

Evaluation of local potential-based local marine biology field practicum program

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Article Information	Abstract
Keyword: Field practicum; Local potential; Marine biology; Program evaluation Kata Kunci: Praktikum lapangan, Potensi lokal, Biologi laut, Evaluasi program History: Received : 03/10/2022 Accepted : 11/02/2023	Marine biology field practicum based on local potential is routinely held at the Department of Biology Education, Faculty of Teacher Training and Education, University of Borneo Tarakan, but has never been evaluated. This study aims to analyze the implementation and results of the field practicum that has been carried out, and make decisions so that the quality of the process and output of the practicum can be increased. This research is an evaluation research using countenance stake model which is qualitative in nature. The unit of analysis used is the course lecturer, students, field assistants, head of the laboratory, study program curriculum, lesson plans, infrastructure, tools and materials, practicum guides, and practicum reports. The techniques used are observation, interviews and document analysis. Data were analyzed using data condensation techniques, data presentation, and data verification. The results of this study are: 1) the planning stage is of poor quality, 2) the process (transaction) stage is of good quality, and 3) the product (outcomes) stage is of excellent quality. The team of lecturers supporting the course needs to plan practicums more carefully as an effort to improve, such as revising the RPS, compiling practicum guidelines based on local potential, compiling assessment instruments and coordinating well with the head of the laboratory regarding the practicum implementation. Abstrak Praktikum lapangan biologi laut berbasis potensi lokal rutin dilaksanakan pada jurusan Pendidikan Biologi Fakultas Keguruan dan Ilmu Pendidikan Universitas Borneo Tarakan, namun belum pernah dievaluasi. Penelitian ini bertujuan untuk menganalisis pelaksanaan dan hasil praktikum lapangan yang telah dilaksanakan, dan membuat keputusan agar kualitas proses dan keluaran praktikum dapat meningkat. Penelitian ini merupakan penelitian evaluasi menggunakan model <i>countenance stake</i> yang bersifat kualitatif. Unit analisis yang digunakan adalah Dosen Pengampuh mata kuliah, Mahasiswa, Pembantu Lapang, Kepala Laboratorium, kurikulum prodi, RPS, sarana prasarana, alat dan bahan, panduan praktikum, dan laporan praktikum. Teknik yang digunakan yaitu observasi, wawancara dan analisis dokumen. Data dianalisis menggunakan teknik kondensasi data, penyajian data, dan verifikasi data. Hasil dari penelitian ini yaitu: 1) tahap perencanaan berada pada kualitas kurang baik, 2) tahap proses (<i>transaction</i>) berada pada kualitas baik, dan 3) tahap produk (<i>outcomes</i>) berada pada kualitas sangat baik. Tim Dosen pengampuh mata kuliah perlu merencanakan praktikum dengan lebih matang sebagai upaya perbaikan, seperti merevisi RPS, menyusun panduan praktikum berbasis potensi lokal, menyusun instrumen penilaian dan melakukan koordinasi yang baik dengan kepala laboratorium terkait pelaksanaan praktikum.

A. Introduction

Biology is the science that studies living things and their environment. Biological material is not only related to concrete scientific facts or natural phenomena, but also related to abstract matters such as metabolic processes, hormonal systems and so on (Sudarisman, 2015). Based on this, a paradigm emerged which considered that learning biology seemed difficult, memorized a lot and tended to be boring (Jayawardana & Gita, 2020). Therefore studying biology needs to be supported by practical implementation either in the laboratory or in the field so that this paradigm can be overcome.

Practicum-based learning can help students find facts from the theory learned in class. Practicum methods are generally designed specifically so that students can develop learning activities, obtain facts from the concepts studied, develop basic skills for conducting experiments and observations, the ability to solve problems with a scientific approach and so on (Murti et al., 2014). Based on this, practicum activities are appropriate to be carried out to support biology learning.

