

Development of Teaching Materials of Demand, Supply and Balance Based on Digital Comic in Micro Economic Theory Course of Economic Education State University of Medan

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ABSTRACT

In general, this study aims to determine the level of feasibility and effectiveness of digital comic-based Demand, Supply and Balance teaching materials with material in microeconomic theory 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 fourth semester students who took microeconomic theory courses in the economic education study program in the 2021/2022 academic year. For a small trial sample, 10 students were taken by random sampling. The developed teaching materials received a good assessment from the experts with an average feasibility score of 89.3 in the very feasible category. In the practical test, students also gave a positive response with an overall average score of 89, 3 in the category of very practical. In the effectiveness test, students also gave a positive response with an overall average score of 26.89 in the category of very effective.

INTRODUCTION

The development of the digital world is no longer just influencing, even changing people's behavior and habits. The digitalization of life that is growing rapidly in the future is what the world of education must read so that it can equip our children with important skills to deal with it. Education today must equip student with life skills in the next ten to twenty years. This means that the world of education must be able to predict and prepare what skills children must have to live in the future. Based on the experience of online implementation so far, it turns out that there are obstacles both experienced by students but also faced by facilitators, namely teachers/lecturers. The first is to design a good learning program. Second, what kind of material or content aspect is it? As it is known that in education, there are many things that can help the goals of education can be achieved. One of them is through learning media.

For this reason, lecturers as lecture facilitators are required to be more creative and innovative in finding better learning solutions that are more comfortable to implement both in terms of students and lecturers. So far, based on the experience of teachers/lecturers, they tend to use conservative teaching materials, there is a lack of breakthroughs in developing digital-based teaching materials, as well as in the use of online learning media using only power points. The use of smartphones in online learning is very high, students are reluctant to use computers or laptops while online for reasons that are more practical in terms of use and cost. Based on this, one of the breakthroughs is to make teaching materials that are certainly interesting, not only limited to ordinary reading and the development of these teaching materials will also be digital-based; that is, teaching materials can be accessed via the student's smartphone. The development of Demand, Supply and Balance teaching materials is in the form of comics that will be developed with a storyline in digital-based materials and can be accessed through Webtoon and the poetrisilaban.com website.

This is considered relevant as a hybrid learning solution at this time because it is considered more accessible on students' smartphones both during conventional class meetings and independent study. Research on the development of digital-based comics has been studied before. (Maulana Arafat Lubis, 2018), (Azizul, 2020), (Rida Fironika Kusumadewi, 2020) the overall results of the study confirm that the development of teaching materials in the form of comics and digital-based provides effectiveness on student learning outcomes. In addition, it fosters students' enthusiasm for learning because learning is up to date and practical through the grip of students' smartphones. The development of demand, supply and balance teaching materials based on digital comic media is a novelty. This step is an innovative idea to deal with relatively easy learning during the COVID-19 pandemic, which has online learning opportunities to student self-study.

THEORETICAL REVIEW

Teaching Materials

Teaching materials can also be interpreted as all forms of materials that are systematically arranged that allow students to learn independently and are designed according to the applicable curriculum. With the teaching materials, the teacher will be more coherent in teaching the material to students and achieve all predetermined competencies. Teaching materials are materials or subject matter that are systematically arranged, which are used by teachers and students in the learning process (Pannen, 1995). Teaching materials are a set of learning tools or tools that contain learning materials, methods, limitations, and ways of evaluating that are designed systematically and attractively in order to achieve the expected goals, namely achieving competence or sub-competence with all its complexity (Widodo and Jasmadi in Lestari, 2007). 2013:1). This understanding explains that a teaching material must be designed and written with instructional rules because it will be used by teachers to assist and support the learning process. Learning materials or materials are basically the "content" of the curriculum, namely in the form of subjects or fields of study with topics/subtopics and details.

