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## Problem Solving Ability Considered by Self Confidence in Digital Media Assisted Online Learning

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#### Abstract

The aims of this research are to know the Problem-Solving Ability (PSA) in Missouri Mathematics Project (MMP) assisted by digital media and Discovery Learning (DL) models to achieve learning mastery, to know the comparison of PSA of MMP assisted by digital media and DL, and to know how PSA students based on Self Confidence (SC) of low and high category. Subjects are 12 students who are unique in the results of the PSA test and self confidence questionnaire. Data collection using documentation, questionnaire, test, and interview. The result is 16 out of 26 students achieved individual mastery, so the percentage of classical completeness was 61,54%, which means that the experimental class hadn't yet reached 80% classical completeness; the PSA of MMP model assisted by digital media is better than DL model; students with high category SC achieve good criteria at the first PSA indicator.

#### Abstrak

Tujuan penelitian mengetahui ketuntasan klasikal Kemampuan Pemecahan Masalah (KPM) pada pembelajaran daring model Missouri Mathematics Project (MMP) berbantuan media digital; mengetahui perbandingan KPM peserta didik model MMP berbantuan media dengan model Discovery Learning (DL); mengetahui KPM peserta didik model MMP berbantuan media digital ditinjau dari self confidence (sc). Penentuan sampel dan subjek menggunakan teknik purposive sampling. Subjek penelitian 12 peserta didik yang memiliki keunikan pada hasil tes KPM dan angket sc pada kelas eksperimen. Pengambilan data penelitian menggunakan dokumentasi, angket, tes, dan wawancara. Hasil penelitian 16 dari 26 peserta didik mencapai ketuntasan individual, sehingga persentase ketuntasan klasikal 61,54% yang artinya kelas eksperimen belum mencapai ketuntasan klasikal 80%, KPM peserta didik model MMP berbantuan media digital lebih baik daripada KPM peserta didik model DL, dan Peserta didik dengan sc tinggi mencapai kriteria baik pada setiap indikator KPM, sedangkan peserta didik dengan sc rendah mencapai kriteria baik pada indikator KPM pertama.

Keywords: Problem Solving Ability; Self confidence (SC); Digital Media.

#### INTRODUCTION

Mathematics is not enough to only be mastered by some people, of course, every individual needs to have mastery of mathematics at a certain level (Kemendikbud, 2014). According to Sadat (2016), the main purpose of learning mathematics is to provide provisions in the form of abilities that will be needed by students in their daily lives. According to NCTM (2000), as quoted by Rasmin (2018), the purpose of learning mathematics is no longer only focused on improving student learning outcomes, but is expected to be able to improve higher-order mathematical thinking abilities including (1) mathematical reasoning ability, (2) mathematical problem solving ability, (3) mathematical creative thinking ability, (4) mathematical representation ability, (5) mathematical communication ability, (6) mathematical literacy ability, and (7) mathematical communication ability. One of the mathematical high orders thinking ability that are very important for students to have been the mathematical problem-solving ability. This is in accordance with one of the objectives of senior high school mathematics learning in the attachment of Permendikbud No. 59 of 2014 about Senior High School Curriculum, namely developing students' mathematical problem-solving abilities. There are four steps that can be taken to solve the problem, namely (1) understanding the problem; (2) problem solving planning; (3) carry out problem solving planning; and (4) reviewing the completeness of problem solving (Polya, 1973). In addition to problem solving abilities, one of the other learning objectives of mathematics from the affective aspect is selfconfidence. Self-confidence is a person's view (positive feelings) towards himself and his confidence in the knowledge, abilities, and capacities he must be able

to handle or solve problems in his life with very good results (Sadat, 2016).

In Kudsiyah's research (2017), there are several factors that affect students' mathematical problem solving ability after the implementation of problem based learning, these factors are in the form of cognitive aspects (behavior that emphasizes intellectual aspects such as understanding of translating questions, understanding concepts ability, counting ability, etc.) as well as affective aspects (behavior that emphasizes aspects of feelings such as interest, motivation, attitude, appreciation, anxiety, and ways of self-adjustment shown during the learning process, self-confidence, etc.), or it could be outside of these two aspects. In Sadat's research (2016), there are two factors that affect the low mathematical problem solving ability of students, namely the first internal factors, one of which is the view of students that mathematics is difficult which causes feelings of hatred or fear to learn mathematics. This hatred and fear can arise because of the low self-confidence of students. The second factor is an external factor, one of which is how the teacher conducts learning.

