

Mathematics Learning Management Framework in Biak Numfor: Numfor Island a Remote Area Direction Towards the Future

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ABSTRACT

This study attempts to conduct a comprehensive and in-depth examination of the challenges in managing learning at SMPN 3 Numfor Barat located on Numfor Island. To achieve the research objectives, the author uses a qualitative research methodology to explore field phenomena naturally and comprehensively. This study involved 1 head of educational unit, 1 subject teacher, and 141 students. Research techniques include field observation, document analysis, and detailed interviews to identify key issues in the learning management process. Data processing includes initial collection, reduction, presentation, analysis, verification and validation, drawing conclusions, and formulating recommendations. The research findings are that: 1) Learning management at SMPN 3 Numfor Barat includes planning, implementation, and evaluation functions. 2) These management components have not been implemented effectively and efficiently. 3) The main challenge in managing learning at SMPN 3 Numfor Barat lies in the planning stage, where learning materials are fully aligned. This study provides valuable insights for the government, education department, Education Unit Companions, heads of education units, teachers, and stakeholders to design and implement learning.

INTRODUCTION

Education aims to develop students' competencies and life skills and prepare students to enter the workforce or continue their higher education to college. improve critical and analytical thinking skills (Nurhayati, 2019), develop effective communication skills (Widyastuti, 2018), prepare students to face global challenges (Kusuma, 2019), and develop students' entrepreneurship and entrepreneurial skills (Hermawan, 2020). This is in line with the goals of education based on the Ministry of Education, Culture, Research and Technology (2022) regarding the implementation of the Independent Curriculum which consists of developing core competencies (literacy, numeracy, and character), developing vocational and technical competencies, improving critical and analytical thinking skills, developing effective communication skills, and preparing students to enter the world of work or continue higher education.

Effective numeracy literacy skills in mathematics are very important for everyday life, almost all activities we do involve mathematical concepts such as managing finances, measuring, cooking, time, schedules, business, investment, sports, technology and science . Mathematics is not just numbers, but also helps us think logically and solve everyday problems through the implementation of an effective curriculum must be prioritized. An important factor in improving mathematics success at the junior high school level is the availability of teaching materials and learning resources that are in accordance with the national curriculum. to ensure that students' understanding, mathematical skills are relevant to the professional environment. Furthermore, appropriate problem-solving strategies, and developing critical and analytical thinking skills. With this approach, students can connect mathematical concepts to real-world situations, so that learning becomes more meaningful and relevant .

To achieve the targets described above, various effective learning strategies are needed, such as: (a) contextual approaches can relate mathematical concepts to real-life situations or the world of work, so that students understand the relevance of the material being studied . (b) Problem-Based Learning (PBL) can provide real challenges that encourage students to apply mathematical concepts in solving problems independently or in groups . (c) Use of Technology can utilize software, simulations, or digital tools to help visualize mathematical concepts and increase interactivity in learning. (d) Collaboration and Discussion can encourage cooperation in solving problems, sharing strategies, and discussing various solutions so that students have a deeper understanding. (e) Skill-Based Evaluation can assess student understanding through projects, case studies, or real-life application-based assignments, not just memorization-based exams. (f) Differential Learning can adjust learning methods according to students' abilities and learning styles so that they can more easily understand mathematical concepts. The importance of learning mathematics in junior high school in management because of the management process is a the process applied For get purpose. Understood with for real that with using effective and efficient models through empowerment all over source the power possessed by an institution (Syam, 2017), then the learning objectives can be achieved. In addition, Dezhbankhan et al. (2021) stated that the management system is a set

of interrelated elements related and interact For set goals and objectives and empower goals and objectives This For achieved in a way efficient and effective . Considering the urgency of the importance of an effective, efficient, practical, and innovative management model to improve. Based on the explanation above, this research was conducted to explore the answers to the research formulation that was set, namely (1) What is the mathematics learning management model like at SMPN 3 Numfor Barat? (2) What are the weaknesses of the mathematics learning management model at SMPN 3 Numfor Barat?

