Development of "Tcode" Learning Model (Qr-Code Based TGT) and the Role of Digital Literature to Improve Learning Results Economic Students of Class X IPS SMA N 1 Tukka Kab. Central Tapanuli TP. 2021/2022

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Abstract. This research is motivated by the low economic learning outcomes of students of class X IPS SMA N 1 Tukka Kab. Central Tapanuli. The purpose of this study is to develop an innovative learning model using the ADDIE method to produce a TCODE learning model with the role of digital literacy to improve student economic learning outcomes. Based on the validation of the learning model experts gave an assessment of 92.5%, media experts 87.5%, and material experts 90%. So that the developed model is feasible to use. From the t-test, it is known that the sig value is 0.004 <0.05. So it can be concluded that the TCODE learning model is effectively used. Furthermore, through the 2-way Anova test obtained a sig value of 0.00 <0.05, the conclusion is that there is an interaction between learning models and digital literacy to improve economic learning outcomes.

Keywords: TCODE, Digital Literacy, Economic Learning Outcomes.

1 Introduction

In the Republic of Indonesia Law No. 14 of 2005 concerning Teachers and Lecturers Article 1 paragraph (1) "Teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education through formal education, basic education, and middle education. The teacher's accuracy in the preparation of learning activities is a determinant of the quality and results. So, in making the learning effective, the teacher must use the right learning model so that the students have good learning motivation. Likewise with economics learning, effective learning activities are certainly needed. Economics Learning Activity is a series of learning that involves students being active in the process. In the following research, the researcher discusses economic material related to supply and demand.

The selection of learning models and their media brings hope that they can increase their learning activities. From the results of preliminary interviews with Economics teachers at SMA N. 1 Tukka, in carrying out their learning they use several methods, namely lectures, questions

and answers, and giving assignments and teachers still rarely use models that can make students interactive and collaborative. Here, the researcher assumes that students are only recipients of the material. This situation makes students passive, boring and difficult to understand the material. In addition, based on the list of student scores, some of the student's test scores, especially on the subject matter of demand and supply, are still below the predetermined KKM, namely "75", in 34 students it is known that only 30% are declared passed while 70% are declared unsuccessful.

In solving this problem, it is necessary to apply a learning model with interactive and collaborative nature between students so that students can be interested in learning so that it brings out students' creativity in learning which of course is expected to be able to improve students' economic learning outcomes. According to Fathurrahman (2015) the TGT learning model is part of a cooperative model which can be easily used by involving all students regardless of their status. Media is also useful for making learning interactive and interesting so that it can motivate students when learning and eliminate boredom in the process (Suryani, 2018). The use of QR-Code is very effective in many purposes, including in education. Applications in education as a new thing, QR-Code is used in redesigning subject matter (Durak, et al 2016), increasing student knowledge regarding plant species from websites, texts, website videos, texts, videos (Patil, 2020), active learning for students which can bring student involvement and curiosity (Someral, 2020). All research results related to QR-Code got good results until QR-Code brought hope as a digital technology literacy media used by economics teachers for their students.

Digital literacy gives us an idea of how to use social networks well. Literacy is a person's language skills, namely listening, reading, writing, and communicating based on goals (Pujiono, 2017). Digital literacy is the ability to use digital technology to be effective and efficient for many things (Gilster 1997). Digital literacy can be inserted in language lessons, science, social studies, and others. For example, in economics, when combined with digital literacy, students must master several skills such as reading, listening, describing social events in society, using digital media such as computers, the internet, or cell phones. According to Rahmadhani's research (2020), where in his research he concluded that there was a significant positive relationship between emotional intelligence and digital literacy together on student social studies learning outcomes. Furthermore, Yusuf (2019) in his research shows that the role of digital literacy of students at Madrasah Aliyah Negeri Palopo arouses student interest and increases student creativity in learning to improve student learning outcomes. From the problems that exist in the field that the researchers have explained in the background above, the researchers are interested in developing research "Development of the TCODE (Teams Game Tournament Based on Qr - Code) Learning Model and the role of Digital Literacy to Improve Student Learning Outcomes in Economics Subjects in Class X Social Sciences SMA N 1 Tukka Kab. Central Tapanuli". The development of the Teams Game Tournament (TGT) model is relevant to previous research, namely the research of Kristiyani (2021), in the results of her research it was found that the TGT model increased student activity and learning outcomes in mathematics. Likewise, Hudi's research (2020), explains the android-based TGT-type cooperative learning model that was developed to meet valid, practical, and effective aspects. However, there is a difference with the research of Amni, et al (2021), it is concluded that there is no effect of the TGT learning model assisted by destination media on learning outcomes. This is because there are implementation constraints, namely students are not present, so the material is not perfect so that the learning outcomes are below the KKM, time management is not good where the game is only carried out during the last 1 hour of the lesson. And also Reseyca's