Digital Comics

According to Lamb & Johnson (2009), digital comics are simple comics presented in certain electronic media. Thus, it can be said that digital comics are a form of illustrated story with certain characters that present information or messages through electronic media. The presentation of electronic-based comics allows teachers to make comic stories more interesting by adding animation and sound elements in their presentation. Based on previous research conducted by Yang & Wu (2011), the use of digital comics can improve students' understanding of lesson content, increase students' desire to explore and improve critical thinking skills. It is hoped that learning through digital comics will be easier for students to understand so that the learning process becomes more enjoyable.

The use of technology and information at this time continues to develop without exception technology and information in the world of education. The development of technology and information in the world of education will certainly facilitate and facilitate the ongoing learning process, it must be supported by creativity and innovations in carrying out the development of technology and information in the world of education. Digital media is also defined as electronic media used to store, transmit and receive digitized information. Radio and television are the first generation of digital media. Digital media is identical to the internet because digital media is usually shared, distributed, or published through the internet network. However, digital media can also be accessed without the internet, after these media files are downloaded or stored on a computer or smartphone device.

Demand, Supply, and Equilibrium Teaching Material

Understanding Demand and the factors that affect it demand can be defined as the quantity of a particular good that a consumer wants and can afford at various price levels, assuming other factors remain (*ceteris paribus*). The

demand relationship only shows a theoretical relationship between price and quantity purchased per unit of time, *ceteris paribus*. The factors that affect demand are:

1). The Price of the Goods Concerned ($P_x = \text{Price of Goods X}$)

The law of demand states that: "if the price of a good or service increases, the quantity of goods and services demanded will decrease and if the price of a good or service decreases, the quantity of goods and services demanded will increase". From the law of demand, it is known that the price of the goods in question has a negative effect on the quantity demanded of the goods, assuming other factors do not change. However, if other factors change then this law of demand does not apply.

2). Prices of other Goods that are Closely Related to these Goods ($P_y = \text{Price of Related Goods}$)

The relationship of a good with other goods in the economy based on the nature is known as complementary goods (complementary/fulfillment) and substitute goods (substitutes) and neutral goods. Complementary goods are goods that must be used together. For example sugar with coffee, cars with gasoline. If the price of sugar increases then the amount of demand for coffee decreases and vice versa so that the relationship is negative. Substitutable goods are goods that replace each other's function of an item. For example beef with chicken. If the price of beef increases and the assumption that the price of chicken meat is constant, the demand for beef will decrease because some consumers will switch to consuming chicken meat. On the other hand, if the price of beef goes down assuming the price of chicken is constant, the demand for chicken will decrease because some consumers will switch to asking for it. beef. Neutral goods are goods whose demand is not affected by the price of other goods. For example, the price of clothes with the demand for notebooks.

3). Consumer Income ($Y = \text{Income}$)

The amount of goods demanded by a consumer is strongly influenced by the level of income of the consumer concerned. Changes in the quantity demanded by consumers due to changes in income will be affected by the type of goods. According to Sukirno (2001) these goods are classified into inferior goods, essential goods, normal goods and luxury goods. Inferior goods are goods for which the consumer's income increases, the quantity demanded of that good decreases. Essential goods are staple goods for consumers, for example, rice, sugar, and clothing. The demand for these essential goods has not changed significantly even though consumer income has increased. Normal goods are the types of goods that if the income of consumers increases, the quantity demanded of these goods increases (if Y increases, the quantity demanded increases). Luxury goods are goods demanded by consumers who have high incomes, usually these consumers have fulfilled their basic needs. These items are like diamonds, diamonds.

4). Consumer Tastes

Consumer tastes will also affect the amount of demand, for example in North Sumatra the demand for rice is greater than in Maluku province, although the price is lower because of the people's habit of consuming sago in Maluku.

5). Consumers' Expectations of the Future Economy

Consumers' estimates of prices and future economic conditions will affect demand. For example, if consumers predict that there will be an increase in the price of a type of goods, the current amount of demand will increase. On the other hand, if consumers predict that there will be a decrease in prices in the future, consumers will delay their purchase waiting for the price to fall, which means the quantity demanded will decrease.

