Analysis Of Teachers 'Abilities Innovation And Creativity To Make Biological Learning Devices Based On Local Potential During The Covid 19 Pandemic

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Abstract

The teaching and learning process during the COVID 19 pandemic requires innovation and creativity in making learning devices. Biology learning tools can be developed from local potentials so that they can support the biology learning process. The purpose of this study was to analyze the ability make biological learning and response of teachers in innovation and creativity during the COVID 19 pandemic. The method in this study was an experiment with a training and mentoring approach, a sample of Biology teachers at SMP members of the Natural Sciences Teacher Group Discusion in Tuban Regency. The results showed that biology teachers were able to make biology learning tools based on local potential in the majority of 34 (68%) student worksheets (68%) and 15 (35%) practical instructions and 1 (2%) lesson plans. The response of teachers in innovation activities and creativity in making biology learning tools based on local potential is very positive, shown by the results of the questionnaire answers to the questions, the majority strongly agree (30%) and agree (70%) Conclusion biology teachers are able to make biology learning tools based on local potential and the response is positive.

Keyword: Innovation and Creativity, Local Potential, Pandemic, Covid 19

1. Introduction

The COVID 19 pandemic is still not over, the acceleration of handling COVID 19 continues to be improved, the face-to-face learning plan which will start in the even semester has been postponed again and currently the Minister of Education and Culture circular letter No: 6/2020 has also been canceled and added with the Minister of Home Affairs circular No: 1 of 2021 concerning the imposition of restrictions on community activities which are strengthened by the Governor's circular No: 188/7 / KPTS / 013/2021 which emphasizes learning activities must be carried out online. Education is a very important thing in human development and empowerment efforts. Thus there needs to be an effort to improve in terms of processes and techniques in the development of an education (Zogi 2015).

During the COVID-19 pandemic there were changes in the learning process at both the primary and higher education levels so that from conventional learning switching to online learning (Nurtjahyani SD, Sukisno 2020). The online learning provided must be varied so that it is not boring and can improve student competence, in

this case the teacher must be innovative and creative in using learning tools. The use of learning tools to suit the needs of students must be adapted to the material and conditions of each area so that teachers are required to be able to make their own learning tools. Learning tools include lesson plans, practicum instructions, student worksheets, teaching media and textbooks. Instuctional Planing is already a routine learning tool and must be made but for other learning tools such as practicum instructions and student activity sheets are rarely made because generally use existing student activity sheets but if there are weaknesses in the student activity sheets it becomes a problem in understanding the concept of students. Learning devices have a role in determining the success of learning in schools. A learning device if designed correctly will have an easy impact on students to fulfill the content of the material to be studied (N 2019).

The natural environment in the area is a local potential that can be used as a learning resource, especially learning biology during the COVID 19 pandemic, for practicum activities not being carried out because learning is done online so that students do not understand biological material that must be practiced such as food biotechnology using microbes , ecosystem, vegetative propagation, environmental pollution, composting, etc. As a teacher, he must be able to develop innovative and creative ideas so that they can provide good subject matter and are easily understood by students so that the expected competence can be achieved. The natural environment, both abiotic and biotic, provides a great opportunity to be used as a learning resource and is a natural laboratory that can be used for media and student practicum activities.

Teachers in junior high schools and senior high schools must be able to provide concepts of knowledge that can be created and developed for further education so that these learning activities must be pursued properly according to the competencies that must be achieved so that the material which must be practiced in accordance with the objectives of the practicum.

Practicum activities are generally carried out in laboratories but not all schools have adequate laboratories and laboratory equipment so that the need for media that can support these learning activities, especially biology learning, one alternative to the solution of this problem is the use of local potential around the school that can be used as a natural laboratories, so that teacher innovation and creativity ideas must be developed to be able to design innovative and creative biology learning tools based on local potential during the COVID 19 pandemic so that teacher competence must be improved through innovative and creative learning training activities. The purpose of this study was to analyze the ability and response of teachers in innovation and creativity in making learning tools based on local potential during the COVID 19 pandemic.