research (2017) explains that the TGT learning model is not effective on learning outcomes of uniformly changing straight motion for class X SMA Santo Fransiskus Asisi Pontianak. The reason is that the use of TGT-style learning has research limitations, namely: (1) students do not follow the rules during tournaments; (2) identifying group members using pre-test data is not appropriate in group formation because not all students take the pre-test seriously, so that the group capacity is not balanced; (3) the limited ability of students to give topics to other groups; (4) does not apply feedback on the work of LKS due to time constraints. With the results of the varied Teams Game Tournament (TGT) model research above, it shows the inconsistency of the influence of these variables so that there is a research gap. This adds to the interest of researchers to conduct a research on the development of the Teams Game Tournament (TGT) model with different modifications from previous studies.

The development research that the researchers applied in the research on the development of the QR-Code-based Teams Game Tournament learning model was using the ADDIE model with the following steps: Analize, Design, Develop, Implementation, and Evaluation.

2 Research Methodology

In the research "Development of the TCODE learning model (Teams Games Tournament based on QR-Code) and the role of digital literacy to improve students' economic learning outcomes in class X IPS SMA N 1 Tukka" using the ADDIE model. According to Mulyatiningsih (2011), the ADDIE model is a structured model. The reason the researcher uses the ADDIE model is because this model is suitable for various kinds of development, one of which is the learning model and can solve research and development problems in the learning model. The ADDIE model is structured systematically in order to solve learning problems related to learning needs. The ADDIE model has 5 stages, namely 1) Analyze, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation.

The following is a procedural chart in this research
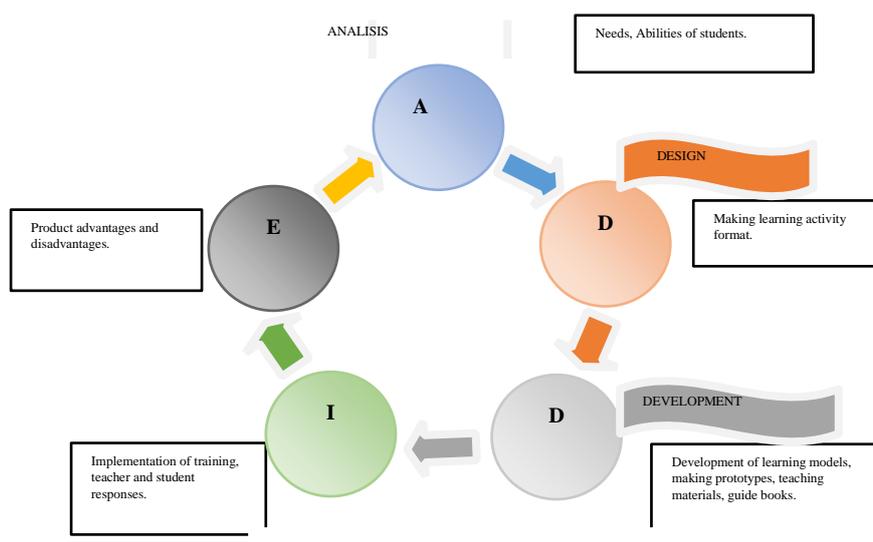
Fig. 1. EDDIE model procedural chart

This research was conducted at SMA N 1 Tukka which is located on Jl. Education No. 2 district. Tukka, Kab. Central Tapanuli, North Sumatra. The research was carried out in the even semester of 2021/2022. The research population in this study were students of class X SMA N 1 Tukka Kab. Tapanuli Middle of the Academic Year 2021/2022.

Table 1. Total Population of Class IX students

No	Class	Total students
1.	X A	34
2.	X B	34
3	X C	36
Total		104 Person

(**Source:** Researcher Data)

Samples were taken using purposive sampling. The sampling technique in this study was to take two classes, namely class X IPS-A as many as 34 students as the experimental class, and class B as the control class as many as 34 students.

