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Management of Biology Learning in Integrating 21st Century Skills at Muhammadiyah High School Special Program Kottabarat Surakarta

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Abstract

This study aims to examine the planning, organization, implementation, and evaluation of the implementation of Biology learning in integrating 21st century skills at the Muhammadiyah High School Special Program for Kotatabarat Surakarta. This research is a qualitative research, with a case study research design. Data collection techniques in this study used observation, interviews, and documentation techniques. The data analysis technique in this study uses an interactive model analysis technique from Miles & Huberman. The results of the study show that: a. Biology learning planning in integrating 21st century skills in SMA Muhammadiyah Special Program for Kotatabarat Surakarta begins with the creation of learning tools, namely: annual programs, semester programs, learning outcomes and learning objectives, as well as teaching modules; b. The organization of Biology learning in integrating 21st century skills at the Muhammadiyah High School Special Program for Kotatabarat Surakarta is contained in the teaching module; c. The implementation of Biology learning in integrating 21st century skills at the Muhammadiyah High School Special Program for Kotatabarat Surakarta consists of initial/preliminary activities, core activities, and closing activities; and D. Evaluation of the implementation of Biology learning in integrating 21st century skills at the Muhammadiyah High School Special Program for Kotatabarat Surakarta includes initial assessment, process, and summative or final assessment assessments. Management of Biology Learning in Integrating 21st Century Skills at SMA Muhammadiyah Special Program for Surakarta City is going well.

Keywords: Management, Implementation, Organizing, Implementation, Evaluation

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INTRODUCTION

Learning about 21st century skills is very important and cannot be ignored. Educators should not see 21st century skills as additional subjects, but rather as skills that must be integrated into all subjects. Teachers must build a vision for students by developing communication and collaboration skills, integrating technology and problem-solving skills, and encouraging innovative and creative thinking. 21st century learning has the main principle that the role of society and educators in carrying out 21st century learning is very important in realizing a better life for the future of the nation. Therefore, the education system must be oriented towards debriefing and developing 21st century skills (Hidayatullah et al., 2021).

The development of the 21st century is characterized by the existence of a balance between Science and Technology (IPTEK). The 21st century demands human resources who are able to adapt and take advantage of the sophistication of developing technology. The skills of the 21st century are known as 4C, namely: Criticial thinking and problem solving, communication, collaboration, and creative thinking. The life of the 21st century is characterized by competitive abilities that are the basic capital of the younger generation to build the nation. The competition is not just about getting high test scores, but what about the

ability to communicate effectively, carry out activities with collaboration, and think and work effectively and creatively.

This research will take the subject of Biology, because the subject of Biology is one of the fields of science that has experienced a significant development in 21st century learning, with the current development of education, teachers or educators are required to be able to communicate and visualize learning so that it is easy to understand by students. In addition, students certainly also have collaborative and communication skills to support the achievement of success in the learning process. Collaboration and communication skills will help and facilitate learners in receiving and sharing information related to the content of the Biology material studied (Sahil et al., 2022). Learning Biology in schools has a central role in providing 21st century skills to learners. Biology subjects aim to cultivate spiritual attitudes and social attitudes, equip knowledge and skills to learners that are relevant to Biology so that students are able to solve problems in daily life as individuals and as citizens (Hidayati et al., 2014, p. 6).

The results of interviews with teachers of Biology subjects at the Muhammadiyah High School Kottabarat Special Program show that 21st century skills have been applied to Biology learning activities. An educator must adjust to the development of education in 21. This is inseparable from the success of teachers in organizing learning activities in the classroom. If the teacher is able to organize learning activities properly, then all the 4C skill points can be carried out. To organize classes, good learning management is needed. Learning management is a process of planning, organizing, implementing, and assessing or evaluating learning activities. Learning management starts from planning, organizing, implementing, and evaluating.

Planning is the initial action in managerial activity in any organization. Organizing is an attempt to create a clear relationship of tasks between personnel, so that thus everyone can work together in good conditions to achieve the goals of the organization (Wijaya & Rifa'i, 2016, p. 40). Actuating is an action carried out from a plan that has been carefully prepared and detailed (Wulandari, 2018). Evaluation is an ongoing process of collecting and interpreting information to assess decisions made in designing a teaching system (Syafaruddin, 2019, p. 104).