The implementation of biology practicum doesn't have to be carried out in the laboratory, but can also be carried out in the surrounding environment (Sunariyati et al., 2018). Tarakan City consists of two islands, namely Tarakan Island and Sadau Island with an area of 254.18 km², of which 249.65 km² is land and the remaining 4.53 km² is sea. (BPK Kalimantan Utara, 2022). The geographical conditions of Tarakan City as an island in North Kalimantan Province are certainly very supportive for the implementation of marine biology practicum courses. The city of Tarakan has many mangrove ecosystems, beaches or coastal areas that can be used for field practicum locations to support learning. Based on these geographical conditions, the city of Tarakan is a region that has very abundant marine resources such as various types of fish, seaweed, shrimp, crabs, and so on. These abundant marine resources can be used as a method and source of learning marine biology, especially in field practicum activities based on local potential. Apart from Tarakan City, marine biology field practicums are also usually carried out on Derawan Island and its surroundings because it is considered that the plankton, nekton and benthos are more numerous and varied.

Local potential-based learning is contextual learning. Contextual learning is a learning concept in which the lecturer brings the real world or experience into the classroom and encourages students to make connections between the knowledge they have and its application in

everyday life (Hosnan, 2014). The implementation of local potential-based field practicum must of course be designed in such a way as to be well organized and the learning objectives can be achieved. Marine biology field practicum activities are carried out every year, but there are still many obstacles to implementation, such as 1) students don't fully understand the basic theory that will be practiced, 2) limited tools and materials for field practicum and sample identification in the laboratory, 3) students don't master the use of books sample determination key, 4) the unavailability of a proper practicum guidebook, 5) and what is of particular concern is that the implementation of field practicums is in a pandemic condition, and so on.

Before the Covid-19 pandemic, field practicum activities were carried out in the Derawan Islands and their surroundings because it was considered that they had more marine ecosystems and were still good compared to Tarakan Island. The marine biology field practicum held in Tarakan City and Derawan Island is none other than to raise local potential as a source of learning. The marine biology field practicum program was not implemented in 2020 due to the pandemic. Field practicum implementation in 2021 will be carried out in Tarakan City because the location can be reached by students, besides that the pandemic situation is one of the considerations. The impact of the practicum carried out was only limited to coastal biota and mangrove biota.

So far there has never been an evaluation activity, especially the evaluation of the practicum program implementation using clear and measurable methods. Evaluation of practicum programs is of course very important to implement because the results and quality of education are largely determined by the evaluation system carried out in measuring, assessing and evaluating the learning that has been carried out (Djulia et al., 2020). The purpose of holding a program evaluation is to produce recommendations to policy makers as an effort to improve the implementation of learning programs (Abidin, 2017). Research Evaluation of marine biology field practicum programs based on local potential aims to measure matters relating to the implementation of practicums, determine the impact of programs that have been implemented on marine biology learning, determine criteria for assessing whether the program is running well and as material for decision making and improvement of program planning field practice in the future.

In particular, the benefits of conducting program evaluations in lectures or field practicums are to gain an understanding of the implementation and results of field practicums that have taken place/implemented by the Lecturer, make decisions regarding the implementation and results of field practicums, and to improve the quality of processes and results of field practicums in an effort to improve output quality of field practicum (Abidin, 2017). Based on the description above, there are 3 research focuses, namely the planning of the marine biology field practicum program, the implementation of the marine biology field practicum program, and the results of the marine biology field practicum program.

B. Material and Method

This type of research uses a qualitative approach in the form of an evaluation of the Countenance Stake model. This is in accordance with the statement of Komarasari et al., (2019) which states that Stake as the creator of this evaluation model classifies it into qualitative research. This model analyzes

evaluation which emphasizes two types of operations, namely descriptions and judgments which include 3 phases, namely evaluation of antecedents (planning/input), transactions (process), and outcomes (results/output). Antecedent (context) is a condition that exists before the instruction related to the result. Transaction (process) is a process of activity instructions, and outcomes (results) are the effects of experience, observation and results of work (Lukum, 2015).

Based on the Countenance Stake evaluation model, this study compared the suitability between planning and implementation and the results of practicum programs. In program evaluation research, a criterion is used to determine the value of the program being evaluated (Fitzpatrick et al., 2004). Criteria are benchmarks or standards used to assess the success of a program being evaluated (Arikunto & Jabar, 2008). Therefore the criteria used from each aspect in this study are presented in Table 1.

