



## THE EFFECTIVENESS OF PROBLEM-BASED LEARNING WITH FLIPPED CLASSROOM INTEGRATED CHARACTER EDUCATION AT TRIDHARMA VOCATIONAL SCHOOL, GORONTALO INDONESIA

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Article history:	Abstract:
<b>Received</b> 8 <sup>th</sup> October 2022	Character education is an important component that must be integrated in learning mathematics to achieve predetermined educational goals, namely changes in attitudes and behavior of students which include the formation of personal character such as honesty, discipline, responsibility, polite cooperation in addition to the ability to think mathematically. always based on logical and systematic thinking. Thus learning mathematics is expected not only to be able to lead students to success in learning mathematics in the form of achievement, but also changes in attitude and character . The research method used in this study is descriptive qualitative to see the effectiveness of problem-based learning with flipped classrooms that are integrated with character education. The instruments used were observation sheets of teacher activities and student activities, student response questionnaires and learning achievement tests. Based on analysis descriptive could concluded that: 1). The ability of the teacher in manage learning categorized as effective, 2). Activity student categorized as effective, 3). Response student to learning positive, and 4). Study results in a manner classic complete. With k ian's sake, learning based on problem with integrated flipped classroom with education character at SMK Tridharma Gorontalo said effective
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### INTRODUCTION

Education is a humanizing process human. For reach degrees man completely impossible without through the educational process. Education must could produce people who have character noble, beside have ability Adequate academic and skills. One method for realize character human is with integrate education character in every learning. Integration education character in learning could conducted with loading values character in all eye lessons taught in schools and in implementation activity learning. For that's a teacher should prepare education character start from planning, implementation, up to evaluation. Implementation education character at school need supported by the example of teachers and parents as well character culture.

Importance education character has formulated on functions and objectives education as development sustainable on factors education nation this. this implied in sound Article 3 of the Law Number 20 of 2003 concerning The National Education System which states: National education function develop ability and shape character as well as civilization

dignified nation in framework educate life nation, aims for development potency students to be a man of faith and piety to Almighty God Esa, morals noble, healthy, knowledgeable, capable, creative, independent, and become democratic citizens as well as responsible answer.

Provision Constitution the could interpreted that education national push realization generation successor nation that has character religious, moral noble, intelligent, independent, and democratic. Along with existing situation, institution education as institution academic with Duty mainly organize education and develop science, science, technology, and art. In Thing this destination maintenance education, actually no only develop scientific, but also forming personality, independence, skills social, and character, because In addition, various programs are designed and implemented for realize destination education those, especially in framework coaching character. kindly academic, education character interpreted as education value, education favor character, moral education, education character, or education the goal of morality develop ability student for give decision good or bad, maintain what is good, and embody kind that in life daily with full heart. Therefore, "load education character in a manner psychological covers dimensions of moral reasoning, moral feeling, and moral behavior" (Lickona, 1991: 21). Kindly practical, educational character is something system planting values kind to students in the neighborhood school with covers component knowledge, awareness or will, and action for doing values such, fine in relate with Almighty God Esa (YME), fellow humans, the environment, and homeland and nation. Kindly terminology, meaning character put forward by Lickona who defines character as "A reliable inner disposition to respond to situations in a morally good way." Next up, Lickona added, "The character so conceived has three interrelated parts: moral knowing, moral feeling, and moral behavior" (Lickona, 1991: 51). Character noble (good character), deep view Lickona, covers knowledge about goodness (moral knowing), then raises commitment (intention) to goodness (moral feeling), and finally truly To do goodness (moral behavior). In other words, character refers to series knowledge (cognitives), attitudes and motivations, as well behavior and skills.