6). Distribution of People's Income

The distribution of people's income will affect the level of demand. The more even the level of people's income, the demand for goods and services is greater than the distribution of people's income which is less evenly distributed. For example, if income in a society is unequal (uneven) then only certain people (rich people) can afford beef for consumption, so consumer demand for beef will be less.

Requests can be classified into three, namely as follows.

- 1). Absolute demand, is a demand that is not supported by purchasing power, but rather is wishful thinking. Everyone can be sure to have absolute demand.
- 2). Potential demand, is a demand that will be realized with the amount of money owned.
- 3). Effective demand is the demand for goods or services carried out in accordance with the purchasing power owned.

Request Function

Demand which is expressed in a mathematical relationship with the factors that influence it is expressed by the demand function. From the factors that influence this demand, the demand function can be formulated (Kalangi, 2006).

$$Q_{dx} = f(P_x, P_y, Y, T, P_p, Y_{dis}) \dots \dots \dots (1)$$

Where:

- Q_{xd} = Demand for goods x
- p_x = Price of goods x
- P_y = Price of related goods
- Y = Income
- T = Consumer tastes
- E = Community expectations
- Y_{dis} = Income distribution

The Schedule and Demand Curve

The demand schedule is a list that shows the relationship between the price of an item and the level of demand for the item. Example:

Table 1. Schedule of Demand

Price of Chocolate Bread	Quantity of Chocolate Bread
0.00	12
500	10
1000	8
1500	6
2000	4
2500	2
3000	0

Individual and Market Demand Curves

Market demand or aggregate demand represents a quantity of a good demanded per time period, at various price levels by all individuals in the market. Thus the market demand for a good depends on all the factors that determine individual demand, and subsequently on the number of buyers of that good in the market.

Movements and Shifts in the Demand Curve

The demand curve need not be stable all the time. If something happens and changes the quantity demanded at a given price, the demand curve will shift.

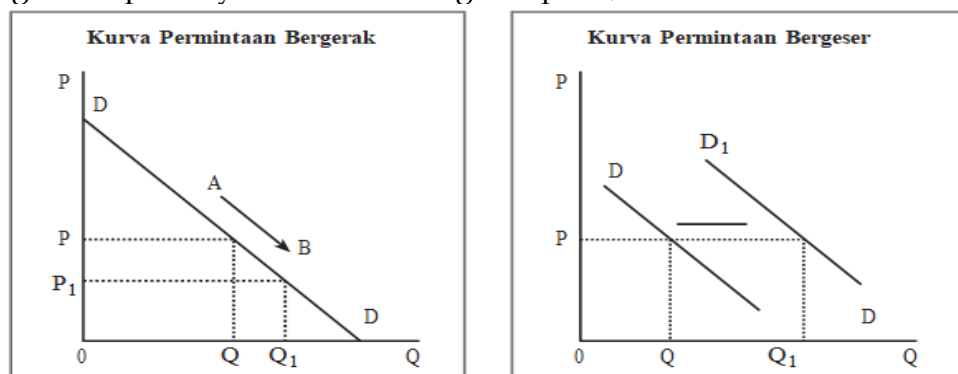


Figure 1. The Demand Curve Moves and Shifts

If the price factor affects demand it will cause the demand curve to move. However, if other factors affect demand will cause the demand curve to shift. There are several variables that can affect demand, including:

- 1). The price of the item itself (P_x)
- 2). Price of related goods (P_y)
- 3). Consumer income (I)
- 4). Taste (S)
- 5). Population (Pop)
- 6). Hope for the future (H_d)

The demand function equation can be written:

$$(Q_d = F(P_x, P_y, I, S, Pop, H_d)) \dots \dots \dots (2)$$

Definition of Supply and the Factors that Affect It

Supply is a number of goods or services offered by sellers (producers) at various price levels and within a certain time (per day, per week, per month, per year). According to several economists, there are various factors that affect supply in the market, Sukirno (2001) explains that the factors that affect supply (Q_s) in the market are as follows:

1). The Price of the Item (P_x = Price of the Item X)

Understanding the law of supply: "when the price of a good or service increases, the quantity supplied will also increase, otherwise when the price of goods or services falls, the quantity supplied will also decrease". Since the quantity supplied increases as the price increases, it can be said that the quantity supplied is positively related to the quantity supplied of the good assuming other factors do not change. However, if other factors change which this law of supply does not apply.