3 Result and Discussion

Prior to testing the QR-Code learning media, a feasibility test was first carried out by a team of experts. The media feasibility test was carried out by 1 expert media validator lecturer from UNIMED. This validation aims to obtain information, criticism, and suggestions so that the QR-Code learning media in the TCODE model developed becomes a quality product, in terms of material, appearance and attractiveness so that this media is suitable for use in the learning process. The overall results of the aspects obtained are based on the validator experts as much as 87.5% with very decent criteria. The inputs obtained include; it is necessary to make a curve for each sales result from each group, on the advice of media experts so that the researcher makes a student sales result curve. Furthermore, expert validation of the model provides an assessment of the TCODE learning model as much as 92.5% with very feasible criteria. By providing input so that the lesson plans are revised according to K-13, and on the advice of the validator so that researchers have made improvements to the lesson plans in accordance with the provisions in K-13. Next, material expert validation gives an assessment of 90% with very feasible criteria. As for the input submitted by expert validation, it is necessary to add calculation test questions related to demand and supply materials. So, on the advice of material experts, the researcher has made calculation test questions related to supply and demand material.

Table 2. Anova 2 lane
Tests of Between-Subjects Effects

Dependent Variable: Learning outcomes

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	4719,727ª	3	1573,242	23,642	,000
Intercept	265516,455	1	265516,455	3990,001	,000
Model_Pembelajaran	372,364	1	372,364	5,596	,023
Literasi_Digital	338,273	1	338,273	5,083	,030
Model_Pembelajaran * Literasi_Digital	4009,091	1	4009,091	60,246	,000
Error	2661,818	40	66,545		
Total	272898,000	44			
Corrected Total	7381,545	43			

From the results of the calculation of the 2-way ANOVA test in the table, it is known that the significance value of the learning model is 0.023 <0.05, which means that there are differences in student economic learning outcomes taught using the TCODE learning model and conventional methods. Where in the experimental class with the application of the TCODE model, the average student learning outcomes are 81.7 with a total of 34 students and from the average this value has shown the achievement of KKM (Minimum Completeness Criteria) from those determined by the school as many as 75 in class. X. While student learning outcomes in the control class using conventional learning models obtained the average value of learning outcomes from 34 students had not reached the predetermined KKM (Minimum Completeness Criteria) score of 75 while the average student learning outcome was 73.82.

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From the calculation of the 2-way ANOVA test calculated using SPSS, it is also explained that the significance value of the learning model and the role of digital literacy is 0.00 < 0.05, then H0 is rejected and H1 is accepted. Thus, it is concluded that there is an interaction between the learning model and the role of digital literacy to improve student economic learning outcomes.

The TCODE learning model is a learning model developed from the Teams Game Tournament model, where this model has the advantage of accelerating students' mastery of teaching materials because through the games contained in this model students have higher learning motivation. As stated by Slavin (2010), the advantages of the TGT model are: 1) With a little time, you can master the material in depth. 2) Higher learning motivation. 3) The teaching and learning process takes place with the activeness of the students. 4) Further increase the time devoted to tasks. 5) Educate students to practice socializing with other people. 6) Prioritizing acceptance of individual differences 7) Increasing kindness, sensitivity and tolerance.

Through the ADDIE model development stage, a model that develops a product based on 5 stages, namely Analyze, Design, Development, Implementation, Evaluation, the TGT learning model is developed into a TCODE (Teams Game Tournament based on Qr-Code) model. With the ADDIE development model, products are developed and tested to see the level of feasibility, namely by distributing questionnaires to learning model experts, learning media experts, and subject matter experts. The TCODE model questionnaire was also distributed to teachers and students to see the responses of teachers and students to the developed model.

From the results of the distributed questionnaire, it was obtained that the feasibility test assessment from the learning model expert was 92.5% with a very feasible category, because the TCODE model was an expert in assessing according to the material being taught, namely demand and supply. Furthermore, the assessment from media experts gave an assessment of 87.5% with a very decent category, because with the use of this media the experts assessed that students could be enthusiastic in understanding the subject matter because this media was considered closer to the habits of students who use gadgets. Next, the meter expert gave an assessment of 90% with a very decent category, where the test questions were in accordance with the material presented, namely demand and supply and the content of the material was also complete. In this case the researchers also looked at the responses of teachers and students to the application of the TCODE model. Where the teacher gave a very positive response to the TCODE model because during the teaching and learning process through this model the teacher saw that students were very enthusiastic and actively involved in participating in class learning. So the teacher gave an assessment of 90 responses with very good criteria. Likewise, students who gave a positive response with an average rating of 84.4 with good criteria.

To see the effectiveness of the TCODE learning model, the researchers calculated the 2-way ANOVA test and compared the student learning outcomes in the experimental class and the control class. Where from the calculation of the 2-way ANOVA test, it is known that the significance value of the learning model is 0.023 <0.05, which means that there are differences in student economic learning outcomes who are taught using the TCODE learning model and conventional methods. By distributing 20 multiple-choice test questions to each class, each class has 34 students. Where from the results of the study, it was obtained that the economic learning outcomes of students who were taught with the TCODE model were 10% higher than the economics learning outcomes of students who were taught using conventional learning methods. This is evidenced by the average economic learning outcomes of students who are taught using the TCODE learning model getting a score of 81.7 and having reached the predetermined KKM value of 75. While the economic learning outcomes of students who are taught using conventional learning models get an average value of 73 ,82 has not reached the KKM value. So it can be concluded that the TCODE model is effectively used to improve student economic learning outcomes.