This research will use the theory of Biology learning management and the theory of 21st century proficiency. This topic is interesting to discuss and develop, because 21st century skills are very important to use in learning activities to welcome creative, innovative, and independent young people. Based on the description above, researchers are interested in researching "Biology learning management in integrating 21st century skills at Muhammadiyah High School Special Program Kottabarat Surakarta". This research is different from the research used as a guideline above, the difference in this study lies in the focus and location of the study. So the research on "Biology learning management in integrating 21st century skills at the Muhammadiyah High School Special Program Kottabarat Surakarta" has no similarities with the research that has been done.

RESEARCH METHODS

This research is a qualitative research. There are seven characteristics of qualitative research, namely: using natural settings, being descriptive analytics, emphasizing processes rather than results, using an inductive mindset, prioritizing meaning, researchers as key instruments, and purposive samples (Ghufron, 2008). The research design is a case study. According to Mulyadi (2012), a case study is a form or pattern of research that is desired. A case study is a deep understanding of a phenomenon.

The place of this research was carried out at the Muhammadiyah High School Special Program Kottabarat Surakarta, which is located on Jalan Pleret Raya, Sumber, Banjarsari, Surakarta. The overall research time was carried out for four months, namely June-September 2022 in the even semester. The data collection technique in this study used observation, interview, and documentation techniques. The data sources in this study are school principals, Biology teachers, and curriculum waka. The validity of the data in this study uses technique triangulation and source triangulation. The data analysis technique in this study uses interactive model analysis techniques from Miles & Huberman. The interactive model analysis technique has 3 components, namely: data reduction, data presentation, conclusion drawing and verification.

RESULTS OF RESEARCH AND DISCUSSION

Biology learning planning in integrating 21st century skills at Muhammadiyah High School Special Program Kottabarat Surakarta

The annual program is an allocation of one year of spending time. The process of creating an annual program must first look at the educational calendar to find out the effective number of weeks. After knowing the effective week, continue by mapping the subject matter according to the effective week. This is in line with the opinion Simanjuntak et al. (2020, p. 105) which explains that the process of preparing the annual program needs to pay attention to the educational calendar. The integration of 21st century proficiency in the annual program is tucked into the CP and ATP sections.

Semester programs. The process of preparing the semester program, must pay attention to several things that need to be prepared, including setting time allocations, determining goals. The semester program is a design of teaching and learning activities, in general, which is made within a period of one semester by paying attention to the prota and time allocation every week (Astuti, 2018). According to Zuhara et al. (2019), semester program (promissory note) is the elaboration of the annual program (prota). The semester program is prepared by displaying identity, subject matter or basic competencies, number of class hours, month of learning implementation and attestation. The integration of 21st century proficiency is tucked into the learning objectives (ATP) and avidences section.

Learning Outcomes (CP) and Learning Objectives Flow (ATP). In the independent curriculum, there are learning outcomes (CP), which distinguishes the K-13 curriculum from the independent curriculum. Before making or compiling CP, there are several things that must be considered such as CP components, mapped the ATP, designing activities, determining achievement indicators, determining assessments, and reflecting. The components of CP consist of school identity, learning outcomes, learning flow, avidance, activities, assessments, time allocation, learning resources and tools. In CP, it contains several abilities, namely the ability to observe, question and predict, plan and conduct research, process and analyze data and information, evaluate and reflect, and communicate. The integration of 21st century skills in CP is outlined in learning activities.

Learning outcomes (CP), then derived or simplified into learning objectives (TP). According to Putri et al. (2022), Learning objectives flow (ATP) is a series of learning objectives that have been systematically and logically arranged in the phase of learning outcomes as a whole from the initial to the end phase. The preparation of the Learning Objectives Flow (ATP) must be carried out sequentially, linearly, not cross-phase, and not branched, as well as logically (Ayundasari, 2022). Before compiling the ATP, there are several things that must be prepared, namely preparing competency achievements, preparing learning methods and models, and assessments. The components that must be present in ATP

are CP, avidance, material mapping, and assessment. The learning objectives flow component contains the identity, elements, learning outcomes, keywords, learning objectives, and learning objectives flow.