Table 1 Evaluation criteria for each aspect

Stage	Criteria/Indicator
Planning/Input (Antecedents)	1. RPS contains practicum design; 2. The practicum assessment instrument is equipped with scoring guidelines; 3. Practicum assessment instruments are equipped with scoring guidelines; 4. Availability of local potential-based practicum guides; 5. Complete practicum supporting infrastructure; 6. Completeness of facilities (tools and materials) for field practicum
Process (Transaction)	1. Practicum activities are carried out in accordance with work steps; 2. Assistance by Lecturers 3. Assistance by Field Assistants
Result/Output (<i>Outcomes</i>)	1. Report on the results of field practicum or products produced.

(Adaptation from Sam et al., 2018)

The units of analysis in this study were 2 lecturers, 5 students, 1 assistant/field assistant, Head of Laboratory who acted as an informant, study program curriculum, RPS, infrastructure, tools and materials, local potential based field practice guide, and field practicum reports. The data collection technique used was direct observation where the researcher acted directly as an observer and was assisted by 2 other observers, interviews, and documentation.

In qualitative research the researcher acts as a key instrument, but when collecting data observation sheets, interview sheets, and various documents related to the field practicum program

are used to assist researchers in collecting data. This evaluation model places importance on the results of observations, descriptions, and program evaluations through various data sources and data analysis between stakeholders and evaluators (Harjanti et al., 2019). The collected data is then analyzed using techniques namely condensing data, displaying data, and making conclusions or verifying data (Miles et al., 2016). The assessment category used adopts Sam (2018) where there are 3 levels of assessment, namely indicator assessment, aspect assessment and stage assessment presented in Table 2.

Table 2 Assessment category rubric

Assessment Level	Category	Assesment Criteria
Indicator	In accordance	1. Found complete evidence of the state of things and still functioning on observation;
		2. There is a choice of statements that justify the condition of something in the questionnaire;
		3. There is an answer that justifies the state of things in the interview.
	not suitable	1. Found evidence of a state of something that is incomplete but still functioning on observation;
		2. There is a choice of doubtful statements about the state of things on the questionnaire;
		3. There are doubtful answers about the state of things in the interview.
	it is not in accordance	1. Not found complete evidence of the state of things and still functioning on observation;
		2. There is a choice of statements that deny or do not justify the condition of something in the questionnaire;
		3. There are answers that do not justify or reject the state of things in the interview.
Aspect	fulfilled	1. Most of the indicators in this aspect are in the appropriate category; or
		2. Most of the indicators in this aspect are in the appropriate category even though there is one category that is not appropriate.
	not fulfilled	1. Most of the indicators in this aspect are categorized as inappropriate; or
		2. Some of the indicators in this aspect are categorized as appropriate, but there are some (50%) that are not appropriate
	No fulfilled	1. Most (more than 50%) indicators in this aspect are categorized as inappropriate; or
		2. All indicators in this aspect are categorized as inappropriate.
Stages	Excelent	A stage is considered to be of excellent quality if all aspects are met, A stage is considered to be of good quality if most of the aspects are fulfilled, even though there is one aspect that is not fulfilled.
	Good	A stage is considered of good enough quality if some aspects are met, but there are also some (50%) aspects that are not fulfilled or not fulfilled.
	Not Good	A stage is considered to be of poor quality if most of the aspects in the component are categorized as unfulfilled.
	Bad	A stage is considered to be of poor quality if all aspects are not met.

B. Results and Discussion

In general, evaluation is defined as a systematic assessment of the value and value of an object (Lazwardi, 2017). Furthermore program evaluation is interpreted as a process for collecting, compiling, processing, analyzing, presenting, and disseminating information in order to describe or understand a program or make decisions, determine the level of success, and develop various alternative solutions to problems related to the program (Owen, 1993; Gani, 2019)

Based on the results of reference studies from various similar research articles, it was found that there were no articles regarding research evaluation of field practicum programs, especially in marine biology courses based on local potential using the Countenance Stake model. This research has never been conducted in the Biology Education study program, so the results of this study are new findings that aim to improve the quality of field practicum in Marine Biology courses.