Sadat (2016) also states that mathematical problem solving ability and self confidence influence each other where self confidence makes students able to overcome challenges and solve mathematical problem solving, especially non-routine problems, and vice versa if students are able to solve math problems well can lead to increased self confidence in himself. This is relevant with Lutfiyah's research (2019) which states that there is a significant influence between students' self confidence and problem solving ability, where the higher the self confidence, the higher the students' mathematical problem solving ability. Several other studies that examined problem solving ability and self confidence were mostly carried out by previous researchers, including Fitriani (2016), Wulandari (2017), Fauziah (2018), Aisyah (2018), Putra (2018), and Ramdan (2018). Aisyah's research (2018) conducted at West Bandung Junior High School shows that there is a significant relationship between problem solving ability and students' self-confidence. Where the higher of problem solving ability, the higher the self confidence of students. Because having good self-confidence can foster a sense of confidence in problem solving.

Several previous studies reveal that the performance of students in Indonesia is still low. One of them in TIMSS (Third International Mathematics and Science Study) shows that the achievement of junior high school students in Indonesia is ranked 34 out of 38 countries, while the **PISA** (Program for International Students Assessment) shows that the mathematics achievement is ranked 63 out of 70 countries in 2015 (Ulfa, 2019). Based on the results of the 2015 TIMSS study, it showed that senior high school students in Indonesia were ranked 45th out of 50 countries (Masri, 2018). Purnamasari's research (2019) conducted at the Professional Field Practice (PFP) at Angkasa Lanud Sulaiman Junior High School showed that the PSA students at the school in solving math problems were still low from the results of Mid-Semester Exam (MSE) for 2018/2019. Therefore, to determine the PSA of MAN 2 Banjarnegara, the researchers observed the results of the daily assessment, MSE, the End-Semester Exam (ESE), and the End of Year Exam (EYE) in recent years and the results are still relatively low. As an illustration of the ability students in class XI science in solving math problems, the following is presented data on the percentage of classical in class X MAN 2 Banjarnegara in the form of Final-Semester Exam and the End of Year Exam in the 2019/2020 in Table 1.

Table 1. Data of ESE and EYE				
	Cor	Compulsory Mathematics		
Class	ESE		EYE	
	$\overline{x}$	%	$\bar{x}$	%
IPA 1	77,7	53,85	81	82,05
IPA 2	75,2	56,10	79,2	87,80
IPA 3	68,1	34,21	79,4	89,47
IPA 4	75,8	40,54	78,1	56,76
ΙΡΑ ΚΟΚ	77,1	52,50	77,8	67,50
IPA TB	78,6	58,06	79,0	61,29

The results of observations on student answer sheets in both ESE and EYE were found that there were still many that were not right in solving math problems, both multiple choice guestions and description questions. Based on field observations at MAN 2 Banjarnegara, the learning model that is often applied during face-to-face learning (offline) is the teacher explains the material on the blackboard accompanied by examples of the questions, then students work on the type questions in the student's worksheet or textbooks which are then assessed or discussed together. Meanwhile, when Distance Learning or online the teacher uses the online mode Discovery Learning model. While the results of an interview with one of the mathematics teachers at MAN 2 Banjarnegara explained the learning model applied and the absence of innovative learning media during the implementation of online learning. There are still many students who are not active and do not even respond when online learning takes place. This is relevant with Sadat (2016) stated, there are external factors that affect students' problemsolving ability, one of which is how teachers do learning, if teachers are accustomed to conveying messages of knowledge (conventional learning), then students tend to be passive so that it has an impact on low learning outcomes their

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problem-solving abilities. The implementation of mathematics learning itself is expected to use an approach or learning strategy that can trigger students to take an active role in the learning process and guide students in the process of problem posing and problem solving (Kemendikbud, 2016).

One of the efforts to improve students' problem-solving ability is that teachers need to choose a learning model that is in accordance with the material being studied (Yuliasari, 2017). Missouri Mathematics Project (MMP) is one of the learning models that can improve students' problem-solving ability (Sadat, 2016). This statement is in accordance with the results of research by Alba (2013), Faroh (2014), Latifah (2014), Ansori (2015), Masriah (2015), Shah (2015), and Faroh (2017) which show that the Missouri Mathematics Project (MMP) model can improve students' mathematical problem-solving ability. In Ansori's (2015) research conducted at SMP N 26 Banjarmasin, it showed that the problem-solving ability of students in the MMP learning model were in the good category for each problem-solving step. MMP itself can be applied in face-to-face learning (offline) or distance learning (online).