In the process of development and formation, character somebody influenced by two factor, ie factor environment (nurture) and factors innate (nature). kindly psychological behavior character is embodiment from potential Intelligence Quotient (IQ), Emotional Quotient, Spiritual Quotient, and Adverse Quotient possessed by a person. Configuration character in context the totality of psychological and sociocultural processes in the end could grouped in four category, namely 1) processed heart (spiritual and emotional development), 2) exercise thinking (intellectual development), 3) exercise and kinesthetic (physical and kinesthetic development), and 4) exercise of taste and intention (affective and creativity development). The four psycho-social processes this in a manner holistic and coherent each other related and interrelated complete in framework formation character and embodiment values sublime in self someone ( Ministry of National Education , 2010: 9-10).

Kindly easy character understood as typical good values (know score goodness, will do good real alive good, and impactful good to environment) that is embedded in self and manifest in behavior. kindly coherent, character radiating from results though think, work heart, sports, as well taste and intention somebody or group of people. Character is characteristic typical somebody or pregnant group values, abilities moral capacity and obstinacy in face difficulties and challenges (Government of RI, 2010:7).

From the explanation above could understood that character identical with morals, so character is values behavior universal human covering whole activity human, fine in framework relate with Lord, with self alone, with fellow humans, as well with environment, which is realized in thoughts, attitudes, feelings, words, and deeds based on religious norms, laws, etiquette, culture, and customs customs . According to Ahmad Amin (1995: 62) that will is beginning happening morals (character ) in oneself someone , if will that embodied in form habituation attitude and behavior . From concept character this appear draft education character.

Character education , contains three element principal , that is knowing goodness, loving goodness, and doing goodness ( Lickona , 1991: 51). on the side others , Frye (2002: 2) defines education character as , "A national movement creating schools that foster ethical, responsible, and caring young people by modeling and teaching good character through an emphasis on universal values that we all share". So, education character must Becomes movement national which makes school ( institution education ) as agent for build character participant educate through learning and modeling . Through education character school must pretend for bring participant educate have values character glorious like respect and care for others, responsibility answer , be honest , have integrity , and discipline . On the other hand education character should too capable keep away participant educate from disgraceful and prohibited attitudes and behavior.

Character education no only teaches what is right and what is wrong child , however more from that education character embed good habits so that participant educate understand, can feel , and want do good. With thus , education character bring same mission with education morals or moral education. Basic Values in Character Education The Indonesian government has formulate policy in framework development character nation. In National Character Development Policy Nation 2010-2025 confirmed that character is results cohesiveness four part, ie though heart , though think , exercise , as well taste and intention processing . though heart related with feeling attitudes and beliefs/faith, though think regarding with a reasoning process To use find and use knowledge in a manner critical, creative , and innovative , sports related with the processes of perception , readiness , imitation , manipulation , and creation activity new accompanied sportsmanship , as well taste and intention relate with reflected will and creativity in caring, imaging, and creation novelty ( Government of RI, 2010: 21). Values character imbued with the Pancasila precepts in each section that, can put forward as following:

1. Sourced characters from though heart among others, faith and piety , honest , trustworthy , fair , orderly , obedient rules, responsible answer, empathize, dare take risk , abstinence give up , willingly sacrifice and soul patriotic ;

2. Sourced characters from thought including intelligent, critical, creative, innovative, willing know, productive, oriented science and technology, and reflective;
3. Sourced characters from sports / kinesthetics among others, clean and healthy, sporty, tough, reliable, empowered resistant, friendly, cooperative, determinative, competitive, cheerful, and persistent; and
4. Sourced characters from taste and intention including humanity, mutual appreciate, mutual cooperation, togetherness, friendly, respectful, tolerant, nationalist, caring, cosmopolitan, prioritizing interest general, love Homeland, proud use Indonesian language and products, dynamic, work hard, and ethos work.

of values character above, the Government proclaimed four score character main to be end spear application characters among participant schooled, that is honest (from thought heart), intelligent (from thought think), tough (of exercise), and caring (from taste and intention processing). With so, there is many score character that can developed and integrated in learning at school. Embed all grain score the is very tough task because it is necessary chosen values certain priorities planting on the participants educate.