Various data obtained such as observations, analysis of study program curriculum documents, RPS, practicum guides, and practicum reports as well as interview results from various informants were condensed (selected and simplified) according to the indicators of each aspect. At this data condensation stage all objective conditions are compared with the evaluation criteria that have been set as shown in table 1. This process of comparing is known as the measurement and assessment process. After that the data is arranged systematically so that it is easy to understand so as to provide a conclusion.

The evaluation criteria in this study consist of 3 stages, namely antecedents (planning/input), transactions (process), and outcomes (results/output). Data from evaluation research results using countenance stakes that have been displayed and verified are presented in Table 3 below.

Table 3 Program evaluation diagram countenance stake field practicum for marine biology course

Intent	Observation		Standard	Judgement
RPS contains a practicum design	Basically, this lesson plan does not include any material that must be practiced or in other words it is not in accordance with the lesson plan. In this academic year, the practicum was carried out only limited to coastal biota and mangrove biota, adjusting to pandemic conditions so that the implementation was only in Tarakan City.	Antecedent (Plan)	Deptment Biology Education curriculum	not fulfilled
The practicum assessment instrument is equipped with scoring guidelines	There is no practicum assessment instrument plan along with scoring guidelines		Educational Process Standards and Educational Assessment Standards	No fulfilled
Availability of local potential based practicum guide	Practicum guides are available but still do not contain or do not raise local potential in Tarakan City, such as seaweed, etc. The local potential raised is only the location of the field practicum.		Process Standart	not fulfilled
Infrastructure	Adequate infrastructure to support marine biology field practicum activities		Facilities and Infrastructure Standards	fulfilled
Facilities (practical tools and materials)	Less complete. There is no plankton net, tools for measuring physical parameters, etc		Facilities and Infrastructure Standards	not fulfilled
Practical activities carried out in accordance with work steps	The field practicum went well according to the work steps in the practicum	Transaction	Process Education Standart	fulfilled
Assistance by the Lecturer	Lecturers are present accompanying students		Process Education Standart	fulfilled
Assistance by field assistants.	Don't have a practicum assistant yet		Process Education Standart	not fulfilled
Field practicum report	Reports on the results of field practicum or the resulting products are in the form of reports that can be developed into learning resources.	Outcomes	Assesment Standart	fulfilled

1. Planning (Antecedents)

At the planning stage there are 5 criteria or indicators. The first indicator is that the RPS contains a practicum design. The technique used to measure this indicator is the analysis of SLP documents, field observations and to strengthen the data, interviews are conducted with the subject's lecturers. The objective condition found in the first indicator is that basically the SLP that has been prepared by the Lecturer Team does not include a list of material that must be practiced or in other words it is not in accordance with the SLP. In this academic year, the practicum was carried out only limited to coastal biota and mangrove biota, adjusting to pandemic conditions so that the implementation was only in Tarakan City, even

though the RPS contained other biota that could be practiced.

When referring to RPS, other biota that can be practiced are seagrass biota and coral reefs. Besides that, the marine conditions of Tarakan waters, biological resources and their potential can also be used as material for field practicum. Therefore there is a gap between the criteria and objective conditions in the field so that the assessment on the first indicator is not appropriate, and the judgment is not fulfilled.

The second indicator is the practicum assessment instrument equipped with scoring guidelines. The technique used to measure this second indicator is document analysis. The objective conditions found were that there were no practicum assessment instruments along with

scoring guidelines. This is because the practicum guidelines prepared are still temporary and it is realized that there is a need to add or develop better practicum guidelines.

Assessment instruments and practicum guidelines are tools that can be used to assist lecturers in providing assessments to students. Rubric is an assessment tool that provides an overview of the expected performance on each criterion to achieve certain results. Using a rubric in the assessment will provide a real description of student abilities (Suwarno & Aeni, 2021). Furthermore, according to Hajiriah et al. (2019) stated that scoring rubrics and guidelines can assist lecturers in carrying out assessments as objectively as possible so as to avoid giving random scores. Based on the description above, the assessment on the second indicator is not appropriate, and the judgment is not met.