In addition to the selection of learning models, one of the efforts to improve the quality of mathematics learning can be done with the support of appropriate learning media in the teaching and learning process (Walida, 2015). Many studies have been conducted to examine the use of media that support the learning process. The media itself has been studied in research by Lena (2015), Huan (2016), Faroh (2017), Ginting (2017), Hidayah (2018), and Yenni (2018) which generally conclude that media effectively supports the learning process. Due to the Covid-19 pandemic, teachers use digital media that makes it easy to access during distance learning (online). Teachers can of course take advantage of digital media as a supporter of learning to have a more positive impact (Kurniawati, 2016). Huan's research (2016) conducted on students at the University of China showed that learning with the help of digital media can increase students' enthusiasm, initiative, and effort in solving math problems. Meanwhile, Ubaidah's research (2020) conducted at SMP N 1 Rowosari shows that the Quizizz based STEAM approach is effectively used at the junior high school level, namely the STEAM approach assisted by digital media in the form of Quizizz which can create innovative learning models, learning that explores the potential of students can provide innovation and motivation of students so that they can know the problem solving ability of each student, are able to create various works from scratch, and an interactive learning.

Based on the factual conditions of learning at MAN 2 Banjarnegara as well as various studies on the MMP model, digital media, and self confidence, it encourages researchers to compare the problem-solving ability of students in class XI MAN 2 Banjarnegara between those using the MMP model assisted by digital media (experimental) and the DL model (control). In addition, researchers also want to describe the problemsolving ability of students in the MMP model assisted by digital media in terms of self confidence.

## METHODS

The type or research method used is a combination of quantitative and qualitative research (mixed method). The combination research design used is concurrent embedded, where the method is used continuously, namely collecting and

analyzing quantitative data followed by qualitative data collection and analysis (Creswell, 2016). Quantitative research is used to compare the problem-solving ability of the MMP model assisted by diqital media and DL. This quantitative data was obtained through the Problem-Solving Ability Test (PSAT). The design used in quantitative research is Post-Test-Only Control Group Design. PSA students will be tested classical completeness. Classical completion occurs if the number of students who complete individually reaches a percentage of at least 80% of the number of students in the class. Quantitative data analysis in this study used a learning completeness test and average difference test (right side).

Qualitative research is used to find out how the description of students' problem-solving ability on matrix material in terms of low and high self confidence categories. This gualitative data was obtained through interviews with research subjects. The research subjects in this study were 12 students of the MMP model class assisted by digital media who were unique in the results of the PSA test and self confidence questionnaire. This uniqueness can be seen from the results of the PSAT and self confidence questionnaires with different levels of criteria and categories, namely, each of two students taken from a high category of self confidence with low and medium PSAT criteria, self confidence in the medium category with low and high PSAT criteria, and self confidence. low category with medium and high PSAT criteria.

Data collection techniques used in this study were documentation, self confidence questionnaires, tests, and interviews. Documentation is used to obtain student data needed as research data. Questionnaires were used to collect data on self confidence from learning the MMP model assisted by digital media and DL. Various research questionnaire instruments used in this study include Fitriani (2016), Wulandari (2017), Fauziah (2018), and Ramdan (2018). The test method is used to get the value of the problem-solving ability of the students in the research class. Interviews in this study were used to obtain direct data regarding the problem-solving ability of students in solving problems on the problem-solving ability test questions.

#### **RESULTS AND DISCUSSION**

#### Quantitative Data Analysis

Based on the results of observations of learning in the MMP model assisted by digital media and DL, the data obtained from the PSAT results were tested as follows.

#### Normality Test

The final data normality test was used to find out that the PSAT value data of students in the experimental and control classes. Test the normality of the initial data using the Excel program. The following presents the results of the normality test of PSAT data in Table 2.

Table 2. Output of Normality Test			
Data	Chi-Kuadrat		
Dala	Obs	f	Table
Experiment	10,0663	26	11,0705
Control	5,6479	27	11,0705

Table 2 shows that the value of  $\chi^2_{obs} = 10,0663$  for the experimental class PSAT results which means more than  $\chi^2_{table} = 11,0705$ . Meanwhile, the value of  $\chi^2_{obs} = 5,6479$  for the control class PSAT results is greater than  $\chi^2_{table} = 11,0705$ . This means that  $H_0$  is accepted, so it can be said that the stu-

dents' problem-solving ability test scores come from a normally distributed population.