See results education positive character the so needed integration education character in every eye lesson included in the lesson math. Learning math is very interesting for connected with education character because mathematics is underlying universal science modern developments, have role important in various discipline knowledge and progress power think human. For dominate and create future technology needed mastery strong math since early. For equip participant educate Becomes a ruler capable technology utilise knowledge in life nation and state, no enough only with equip mastery cognitive course, however needed formation character participant educate.

Permendiknas No. 22 of 2006 concerning Mathematics Subject Content Standards state that learning mathematics education elementary and intermediate aims for students to:

1. Understanding draft math, explained linkages between concept and apply draft or algorithm in a manner flexible, accurate, efficient and precise in solving problem
2. Using reasoning on patterns and traits, doing manipulation mathematics in make generalization, composing evidence, or explain ideas and statements mathematics
3. Solve covering issues ability understand problem, designing a mathematical model, solving the model and interpreting the solution obtained
4. Communicating idea with symbols, tables, diagrams or other media for explain circumstances or problem
5. Have attitude value utility mathematics in life, that is have a desire know, concern, and interest in learn mathematics as well as attitude tenacious and believe self in solving problem

Characteristics eye lesson mathematics among others is demand ability think logical, analytical, systematic, critical, creative and innovative as well as emphasize mastery concepts and algorithms Beside solving problem. According to Soedjadi "the values contained in mathematics covers agreement, freedom, consistency and universality" (Suyitno, 2011:23). Characteristics eye lesson mathematics and the values contained in mathematics the could grown in the learning process with election appropriate methods and materials. "Traits general mathematics namely: (1) Object mathematics is abstract; (2) Mathematics use blank symbols of meaning; (3) Think mathematics based axioms; and (4) How to reason is deductive" (Juhartutik, 2012: 18).

During this, the teacher has not many grow education character in learning, so many students who haven't have the character it should be formed, they afraid ask moment experience difficulty understand Theory learning, love cheat or ask to other students at the time work questions, talk and behave less relevant moment learning going on. because that is, education character specifically attitude believe self, honesty as well as not quite enough very important answer in learning math, so in the process of learning trust self discipline as well as not quite enough answer expected could appears and is owned by each student. Existing problems in education moment this that is more prioritize aspects cognitive than affective and psychomotor. From several case implementation Even more National Exams attach importance aspect intellectual than aspect his honesty, level honesty The National Exam only 20%, because still many participant cheating students in various method in work The National Exam. Moment this not yet many school that provides educator education in a manner intense for morality" (Dumiyati, 2011: 98).

Teachers (educators) can choose values character certain for applied to participants educate customized with payload Theory from every eye existing lessons. Teachers can too integrate character in each designed learning process (scenario learning) with choose suitable method for developed character participant educate. One possible alternative used is with learning settings based problem with flipped classroom. A number of studies find benefit from flipped classroom. According to Hamdan (in Drake et al, 2016: 5) after use flipped classroom learning during three year in all class mathematics at school middle school in Minnesota, happened enhancement students who pass the exam nationalmathematics as much as 50 percent. While in Colorado experienced enhancement score test in math, science, reading, study social, and writing. According to the New York regional Information Center (in Drake et al, 2016: 5) after a teacher uses a flipped classroom at a school at the Niagara Falls city level graduation for Algebra / Trigonometry increase by 20 percent (students reach level mastery an increase of 3 percent).

Furthermore Arends (1997: 288) argued that learning model based on problem is a learning model with approach learning students on the problem authentic so that student could arrange knowledge own, develop more skills high and inquiry, self-sufficient students, and improve trust self alone. According to Arends (1997: 161) learning based on problem consists of 5 (five) phases ie: Orientation Students on Problems, Organizing Student in Learning, Guiding Individual Investigations and Groups, Develop and Present the Work, and Analyze and Evaluate the Solution Process Problem this model function for stimulate think level tall in situation oriented problem, incl inside it how learn. In In this learning model, the teacher

plays a role in serve problem , filed questions , and facilitate investigation and dialogue. More important again the teacher is doing scaffolding ( as a process where a student helped finish problem certain go beyond capacity development from teachers or other people who have ability more ), a framework enriching support inquiry and growth intellectual (Ibrahim and Nur, 2000: 22).