This research is in line with the study R. Hidayat et al. (2022) which concluded that the implementation of technical guidance carried out by the English Language Education study program at PGRI Adi Buana University Surabaya on understanding CP and TP which was then continued with the creation of a concept map for educators who are members of the English Subject Teacher Deliberation (MGMP) at the SMK level throughout the Surabaya Municipality found its relevance to the implementation of the Merdeka Curriculum in 2022, which will soon be implemented in schools.

Teaching Module. In the independent curriculum, the term rpp is replaced with a teaching module. The term rpp is only used in the 2013 curriculum. According to Kemendikbud (2022), Teaching modules are documents that contain learning objectives, steps, and media, as well as assessments needed in one unit / topic based on the Learning Objectives Flow (ATP). The integration of 21st century proficiency is inserted in lighter questions, and inserted into the initial assessment (formative assessment), learning activities, and the final assessment (summative). The process of integrating 21st century skills contains graduates who have the ability to think critically, complex communication, problem-solving skills, and good collaboration.

This research is in line with the study Maulida (2022) which shows that the independent curriculum teaching module is a substitute for a formatted and varied rpp which includes learning materials / content, learning methods, interpretations, and evaluation techniques that are arranged systematically and stunningly to achieve the expected success indicators. Teachers develop teaching modules before learning in the classroom. One of the functions of the teaching module is to reduce the burden on teachers in presenting content so that teachers can have a lot of time to become tutors and help students in the learning process.

Organizing Biology learning in integrating 21st century skills at Muhammadiyah High School Special Program Kottabarat Surakarta

The organization of Biology learning in integrating 21st century skills has been packaged in the teaching module. The teaching module is one of the teaching tools. Teaching modules are the same as rpp which contains learning plans in the classroom. However, in the teaching module there are components that are more complete than rpp. Teaching modules are a number of tools or media tools, methods, instructions, and learning guidelines that are systematically designed and interesting. The teaching module contains learning objectives, steps, and media, as well as assessments needed in a unit or topic based on ATP. The purpose of compiling teaching modules is to support the achievement of competencies in Learning Outcomes (CP) and Pancasila Student Profiles at each stage of development in a subject. Creation of teaching modules based on CP in the appropriate phase, which is described in the ATP (Kemendikbud, 2022). The teaching module consists of three phases, namely the preparation phase, learning activities, and evaluation. The organization of learning that is prepared is the learning strategies, models, and methods used.

This research is in line with the study Hidayat (2020) which concludes that the organization of PAI learning in motivating the learning of students is carried out in several stages, namely: before entering class (Pre-conditions), this stage is the preparatory stage; at the time of class (Operatting Procedures), this stage is the stage of applying or executing what was planned in advance before entering the class; and evaluation, activities to measure and assess learner learning outcomes through both written and oral examinations.

Implementation of Biology learning in integrating 21st century skills at Muhammadiyah High School Special Program Kottabarat Surakarta

Preliminary activities in Biology learning in integrating 21st century skills contain greetings, prayers, attendance, apperceptions, and conveying learning objectives. This apperception aims to bring their world to ours. This means that the teacher associates what has been known or experienced with what will be learned. In this preliminary activity, it will foster critical thinking and communication skills for students. This research is almost the same as Erayati's research (2014) which shows that preliminary learning activities are carried out by teachers by providing motivation, conducting apperceptions, conveying learning objectives, conveying the abilities to be achieved and holding pre-tests.

The results of this study did not mention the existence of motivation and pre-tests, while in previous studies it was mentioned. Core activities in Biology learning in integrating 21st century skills include stimulus, problem identification, data collection, proof, and drawing conclusions. In this process, teachers are used to insert 21st century skills in discussion activities. This discussion aims to train students in collaborating and communicating between groups. In addition to discussing, students also answered several questions on the student worksheet (LKPD). This can hone the ability to collaborate between groups or learners. This is in accordance with the opinion Zuhara et al. (2019) who argues that LKS is a printed teaching material consisting of sheets of paper containing material, summaries and instructions for the implementation of learning tasks that must be carried out by students, referring to the basic competencies that must be achieved.