The third indicator is the availability of practicum guides based on local potential. The implementation of practicum activities requires a practicum guide as a tool to assist students in developing the science process during practicum activities (Jamal, 2019). The objective condition found is that there is a practicum guide for marine biology courses, but it does not contain local potential in the City of Tarakan and its surroundings. The local potential raised is only limited to the location of the field practicum. Even though there are many practicum materials in the form of marine animals and plants that can be used as objects of observation. Marine plants that can be used as field practicum materials are seaweed and mangroves. Practicum animals that can be used as practicum materials are various types of fish, shrimp, and crabs.

The city of Tarakan is a small island surrounded by the ocean, so it has a large potential capacity for fish, both seawater and brackish water (Amalia & Sakti, 2020). The large potential for marine products in Tarakan City makes Tarakan City have a fishing industrial area located in Juata Laut with a planned area of 50 Ha. The famous seafood commodities from Tarakan City are pepija thin fish, seaweed, crab and frozen shrimp. (DPMPTSP Kalimantan Utara, 2019; Amalia & Sakti, 2020)

According to Sapitri et al. (2020) the use of local potential-based learning methods can be adapted to the conditions of students and the surrounding area. The natural and socio-cultural environment can be used as learning resources because they can develop student abilities and raise awareness of the importance of preserving local culture and potential (Hikmawati et al., 2021).

Based on this, the assessment on the third indicator is not appropriate, and the judgment is not met.

The fourth indicator is the completeness of supporting infrastructure for marine biology field practicum based on local potential. This indicator refers to PP Number 57 of 2021 facilities and infrastructure standards. From the results of observations and interviews with all informants, the results obtained are objective conditions in the field, namely that the infrastructure is sufficient to support practicum.

According to the standards for facilities and infrastructure set out in Government Regulation Number 57 of 2021, infrastructure is the basic facility needed to carry out the functions of an education unit. The basic facilities needed in this practicum are not many because the whole implementation is carried out in the field. Based on this, the assessment on the fourth indicator, namely appropriate, with Judgment is fulfilled.

The fifth indicator is the completeness of facilities or tools and materials for marine biology practicum. According to the standards for facilities and infrastructure contained in Government Regulation Number 57 of 2021, facilities are anything that can be used as tools and equipment in achieving learning objectives. The objective conditions obtained are that the materials needed are complete, but the tools needed are incomplete. Tools in the form of plankton nets, fishing rods, and tools for measuring physical parameters such as thermometers and secchi disks are not available in the laboratory.

Thermometers are not available in the laboratory because they are all broken so they cannot be used. A thermometer is a tool used to measure temperature or temperature (Nugroho, 2019). In marine biology labs, a thermometer is used to measure water temperature. The thermometer is made of glass and there is a space in the middle which is filled with mercury or alcohol so it is prone to breaking. Based on information from the Head of the Laboratory, plankton net and secchi disk are not available in the laboratory because there is no budget to procure laboratory equipment. The routine budget every year is only for the procurement of consumable materials, so for the procurement of equipment the Head of the Laboratory must make a proposal. In previous years, proposals for equipment procurement were submitted but were not followed up. Based on this, there is a gap between the criteria and objective conditions in the field so that the assessment on the fifth indicator is not appropriate, the judgment is not met.

Based on the description above, it can be concluded that of the 5 aspects contained in the planning stage, only 1 aspect is in the fulfilled category. The remaining 3 aspects are in the less fulfilled category and 1 aspect is not fulfilled. Therefore the assessment on the planning aspect is of poor quality because most of the aspects in the components are not met.

2. Process (Transactions)

At the process stage there are 3 criteria, namely field practicum in accordance with practicum work steps, mentoring process by Lecturers during field practicum and mentoring process by Field Assistants. Explanation of each indicator as follows.

The objective conditions in the field in the first indicator are that the field practicum is running well and in accordance with the practicum work steps, so there is no gap between the criteria and the objective conditions. Therefore the assessment on the first indicator on the process aspect is in accordance with the Judgment fulfilled.

The second indicator is the mentoring process by the lecturer. The objective condition in the field is that during practicum in the field the lecturer is present to accompany the students. Before leaving for the practicum location, the lecturer first gives directions in class regarding meeting points, gathering hours, tools and materials that students need to prepare independently, including personal equipment needed during the practicum. In addition, practical steps were also presented in order to save time in the field. Even though they had been given instructions before leaving for the location, the lecturer still gave directions when they arrived at the field regarding the installation of transects and the division of jobs for each group and its members.