2). Prices of Other Goods that are Related to these Goods (P_y = Price of Related Goods Y)

Similar to the theory of demand, the price of other similar goods can affect the quantity supplied of the good. For example, if the price of imported goods, namely rice, is very expensive, allowing the demand for imported rice to decrease, domestic farmers can increase the amount of rice production (increase supply) at a lower price, so that the amount of domestic demand can be met.

3). Production Costs (C = Production Costs)

Production costs are a form of sacrifice that will be issued by the company to obtain company resources. Owned resources play a very important role in the continuity of the company's life, production costs have a negative influence on the supply of goods to the public. the higher the cost of production means the company is not able to perform efficiency, the company's inefficiency has a negative impact on increasing production costs. To cover the cost of production, the company will sell it at a high price.

4). Use of Technology (T = Technology)

The use of modern technology will create efficiency in terms of producing goods and services. At this time the application of technology can break the deadlock on the problem of high costs (high cost), companies that use modern technology allow companies to produce faster by maintaining the quality of goods and more quickly respond to consumer tastes by innovating. In relation to the supply of goods, the use of technology can have two positive effects on the company's performance, namely: (1) production can be increased quickly. (2) production costs are getting cheaper. Thus, the positive influence resulting from the use of technology provides greater benefits to the company.

The types of offers are as follows:

- 1). Individual offers (individuals), are offers that come from a producer (seller) for the goods to be sold to consumers.
- 2). Collective (joint) offers are offers that come from several sellers (producers) who will sell goods to consumers.

Offer Function

Mathematically the supply function can be expressed as follows:

$$Q_{sx} = f(P_x, P_y, C, T) \dots \dots \dots (3)$$

Where:

- Q_{sx} = Supply of good X
- p_x = Price of goods X
- P_y = Price of related goods
- C = Production cost
- T = Technology

Kalangi (2006) states that the relationship between the number of goods offered to the factors that influence it can be explained as follows:

- 1). $Q_{sx} = f + P_x$, which means that the number of goods offered is positively associated with the price of the goods themselves, meaning that every increase in the price of these goods will increase the number of goods offered.
- 2). $Q_{sx} = f + P_y$, which means that the number of goods offered is positively associated with the prices of other goods related to these goods, meaning that any increase in the price of other goods related to these goods will increase the number of goods offered.
- 3). $Q_{sx} = f - C$, which means that the number of goods supplied is negatively associated with the cost of production, meaning that every increase in production costs will reduce the number of goods offered.
- 4). $Q_{sx} = f + T$, which means that the number of goods offered is positively associated with the company's use of technology, meaning that every increase in the use of the technology will increase the number of goods offered.

So that the equation model of the influence above, is as follows:

$$Q_{sx} = 0 + 1P_x + 2P_y - 3C + 4T \dots \dots \dots (4)$$

In order to make it easier to analyze multiple linear equations, it can be explained in the form of a conceptual framework image as follows:

