ANALYSIS OF CRITICAL THINKING ABILITY IN SPLDV

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Abstract

Critical thinking can be interpreted as processes and abilities used to understand concepts, apply, synthesize and evaluate the information obtained or the information produced .This study aims to describe students' ability to complete SPLDV questions , and find out the causes of the difficulty in solving the SPLDV questions . Research subject consists from 15 students who originate from State Middle School in the district North Lampung. Data study collected through test And interview. Interviews were conducted to complete data aboutthe causes of the difficulty in solving SPLDV problems. The research data were analyzed descriptively . Research result concluded that ability student in finish about SPLDV is at on levels not enough, Enough, And Good, Andreason how difficult student finish question SPLDV the is how difficult solving problems with more variables than equations, separating the *x* and *y* *variables* on different sides, and don't get a unanimous solution (*real/imaginary*). In addition, important findings were obtainedin this study, namely there are still weaknesses/deficiencies in modifying algebraic forms, look forvarious alternative problem solving, and separate the two variables (x and y).to students It is advisable to understand the concepts and operations of fractions again, as well as train yourself to be critical in solving them about SPLDV.

Keywords: critical thinking, spldv,

Abstrak

Berpikir kritis dapat diartikan sebagai proses dan kemampuan yang digunakan untuk memahami konsep, menerapkan, mensintesis dan mengevaluasi informasi yang diperoleh atau informasi yang dihasilkan. Penelitian ini bertujuan untuk mendeskripsikan kemampuan siswa dalam menyelesaikansoal SPLDV, dan mengetahui penyebab sulitnya menyelesaikan soal SPLDV tersebut. Subjek penelitianterdiridari15 siswa yang berasal dari SMP Negeri di kabupaten Lampung Utara. Data penelitian dikumpulkan melalui tes dan wawancara. Wawancara dilakukan untuk melengkapi data tentang penyebab sulitnya menyelesaikan masalah SPLDV. Data penelitian dianalisis secara deskriftif. Hasil penelitian menyimpulkan bahwa kemampuan siswa dalam menyelesaikan soal SPLDV berada pada level kurang, cukup, dan baik, dan penyebab sulitnya siswa menyelesaikan soal SPLDV tersebut adalah sulitnya menyelesaikan soal dengan variabel lebih banyak dari padapersamaan, memisahkan variabel *x* dan *y* pada sisi berbeda, dan tidak mendapatkan solusi bulat (*real/imaginer*). Selain itu, diperoleh temuan penting pada penelitian ini, yaitu masih kelemahan/kekurangan dalam memodifikasi bentuk aljabar, mencari berbagai alternatif penyelesaian soal, dan memisahkan dua variabel (x dan y). Kepada siswa disarankan memahami konsep dan operasi pecahan lagi, serta melatih diri untuk kritis dalam menyelesaikan soal SPLDV.

Kata kunci: berpikir kritis, spldv, analisis

INTRODUCTION

Education is a business or activity that is carried out deliberately, regularly and planned (Zulyadaini, 2009) . This is with the intention of changing or developing the desired behavior. Through education it is hoped that it will produce quality human resources and beable to build people's lives tobetter direction(Ashadi, 2016; Naufal, 2021).

Mathematics is a universal science that underlies the development of modern technology and has an important role in various disciplines to master and prepare for future technological challenges (Darma et al., 2020) . Mathematics is also an abstract science that requires a diligent and thorough understanding to study it(Zubaidah Amir, 2013) . Even though mathematics is important to learn, many students do not like mathematics. Mathematics is also always used as an arena for competition between students who have understanding and ability in mathematics.

Good mathematical ability will support a person to obtain various kinds of provisions in facing challenges in the global era (Irianto & Febrianti, 2017) . The ability to think critically, logically, carefully, systematically, creatively and innovatively are some of the abilities that can be learned grow develop through good mathematics education (Tampubolon, 2014) . The existence of mathematics learning can help humans understand and master social, economic, and natural problems (Pratami et al., 2018) . There are many interpretations of problem solving or problem solving in mathematics (Nurhasanah & Luritawaty, 2021) . One way to do this is through critical thinking skills.

Critical thinking is a strength and a source of energy in one's social and personal life(Zubaidah, 2010) .The critical thinking learned in science classes also influences students' lives long after they leave their formal education by providing them with tools with which they can analyze a large number of issues that they will encounter in their everyday lives

.Critical thinking skills must be possessed by students in order to be able to face various personal and social problems in their lives(Nuryanti et al., 2018) .