The mentoring process was then continued during the process of identifying the samples found. After the sampling process in the field was completed, all samples found were then identified at their respective homes. The identification process is carried out at home because there are still restrictions on laboratory use during the Covid-19 Pandemic. The mentoring process by this lecturer ends with the activity of compiling student practicum reports.

Assistance by the Lecturer is in accordance with the implementation of learning as stated in PP Number 57 of 2021 article 12. Based on the description above, the practicum assistance process by the Lecturer is appropriate and the Judgment is fulfilled.

The third indicator is the facilitation process by field assistants. Basically, the biology education

department does not yet have a practicum assistant because there is no filing account at the RAB so it cannot budget funds for laboratory assistants. Therefore, lecturers empower alumni who have graduated to assist in carrying out the mentoring process during field practicums. However, there are only 2 alumni who can be empowered and do not match the number of groups. Ideally each group is accompanied by 1 laboratory assistant. Due to limited human resources, the mentoring process by practicum assistants cannot be maximized. Field assistants can only be present during the practicum on coastal biota, so other practicum topics are carried out without any field assistants. This is certainly very influential on the mentoring process. The accompanying lecturer was overwhelmed in guiding all groups during the mangrove biota practicum. Based on this description, the indicators of the mentoring process by field assistants are not appropriate, with Judgment not being fulfilled.

The conclusion from the process stage (transaction) is that of the 3 aspects, there are 2 aspects that are fulfilled and 1 aspect that is not fulfilled. Therefore the assessment at this stage is in good quality because most of the aspects are met, although there is one aspect that is not fulfilled.

3. Product (Outcomes)

The criteria for the outcomes stage are reports on the results of field practicum or products produced in the form of reports that can be developed into learning resources. Based on the objective conditions in the field, it was found that the student practicum report consisted of two, namely a written report and an activity video report. Written reports are made in the form of soft files using the Flipbook application, while video reports of activities are uploaded to Youtube. The two reports were presented, then disseminated to students of the same batch. The results of document analysis show that both reports are good and can be developed into learning resources. Student scores are relatively high.

Based on the description above, the criteria for field practicum reports or products produced in the form of reports that can be developed into learning resources have been fulfilled and Judgment is fulfilled. Therefore, the conclusion from the Product aspect (Outcomes), namely from 1 criteria contained in the Product aspect (Outcomes) has been fulfilled and is in excellent quality.

It has been explained previously that this research consists of 3 stages, namely antecedents (planning/input), transactions (process), and outcomes (results/output). This is in accordance

with the educational process standards, where according to Government Regulation Number 57 of 2021 Article 10 states that process standards are the minimum criteria for the learning process based on path, level, and type of education to achieve graduate competency standards and includes lesson planning, learning implementation and assessment of the learning process.

Based on the description of each stage, it can be concluded that the evaluation results of the planning stage of the marine biology practicum program are in the category of poor quality, the process of marine biology practicum is in good quality, and the outcomes are in the excellent quality category. In general, this field practicum program has similarities with other programs, namely the existence of obstacles or obstacles. With the evaluation of this program, it is hoped that the obstacles or constraints can be corrected so that the quality of the learning process can be increased.

The decision from the results of this evaluation is that the marine biology field practicum program can still run and is excellent to be continued or implemented in the following years but by making improvements to several main aspects at the planning stage. Recommendations that can be given are for the Lecturer Team to be able to design better learning, to revise the lesson plans, to make practicum assessment instruments, to develop practicum guidelines based on local potential, to coordinate well with the Head of the Laboratory regarding the need for tools and materials, and to recruit practicum assistants.

C. Conclusion

The conclusion of this study is that the marine biology practicum program planning is in the poor category, the marine biology practicum process is in good quality, and the outcomes are in the excellent quality category. It is expected that the Lecturer Team for marine biology courses will be able to better prepare and plan marine biology field practicum activities based on local potential properly such as revising the RPS and including practicum topics, making assessment instruments complete with scoring guidelines, revising practicum guidelines so that they are based on local potential, completing tools and field practicum materials, and recruit field assistants or helpers.

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E. References

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