	Feasible
	Overall average	5,80	Very feasible

In the table above the results of the practicality (usability) test show an overall average of 5,80. Based on the conversion table, it is included in the very feasible category.

## CONCLUSION

The results of this research and development are in the form of learning media for introduction to macroeconomics based on Poodton animation. The results of the validity test by experts show that the development of learning media is very feasible. Likewise, the results of the practicality test assessment carried out by the supporting lecturers yielded practical results. The findings of the evaluation of the effectiveness test concluded that the outcomes of the respondent's data were acceptable. This demonstrates the learning media developed based on the resulting animation has demonstrated to be helpful in enhancing student learning results.

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