2. Research Method

This research is a qualitative descriptive research. The research method is carried out experimentally with a training approach and assistance in making biology learning tools based on local potential (Arikunto 2010). The research subjects were biology teachers of Junior High School Scince embers of the Teacher Group Discusion Tuban Regency, a sample of 50 teachers with a purposive sampling technique. The study was conducted for 1.5 months from January 8 to February 23, 2021. The data

collection technique used was documentation techniques and evalalution from data document base on criteria according to Arikunto. The research data is in the form of the teacher's ability to compile biology learning tools and teacher responses obtained from the questionnaire results. The data sources were in the form of biology learning device software files and questionnaire results. The research data were analyzed descriptively by calculating the percentage and categorized(Creswell 2002). The criteria according to Arikunto are as follows:
81-100% = very good
61-80% = good
41-60% = enough
21-40% = less
0-20% = very less
The teacher's response is analyzed from the questionnaire results as follows:
4 = strongly agree 3 = agree 2 = disagree 1 = disagree.

3. Results and Discussion

Research has been carried out on junior high school biology teachers who are members of Teacher Group Discusion IPA in Tuban district regarding innovation and creativity in making local potential-based biology learning devices during the COVID 19 Pandemic (Table 1)

Table 1. Recapitulation of Teachers' Abilities in Making Biology Learning Tools Based on Local Potentials During the COVID-19 Pandemic

No.	Types of learning devices	Local Potential	Theory	Level	Average Value of Teacher Ability	Total
1.	Student Activity Sheet	The surrounding natural environment, namely home, school	Ecosystem, pollution, leaf morphology, structure of plant organs, classification of living things.	Junior High School	76,50	16(32%)
2.	Practicum Instructions	Natural Resources: Benalu	Biotechnology: Bioinsecticide from parasite extract	Junior High School	85	1(2%)
3.	Instructional Planning	School environment	Acid and base indicators	Junior High School	85	1(2%)
4.	Practicum Instructions	Natural resources: organic waste	MOL	Junior High School	80	1(2%)
5.	Practicum Instructions	Natural resources: livestock waste	Biogas	Junior High School	86	1(2%)
6.	Practicum Instructions	Surrounding environment	Interdependence between	Junior High	69	5(10%)

			ecosystems, environmental pollution, classification of living things, recognizing alternative energyf	School		
7.	Practicum Instructions	Biological resources of cassava, breadfruit, turmeric, secang, hibiscus, rose and rhodiscolor flowers	Food biotechnology, acid and alkaline indicators	Juinior High School	82	7(14%)
8.	Student Activity Sheet	Natural resources: bacteria and fungi in the home environment	Food Biotechnology using microbes	Junior High School	87	1(2%)
9.	Student Activity Sheet	Plasticine flipchart.	Classification of living things	Junior High School	75	2(4%)
10.	Student Activity Sheet	Natural resources: Soil, organic waste, organic waste.	Soil pollution, compost, environmental pollution	Junior High School	80	15(30%)
	Total					50 (100%)

From the data table 1, the recapitulation of the teacher's ability in making biology learning tools, the greatest number of learning tools is in the form of Student Worksheet as much as 34 (68%) of local potential materials. organic while the learning device in the form of a biology lesson plan about acid and base indicators is 1 (2%) and other learning tools produced are 15 (30%) practical instructions.

Teacher Response in Innovation and Creativity Making Biology Learning Tools Based on Local Potentials During the COVID 19 Pandemic is presented in the following Fig 1:

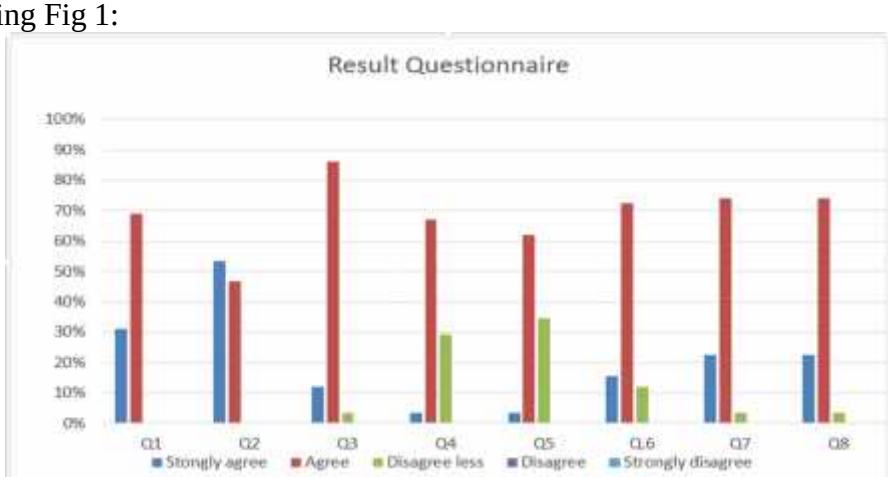

Fig. 2 . The results of the teacher response questionnaire in innovation and creativity training in learning biology based on local potential

The results of the teacher response questionnaire in innovation and creativity in making biology learning tools based on local potential are presented in the graph above. Respone activity, creativity base on questioner in category good and very good.

The results of research on the ability and response of teachers in innovation and creativity in making table 1 that the most learning tools that teachers can make are 34 (68%) Student Worksheets and 15 (30%) practical instructions in the form of Intruction Planning.Learning tools in the form of Student Worksheets with natural resources in the form of organic waste, organic waste and the surrounding environment, which were mostly 31 (62%) with an average value of 78.25 in good categories while biology learning tools in the form of practical instructions were 15 (30%) with an average value of 79.25 in the very good category using the local potential of parasites, the surrounding environment, turmeric, hibiscus and maward flowers and rhodischolor flowers. From the results of research on the ability of teachers in making biology learning tools all teachers are in a good category. The data from the research results in table 1 of the 49 teachers who were sampled were able to make biology learning tools based on local potential during the COVID 19 pandemic in categories both in the form of Student Activity Sheet

and practicum instructions and only 1 teacher was in the very category in making learning tools in the form of lesson plans. This Student Activity Sheet is very beneficial for students and teachers because the subject matter has been packaged in such a way and is ready to be used, the results of this study are the majority of learning tools produced in the form of Student Activity Sheet based on local potential so that they can support the biology learning process. This is in line with the research of Hanif, (2016) which states that student worksheets are very important in the learning process of biology and very beneficial for students (Hanif, Ibrohim 2016).

Other learning tools used in the learning process are generally printed books so that more innovative and creative learning tools are needed. Making biology learning tools based on local potential for teacher innovation and creativity can also improve the thinking skills of teachers and students (A 2016). The making of this learning tool will make it easier for teachers to carry out the teaching and learning process (Ertiningsih 2014), (Tlhoaele et al. 2014), (Andrini 2016). Especially during the pandemic, learning from Home will be easier if the learning tools come from the environment around students, namely local potential in their respective student areas, student learning activities including physical and mental activities will result in changes in values or positive attitudes in themselves with teacher guidance and responsibility and good learning resources will produce optimal learning outcomes (Paidi 2011), (Alisa Y, Yennita 2017). This research is in line with the results of this study because learning resources, namely local potential, are a more effective and efficient learning resource especially during the Covid 19 pandemic so that it does not make it difficult for students

to learn and student learning outcomes can be optimal and biology subjects are considered potential to be used as study material to improve The child's ability to solve problems and metacognitive abilities in addition to the ability to master biological concepts (Hosnan 2014). So that biology learning tools must be designed appropriately and correctly to improve student learning outcomes. In addition, challenging practical activities are needed to develop a scientific mindset, critical thinking skills in the hope of forming an independent, scientific, creative, and objective personality that has soft skills in appearance, attitude and level of behavior (Hasruddin 2013) (Schwartz & Lederman 2002).

The results of the teacher response questionnaire in innovation and creativity in making biology learning tools based on local potential, the majority of the responses were positive by showing the answers to questions related to innovation and creativity in making biology learning tools starting from material, experimental activities in the form of training and mentoring, most of them were answered strongly agree above 30% and agree on 70% and only 5% disagree

4. Conclusion

Based on the results of research and data analysis, it can be concluded as follows:The majority of teachers' ability in innovation and creativity in making biology learning tools based on local potentials was able to produce biology learning tools in the form of student worksheets as many as 34 (68%); The teacher's response to innovation and creativity in making biology learning tools based on local potential, the majority of the responses were positive with the answers to the questions strongly agree and agree.

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