On the basis mandate education and goals education national , then researcher interested for To do study about studies case education character through the learning process mathematics especially at SMK Tridharma Gorontalo. the SMK is one school Vocational education in Gorontalo , especially in the City of Gorontalo doing education character or build character During a number of year this , like build culture school that alone even in part eye lesson . It's been a while school the apply education character even no only on learning but also culture school like pray before lesson started and finished study , prayer dhuha on break first , and pray midday at break second and held canteen honesty .

### **METHODOLOGY**

Method study this is descriptive qualitative. Analysis statistics descriptive used for analyze effectiveness learning mathematics for Theory Operation Matrix through learning based on problem with Flipped Classroom which is integrated with Character Education at Tridharma Vocational High School Gorontalo.

Slavin (1994: 310) states that effectiveness learning consists from four indicator namely: (a) Quality learning, (b) Appropriateness level learning , (c) incentives , and (d) time. Quality learning , that is how much big the information conveyed such until student could study it with easy . Quality learning part big is product from quality curriculum and learning that alone . suitability level learning, that is to what extent the teacher ensures level readiness student for learn information new where student must have related skills and knowledge with information the. In other words, matter the learning given no too difficult or no too easy . Incentives , that is how much big motivating teacher efforts student for work tasks study and study presented material. The more big given motivation , activeness student the more too big. Time, that is ever given time to student for learn presented material. Learning will effective if student could complete learning in accordance with specified time .

Meanwhile, Kemp (Mudhafir , 1987: 164) argued that method measure effectiveness learning started with submit question : what has \_ achieved student ? For answer this could seen from how many amount successful students \_ reach destination study in time certain . Furthermore , Diamond ( in Mudhafir , 1987: 164) argues that effectiveness too \_ be measured with see interest student to activity learning . Suherman ( in Alhadad , 2002: 55) stated that interest affect process results study student . If student no interested for learn something so no could expected he will succeed with good in learn Thing it , on the contrary if student study in accordance with interest so could expected result will more ok . Besides that , Eggen and Kauchak (1988: 1) say that effectiveness learning be marked with liveliness student in learning , in particular in organization and discovery information . because \_ that the more active student in the learning process , increasingly effective learning is also implemented .

Notice a number of opinion above \_ seen that effectiveness learning according to Slavins more emphasizes the ability of teachers , while Kemp emphasizes results study student . Furthermore, Diamond emphasizes student interest ( response ) , while Eggen and Kauchak emphasize activity student . In study this , author blend a number of opinion above \_ so that effectiveness learning based on four indicator namely : (1) achievement effectiveness teacher's ability to manage learning , (2) achievement effectiveness activity students , that is achievement ideal time to use student for To do every activity loaded in plan implementation learning with tolerance 5%, (3) response student to positive learning \_ that is there is a percentage average answer ( response ) students for category happy , new and interested more big or same with 80% and (4) achievement completeness learn ( a student stated complete study when have power absorb at least 70% of total value of 100, whereas completeness classic achieved when at least 80% of the students are in the class has complete study ). If whole the above aspects fulfilled with condition aspect completeness study fulfilled so learning with learning models based on problem with the integrated Flipped Classroom with Character Education said effective . Data analyzed is the teacher's ability data in manage learning , activity data students , response data students and outcome data study student .

#### 1. Analysis of Teacher Ability Data in Manage Learning

Observational data teacher 's ability manage learning stated in form score Very Good , Good , Enough , Poor , and No OK . the score then described with refers to the table aspect observation based on scenario . The ability of the teacher in manage learning said effective if every every score from all plan implementation learning (RPP) for every assessed aspects \_ is in the minimal category of ' good '.