#### Homogenity Test

The homogeneity test was used to determine whether the PSAT value data of the experimental class and control class students had the same variance. The results of the homogeneity test analysis can be seen in Table 3.

Table 3. Output of Homogenity Test			
Data	Fobs	$F_{table}$	
PSAT experiment and	1,552	1,9416	
control class			

Based on Table 3, it is found that  $F_{obs} < F_{table}$ , then  $H_0$  is accepted. That is, the variance of the PSAT value data of students in the experimental class and control class is the same or homogeneous.

## Learning Mastery Test

The learning mastery test was conducted to determine the achievement of problem-solving ability mastery in the online learning model of the Missouri Mathematics Project (MMP) assisted classical complete digital media. Based on the results of the data analysis of the PSAT scores of the experimental class and control class students, 16 of the 26 experimental class students completed individually, while 8 of the 27 control class students completed individually. Based on the previous test, the data obtained were normally distributed and homogeneous, so that to test the classical completeness of students' problem-solving ability, parametric statistics were used with the z test. The results of learning mastery analysis test can be seen in Table 4.

Table 4. Output Learning Mastery Test
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_	Data	Z <sub>obs</sub>	Z <sub>table</sub>
-	Experiment	-2,26866	-0,1736
	Control	-6,41895	-0,1736

Based on Table 4, it is obtained that  $z_{obs} < z_{table}$ , then  $H_0$  is accepted. That is, the proportion of students who get a problem-solving ability test score of more than or equal to 71 in a class that uses the digital media assisted MMP learning model is less than 80% or classically incomplete. And the proportion of students who get a problem-solving ability test score of more than or equal to 71 in a class that uses the JL learning model is less than 80% or classically incomplete.

## Average Different Test

The two-average difference test was conducted to find out the comparison or difference in the average PSAT scores of students in classes using the MMP learning model assisted by digital media and DL. Based on the results of the data analysis of the PSAT values of the experimental class and control class students, it showed that the data were normally distributed and homogeneous, then a difference test of the two averages was carried out and the results obtained  $t_{obs} =$ 3,514616823 and  $t_{table} = 1,6752$ . Because  $t_{obs} > t_{table}$ , then  $H_0$  is rejected. That is, the problem-solving ability of students in a class that uses the PBL model is better than the problem-solving ability of students in a class that uses the DL model.

## Qualitative Data Analysis

The results of the PSAT which consist of five questions are assessed using a scoring guideline based on the problemsolving ability of the indicators. After knowing the achievement of problem solving, then based on the results of the PSAT indicator data and the results of interviews with the twelve research subjects, triangulation techniques can be implemented. The triangulation technique is an attempt by researchers to use different data collection techniques to obtain data from the same source.

Filling in Self Confidence Questionnaire and Determination of Research Subjects

Table 5. Grouping of Experimental Class

Nurturant Effect Categori Students Percentage				
4	15,385%			
17	65,385%			
5	19,23%			
26	<b>100</b> %			
	4 17 5			

Based on the self-confidence questionnaire, students who received the MMP learning treatment assisted by digital media were grouped into three categories of self confidence which are presented in Table 5. Based on Table 5 it is known that from 26 students there were 4 or 15.385% students who belonged to the high category of self confidence. and 5 or 19.23% of students included in the low self-confidence category. The research subjects were taken by two students with low and high self-confidence categories.

Based on the results of the PSAT and self-confidence questionnaires, it was found that several students whose PSAT and self-confidence had different criteria. The research subjects selected were twelve out of sixteen students who had different criteria for PSAT results and a self-confidence questionnaire with details in Table 6. Based on the results of the self-confidence questionnaire, the subjects with low self-confidence categories were E-05, E-12, E-14, and E-20. Subjects with medium self-confidence were E-02, E-09, E-18, and E-23. Meanwhile, subjects with high self-confidence were E-04, E-13, E-16, and E-19. Furthermore, to facilitate coding, subjects selected

from the low self-confidence category were called S-01, S-02, S-03, and S-04. The subjects selected from the medium category of self-confidence were called S-05, S-06, S-07, and S-08. Meanwhile, subjects from the high category of selfconfidence were called S-09, S-10, S-11, and S-12.