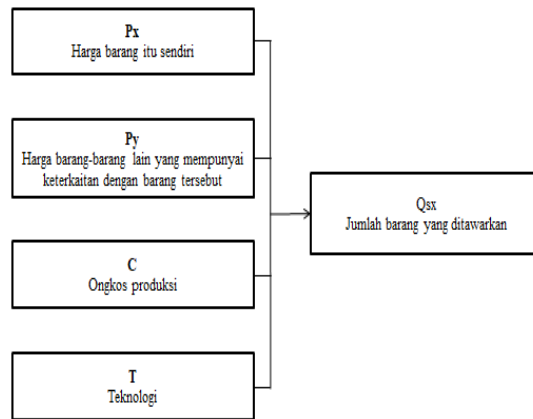


Figure 2. Hypothesis of Factors Affecting the Amount of Goods Offered

Schedule and Supply Curve

The supply schedule is a list that shows the relationship between the price of an item and the level of supply of the item. The pattern of supply curve movement in which there is a change in the commodity's price at a certain time. The movement of the supply curve is caused by a change in the quantity of commodity supplied (Q_{sx}), an increase will result in the price (P_x) being high, and if a change in the quantity supplied of a commodity (Q_{sx}) is decreasing it will result in a low price (P_x) at a certain time. on the movement of the supply curve that affects Q_s is P_x ceteris paribus (technology, the price of raw materials to produce is considered constant).

Offer

A pattern of shifting supply curves in which a commodity changes (other factors such as technology, raw materials when producing), but the selling price of goods remains constant. For example, the use of high technology will create efficient, competitive commodities in the market, so that it will increase the number of goods offered. On the other hand, companies that do not use technology when creating commodities are inefficient and have no competitive value against other commodities in the market, thus reducing the quantity of goods offered. Shift curve consists of two forms, namely: left and right. If the curve shifts to the left, there will be a decrease in the number of goods and if the curve shifts to the right, there will be an increase in the quantity supplied.

Market Price/Equilibrium Price

After studying the supply and demand functions, now we will study the market equilibrium (Equilibrium), the market equilibrium occurs where the interaction between demand $Q_d = a - bP$ and supply $Q_s = a + bP$ goods which is a natural process in the market mechanism. Equilibrium (point of balance) where the supply and demand curves intersect. The demand curve and supply curve intersect because the "equilibrium price" is the quantity of goods that can be purchased is equal to the quantity of goods supplied in the market. Price is the ability of an item / service expressed in money. With the price, it becomes easy

for people to exchange and we can compare the value of goods. The market price is the price agreed upon by the seller and the buyer at the time of the transaction.

Graphical Determination of Balance

Equilibrium is defined as a situation in which all existing forces are in balance, this understanding also explains market balance. At the equilibrium price, the number of goods willing and able to be bought is equal to the number of goods willing and able to be sold. This equilibrium price is referred to as the market clearing price, because at this price all parties in the market are satisfied. Buyers have bought everything they want to buy and sellers have sold everything they want to sell. With this approach we need to create a demand curve and a supply curve first. If we combine the two curves, we will get the point of intersection between the demand curve and the supply curve. That point indicates the market price or the equilibrium price, which is denoted by the letter E. As in the picture below:

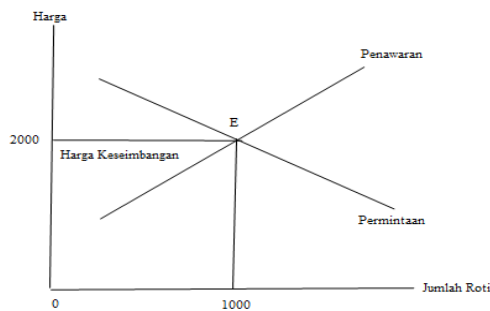


Figure 3. Balance of Supply and Demand

The Effect of Taxes and Subsidies on the Balance

1). Tax Effect

Sales tax is a tax levied by the government when a product is sold. Sales tax can be in the form of a certain percentage of sales or a certain amount that is charged for each unit of product sold. Please note that in reality not all sales tax is borne by the buyer of the product, but partly borne by the seller. With the sales tax, the selling price of the product will be higher. So the tax will have an impact on the market balance.

2). Subsidy Effect

Subsidies are assistance provided by the government to producers in order to ease the burden of the company's production costs. The effect of the subsidy is the opposite of the imposition of a sales tax. This is because the subsidies provided to producers make production costs smaller, so that the imposition of subsidies will have an impact on market balance.

