

Analysis of Mathematics Representation Abilities Based on Prior Knowledge and Learning Styles

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ABSTRACT

Mathematical Representation Ability is one of the mathematical capabilities that ought to be mastered via college students' means. The cause of this look is to research the mathematical illustration capacity in phrases of the preliminary capabilities and studying patterns possessed via way of means of college students in fixing arithmetic problems. This study is qualitative studies with descriptive qualitative studies techniques to describe college students' mathematical illustration capacity to their preliminary capabilities and studying patterns. The topics on this look at had been college students of sophistication VIII SMPN 27 Padang. The process used to pick samples become executed randomly via way of means of pulling lots, even as the studies topics consisted of 9 topics, specifically: college students who have mathematical illustration capabilities with excessive preliminary capabilities and studying patterns (auditory, visual, and kinesthetic), college students who have mathematical illustration capabilities with mild preliminary capabilities and studying patterns (auditory, visual, and kinesthetic), in addition to college students who have mathematical illustration capabilities with low preliminary capabilities and studying patterns (auditory, visual, and kinesthetic). Data series techniques included mathematical illustration capacity assessments, preliminary capacity questions assessments, pupil studying fashion questionnaires, and interviews. The information received had been then analyzed thru four stages, specifically information series, information reduction, information presentation, and concluding. Data validation becomes finished with the use of information series triangulation. Descriptions of mathematical representations are primarily based totally on college students' paintings in fixing mathematical problems.

Keywords: *Mathematical Representation Ability, Initial Ability, and Student Learning Style.*

1. INTRODUCTION

The capacity to symbolize is one of all numerous mathematical capabilities that scholars should have. The mathematical illustration itself is how someone thinks approximately something and positively communicates mathematical thoughts [5]. Also, illustration talents are very beneficial for college students in fixing math problems. As referred to with the aid of using Brenner (Neria and Amit, 2004: 409) that " a success problem-fixing system relies upon on problem-supplying talents inclusive of building and the use of mathematical representations of representations into words, graphs, tables, and equations, fixing and manipulating symbols." The capacity of illustration may be very critical in gaining knowledge of activities, however primarily based totally on the literature's effects. It changed to determined that the illustration capacity of college students changed into nonetheless low. One of the studies' effects on Sinaga in 2016 determined that

the best thirteen out of forty-three college students ought to attain the completeness percent on illustration capacity. The found mathematical illustration capacity is primarily based totally on the college students' preliminary capabilities and knowledge of styles. The initial capabilities of college students have a critical position in gaining knowledge of mathematics, due to the fact there may be a dating among one cloth and another. Hamzah Uno (2011: 58) explains that insufficient capacity may be critical for its position in growing that means of teaching, which affects facilitating the internal procedures that take vicinity in college students' knowledge of [11]. Otherwise, every scholar has a specific knowledge of fashion to soak up and get hold of information. There are college students who examine using studying books, taking note of instructor lectures, gambling roles, doing demonstrations, etc.

The velocity at which college students grasp the fabric is stimulated via their preliminary degree of cap

potential. This preliminary cap potential describes college students' readiness in receiving instructions to be brought via way of means of the trainer. According to Sumantri (2015: 183), "The preliminary cap potential of college students is the cap potential that has been owned via way of means of college students earlier than they take part withinside the gaining knowledge of so one can be given." This examination's initial talents encompass excessive preliminary cap potential, medium preliminary cap potential, and occasional preliminary cap potential [3]. Basically, withinside the method of growing college students gaining knowledge of achievement, a trainer desires to layout a gaining knowledge of method or pastime that takes under consideration the traits of college students together with the tendency in their gaining knowledge of patterns. According to DePorter (2014), understanding that specific knowledge of patterns has helped instructors draw nearly all college students via virtually conveying facts with relevant knowledge of patterns. DePorter divides those gaining knowledge of patterns into three groups. It is; (1) specifically a collection of visible freshmen who get admission to gaining knowledge of via visible photos, (2) a collection of auditory freshmen who get admission to gaining knowledge of via auditory photos, and (3) a collection of kinesthetic freshmen who get admission to gaining knowledge of via motion, emotion and physical [4]. Fauzan (2011), in his module, additionally concludes that the significance of mathematical illustration capabilities in arithmetic gaining knowledge of is the following: 1) mathematical representations are wanted for college students' know-how of mathematical principles and the connection among mathematical principles, 2) representations permit college students to talk with mathematical approaches, argue, and recognize closer to oneself and others, 3) representations permit college students to understand relationships among associated principles and practice arithmetic to practical problems [6]. It means that while college students need to illustrate their mathematical illustration capabilities in fixing mathematical problems, college students try and keep in mind their preceding expertise to get guidelines to remedy the problem. The guidance represented by college students' means is visible, auditory, or kinesthetic. It is primarily based on formerly obtained expertise. From this description, it can be concluded that visible, auditory, and kinesthetic gaining knowledge of patterns plays a position in college students' mathematical illustration. Initial talents and gaining knowledge of patterns are matters that want to be taken into consideration throughout gaining knowledge. However, at the time of observation, it became observed that college students had trouble fixing arithmetic problems. The college students' gaining knowledge of patterns had now no longer been monitored optimally. The connection among preliminary talents and gaining knowledge of patterns had now no longer been proven