In the learning process in class, the teacher has given examples in teaching SPLDV materi alto student. Both teach directly and indirectly. Although various method has done Teacher in teach SPLDV, However student still experience difficulty understand SPLDV. A number of study about finish SPLDV in students level Junior High School that student experience difficulties in algebraic arithmetic operations (Maryani & Setiawan, 2021) . Difficulty conditions studentis doing Which more different on question operation algebraic calculations medium type (Nada, 2022) , solving word problems (Ahmad & Turmuzi, 2023) which is more complicated to solve Again. Difference on process settlemen there it is Which seen to bereas on how difficult students understand algebraic arithmetic operations on

SPLDV material. Process settlement question Which in volving arithmetic operations on the SPLDV equires a number of ability other besides operation That alone.

Based on this description so study This need done n with objective For describestudent ability in finish question SPLDV And know cause of difficulty finish question SPLDV. Question fractions the is "The p value that satisfies the equation $3p - 2q = 15$ and $5p + 6q = 25$ is ....". This research is expected to beneficial to students in SPLDV material and to curriculum makers input material SPLDV in accordance with age cognitive which appropriate.

METHODS

Methods study This is descriptive qualitative Which explain circum stances Actually without There is treatment to subject study. Subjec this research is 15 junior high school students in North Lampung district. Instruments were given to test students understanding of the SPLDV material. Test results student And interview analyzed in a manner descriptive, And classified on five level son Table1.

Table 1. Answer criteria and ability level fractions

No.	Criteria Answer	Levels
1.	Don't give answer	Very Not enough
2.	Answer No finished	Not enough
3.	Answer Wrong	Enough
4.	Answer Correctin a manner *trial-error* (try try).	Good
5.	Answer Correctin a manner mathematic	Very Good

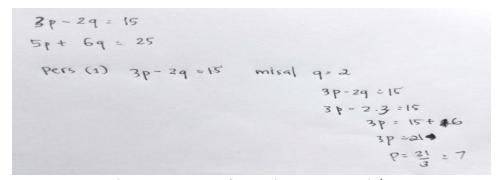**RESULTS AND DISCUSSION**

Answer student

Results analysis from answer student solve the problem "The p value that satisfies the equation $3p - 2q = 15$ and $5p + 6q = 25$ is ....." is classified into five part, that is answer Correctin a manner mathematical, answer Correctin a manner *trial-error,* answer Wrong, answer No finished, And No give answer. Answer students served on Table 2

Table2. Answer student

No.	Criteria Answer	Answer Student
1.	No give answer	0
2.	Answer no finished	5 (3 3 %)
3.	Answer Wrong	2 (13%)
4.	Answer Correctin a manner *trial-error*	8 (54%)
5.	Answer no finished	0

Based on Table2, obtaineda number offindings that all student No can answer with Correctin a manner mathematical, However For ability answer other obtained that ability student finish questions higher than the good teacher in a manner *trial-error* nor answer wrong/unfinished. In addition, from the table the Also obtained that ability answer with Correct (by mathematical And *trial-error*) less than 50%, or more than 50% No capable answer Correct. So, in a manner general ability student on material fractions is enough.

The results of the analysis of several sample answers student in finish question fractions the, that is:

(1) Answer Correctin a manner *trial-error* :

Picture 1. Answer Correctin a manner *trial-error*

Figure 1 shows the correct answerby selecting $q = 3$. election q this is done by direct. Although answer This Correct, but the answer is not mathematical Because there is no mathematical process ,that is the reason for his choice$q = 3$. Answer This Of course just make the reader asks, why was chosen $q = 3$ and not $q$others. So that answer This Correct

But considered *trial-error* answer. Actually, answer *trial-error* worth Correctin a manner mathematical If load steps mathematical Also.

(2) Wrong answer

In Figure 2, you can see the answer toat first characteristic mathematical. However, There is error draft on give information that respondent (student/teacher) not enough under stand method substitution/elimination on settlement equation. substitute equality
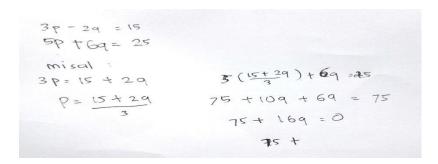

Picture 2. Answer Wrong

(3) Answer No finished:

On Picture 3, answer No finished This Because student No able to exemplify the variable *p* And variable *q*. Example variable That only return Again to form beginning. Answer This show student not enough how ability think critical And creative with take *p* value or certain *q*.

