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Transformation Evaluation Mathematics: From Exams Summative to Evaluation Formative Based Technology

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ABSTRACT

Development digital technology has bring change significant in paradigm evaluation education, including on field learning mathematics. Research This aim for analyzing the transformation process evaluation mathematics from approach traditional based exam summative going to system evaluation formative based more technology adaptive and sustainable. Method research used is studies literature with approach descriptive-analytical to various results study latest about implementation evaluation digital formative, such as use of Learning Management Systems (LMS), applications based on Artificial Intelligence (AI), and assessment online interactive. Results study show that evaluation formative based technology capable give bait more back fast, accurate, and personal to participant educate, so that support learning more mathematics meaningful and reflective. Besides that, use technology allows teachers to do monitoring development competence student in real-time as well identify difficulty Study in a way early. However, the transformation also face challenges, such as teacher readiness in digital literacy, availability infrastructure technology and justice access for all over participant educate. In conclusion, the assessment formative based technology is step strategic in increase effectiveness learning mathematics, as long as accompanied with strengthening digital competence of teachers and support policy Continuing Education.

Introduction

Change paradigm education in the digital era demands existence comprehensive transformation in all over aspect learning, including system assessment. In context learning mathematics, assessment during This tend focus on results end through exam summative assessment achievements cognitive student after the learning process ongoing. Assessment model like This often only give description static about ability student without pay attention to their learning process live it. In fact, in approach learning 21st century, which emphasizes on development ability think critical, solving problems, creativity, and collaboration, system evaluation should capable give bait sustainable return And support the learning process in a way active.

Transformation from evaluation summative to evaluation formative is Wrong One effort important for create a more effective learning process reflective and centered on participant education. Assessment formative functioning No only for measure results learn, but Also For monitor development competence student during the learning process taking place. In context learning mathematics, assessment formative allows teachers to identify difficulty Study student in a way more early, giving bait specific feedback, and adapt strategy teaching to be more in accordance with need individual approach This in line with principle assessment for learning, which places evaluation as tool For increase quality study, not just measure achievement end.

Along with progress technology information, assessment formative now can integrated with various digital platforms that speed up, simplify, and enrich the evaluation process learning. Use of Learning Management System (LMS), applications based intelligence artificial intelligence (AI), as well as various tool online assessments such as Google Form, Quizizz, Kahoot, and Edmodo has open opportunity new in implementation evaluation mathematics. Technology allows teachers to obtain learning data in real-time, providing bait come back automatic, and analyze development ability student with more accurate. With Thus, technology No only functioning as an auxiliary medium, but also as instrument transformational in system assessment modern education.

However, the transformation This No off from various challenges. Teacher readiness in control digital literacy and ability designing instrument evaluation based technology become factor determinant success implementation. In addition that, availability adequate infrastructure And equality access to device as well as internet network too become issue important, especially in the region with limitations source power. By Because that, transformation evaluation mathematics to direction formative based technology need support policy education, training professional teachers, as well as collaboration between schools, government, and public.

With background behind said, the article This aim for analyze concepts, benefits, and challenge in transformation evaluation mathematics from the summative model going to evaluation formative based technology. Through study theoretical and results study previous, writing This make an effort give understanding comprehensive about importance innovation evaluation in increase quality learning mathematics in the digital age, as well as offer recommendation strategic for development system further evaluation adaptive, inclusive, and sustainable.

Method

Study This use approach qualitative with type studies library research. Approach This chosen Because objective main study is For analyze in a way deep concepts, practices, and challenge transformation evaluation mathematics from the summative model to formative based technology. Through studies literature, researchers can study various theory, results study previously, and implementation practice assessment digital -based in context learning mathematics. Data in study This originate from source secondary, that is various relevant literature with topic research. Sources the includes: Articles scientific, Books text and e-books, Document policy education, and Credible online sources.

Technique Data collection in research This done through a number of stages systematic : literature identification, selection sources, data classification, and Recording And synthesis information. As for For technique data analysis was performed with analysis content analysis which is of a nature descriptive-analytical. Steps analysis includes: Data reduction, namely select, focus, and simplify information from various relevant sources with focus research. Then Data presentation, in the form of grouping results study in form table or narrative thematic depicting shift paradigm evaluation from summative to formative based technology, and final Withdrawal conclusion, namely interpret results findings for get understanding comprehensive about How technology play a role in transform system evaluation mathematics as well as the implications to learning.