optimally. Based on the explanation, knowing some opening between what has preferred and what is taking place inside the field. Therefore, it is miles vital to research college students' mathematical illustration talents in phrases in their preliminary talents and gaining knowledge of patterns in fixing arithmetic problems. Therefore, in preliminary mathematical students' illustration talents and gaining knowledge of patterns will help instructors decide on considerable knowledge of strategies to gain knowledge of targets may be executed as it is miles expected.

2. METHOD

Qualitative studies with descriptive qualitative studies strategies aimed to describe the capacity of college students' mathematical representations to their preliminary talents and gain knowledge of styles. Descriptive qualitative studies are selected with the attention that the researcher desires to make a systematic, real, and correct description approximately traits and relationships among the phenomena being investigated [8]. Arikunto (2005: 234) states that descriptive qualitative studies are not supposed to check specific hypotheses. However, the simplest describes "what is" approximately a variable, symptom, or circumstance [1]. The researcher's manner consisted of 4 stages, particularly the making plans stage, the implementation stage, the facts evaluation stage, and the reporting stage. The study's topics were college students of sophistication VIII in SMPN 27 Padang who study arithmetic within the 12 months of 2018/2019. The choice of study topics become accomplished randomly in a single elegance. Then, from that one elegance nine college students had been decided on wherein three college students for each of the following categories: excessive preliminary talents with gaining knowledge of styles (visual, auditory and kinesthetic), slight preliminary talents with gaining knowledge of styles (visual, auditory, and kinesthetic), and preliminary coffee talents with gaining knowledge of styles (visual, auditory, and kinesthetic). Data series strategies used had been observation, interviews, test, dispensing questionnaires, and documental have a look at [7]. The facts received had been then analyzed thru 4 stages, particularly: facts series, facts reduction, facts presentation, and concluding. Data validation becomes carried out through the usage of facts series triangulation. Moleong (2010) stated that "triangulation is a facts validity checking method that makes use of something apart from the facts for checking functions or as an assessment to the facts [2]. The mathematical illustration description is primarily based totally on the scholar worksheets' outcomes on fixing arithmetic problems.

3. RESULT AND DISCUSSION

Following the deliberate facts series method, college students have been given the insufficient capacity to look at questions with a variety of sample fabrics, mathematical illustration capacity, look at questions with relation and characteristic fabric, and mastering fashion questionnaires. After the scholars completed operating at the questions and stuffed out the mastering fashion questionnaire, the researchers performed interviews with nine college students. Each of the nine college students is assessed of; (1) excessive preliminary talents with auditory mastering fashion, (2) excessive preliminary talents with visible mastering fashion, (3) preliminary talents excessive with physical mastering fashion, (4) mild preliminary talents with auditory mastering fashion, (5) mild preliminary talents with visible mastering fashion, (6) mild preliminary talents with physical mastering fashion, (7) low preliminary talents with auditory mastering fashion, (8) low preliminary talents with visible mastering fashion, and (9) low preliminary talents with physical mastering fashion. The nine college students represented as studies topics have been given new questions with the identical signs at the relation and characteristic fabric and endured with the interview process. The intention is to peer the reality in their preceding solutions. If the solutions and facts are accurate, and all are answered, the interview may be stopped and endured with matching different facts. Besides, researchers additionally talk with situation instructors to affirm the effects received withinside the study. Hence, it can help instructors decide on numerous mastering techniques for coaching, so mastering sports becomes extra significant. The targets of mastering may be carried out as it is miles expected.

4. CONCLUSION

However, base on the preliminary capabilities (high, medium, and low) and the scholar styles (visible, auditory, and kinesthetic), it will be seen whether the mathematical students' illustration capabilities tend to be inside some signs. The signs are visible mathematical representations, mathematical expressions, or in written text.

AUTHORS' CONTRIBUTIONS

Based on the effects of the evaluation explained, the capping potential of mathematical illustration in phrases of preliminary capabilities and scholar gaining knowledge of patterns can assist instructors as explanatory gear and help instructors in the usage of diverse gaining knowledge of strategies in sporting out the gaining knowledge of the process so that the targets of gaining knowledge of maybe executed optimally. This study has numerous crucial implications. It can be used as a

guiding principle or a foundation for researchers who will change behavior besides studies with titles associated with these studies. This observation can also contribute to knowledge, particularly concerning the capping potential of mathematical illustration in phrases of preliminary capabilities and scholar gaining knowledge of patterns.

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