#### 2. Activity Data Analysis Student

effectiveness activity student determined by suitability to indicated ideal activity with set ideal time . The ideal time limit can be seen in the table criteria ideal time for activity students. Activities student said effective if the average time is used for every observed aspects \_ from all plan implementation learning (RPP) is in the criteria limit tolerance ideal time .

#### 3. Response Data Analysis Student

Questionnaire data response student analyzed in form percentage . Response student categorized as positive if percentage response positive for every response aspects \_ obtained minimum percentage of 80%.

#### 4. Analysis of Learning Outcomes Data Student

Results data analysis study student in a manner descriptive aim for describe completeness results study student . Data analyzed is the posttest data. A student said complete learn in a manner individual if score obtained \_ student the more from or same with 70% of total score . Whereas completeness study in a manner classic achieved when in class the more

from or same with 80% students complete learn it .  
 Learning based on problem said effective if whole the above aspects are met

**RESULTS**

Analysis statistics descriptive used for analyze effectiveness learning mathematics Theory matrix through learning based on problem with integrated flipped classroom with education character . Data analyzed is the teacher's ability data in manage learning , activity data students , response data students and outcome data study student .

**Analysis of Teacher Ability Data in Managing Learning**

Observational data teacher 's ability manage learning stated in form scores very good , good , fair , poor , and no ok . the score then described with refers to the table criteria teacher's ability to manage learning .

**Ta bell 1. Teacher Ability Data to Manage Learning**

Observed Aspects	Score	Category
Motivating Students	4	Well
Communicating learning objectives	5	Very good
Remind prerequisite material	4	Well
Gives trouble	5	Very good
Give students the opportunity to ask questions that they do not understand	4	Well
Group students	4	Well
Directing students in solving problems	5	Very good
Optimizing student interaction	4	Well
Guiding students to collect appropriate information to solve problems	4	Well
Lead class discussion	4	Well
Encourage students to ask questions, express opinions or answer questions	5	Very good
Appreciate the various opinions of students	5	Very good
Directing students to draw conclusions from the material that has been studied	5	Very Good
Give practice questions or quizzes	5	Very Good

**Analysis of Student Activity Data**

effectiveness activity student determined by suitability to indicated ideal activity with set ideal time . The ideal time limit can be seen in the table criteria ideal time for activity student .

**Ta bell 2 . Percentage of Student Activity in Learning**

Observation Category	Average	Effectiveness Limits
Listening/Paying Attention to Teacher/Friend Explanations	16,3	14P ≤ <24
Reading/Understanding Problems in LKPD	15,75	13P ≤ <23
Solving Problems / Finding Ways and Answers to Problems	22	20P ≤ <30
Discussion / Ask Between Students	21,17	15P ≤ <25
Writing that is relevant to teaching and learning, such as doing a knowledge test, copying	16,17	7P ≤ <17

Draw Conclusions from Procedures/Concepts	6,42	1P ≤<11
Irrelevant Behavior During Teaching and Learning Activities	3,25	0P ≤<5

Table 2 above show that percentage activity student for every aspects observed in implementation \_ learning are on the criteria limit tolerance set ideal time . With thereby could concluded that activity student said effective .

**Analysis of Student Response Data**

Questionnaire data response student analyzed in form presentation . Response student categorized as positive if percentage response positive for every response aspects \_ obtained minimum percentage of 80%.