Development of Demand, Supply and Balance Teaching Materials Based on Digital Comic Media

Digital comic-based learning media is an innovation that has a very big contribution to changes in the learning process, the learning process is no longer just listening to material descriptions from educators but students also carry out

other activities such as observing, doing, demonstrating and others. Surjono (2013) argues that digital-based learning media which is now becoming very popular because of its flexibility and effectiveness is a way of delivering learning materials via the internet that can be accessed anytime and from anywhere. Through digital-based learning media and adequate resources, learning materials can be accessed anytime and anywhere. Digital teaching materials turn each page into a flip page like opening a book and equipped with a dynamic background.

These digital-based demand, supply and balance teaching materials can be accessed from students' smartphones (webtoons and websites), with the hope that smartphones can fulfill human needs or daily activities with an unlimited reach by region. This can be done if there is the availability of a wireless infrastructure network with a wide coverage for data communication or digital audio and video communication (Istiyanto, 2013). The demand, supply and balance teaching materials can be studied independently by students with a new form, namely material in digital comics, the material is arranged into an animated image with a storyline and can be accessed anywhere and anytime.

METHODOLOGY

The research method used in this study is the research and development (RnD) method. The development design that will be used in this research is ADDIE with the following stages of implementation: (1) Analysis, (2) Design, (3) Development and Implementation, (4) Evaluation. Mulyatiningsih (2012) describes the stages of ADDIE development design as follows: The ADDIE research model is used because the ADDIE model is more appropriate for developing a web or software-based learning media, developed systematically, and easy to understand in developing a learning media. This research and development procedure adapts the ADDIE development model.

RESULTS

The research and development procedures for this learning media adapt the ADDIE development model, including:

1). Analysis (Analysis)

a. Analysis of Curriculum and Materials

To determine the material used in the learning media, it must be in accordance with the curriculum and teaching materials used.

b. Analysis of User Needs

Analysis of user needs is carried out to determine student interest in using digital comic-based learning media (webtoon), to determine which software should be used to make it easy to use, and to determine the appearance of the software to be interactive with students.

c. Program Content Analysis

The analysis of the program content is adjusted to the RPS for the microeconomic theory course. This is done so that the content and objectives of the learning media developed are in accordance with the curriculum used.

d. Specification Analysis

At the specification analysis stage, the thing to do is to analyze the minimum requirements of a computer and a mobile device that can be used to develop a digital comic-based learning media (webtoon).

e. Job Analysis

The work analysis stage is a step taken to determine the work of a developed learning media. This stage is related to the function of buttons and navigation in the learning media.

2). Design

Researchers do the design before making learning media products, it aims to make the media that is made according to what is needed by the subject. Based on the results of the analysis, the next stage is the design or product design which includes:

- a. Plot design
- b. Character design
- c. Scenario creation

Product Description

The pandemic has gradually subsided after the vaccinations were carried out but the month meant it was over. It takes more innovation and creativity than educators to be able to create better learning media so that the learning process can run well. Therefore, this is the background for the presence of digital comic-based learning media. Digital comics are the latest innovation for the world of education, especially for lecturers who teach microeconomic theory courses. Because they are based on digital comics, in addition to making it easier for lecturers in the online learning process, it also makes it easier for students to access learning content from anywhere and anytime. Product print screen:

1). The following is an initial display of digital-based comics that can be accessed through the website.

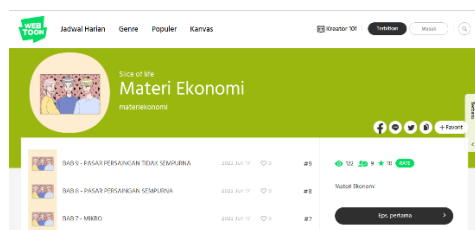


Figure 4: The Following is an Initial Display of Digital Based Comics that Can be Accessed through the Website

2). After that, there is already material consisting of requests, it can be directly accessed without using a registration account, readers/students are free to access from each chapter (material).



Figure 5: Materials of Demand, Supply and Balance

3). Development & Implementation (Development and Implementation).