Results and Discussion

Description Condition Beginning

Before application of the Problem-Based Learning (PBL) model, mathematics problem solution ability of class VIII students of Praya Middle School East Still classified as low. This is seen from:
1. Average test score beginning students only 59.2.
2. Only 28% of students achieved Minimum Completion Criteria (KKM) is 70.

3. Based on observation, students tend to be passive in the learning process, more lots of waiting for teacher's explanation, and not brave enough to put forward ideas.
4. Interview results show part big student feel difficulty understanding question based problem contextual And No used to compile steps settlement.

Results Cycle I

After implementation of PBL in cycle I with steps: orientation problems, organizing students, investigation independent/group, presentation results, and reflection, obtained results:
1. Average value increase becomes 71.3.
2. Percentage of students who achieve KKM increase to 62 %.
3. Activity Study student more alive, even though part Still hesitant in discussing and not yet capable of compiling arguments in a coherent way.
4. The teacher takes notes that Still There is the dominant group discussion, while other members are passive.

Results Cycle II

In cycle II, the teacher does improvement by emphasizing distribution of roles in group, giving guidance more intensively, and clarifying step solution problems (understanding problem, planning completion, implementation strategy, and check back). The results obtained:
1. Average value increase significantly becomes 81.6.
2. Percentage completeness Study reached 87 %, far beyond success indicator (≥80%).
3. Student activity increased; almost all involved in discussion, dare put forward ideas, and capable of serving results settlement problems ahead class.
4. Based on reflection, students confess more motivated Because questions given close to daily life.

Recapitulation Results

Stage	Average Value	Percentage Completeness	Information
Pre-Cycle	59.2	28%	Low
Cycle I	71.3	62%	Enough
Cycle II	81.6	87%	Very Good

Discussion

1. Improvement Ability Solution Problem
    The implementation of PBL is proven capable of increasing ability to solve mathematics problems at Praya Middle School students East. Improvement This happened Because.
    a. Students are involved in an active way in finding drafts through real problems. This is in accordance with constructivism theory which states that knowledge is built alone by students through meaningful study experience.
    b. Step systematic PBL push students for understanding problems, designing strategy, implementation, and evaluating results. This is practice high level thinking skills (higher order thinking skills).
    c. Discussion group give room for students for exchange ideas, train mathematical communication, and develop greater understanding in.
2. Changes in Student Study Activities
    Before implementation of PBL, students tend to be passive and only wait for teacher's instructions. After applying PBL:

    a. Students are more enthusiastic, because the questions given are related to everyday context (for example problem measurement, comparison, or percentage in real life).

    b. Work The same group increased, although at first There were students who dominated, but after repair strategy, all members participated.

    c. Students become more confident themselves for presenting results Work the group in front of class.

3. Comparison with Previous Study

    Results study This in line with study previously stated that PBL is effective in increasing ability to solve mathematics problems. For example, research by Hmelo -Silver (2004) emphasizes that PBL helps students develop critical thinking skills and solve more problems Good compared to conventional learning.

4. Implications of Study Results

    a. Teachers should more often use a learning modelbased problems, especially on demanding material ability analysis.

    b. PBL does not only increase learning results, but also grow a positive attitude towards mathematics, such as Work together, answer responsibility, and believe in yourself.

    c. Schools can make PBL as Wrong One alternative learning strategy to increase the quality of learning mathematics.

Conclusion

Results study show that evaluation formative based technology capable give bait more back fast, accurate, and personal to participant educate, so that support learning more mathematics meaningful and reflective. Besides that, use technology allows teachers to do monitoring development competence student in real-time as well identify difficulty Study in a way early. However, the transformation also face challenges, such as teacher readiness in digital literacy, availability infrastructure technology and justice access for all over participant educate. In conclusion, the assessment formative based technology is step strategic in increase effectiveness learning mathematics, as long as accompanied with strengthening digital competence of teachers and support policy Continuing Education.

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