After testing the feasibility and effectiveness of the model, then the interaction test of the TCODE model with students' digital literacy was carried out. The TCODE model is a model that trains students to be competitive in learning, by dividing students into small groups to conduct buying and selling game tournaments with payment aids using Qr-Code. To apply this learning model, a high level of digital literacy is required, because this model uses digital media in its learning activities. Digital literacy is the ability to use technology and information from digital devices effectively and efficiently in various contexts such as academics, careers and everyday life (Gilster 1997). From the appropriate assessment given by the model validation team, media, and subject matter, as well as obtaining a positive response from teachers and students towards the TCODE model, the researchers concluded that the TCODE model developed was feasible to improve students' economic learning outcomes on the subject matter of demand and supply.

To see the interaction of the TCODE model and the role of digital literacy in improving students' economic learning outcomes, the researchers conducted a 2-way ANOVA test using SPSS 21. Where the results of this study showed significant results with a sig value of $0.00 < 0.05$. So it can be concluded that H_0 is rejected and H_1 is accepted, which means that the TCODE model and the role of digital literacy have interactions to improve students' economic learning outcomes in class X IPS A SMA N 1 Tukka, Kab. Central Tapanuli, TP. 2021/2022. The results of this study are supported by the results of relevant previous studies such as research conducted by Rahmadhani (2020), where in his research he concluded that there is a positive and significant relationship between emotional intelligence and digital literacy together with student social studies learning outcomes. Furthermore, Yusuf (2019), in his research, shows that the digital role of students in Madrasah Aliyah in Palopo State creates student interest and builds student creativity in the learning process so as to improve student learning outcomes.

4 Conclusion

Based on the results of data analysis from research results on the development of the Qr-Code-based Teams Game Tournament learning model and the role of digital literacy to improve student economic learning outcomes in class X IPS-A SMA N 1 Tukka, it can be concluded that The TCODE (Teams Game Tournament based on QR-Code) model developed is suitable for use in Class XIPS-A SMA N 1 Tukka Kab. Central Tapanuli TP. 2021/2022. This can be seen from the 3 results of expert validation, namely expert validation of the learning model providing an assessment of the TCODE model as much as 92.5% with a very feasible category. Furthermore, by the validation of media experts who gave an assessment of the Qr-Code media as much as 87.5%. The validation of subject matter experts provides an assessment of the questions and material that the researcher examines, as much as 90% with very feasible criteria. Then the TCODE (Teams Game Tournament based on QR-Code) model that was developed is effectively used in Class XIPS-A SMA N 1 Tukka, Kab. Central Tapanuli TP. 2021/2022. This can be seen from the calculation of the 2-way ANOVA test using SPSS and comparing the results of students' economic studies. It is known that the significance value of the learning model is $0.023 < 0.05$, which means that there are differences in students' economic learning outcomes who are taught using the TCODE learning model and conventional methods. Where by using the TCODE learning model, student learning outcomes are 10% higher with an average value of 81.7 while the conventional model obtains an average value of 73.8. Furthermore, there is an interaction of the TCODE (Teams Game Tournament based on QR-Code) model with digital literacy in improving economic learning outcomes of students in class X IPS-A SMA N

1 Tukka, Kab. Central Tapanuli TP. 2021/2022. This can be seen from the results of the 2-way ANOVA test analysis with a sig value of 0.00 < 0.05. So it was concluded that Ho was rejected and Ha accepted, which means the TCODE model and the role of digital literacy have interactions to improve students' economic learning outcomes in class X IPS A SMA N 1 Tukka. The implications that can be drawn from the results of this study are if the teacher develops the subject first, a feasibility test of the model must be carried out before it is implemented so that it can be applied properly. Then if the teacher wants to apply the TCODE learning model, first ensure that students have a high level of digital literacy skills so that the model can be applied effectively. Because the TCODE model is only suitable for students who have a high level of digital literacy. If students have a low level of digital literacy, it is better to use other learning models that do not require a high level of digital literacy such as Jigsaw, Inquiry, etc. Furthermore, if the teacher wants the subject matter to be conveyed and easily understood by students, the teacher should apply appropriate learning models and media to be combined. So as to create an interaction between the model and learning media in improving student learning outcomes.

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