LITERATURE REVIEW

Definition of Management

In general general management can understood as a process consisting of from planning (*planning*), organizing (*organizing*), movement (*actuating*), and supervision (*control*) For reach the goals that have been set previously. According to Fayol (2010) management is a planning process (*planning*) , organizing (*organizing*) , and supervision (*control*) to source existing power For reach effective and efficient goals. According to the two definitions above, bias differentiated similarities and differences. The similarities is contained in the function management at the stage planning, organizing, and controlling. While the difference is on function movement or implementation Where function movement No including function management expressed by Fayol.

Management is implementation A approach For help leader manage source Power organization and establish more decisions Good For organize all over activity walk with effective and connected with environment (Taylor, 2012) . Management is interpreted as as a a goal-oriented plan towards the future For interact with competitive environment For reach objective organization through formulation planning, implementation and monitoring to all over activities involving coordination between source Power organization, manpower work, system work and capital for reach objective organization in a way efficient, effective and economical For reach results through the efforts of others (Robinson, 2015).

Over time, understanding management the more Lots put forward by several expert although the essence No different Far with understanding that has been described above. According to Subagyo (2015) management is action For achieve what is done with coordinate other people's activities functions or activities management which includes planning, staffing, coordination, direction, and supervision. Furthermore understanding management dating from Hasibuan (2014) stated management is science and art in regulate the utilization process source Power humans and resources other in a way effective and efficient For reach a objective certain. Opinion This in line with the understanding stated by Assauri (2016) is that management interpreted as activity or efforts made For reach objective with use or coordinate other people's activities.

According to Yamin (2018) management education has the meaning as a systematic, systemic and comprehensive cooperation process in frame realize

objective education national. Management education can also interpreted as all something concerning with management of educational process For reach the goals that have been set, good objective term short and also objective term long. Mulayasa (2014) also stated that management education is development activity collaboration a group of people to reach out objective education that has been set. Control process consists of planning, organizing, actualizing and monitoring as a process for vision become action.

Based on description building the theory above, then can withdrawn conclusion that management is efforts made For reach objective a organization based on agreement through the process of planning, organizing, implementing, controlling, and evaluating. Management can also understood as a process of planning, implementing, and controlling a work For reach effective and efficient results.

Management Indicators

Effective In Management

It is called effective if achieved objective and also target as has been determined by the organization or unit education in the world of education. Words effective can interpreted as Something that cause effect, efficacious, successful and valid. From the word effective bias it is said as a consequences that lead to positive and successful. However in understanding general other, effective is A business For get objectives, expected results and targets. According to Drucker (2014) effective is do the right job (*doing the right things*) , whereas efficient according to him is do work with Correct (*doing things right*) . Furthermore Siagian (2018) defines effective is achievement various specified target just in time with use sources certain ones that have already allocated For do activity certain. Effective is a utilization. Utilization A source power, facilities and infrastructure carried out in amount certain. According to Abdurrahmat (2014) is effective is utilization source power, facilities and infrastructure in amount certain which are aware set previously For produce a number of work just in time.

Based on the explanation above, then concluded that effective is achievement a planned goals, objectives and targets just in time through action or the right effort with utilise source power possessed a organization. A work can it is said effective If the goals set previously can achieved with well, even more Good than planned. Siagian (2018) describes a number of criteria it is said effective a work inside a organization, namely (1) Clarity the intended purpose achieved, thing This intended so that employee in implementation task reach targeted goals and objectives organization can achieved. (2) Clarity of achievement strategy objective has known that strategy is on the path followed in do various effort in reach target. (3) Analysis and formulation process solid policy, related with the intended purpose achieved and the strategy that has been set It means policy must capable bridge objective with business implementation activity operational. (4) Careful planning, in essence means decide Now what the organization will do in the future. (5) Proper program planning a good plan Still need explained in a proper implementation program because if no, the implementers not enough own guidelines act and work. (6) Availability facilities and infrastructure work, one of indicator effectiveness organization is ability

