

# CONCEPT AND CONTEXT RELATIONSHIP MASTERY LEARNING AND THE RELATIONSHIP BETWEEN BIOLOGY AND PHYSICS CONCEPT ABOUT MANGROVE FOREST

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## Abstract

The destruction of mangrove forest ecosystem function is very influential in both aquatic and terrestrial biota and also cause decreased function and benefits of mangrove for the people and the environment. Therefore, it is essential for all the parties such as the government, parents, teachers, and community to take an active role. The Thematic learning is a teaching and learning activities which is combining multiple subjects material in one theme that also can involve parents and the community. This study developed a thematic learning designed of mangrove forest and also held outside the regular school learning. The purpose of this study is to describe the mastery of concepts, relationship between concepts and contexts, and the relationship between the concepts of Biology and Physics of mangrove forest on student at SMP Kristen Bellae. Kab. Sangihe. This study, use the method of research and development of thematic task-based learning with substitution or integration of local elements of targeted school and environment. The result shows a relationship between the two variables measured, where the relationship between the average indicator reaches 0.41 with enough correlation criterion.

**Keyword :** *Thematic Learning Task, Mangrove Forests, Concept and Context.*

## INTRODUCTION

Mangrove forests are one of the forest types that grow in tidal areas which are inundated during the high tide and free from water-logging during the low tide, which the communities plan can adjust with salt (Purnobasuki, 2012). Dahuri, 2003 in Kordi 2012 suggests that mangroves are found in coastal areas that are protected from the onslaught of waves and sloping areas. Therefore, it is often that the destruction of mangrove not only occurs naturally, but also because of the human activities that occur in coastal areas.

The destruction of function the mangrove forest ecosystem is very influential in biota habitat, both aquatic and terrestrial biota, as well as a decrease in the function and

benefits of mangrove for the people and the surrounding environment. Combating the problem caused by the degradation of mangrove forests are certainly not always put emphasis to the local government, but we as community must have self-awareness, motivation and responsibility to utilize and conserve mangrove forests. Therefore, the role of education is very important. Notoatmodjo, 2003 in Yasin, 2012a expressed aims of education imparting knowledge or understanding, opinions and concepts, changing attitudes and perceptions

The implementation of the curriculum in 2013 with a thematic approach to learning becomes the opportunities and challenges in the learning development of mangrove forests. Poerdawadarminta, 1983, Calmness, 2012 suggests an integrated thematic learning is learning that uses the theme to link the several subjects to provide a meaningful experience to the learners. The theme is the big idea or main idea that becomes a moot point . Shanahan, 1995, in Madellu 2013 suggested that the thematic learning is a method of organizing learning around a theme or topic that allows for intergrated a cross- field study instructions. Yasin, 2012b suggested that thematic learning more emphasis on student involvement in the learning process actively, so that students can gain a hands-on experience and trained to be able to find themselves a variety of knowledge they have acquired. Through hands-on experiences, students will understand the concepts they learn and connect with others who have understood the concept.

Sudrajat (2008) suggested that thematic learning has the following characteristics : student-centered , providing direct experience , the separation is not so clear subjects , presents the concept of a broad range of subjects , and flexible nature , learning outcomes in accordance with the interests and needs of students , and using principles of learning and fun while playing . Furthermore, still according to Sudrajat, said implementation thematic learning in school has several implications, which is the implications for teachers, implications for students, implications for infrastructure, learning resources, and the media, the implications of the arrangement of the room, and the implications for the selection of methods.

Madellu (2013) suggests a thematic approach developed as a strategy to improve students' understanding of: the relationship between the concepts learned in the context of each field of study and the relationship between the concepts of multiple fields of study on the concepts.

Anonymous, 2005a in Madellu, 2013 suggests that the basic steps to develop the thematic learning method is choose a theme, set a time frame for the implementation of activities, ensure the theme and the time frame so the instructor can conduct extensive research, do the field trip, the students began to play a role as the center stage of activity. After all the students have the opportunity to absorb new information, students split from the group and implement the learning function independently. There are some characteristics in the learning process of groups as proposed by Burden and Byrd, 1999 in Asri (2009), which is each group must have a purpose, even though there may be members of the group there is no access to the destination. A group that does not have the purpose of the group, is not a group, and each group has a norm.

According Madellu (2013) the stage of thematic development task included formulation of the theme, the determination of the assignment scope of thematic material, translation of assignment material in the form of integrative topics or interaction, formulation choice of learning methods approach, the task of designing thematic instruction, formulation and process indicators performance indicators, and the development of evaluation instruments. From the description above, the goal of the research is to describe the relationship mastery of concepts and the relationships between the learning context and the relationship between biology and physics concepts of mangrove forests.

## METHODS

This research is a development (Research and development) thematic task -based learning that includes a two-stage design, implementation, and evaluation of processes and outcomes. The design phase includes the design standard thematic task instructions and task instructions thematic development of the substitution or integration of local elements of the school and school environments were targeted research / learning

Subjects were Christian Junior High School eighth grade students Bellae. Eighth grade students assumed to have been or being followed regularly in the classroom learning about the concept of diversity of living creatures and plant organs that become contextual enrichment activities conducted on the concept of learning in the classroom on a regular base. The subject of parents as partners in student learning mangrove forest research activities in the design of thematic tasks, parents and community also play a role as a facilitator of student learning, together with teachers and researchers.

Data collection instruments were : Student Task Sheet ( LKS ) , Observation Data Format , Format monitoring activities observation / measurement in the field, a test to evaluate , and interviews .