Table 6. Research Subject			
Code	Self- Confidence	PSAT Cri- teria	Namely
couc	Categori	tenta	itaniciy
E-05	Low	Medium	S-01
E-12	Low	Medium	S-02
E-14	Low	High	S-03
E-20	Low	High	S-04
E-02	Medium	Low	S-05
E-09	Medium	Low	S-06
E-18	Medium	High	S-07
E-23	Medium	High	S-08
E-04	High	Low	S-09
E-13	High	Low	S-10
E-16	High	Medium	S-11
E-19	High	Medium	S-12

#### **Quantitative Discussion**

Learning in classes that receive digital media assisted MMP model learning and classes that receive DL model learning is carried out online with a different number of meetings, but with the same number of lesson hours. Both classes use WhatsApp as a learning medium. Whats-App is used as a medium where online learning takes place, namely conveying information, both material and assignments or others. In addition to using WhatsApp, researchers also use Google Classroom as a digital based learning media or referred to as digital media.

Classes with digital media assisted MMP models and DL classes both use WhatsApp and Google Classroom where Google Classroom is used as a forum for collecting review assignments or other assignments. The difference in the use of Google Classroom in the two classes is that the digital media assisted MMP class uses Google Classroom not only to collect assignments but is also used as a media that is integrated with Quizizz. Quizizz is an application for online quizzes. The DL model class receives a quiz after the discussion of a sub-section of Matrix material is held online in the WhatsApp group, while the quiz in the digital media assisted MMP model class using the Quizizz application is accepted every before (pre-test) and after (posttest) discussing a Matrix material subchapter, as well as teacher evaluation held a live quiz.

In this study, students in the digital media assisted MMP model class can take pre-test, post-test, and live quizzes if they have joined the Google Classroom class. Students are given directions through a WhatsApp group by the teacher regarding the procedure for using Quizizz on their android. The average number of pre-test participants in the digital media assisted MMP model class, namely Quizizz, ranges from 10-20 students out of 27 students. This number is more when compared to the number of students in the DL model class who take quizzes in the WhatsApp group which is attended by about 4-5 students. The researcher also held a live quiz in the experimental class using Quizizz at the end of the discussion of the Matrix material. Live quizz is done streaming where students work simultaneously and are monitored directly by the teacher by streaming. In addition, students can directly see the score and ranking of all participants including themselves. With the live guiz on the MMP model assisted by digital media, students have the urge to prepare themselves by studying first before taking the live quiz. This is in accordance with Amany's research (2020), in his research, he stated that the implementation of exams or assessments can be done using Quizizz with one of its features, namely a live quiz which makes it easier for teachers to make detailed and objective assessments. He also stated that the live quizzes that were conducted simultaneously could minimize cheating in exams and could improve student discipline.

After the online learning was completed, the researchers held an offline Problem-Solving Ability Test (PSAT) while still paying attention to health protocols. The results of the PSAT were then analyzed using individual completeness tests, classical completeness tests, and average differences tests. In the experimental class, 16 of the 26 students achieved individual mastery, so that the percentage of classical completeness obtained is 61.54. While in the control class, 8 out of 27 students completed individually, so that the percentage of classical completeness obtained was 29.63%. In the classical completeness test the percentage of completeness was compared to 80%. If the percentage of completeness has reached 80%, then the class is said to be classically complete. In the experimental class the percentage of completeness is 61.54%, which means that the class has not been completed classically. Likewise, the control class which obtained a percentage of completeness 29.63% had not yet achieved classical completeness. The percentage of class completeness with the MMP model assisted by digital media is greater than the percentage of class completeness with the DL model with a percentage difference of 61.54% - 29.63% = 31.91%.

Furthermore, the right-side difference test was carried out to show that the average problem-solving ability of students in the digital media assisted MMP model exceeded the average problem-solving ability of students in the DL model. The results of the average difference test show that the average PSAT of students in the digital media assisted MMP model is more than the average PSAT of students in the DL model. The problem-solving ability of students in the MMP model assisted by digital media and the DL model achieves an average achievement but does not achieve classical completeness. If it is seen from the percentage of classical completeness of the class with the MMP model assisted by digital media, it is higher than the percentage of classical completeness of the class with the DL model. From these results it can be concluded that the problem-solving ability of students in the MMP model assisted by digital media is better than the problem-solving ability of students in the DL model.

The results of this study are in accordance with the results of Sadat's research (2016) which shows that the problem-solving ability of students who receive the MMP model have better problem-solving ability than students who receive the conventional learning model. In Nurhaliza's research (2020), the problemsolving ability of students who received the MMP model were better than students who received the Problem-Solving model at MTs Al-Iman Bulus for the 2019/2020 school year. In Winardi's research (2017), the MMP learning model with an open-ended approach can improve problem solving ability and student learning outcomes in three-dimensional material for class X at SMA N 1 Sulang, Rembang Regency for the 2016/2017 academic year.