Work in a way productive with facilities and infrastructure provided by the organization. (7) Effective and efficient implementation, namely appropriate useful and appropriate time about program implementation. However the good thing is a program if No implemented in a way effective and efficient so organization the No will reach the target. (8) System supervision and control of a nature educate, remember characteristic human being who is not perfect Name effectiveness organization demand existence side supervision and control .

Efficiency In Management

In general simple, efficient can interpreted as efforts made with the right way For reach something. This is in line with Sule & Saefullah (2010) stated that efficient is effort do a work with right (*do the things right*) . Efficiency can also interpreted as accuracy method in do something, and ability carry out task with good and proper without throw away cost, time, and effort. In order to be more understand what does efficiency mean, then We can referring to opinion expert. Understanding Next, Usman (2016) explains Efficiency (efficiency) is the process of saving *man, money, materials, machines, methods, marketing, minutes and information* with method do work with Correct (*do things right*), whereas effective (results) use) is level success achievement objective (*outcomes*) with method do the right job (*do the right things*) .

The above opinion in line with Sedarmayanti (2017) efficiency is the size level use source Power in a process . The more economical or A little use source power, then the process it is said the more efficient. Efficient process marked with process improvement so that become more cheap and more fast. Based on the explanation above, then can concluded that efficient is accuracy and or efficiency use source power possessed a organization in the process of achieving goals. Simply put, efficient interpreted as effort savings use source Power organization, time and energy with reasonable and proper way in a process for expenditure more save and achieve objective more fast. In a way practical, efficient interpreted ability do work with finished with use source more power, time and effort economical.

Originate from definition mentioned above, then essence efficiency is compare sources used (*input*) with output obtained (*output*) . In principle efficiency prioritize savings as well as method management source Power true nature, so as not to throw away time, energy and cost. According to Mardiasmo (2017) Efficiency in organization own a number of benefit such as (1) Savings and reduction use source Power. (2) Optimizing use source the power possessed so as not to wasted vain. (3) Increase work unit performance in organization so that produce optimal results and improve quality performance. (4) Optimizing the profits or benefits generated from the production process. And (5) Reduce potential waste and abuse source Power.

Mathematics Learning in Junior High School

General Achievements mathematics learning is based on The National Curriculum is participant educate can manage finance, measure, cook, time, schedule, business, investment, sports, technology and science . Mathematics is not just numbers, but also helps us think logically and solve everyday problems

Ministry of Education, Culture, Research and Technology (2022) in implementation National Curriculum achievements learning in mathematics for Junior High School students consist of from Core Competencies, Basic Competencies, Achievements Learning, and Ability Higher Order Thinking. Core Competencies This consists of from (1) Understanding the concept in general effective and efficient In mathematics , (2) Procedural Skills are able to carry out calculations accurately and efficiently , (3) Participate active in discussion and presentation, (4) Using mathematics as a tool in various disciplines such as science, economics, and engineering.

Mathematics learning in Junior High School (SMP) aims to develop conceptual understanding, logical thinking skills, and problem-solving abilities. The SMP mathematics curriculum is designed to build a strong foundation for students before entering higher education. The objectives of learning mathematics in junior high school among others: (1) understanding basic mathematical concepts and applying them in everyday life. (2) developing logical, critical, analytical, and systematic thinking skills. (3) training problem-solving skills using appropriate strategies. (4) increasing accuracy, independence, and self-confidence in solving mathematical problems. (5) connecting mathematical concepts with other fields such as science, economics, and technology.

challenges and solutions in learning mathematics in junior high school
Challenge : Lack of student interest because it is considered difficult , Lack of understanding of basic concepts since elementary school , Limited facilities and infrastructure, especially in remote areas . Solution: Using more engaging learning approaches, such as educational games and math-based projects , Increasing practice questions with varying levels of difficulty , Providing additional guidance and assistance for students who are having difficulties , Using digital teaching aids and applications to make learning more interactive.