The closing activity on Biology learning in integrating the skills of the 21st century teachers concludes the material that has been discussed, conducts assessments, gives assignments, the teacher invites students to clean up or clean the learning equipment or media and ends with a greeting. This is in line with the opinion Pohan & Dafit (2021) that the closing activities carried out by the teacher include making summary or conclusions of lessons, reflecting on activities that have been carried out, providing feedback, planning follow-up activities, and submitting lesson plans at the next meeting. The implementation of Biology learning in integrating 21st century skills is in line with research Erayati (2014) which concludes that the learning preliminary activities are carried out by educators by providing motivation, apperception, conveying learning objectives, conveying the abilities to be achieved and holding pre-tests. However, teachers/educators do not always carry out all these things such as apperception and pre-test, only certain materials are allowed to do the apperception and pre-test they carry out.

The core learning activities are carried out by carrying out mastery activities of subject matter, educational learning strategies, the application of scientific approaches, the use of learning resources or media in learning, student involvement, the use of correct and appropriate language in learning. However, not all teaching activities can be carried out by teachers such as the use of learning resources or media, these skills are not implemented due to the lack of supporting facilities and infrastructure. The closing activity of learning is carried out by the teacher with a closing activity, namely summarize or conclude lessons, give tests and direct students to study the material to be delivered at the next meeting. However, not every meeting the teacher gives a test, the test is only carried out when there is still time left at the end of the class hour.

Evaluation of the implementation of Biology learning in integrating 21st century skills at Muhammadiyah High School, Kottabarat Special Program, Surakarta

Evaluation of Biology learning includes assessment of initial, process, and summative or final assessment of assessment. Initial assessment of Biology learning using questionnaires.

The content of the questionnaire contains light questions or checklists that aim to find out the initial knowledge of students. According to Liliasari and Rahmatan, prior knowledge is a collection of individual knowledge or experiences gained throughout the course of life and that he will bring to a new learning experience (Hikmah, 2018). This is in line with the opinion Hadiyanti & Widodo (2015), which states that every science educator/teacher should know the prior knowledge of learners as well as the misconceptions common to the concept to determine the appropriate learning steps.

Assessment of process assessment in Biology learning uses student worksheets (LKPD). According to Rahmawati & Wulandari (2020), student worksheets contain guidelines that are used as student facilitators which are developed there are sheets containing material, instructions and summaries done by students so that they can add cognitive perspective skills as information provided by students. LKPD contains a learning framework that contains stimulus, introductory material, question sheets and answers. This research is in line with the opinion Afkar & Hartono (2017) which states that one of the strategies that can be used by teachers to activate the role of students is to use LKPD as teaching material to support student activity and help reduce student problems in understanding the lesson.

Summative assessment assessment on Biology learning uses reports or posts. The final assessment is taken from the process assessment, the teacher provides an article and is modified so that it contains aspects of the material. This assessment instrument is in the form of multiple-choice test questions and descriptions. This assessment is carried out after the process of teaching and learning activities is completed. According to Fetrianto (2017), Summative evaluation is an evaluation to assess long-term results, then the behavioral aspects assessed must include cognitive (knowledge), psychomotor (skills) and affective (attitudes and values). The results of this study, stated that the summative assessment was taken from the process assessment. This is in contrast to opinion Adinda et al. (2021) which states that summative assessments are almost always assessed formally, such as during end-of-semester exams, final presentations, or final projects.

CONCLUSION

Based on the results of the research that has been described above, it can be concluded that: Biology learning planning in integrating 21st century skills at Muhammadiyah High School, the Kottabarat Surakarta Special Program begins with the creation of learning tools, namely: annual programs, semester programs, learning outcomes and learning objectives flows, as well as teaching modules. The organization of Biology learning in integrating 21st century skills at the Muhammadiyah High School Special Program Kottabarat Surakarta is contained in the teaching module. The implementation of Biology learning in integrating 21st century skills at the Muhammadiyah High School Special Program kottabarat Surakarta consists of initial/ preliminary activities, core activities, and closing activities; and evaluation of the implementation of Biology learning in integrating 21st century skills at Muhammadiyah High School, Kottabarat Surakarta Special Program, including initial, process, and summative or final assessments. Biology Learning Management in Integrating 21st Century Skills at Muhammadiyah High School, Kottabarat Surakarta Special Program is going well.

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