In Hartono's research (2020), the mathematical problem-solving ability of students who received MMP learning were better than the problem-solving ability of students who received conventional learning in terms of students' selfconfidence in Matrix material. According to Isrok'atun (Hartono, 2020), the MMP model provides opportunities or opportunities for students to work in groups, control exercises, and apply their own understanding by working alone in seat work. In this study, students who obtained the MMP model were given controlled exercises in the form of pre-test, post-test, and live quiz with digital media-assisted form of Quizizz, the results of which were used as evaluation material.

#### **Qualitative Discussion**

After knowing the achievement of problem solving, then based on the results of the PSAT indicator data and the results of interviews with the twelve research subjects, triangulation techniques can be implemented. The triangulation technique is an attempt by researchers to use different data collection techniques to obtain data from the same source. The data is used to determine the problemsolving ability of students in terms of self confidence. Fitriani's research (2016) conducted at a junior high school in West Bandung showed a significant relationship between mathematical problemsolving ability and students' self confidence in learning mathematics. The gualitative discussion in this study is divided into two, namely problem-solving ability in terms of low self confidence and high self confidence categories.

## Problem-Solving Ability Student's with Low Self-Confidence

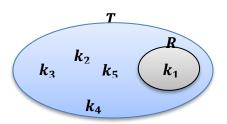
Subjects with low self confidence category achieved good criteria on the first problem solving ability indicator, namely (1) identifying the known elements, which were asked, and the adequacy of the required elements, while the other problem-solving ability indicators achieved sufficient or even less criteria. This means that students with low self confidence categories can identify the elements that are known, what is being asked, and the adequacy of the elements needed. Based on the results of interviews with subjects who have low self confidence categories and based on the observations of researchers during the online learning process, information is obtained that subjects with low self confidence categories are less active in participating in learning and rarely respond to teacher questions when online learning takes place.

# *Problem-Solving Ability Student's with High Self-Confidence*

Subjects with a high category of self confidence achieved good criteria on the first problem solving ability indicator up to the fifth problem solving ability indicator. This means that students with high self confidence categories achieve good criteria on indicators of problem solving ability (1) identify the known elements, which are asked, and the adequacy of the required elements, (2) formulate mathematical problems or develop mathematical models, (3) apply strategies to solve various problems (types and new problems) within or outside mathematics, (4) explain the results according to the original problem, and (5) use mathematics in a meaningful way. Based on the results of interviews with subjects who have high self confidence categories and based on researchers' observations during the online learning process, information is obtained that subjects with high self confidence categories participate in learning more actively than subjects with low self confidence categories. Subjects with a high category of self confidence responded actively and positively, one of which was by answering the teacher's questions and answering the practice questions given.

This is relevant with Sadat's re-

search (2016) which suggests that there is a significant positive relationship between mathematical problem-solving ability and the self confidence of students who receive MMP learning and those who receive conventional learning. If the relationship between the problemsolving ability of students with low and high self confidence is made in the diagram, the following relationship is obtained.



Picture 1. Diagram of Problem-Solving Ability Considered by Self Confidence

Note:

T : High Self Confidence subject R : Low Self Confidence subject k<sub>i</sub> : Indicator problem solving ability for-i

## CONCLUSIONS

Based on the results of the discussion, it was concluded that (1) the results of the Problem-Solving Ability Test (PSAT) of students in the online learning model of Misshouri Mathematics Learning (MML) assisted by digital media achieved individual mastery of 16 out of 26, so classically it achieved completeness of 61.54%. This means that the problem-solving abilities of students in online learning using the MML model assisted by digital media in the form of WhatsApp, Quizizz, and Google Classroom have not been completed classically, (2) the PSA of students with the MML model assisted by digital media is better than the DL model seen from the results of the average difference test. the average and percentage of classical completeness, and (3) the PSA of students with high self-confidence is better than the PSA of students with low self-confidence. Students with high self-confidence category achieved good criteria on each PSA indicator, while students with low self-confidence achieved good criteria on the first PSA indicator.

The use of online Misshouri Mathematics Learning (MML) learning models assisted by digital media can be used as an alternative for MAN 2 Banjarnegara teachers to develop problem solving ability. The self-confidence of students needs to be developed again by the MAN 2 Banjarnegara teacher, namely by the way the teacher becomes a guide, motivator, and inspiration in the hope that this development will be accompanied by the development of students' problemsolving abilities.