**Ta bell 3 . Student Responses to Learning Activities**

Statement	Student Choices		Percentage of Student Answer Choices	
	Yes	No	Yes	No
Happy with math lessons	28	3	90.32	9.68
Passionate in learning mathematics	30	1	96.32	3.23
Active in following math lessons	30	1	96.32	3.23
Interested in math lessons	27	4	87.10	12.90
Listen carefully to the math teacher's explanation	29	2	93.55	6.45
Likes to discuss with friends discussing math assignments	31	0	100	0
Waiting for math class	30	1	96.77	3.23
Ask the teacher when you don't understand math material	27	2	87.10	6.45
Tend to be passive during group discussions	1	30	96.77	3.23

**Analysis of Learning Outcomes Data**

In study this is in class Nursing imposed test end . On class the given test end followed by 31 students Class XI Nursing at Tridharma Vocational High School , Gorontalo. Description about score student for Theory matrix in a manner concise presented in Table 4 .

effectiveness activity student determined by suitability to indicated ideal activity with set ideal time . The ideal time limit can be seen in the table criteria ideal time for activity student .

**Ta bell 4 . Calculation of Individual and Classical Completeness**

Student's name	Learning outcomes	Completeness Criteria
Agustina Tahir's sister	85	complete
Djafar's sister	80	complete
Anastasya Oktaviyani Paputungan	90	complete
Aril Mointy	85	complete
Cindy Angelina Omar	60	Not Completed
Cinderella Isa	70	complete
Dimas Saputra Iloponu	75	complete

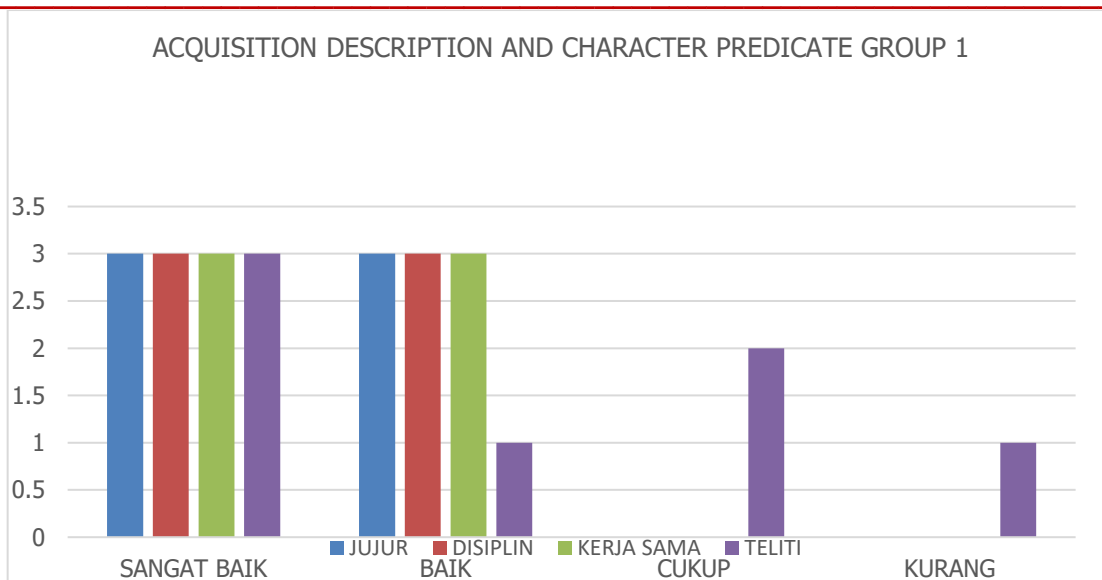
Echa Agustinanda Nasir	82	complete
Fauzia Ma'rus	90	complete
Frances Cecilia Djabar	70	complete
Hamsira Saleh	93	complete
Lumbato sun	65	Not Completed
Mohamad Fazril Islami Dali	40	Not Completed
Naysila Putri Ngalitu	95	complete
Nuraini Fitriah R. Ibrahim	90	complete
Nuzul Ramadan	75	complete
Qurrauwaini Kondengis	90	complete
Grace Ibrahim	85	complete
Rahmawaty Gintulangi	20	Not Completed
Regita Rahmola	90	complete
Rivaldi Buge	85	complete
Samsadilla Revalina Putri Kobisi	95	complete
Septyanto Ibrahim	85	complete
Siti Marshanda V. Zakaria	80	complete
Siti Naila F. Ahmad	65	Not Completed
Siti Nut Alifyah Amuda	95	complete
Siti Nurfadilah Rauf	90	complete
Siti Nur Amalia Paputungan	90	complete
Sri Olivia Saud	65	Not Completed
Yulan Poha	70	complete
Nezlan Ghaib	75	complete
Average	83.55	