The development carried out by researchers is to make digital comic-based learning media products. The implementation of the product results in the form of learning media that can be accessed using smartphones and laptops. At the development stage, the researcher realized the design that had been made. To create a digital comic there are several stages to go through:

- a. Layout panel (storyboard)
- b. Manuscript and recreating comic
- c. Book binding

After the digital comic learning media has been created, the no less important step is the validation process. The validation process is divided into two main stages, namely:

a. Design Validation

Namely the availability of validation test results documents either through expert validation for the content of teaching materials that have been prepared at the product design stage is draft 1, then tested through several stages. The first stage is a test of the validity of teaching materials by using an expert validity assessment. The validation carried out consists of two stages, namely 1) validation of the validation sheet questionnaire that will be used by material experts, 2) validation of digital comics through a questionnaire given to media experts after revision. The validation of the questionnaire was carried out by two validators who were experts in microeconomic theory and learning media. Before the designed learning media is declared valid and reliable and can be used in small group trials, first digital comics are validated by several experts. After the validation sheet is revised, the validator provides an assessment of the image of the digital comic media. The following are the results of the revision of teaching materials by the validator. From the value data from the validator, further analysis is carried out using the analysis of the average total score, namely:

$$\text{Average total score} = \frac{143}{2} = 71,5 \dots \dots \dots (5)$$

Then the formula for the percentage of results can be calculated by the following formula.

$$\text{Yield} = \times 100\% = 89.3\% \frac{71,5}{80} \dots \dots \dots (6)$$

The result of the percentage value of the validator is 89.3%, meaning that if it refers to the Eligibility Criteria for digital comic-based teaching materials, the eligibility category of the validator's assessment results is in the very feasible category because it is between the 81-100% interval.

b. Design Revision I (Draft 2)

Namely the availability of a revised design draft resulting from design validation by experts. After going through the expert validation stage, the first revision of the draft digital comic-based learning media was carried out by adjusting to the assessments of the experts so as to produce draft 2 digital comic-based learning media.

c. Product Trial (Implementation)

Which is a limited trial carried out in a small class sample, which is selected by 10 students in the third semester of class A in the Microeconomic Theory course.

d. Stage of evaluation (Evaluation)

At this stage, an evaluation of the practicality of the product that has been developed is carried out, by analyzing the practicality data, effectiveness data and the final result of using the product. This evaluation stage is the product of a limited trial and field trials are carried out to obtain data on the practicality and effectiveness of the digital comic media that has been developed. Practicality data was obtained from the results of student assessments in limited trials. As for the effectiveness data obtained from the results of student learning outcomes test scores in field trials.

e. Product Evaluation

Namely measuring the level of effectiveness and practicality of web-based learning applications.

(1). Effectiveness Test

The effectiveness test was carried out with a pretest-posttest experimental design on different test materials (independent Sample Test and Paired Sample Test) in two meetings with the following results:

Table 2. Calculation Results of Pairwise Difference Test
Paired Samples Test

	Paired Differences			95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
	mean	Std. Deviation	Std. Error	Lower	Upper			
Pair 1 before after	-31.3	6,547	1.171	-33,824	-29.07	-26.89	27	.000

Based on the table above, the t-count value is 26.89 with a Sig value. $.000 < 0.05$, then H_0 is rejected.

(2). Practicality Test

The practicality test of this web-based learning application is carried out with the aim of knowing the level of convenience, usability and time effectiveness by students.

DISCUSSIONS

Effectiveness Test

Based on the table above, the t-count value is 26.89 with a Sig value. $.000 < 0.05$, then H_0 is rejected. This means that student learning outcomes after learning treatment using Microeconomic Theory learning media based on digital comics are significantly higher than the students' pretest results. This shows that the microeconomic theory digital comic learning media produced is proven to be effective in improving student learning outcomes in the Microeconomic Theory course.