#### REFERENCES

- Aisyah, P. N., Nurani, N., & Akbar, P. (2018). Analisis Hubungan Kemampuan Pemecahan Masalah Matematis dan Self Confidence siswa SMP. Journal On Education. 1(1), 58-65.
- Alba, F. M., Chotim, M., & Junaedi, I. (2013). Keefektifan Model Pembelajaran Generatif dan MMP terhadap Kemampuan Pemecahan Masalah. *Kreano.* 4(2), 131-137.
- Ansori, H. & Aulia, I. (2015). Penerapan Model Pembelajaran Missouri Mathematics Project (MMP). *EDU-MAT Jurnal Pendidikan Matematika*.3(1), 49-58.
- Faroh, N., Sukestiyarno, & Junaedi, I. (2014). Model Missouri Mathematics Project Terpadu dengan TIK untuk Meningkatkan Pemecahan Masalah dan Kemandirian Belajar. Unnes Journal of Mathematics Education Research. 3(2), 88-103.
- Faroh, N. (2017). Pemanfaatan TIK Guna Menunjang Karakter Kemandirian dan Pemecahan Masalah Matematika dengan Model MMP. Zeta-Math Jurnal. 3(1), 22-26.
- Fauziah, R., Maya, R., & Fitriana, A. Y. (2018). Hubungan Self confidence terhadap Kemampuan Pemecahan Masalah Matematis SMP. Jurnal Pembelajaran Matematika Inovatif. 1(5), 881-886.
- Fitriani, N. (2016). Hubungan antara Kemampuan Pemecahan Masalah Matematis dengan Self confidence Siswa SMP yang Menggunakan

Pendekatan Pendidikan Matematika Realistik. *Jurnal Euclid.* 2(2),341-351.

- Ginting, I. N. B. & Surya, E. (2017). Use of Figure Tools to Increase Mathematics Result Learning Student Class V Prymary School 101796 Patumbak. International Journal of Sciences: Basic and Applied Research (IJSBAR) 34(1), 247-260.
- Hartono, Huda, N. N., & Prihatin, I. (2020). Model Pembelajaran Missouri Mathematics Project Terhadap Kemampuan Pemecahan Masalah Matematis Ditinjau dari Self Confidence Siswa. Journal of Education and Learning Mathematics Research. 1(1), 25-32.
- Hidayah, I. (2018). Pembelajaran Matematika Berbantuan Alat Peraga Manipulatif Pada Jenjang Pendidikan Dasar dan Gerakan Literasi Sekolah. *PRISMA, Prosiding Seminar Nasional Matematika, 1,* 1-11.
- Huan, C. (2016). A Study on Media digital Technology Courses Teaching Based on Flipped Classroom. *American Journal of Educational Research*, 4(3), 264-267.
- Kemendikbud. (2014). Salinan Lampiran III Permendikbud RI No. 59 Tahun 2014 tentang Kurikulum 2013 Sekolah Menengah Atas/Madrasah Aliyah: Pedoman Mata Pelajaran Sekolah Menengah Atas/ Madrasah Aliyah. Jakarta: Kemendikbud.
- \_\_\_\_\_. (2016). Salinan Lampiran Permendikbud No. 22 Tahun 2016 tentang Standar Proses Pendidikan Dasar dan Menengah. Jakarta: Kemendikbud
- Kurniawati, J. & Baroroh, S. (2016). Literasi Media Digital Mahasiswa Universitas Muhammadiyah Bengkulu. Jurnal Komunikator. 8(2), 51-66.
- Kudsiyah, S. M., Novarina, E., & Lukman, H. S. (2017). Faktor-faktor yang Mempengaruhi Kemampuan Pemecahan Masalah Matematika Kelas X di SMA Negeri 2 Kota Sukabumi. *Seminar Nasional Pendidikan*. 110-117.
- Latifah, D. (2014). Peningkatan Kemampuan Pemecahan Masalah Matematis Siswa Melalui Model Pembelajaran Missouri Mathematics Project (MMP). Jurnal Pendidikan Matematika. 3(3), 159-168.
- Lena, L. (2015). Media digital and Young Children's Learning: A Case Study of Using iPads in American Preschools. International Journal of Information and Education Technology. 5(12), 947-950.
- Lutfiyah, L., Rumigarsari, E., & Fathani, A. H. (2019). Pengaruh Kecemasan Matematika dan Kepercayaan Diri terhadap Kemampuan Pemecahan Masalah Matematis Siswa pada

UNNES JOURNALS

Materi Aritmetika Sosial SMP Negeri 14 Malang. *JP3.* 14(6), 49-53.