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Table 4 shows that obtained that the average score results study is 83.55. When noticed in class Nursing has reach completeness study set classic \_ that is by 80%. this \_ indicated by the number students in class complete nursing \_ study individually 25 of 31 students or by 81%. This overview indicate that learning based on integrated problem \_ with the flipped approach is effective reviewed from completeness study in a manner classic .

Besides test results study , deep study this is also being developed instrument evaluation attitude Social : honest , disciplined , responsible responsible , caring (mutual cooperation, cooperation , tolerance , peace ), polite , and responsive . Following served results evaluation attitude in Class XI Nursing at Tridharma Vocational School, Gorontalo:

**Diagram 1 . Student Character Description**



## DISCUSSION

### The Effectiveness of Problem-Based Learning with Flipped Classroom

Based on the research results above, the effectiveness indicators show results above the minimum criteria set. This is shown by data on the ability of teachers to manage learning to achieve good and very good criteria. Student activity also shows that percentage activity student for every aspects observed in implementation \_ learning are on the criteria limit tolerance set ideal time. Response student achieve positive criteria indicated by the response results students for every aspect reached more than 80%. When noticed in class Nursing has reach completeness study set classic \_ that is by 80%. this \_ indicated by the number students in class complete nursing \_ study individually 25 of 31 students or by 81%. This means that problem-based learning with a flipped classroom that is integrated with character education is effective when viewed from the teacher's ability to manage learning, student activities, student responses, and student learning outcomes.

Research results this in accordance with findings learning outcomes research mathematics participant students who apply learning with Flipped Classroom strategy with more scientific approach good than results study mathematics participant teach without \_ apply to participants educate class XI SMKN 2 Padang Panjang. 2. Motivation participant educate to defender horse with the application of the Flipped Classroom strategy and a classified scientific approach high. 3. Interests participant educate to Theory learning mathematics with the Flipped Classroom strategy and a scientific approach are also classified high. . Another research was also conducted by Made Juniantari, I Gusti Ngurah Pujawan, and I Dewa Ayu Gede Widhiasih (2018) which reveals that flipped classroom had an effect positive to understanding draft mathematics student.

Character education through learning mathematics is quite effective in increasing learning achievement and instilling character values in students. This is in line with Salafudin's research (2013) where based on his conclusions it was revealed that the learning achievements of students who underwent learning with character education were better than learning outcomes with conventional learning (expository method).

In learning mathematics also bears responsibility in developing character education. Character education in learning mathematics can be done through mathematics material (such as: conveying or writing reasons/arguments at each step in working on/solving math problems), through models, methods, or strategies used in learning mathematics (for example: discovery methods for learning concepts, principles or skills, cooperative methods in problem-solving learning), and through the implementation of the mathematics learning process (for example: done by providing positive examples of actions from educators or real examples experienced by educators or students, enforcing discipline, strengthening strengthening good habits, and reminding bad habits, such as politeness in sitting, dressing, talking, and so on) (Jailani, 2011)

## CONCLUSION

Based on analysis descriptive in results study about effectiveness learning based on problem with integrated flipped classroom education character at SMK Tridharma Gorontalo with indicator teacher's ability to manage learning, activity study student, response students and results study classic could concluded that:

1. The ability of the teacher in manage learning categorized as effective.
2. Activity student categorized as effective.
3. Response student to learning positive.
4. Study results in a manner classic complete.

Thus, learning \_ \_ based on problem with integrated flipped classroom with education character at SMK Tridharma Gorontalo said effective



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