Practicality Test

The practicality test of this web-based learning application was carried out with the aim of knowing the level of convenience, usability and time effectiveness by students. By adopting the calculation from Akbar, it is known that the results of the practicality test of this product are 89.3%, meaning that this product is very practical for students to use, but with little input for revision. Revision of Product II, namely the availability of a revised draft of learning Microeconomic Theory based on digital comics as a result of limited test input. After going through the product trial phase on a small sample and also a readability test for students, then revisions were made according to student input so as to produce Microeconomic Theory learning materials based on digital comics draft 3 which are ready to be tested on a large group sample.

CONCLUSIONS AND RECOMMENDATIONS

This research is a development research. The development model used in this study is the ADDIE model, analysis, design, development, implementation, and evaluation. The result of this research is in the form of digital comic based learning. Currently being tested for feasibility by materials and media experts. Furthermore, it is necessary to conduct a trial to a group of students on the effectiveness and readability of the resulting product. The results of this study are expected to increase students' interest and independence in learning, especially in microeconomic theory courses.

FURTHER STUDY

Hopefully this article can be a reference to support better future research.

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REFERENCES

- Arikunto, Suharsini. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.
- Asyhar, Rayandra. (2012). *Kreatif Mengembangkan Media Pembelajaran*. Jakarta: Referensi Jakarta
- Azizul, Azizul, et al. (2020). "PENGEMBANGAN BAHAN AJAR KOMIK DIGITAL PADA MATERI GERAK." *VOX EDUKASI: Jurnal Ilmiah Ilmu Pendidikan* 11(2), 97-104.
- Cholily, Y. M., Putri, W. T., & Kusgiarohmah, P. A. (2019). *Pembelajaran di era revolusi industri. 4.0*. 1-6
- Deni Darmawan. (2014). *Inovasi Pendidikan*. Bandung: PT Remaja Rosdakarya.
- Dimiyati dan Mudjiono. (2013). *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta.
- Flew, T. (2008). *New Media : an introduction*. New York: Oxford University Pers.
- Istiyanto, Jazi Eko. (2013). *Pemrograman Smart Phone menggunakan SDK Android dan Hacking Android*. Yogyakarta: Graha Ilmu.
- Kadir. (2015). *Statistika Terapan: Konsep, Contoh, dan Analisa Data dengan Program SPSS/Lisrel dalam Peneltian*. Jakarta : PT Rajagrafindo Persada
- Kusumadewi, Rida Fironika, AMOS NEOLAKA, and Mahmuddin Yasin. (2020). "BAHAN AJAR KOMIK MATEMATIKA BERBASIS DIGITAL BAGI SISWA SEKOLAH DASAR." *Phenomenon: Jurnal Pendidikan MIPA* 10(1), 85-101.
- Lubis, Maulana Arafat. (2018) .*Pengembangan bahan ajar komik untuk meningkatkan minat baca PPKn Siswa Min Ramba Padang Tapanuli Selatan*. *Jurnal Tarbiyah*. Vol.25 No.2
- Mulyatiningsih, E. (2011). *Metode Penelitian Terapan Bidang Pendidikan*. Bandung: Alfabeta.
- Pannen, Paulina. (1995). *Pembaharuan Pembelajaran*. Universitas Terbuka
- Ruhimat, Toto, dkk. (2017). *Kurikulum dan Pembelajaran*. Depok: Rajawali Press
- Susilana, R. & Riyana, C. (2009). *Media Pembelajaran: Hakikat, Pengembangan, Pemanfaatan, dan Penilaian*. Bandung: CV. Wacana Prima.

Surjono, H. D. (2013). *Membangun Course elearning Berbasis Moodle (2rd ed)*. Yogyakarta: UNY Press

Thobroni. (2015). *Belajar dan Pembelajaran: Teori dan Praktek*. Yogyakarta : Arr-Ruzz Media.

Wagiran. (2013). *Implementasi Kurikulum 2013 dalam Pembelajaran dan Penilaian*. Semarang: CV Bahtera Wijaya Perkasa.

Widodo dan Jasmadi. (2008). *Panduan Menyusun Bahan Ajar Berbasis Kompetensi*. Jakarta: PT. Elex Media Komputindo.