Picture3.Answernot completed

2. Results interview student

Interview to students carried out after implementation test. Question the interview is lack the courage to do try try *(trial-error)* in finish question. Where as when learning in class, students ever finish question with variable more Lots than equation on the question.

Data results interview identified And grouped based on similarity answer. After the data is analyzed, obtained four answer Which similar from answer student. Similarity answer student that reason how difficult finish question fractions theis (a) Lots variable more Lots from on equation, (b) separate the variable *x* And *y* onside different, (c) No a spherical solution, and (d) nogive reasons. Results summary identification and group ing served on Table 3.

Table 3. Reason hard to finish question fractions

No	Difficult Causes Finish Question Fractions	Lots Student (%)
1	More variables much than equality	9 (60%)
2	Separate variable x And y on the side different	4 (27%)
3	No get solution round	2 (1 3 %)

Based on Table 3, reason most difficult students finish question fractionsis variable more Lots than equation. Answer student This show that question the shaped new (nonroutine), or First time finish question the. When faced with a problem new, generally student.

Usually, something question Which *variable more Lots than equation* has two possibilities solution, that is One solution And Lots solution. To determine *x* and *y* on This question requires creativity to look for alternatives *x* and *y* Whichful file quality That. Critical thinking skills are Wrong One ability Which needed in learn mathematics, especiallywhen solving questions. In case In this case, it can be seen that students lacking critical thinking skills finish question. Where as ability critical thinking This can grown And developed on student.

Reason second is difficult separate the *x* and *y variables* on the sides different. In thisproblem there is a denominator Which own two variable so that on moment equate the denominator become *xy*. Further more, multiplying the quantifier of the left side by

the denominator of the side right, And multiply denominator side left with numerator side right. Following process the calculation, that is:

Onside left variable *y* Already separated with *x*, However on side right there is there*x* and *y*. Condition this makes students difficult separate variable *x* And *y*. Similarly, when on the right side want to separate variable *x* with *y* so inside left will still own variable *x* And*y*. So that can separate second variable *x* And *y*, so that student must capable manipulate operation algebra. Manipulation operation algebra is ability manipulate four operation main algebra, that is sum, subtraction, multiplication, And distribution. Ability manipulation of algebraic operations. Influence ability reasoning mathematical, or with say other If algebraic operations manipulation skills some body Good so will Good Also ability reasoning the math, Andon the contrary the more low ability manipulation so will not enough Also ability reasoning mathematical.

Reason third is No get a spherical solution (*real/imaginary*). Difficulty This caused by in ability student moment manipulation operation algebra. Lots factor Which causing difficulties for students manipulating algebraic operations. Reason how difficult do operation algebra student is difficulty in write condition need And Enough, difficulty in understand ethnic group, variable, And constant, error procedural on material in aggregation of sums, and can't do simplification, reason other how difficult do operation algebra is error writing And use signs and mistakes in do ing algorithm.

A number off indings importantin study This, that is though student Already learn or teach material fractions However part big student the Still weakness/deficiency in modify form algebra, looking for alternative solutions problem, and separating the two variables (*x*and *y*). These findings were obtained when done interview to student. Weakness or student shortage in modify form algebra caused by weak mastery algebraic properties and operations. Student feel hesitant moment use characteristic And operation algebra, like characteristic associative, distributive, commutative, And *canceled* (cross out). Weak ability look for various alternative settlement question by student showed by most (less than 50%) student And Teacher answer *trial-error* when unable to complete with method mathematical. Weak ability This caused by no k get used to it student critical and creative thinking. Then, weak separating the two variables

(*x* And *y*) by student shown when the variables *x* and *y* shaped (*xy*) on second side. This difficulty was caused by weakness understanding concept of algebraic arithmetic operations).

CONCLUSION

Results study conclude that student ability in finish question SPLDV is at on levels not enough, Enough, da n good as well as reason how difficult student solving the SPLDV problem is more variables Lots than equality, separate the *x* and *y variables* on the sides different, and didn't get a solution round. Besides That, obtained findings important in this study, namely still weakness/deficiency in modifying algebraic forms, look for various alternative settlement question, And separate two variable (*x* And *y*).

Based on results study the so suggested to student should understand the concepts and arithmetic operations of algebra again, as well as train yourself to solve critically question SPLDV; to curriculum makers review placing material age-adjusted SPLDV cognitivestudent, like material SPLDV is taught most fast student class 2 junior high school; And to another researcher should study ability SPLDV for junior high school students in order get a complete picture of ability student about SPLDV starts student elementary school to college tall.

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