METHODOLOGY

Types of research applied For reach objective study is qualitative research. According to Sugiyono (2023) research qualitative is research conducted with data collection in natural settings (natural conditions), primary data sources, and techniques More data collection much on observation play a role and (participant observation), interviews in-depth interviews and documentation. The purpose of the application type study This Because fo k us on understanding structures, patterns, relationships, and changes used for management models mathematics learning at the junior high school level . In addition, the type of study This applied because of the research data that was excavated from field is information about management model mathematics learning at the junior high school level which has applied and weaknesses of each model function SM management contained in the applied model. This research was conducted at SM PN 3 Numfor Barat. To obtain the required information, the researcher conducted in-depth interviews with 1 head of the SM P educational unit , 1 mathematics teacher at SMPN 3 Numfor Barat .

To obtain more comprehensive data, researchers have conducted direct observation studies at schools, attending several school activities . To ensure the validity of data collected through interviews and observations, researchers test the truth of the information collected. (1) Credibility testing is carried out through triangulation by examining interview data using different techniques and collecting the same data from different sources. (2) Dependability testing is carried out to test the consistency of information obtained from various sources. (3) Transferability testing is carried out to test the truth of research data and whether the information obtained can be used elsewhere by involving people from other schools. Furthermore, (4) Confirmability testing to produce valid information through comparison of information from academics, leaders of the mathematics teacher community who have knowledge and experience and explore the latest findings and literature. Miles and Huberman's data analysis technique involves four steps: data collection, data reduction, data presentation, and drawing conclusions/ verification. Data reduction is the process of selecting, focusing, simplifying, abstracting, and transforming data from transcription.

RESEARCH RESULT

Management of learning resources, including teaching materials, is referred to as learning management. According to the Indonesian Education System Law Number 20 of 2003, this process includes three stages: planning, implementation, and evaluation. Mathematics learning in junior high schools is regulated in several other regulations, including: (a) **Regulation of the Minister of Education and Culture Number 35 of 2018** : This regulation amends the 2013 Curriculum for Junior High Schools/Islamic Junior High Schools (MTs) by adding Informatics subjects to the general subject group Group B. In the curriculum structure, Mathematics is included in the general subject group A. (b) **Regulation of the Minister of Education and Culture Number 58 of 2014** : This regulation sets out the objectives of mathematics learning in junior high schools, which include conceptual understanding, problem-solving skills, and mathematical communication skills. (c) **Government Regulation Number 19 of 2005** concerning National Education Standards, which has been amended by **Government Regulation Number 32 of 2013** , also provides general direction regarding content standards, including mathematics subjects in junior high schools.

Based on field studies through in-depth interview techniques, observations, and documentation studies, the researcher found that the function of mathematics learning management at SMPN 3 Numfor Barat consists of planning, implementation, and evaluation stages. The representation of the Mathematics Learning Management Model for Junior High Schools is presented below.



Figure 1. Vocational English Learning Management Model

1. Planning
Mathematics teachers prepare general mathematics learning plans. Using modules, teaching materials from other sources such as e-books from the internet, mathematics textbooks from publishers.
2. Implementation
Mathematics teachers carry out the mathematics learning process according to the learning plan and mathematics textbook .
3. Evaluation
Teachers who conduct evaluations of mathematics learning have focused on measuring communication skills and focused on measuring students' understanding of mathematical concepts, procedures, applications, and problem solving .