- Masri, M. F., Suyono, & Deniyanti, P. (2018). Pengaruh Metode Pembelajaran Berbasis Masalah Terhadap Self-Efficacy Dan Kemampuan Pemecahan Masalah Matematis Ditinjau Dari Kemampuan Awal Matematika Siswa SMA. JPPM. 11(1), 116-126.
- Masriah, Sukestiyarno, Susilo, B. E. (2015). Pengembangan Karakter Mandiri dan Pemecahan Masalah Melalui Model Pembelajaran MMP Pendekatan ATONG Materi Geometri. Unnes Journal of Mathematics Education. 4(2), 157-163.
- Nurhaliza, I. R. & Maryam, I. (2020). Eksperimen Model Pembelajaran MMP dan Problem Solving terhadap Kemampuan Pemecahan Masalah Siswa. *Jurnal Inovasi Pendidikan Matematika (JIPM).* 2(2), 131-141.
- Polya, G. (1973). *How To Solve It*. Princeton: Princeton University Press. Tersedia di https://notendur.hi.is/hei2/teaching/Polya\_H owToSolvelt.pdf.
- Purnamasari, I. & Setiawan, W. (2019). Kemampuan Pemecahan Masalah Matematis Siswa SMP pada Materi SPLDV Ditnjau dari Kemampuan Awal Matematika (KAM). Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang. 3(2), 207-2015.
- Putra, H. D., Putri, W. A. S., Fitriana, U., & Andayani, F. (2018). Kemampuan Pemecahan Masalah Matematis dan Self-Confidence Siswa SMP. *SJME (Supremum Journal of Mathematics Education).* 2(1), 60-70.
- Ramdan, Z. M., Veralita, L., Rohaeti, E. E., & Purwasih, R. (2018). Analisis Self confidence Terhadap Kemampuan Pemecahan Masalah Matematis Siswa Smk pada Materi Barisan dan Deret. *AKSIOMA: Jurnal Pendidikan Matematika FKIP Univ. Muhammadiyah Metro.* 7(2), 171-179.

- Sadat, A. (2016). Implementasi Model Pembelajaran Missouri Mathematics Project Dalam Upaya Meningkatkan Kemampuan Pemecahan Masalah Matematis Dan Selfconfidence Siswa Madrasah Tsanawiyah. Didaktik : Jurnal Pendidikan Guru Sekolah Dasar. 2(1), 1-11.
- Syah, M. A. & Susilo, B. E. (2015). Komparasi Kemampuan Pemecahan Masalah Siswa Antara Model Pembelajaran Mmp Dan Pairs Check. Unnes Journal of Mathematics Education (UJME). 4(1), 77-84.
- Ubaidah, N., Kusmaryono, I., & Prayitno, A. T. (2020). Pendekatan Steam Berbasis Quizizz terhadap Kemampuan Pemecahan Masalah. *Konferensi Nasional Penelitian Matematika dan Pembelajarannya (KNPMP). V:* 351-362.
- Ulfa, D., Rahmi, D., & Revita, R. (2019). Pengaruh Penerapan Model Pembelajaran Core terhadap Kemampuan Pemecahan Masalah Matematis Berdasarkan Self-Confidence Siswa SMP/MTs. Journal Cendekia: Jurnal Pendidikan Matematika. 3(2), 400-409.
- Walida, S. E. (2015). Pengembangan Bahan Ajar dalam Bentuk Multimedia Interaktif pada Mata Kuliah Teori Graph untuk Pembelajaran Matematika Berbasis Digital. Jurnal Pendidikan Matematika. 1(1), 53-57.
- Winardi. (2017). Meningkatkan Kemampuan Pemecahan Masalah dengan Metode MMP dan Pendekatan Open-Ended. *Prosiding Seminar Nasional Matematika (PRISMA). X*: 421-431.
- Wulandari & Sinambela, NJM. (2017). Hubungan Kepercayaan Diri (Self-Confidence) dengan Kemampuan Pemecahan Masalah Matematika Siswa dengan Menggunakan Model Problem Basedlearning di MAN Kisaran. Jurnal Inspiratif. 3(2), 102-108.
- Yenni, R. F. (2018). Permainan Kartu Trigonometri dalam Pembelajaran Matematika Di Kelas X SMA Tamansiswa Palembang. *Nabla Dewantara: Jurnal Pendidikan Matematika*. 3(2), 31-39.