Processing techniques and data analysis: Data analysis includes quantitative and qualitative analysis. Quantitative analysis used to describe the research indicator variables, the correlation between the indicators from the initial meeting to the final meeting. Qualitative analysis used to explore and describe the patterns of students' attitudes and perceptions towards design activities, implementation of learning and the role of parents / community using hypothesis testing using the formula:

$$\rho = 1 - \frac{6\sum D^2}{n(n^2-1)},$$

$\rho$  = rho correlation coefficient

$D$  = difference in rank between the variables X and Y for each subject

6 and 1 = rate constant

N = number of cases or samples

(Ipaipah, 2011)

## FINDING AND DISCUSSION

### Finding

1. The ability to identify living things in the mangrove forest and mangrove forest types, derived from 11 students 0:53. The results considered as a strong correlation.
2. Relationship over function of mangrove forests concept with destruction of mangrove forests, 0:25 obtained from 11 students. The results of this correlation are enough.
3. Relationship mastery wave measurements and identify living things in the mangrove forest , and the destruction of mangrove forests by identifying and comparing the living creatures in the mangrove forests , types , functions of mangrove forests , mangrove forest destruction and wave based measurement and identification of factors that influence on the field . 0.53 obtained from 11 students. Result of this correlation is strong.

4. Relationship mastery of biological concepts mangrove forests (identification of living organisms in mangrove forests) to physics (wave). A strong correlation retrieved from total 11 students that 0.51.
5. Relationship mastery of biological concepts mangrove forest (mangrove forest types) to physics (wave). 0.53 obtained from 11 students, considered as a strong correlation.
6. The relationship mastery of biological concepts mangrove forest (mangrove forest functions) to physics (wave) of the total 11 students is 0.35. The correlation categorized enough.
7. Relationship of biological concept of mangrove forests (mangrove forest destruction) and physics (wave) 0.21 obtained from a total 11 students, the correlation categorized weak.

## Discussion

1. The abilities to identify living things in the mangrove forest and mangrove forest types. At first, the learning implemented in the class, which the researchers describe in general living beings and any type of mangrove forests that exist within the mangrove in Indonesia. Ask students to answer the activity of forms in accordance with experience and references of each other. Then the learning is doing in the outside classroom again. In complement of forms this activity; students also engage parents and the surrounding community as a resource to assist in the task, so that the good performance of the students as there is also help from parents.
2. Relationship mastery of concepts function of mangrove forests mangrove forest destruction. Learning implemented first in the class, explaining in general what are the functions of mangroves for natural (environmental) and for other living things, including humans, and any human activity cause damage to mangrove forests, and natural factors that cause any damage to the forest mangroves. After that ask students to answer the activity of forms according to the experience, as well as from other sources of each student, then learning occurs outside the classroom again to complete the entry form, and provide value.
3. Relationship mastery wave measurements and identify living things in mangrove forests , types , functions of mangrove forests , destruction of mangrove forests by identifying and comparing the living creatures in the mangrove forests , types , functions of mangrove forests, mangrove forest destruction and wave based measurement and identification factor- influential factor in the field. In general, the concept of waves, among others, how

to measure the amplitude, wavelength, frequency and wave speed, using the Student Task Sheet contains about the concepts taught.

4. Relationship mastery of biological concepts mangrove forests (identification of living organisms in mangrove forests) to physics (wave). Describes in general about living creature in the mangrove forests, and how the sea waves effect on living creatures in the mangrove forests and how it influence living beings to the spread of mangrove forests.
5. Relationship mastery of biological concepts mangrove forest (mangrove forest types) to physics (wave). Generally explain how mangroves reduce wave, and how well the type of mangrove forests in reducing the huge tidal wave.
6. Relationship mastery of biological concepts mangrove forest (mangrove forest functions) to physics (wave). Explaining the function of mangrove forests for other living things, including humans, and for the natural (environmental) example is the function of mangrove forests to protect residential areas from the onslaught of the waves and the function of mangrove forests as a protective shoreline.
7. The mastery of biological concepts mangrove forest relationship (mangrove forest destruction) and physics (wave), explain what causes the destruction of mangrove forest either from natural or human. Also as a consequence of the mangrove forest dredged; for example when there are mangrove forests around coastal settlements and destroyed the existing ecosystem around the mangrove forest will definitely damaged and disrupted by the brunt of the waves are great because there is no more mangrove forests to reduce wave.

The description of the discussion about the relationship concept mastery and learning context and the relationship between biology and physics concepts of mangrove forests, giving the impression that an important role in learning is needed for the involvement of parents and the community in building a good interaction for the success of learners. Also in building a good relationship between the school, parents, communities, and governments in understanding the importance of the student's knowledge, parents, and society about the importance of conservation of the site for living things, which includes humans?

Djulia (2005) in Laksono, et al (2013), Conclude that the scientific concepts that people can overcome the limitations in the context of learning in school. It is intend that the approach to science learning in schools in the context of the culture and the place of the students are learning very important and well.

Application of a thematic approach to learning that is done by Haji, 2009, from the case study research subjects SD and SD N 69 N 70 the city of Bengkulu, obtaining results that stated that learning to use a thematic approach is better than that taught by using ordinary learning. Further research conducted by Rumidani et al, 2014 on the implementation of the thematic-based learning environments to enhance motivation and learning outcomes through questionnaires, achievement test, and observation. It proves that implementation-based thematic learning environments can enhance learning motivation and student learning outcomes in the implementation process learning experiences that involve students directly so that students are able to discover for themselves the concepts covered in the lesson.

Some relevant research results above show that in carrying out a thematic approach to learning, teachers must be able to innovate so that learning is done to obtain good results and meaningful for students, parents, community, and government.

## CONCLUSION

1. The achievement of student learning outcomes are very good, in terms of student participation in answering questions about the biological concept and concept mangrove forests, biological concepts to the context of the relationship between mangrove forests and fields of study.
2. There is a relationship concept and learning context mangrove forests and relationships between concepts of biology and physics of mangrove forests.

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