DISCUSSION

The findings of the study indicate that the management of mathematics learning in schools has significantly improved for students of SMPN 3 Numfor Barat . During the planning stage, mathematics teachers develop learning plans that reflect everyday life. At the implementation stage, mathematics teachers utilize subject matter that is in accordance with the demands of everyday life reality , so that students can understand the relationship between understanding the material and the usefulness of mathematics in everyday life . The evaluation process in the mathematics program at SMPN 3 Numfor Barat still prioritizes the assessment of conceptual understanding and the ability to measure reciprocal skills in class . As a result, students have the competence to understand concepts and apply them in everyday life in the community environment .

CONCLUSIONS AND RECOMMENDATIONS

Based on results research presented and results discussion presented in the section previously conclude that function management Mathematics learning at SMPN 3 Numfor Barat level consists of from function planning, function implementation, and function evaluation. From the results search in a way deep through interviews, observations, and documentation that management model Mathematics learning at SMPN 3 Numfor Barat level is already underway with effective. Weaknesses Thematic learning is found in the planning function which teachers have carried out planning relevant learning with student needs , planning use empirical information k , do analysis need student in communicating mathematics learning in everyday life . Next weaknesses of this model contained in the function implementation where the textbook used is very relevant with teaching materials on aspects experience learning and knowledge as well as competencies learned relevant with context Effective numeracy literacy skills in mathematics are very important for everyday life . Teachers who evaluate junior high school mathematics learning in Numfor Island on measuring skills that focus on measuring students' understanding of everyday life and skills in applying concepts and procedures . The results of the above

research are very important For used by all mathematics teachers in Biak Numfor Regency , the government For develop management Mathematics learning at the junior high school level in Biak Numfor Regency to be appropriate with aligned context , so competencies learned students at school in line with the national curriculum . In addition, the results study This become map very clear new for study furthermore or other researchers For develop management model learning Effective Mathematics Language at the Junior High School level to suit with the context of everyday life . In Implicative, effective and relevant learning process in accordance with need user graduate of can increase readiness Junior high school graduates towards Golden Indonesia in 2045 coinciding with the 100th anniversary of Indonesian Independence, who will then continue to a higher level and be able to compete in Biak Numfor Regency and Papua Province and will reduce unemployment and poverty rates in Papua.

ADVANCED RESEARCH

Developing a mathematics learning management framework in remote areas such as Numfor Island, Biak Numfor Regency, requires an adaptive and innovative approach. Here are some strategies that can be applied:

1. **Environmental-Based Learning** : Using the surrounding environment as a learning resource can make mathematics learning more contextual and relevant for students. For example, teachers can invite students to calculate the area of a local garden or rice field to understand geometry concepts. This approach has been shown to increase student engagement and understanding in the context of Frontier, Outermost, and Disadvantaged (3T) areas.
2. **Integration of Local Wisdom** : Combining local culture and traditions in mathematics learning can increase students' interest and understanding. For example, in Biak, the making of the Papuan Customary Crown - Kaswari can be used to teach physics concepts such as center of gravity and elasticity, which are also relevant in mathematics learning.
3. **Utilization of Technology** : Although technological infrastructure may be limited, the use of simple teaching aids or available technology can help visualize mathematical concepts. Literature studies show that technology-based mathematics learning, adapted to local contexts, can improve the quality of education in remote areas.
4. **Teacher Competency Improvement** : Training and professional development for teachers in remote areas is essential. Teachers need to be equipped with learning methods and models that are appropriate to local conditions to improve learning effectiveness.
5. **Collaboration and Community Support** : Involving local communities in the educational process can enrich students' learning experiences. For example, collaboration with local leaders or artisans can provide new perspectives on learning mathematics.
6. **Strengthening Education Infrastructure** : Local governments need to ensure the availability of adequate education facilities, such as decent classrooms and access to teaching materials. In Biak Numfor Regency, efforts such as the

construction of physics and language laboratories for high schools have been made to improve the quality of education.

By implementing these strategies, it is hoped that mathematics learning on Numfor Island can be more effective, relevant, and able to prepare students to face future challenges.

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