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ICERI

# The 5th International Conference On Educational Research and Innovation

# OPTIMIZING EDUCATIONAL RESEARCH FINDINGS TO IMPROVE THE QUALITY OF LIFE

# CONFERENCE PROCEEDINGS

Institute of Research and Community Services Yogyakarta State University
May, 8-9, 2017

# MESSAGE FROM THE RECTOR OF YOGYAKARTA STATE UNIVERSITY

Assalamu'alaikum warahmatullah wabarakatuh.
May peace and God's blessings be upon all of us.

Welcome to Yogyakarta, Indonesia

It is a privilege for Yogyakarta State University to have the opportunity to organise this conference in which educational researchers and practitioners get together to share ideas, experiences, expectations, and research findings. This conference is one of the agendas of Yogyakarta State University to celebrate its 53rd anniversary. It also marks the new era of Yogyakarta State University with its new leaders and leaderships with new priority programs hoping to excel this university to the new level that is internationally recognized – the World Class University.

One effort that this university is doing is making sure that fruitful research is among the priorities. So far, however, the research findings produced by universities, research institutes, schools, and practitioners have not been optimally disseminated and utilized and have not produce maximum impact on the improvement of quality of life. Findings of research should be able to benefit not only for the researchers themselves and their limited communities, but also to the wider communities and worldwide. This is what Yogyakarta State University wants to promote, while improving its impacts to the scientific life worldwide by encouraging researchers to publish their articles in internationally reputable journals.

This fifth International Conference on Educational Research and Innovation (ICERI), in particular, aims at facilitating researchers, educators, scientists, and students to exchange and share their experiences, new ideas, and research findings about all aspects of education, research and innovation, and discuss the practical challenges encountered and the solutions adopted to improve the quality of life. With the commitment to improve the impact of research, this year theme is "Optimizing Educational Research Findings to Improve the Quality of Life."

Finally, let me acknowledge the hard work of all committee members who have devoted their time and energy to make the conduct of this conference possible. I would also use this opportunity to wish all of you a happy conference and hope this conference be one of the conferences that really contribute to the upbringing of the scientific life.

Wassalamu'alaikum warrahmatullah wabarakatuh.

Yogyakarta, 8 May 2017
Rector,

Prof. Dr. Sutrisna Wibawa, M. Pd.

# MESSAGE FROM THE ORGANIZING COMMITTEE

Assalamu'alaikum warrahmatullah wabarakatuh.
May peace and God's blessings be upon you all.

First of all allow me to extend my warmest greetings and welcome to you all to the 5th International Conference on Educational Research and Innovation, organized by Yogyakarta State University to celebrate its 53rd anniversary. The conference is held for two days – May 8 and 9, 2017.

Raising the theme – Optimizing Educational Research Findings for Improving the Quality of Life - this conference is designed to explore how various findings of educational researches and applied researches from academicians, researchers, practitioners, educators, bureaucrats, teachers, and students are optimized to improve the quality of life. Hopefully, this conference will contribute various inspiring innovative thoughts and proactive strategies for the systemic and sustainable improvement of the quality of life.

For your information, we will proudly present one keynote speech, three plenary presentation sessions and four parallel presentation sessions. Seven outstanding speakers in the field of character education and educational research have been invited. They are Prof. Laurance Splitter, Ph.D. from Education University of Hong Kong, also representing Asia Pacific Network for Moral Education (APNME), Prof. Richard Luke Daniels from the College of Idaho, USA, Dee Dee A. Salle, Ph.D. , an Exercise Physiologist, Nutritionist, and Consultant from Singapore, Dr. Minako Sakai from the University of New South Wales, Australia, Dr. Nurul Taufiqu Rochman, M.Eng., Ph.D. from Indonesian Institute of Sciences (LIPI), Indonesia, Dr. Deendarlianto from Universitas Gadjah Mada,Indonesia, and Prof. Dr. Sri Atun from Universitas Negeri Yogyakarta, Indonesia.

We have done our best to prepare for this conference. So, my highest appreciation and heartfelt thanks to all committee members. As to err is human, shortcomings may occur here and there. On behalf of the committee, I would therefore like you all to accept our apologies.

At the end of my speech, I would like to kindly request the Rector of Yogyakarta State University to officially declare the conference open.

To conclude, let me wish you a productive discussion and a fruitful conference.
Wassalamu'alaikum warrahmatullah wabarakatuh.
May peace and God's blessings be upon you all

Yogyakarta, 8 May, 2017
Head of Research Institute and Community
Service of Yogyakarta State University

Dr. H. Suyanta, M.Si.

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# CURRICULUM IMPLEMENTATION OF HIGHER EDUCATION ACCORDING TO NATIONAL STANDARD (SNDIKTI) AND INDONESIAN NATIONAL QUALIFICATIONS FRAMEWORK (KKNI) ON COURSE PHYSIOLOGY OF PLANTS

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**Abstract**

Higher education institutions was given the authority to establish and develop a curriculum that is based on SNDIKTI number 44 year 2015 and Presidential Decree number KKNI 8 year 2012. Higher education institutions need the readiness of human resources professionals in the implementation of curriculum development. The purpose of this study was to describe the validation results of learning device, the effectiveness of the curriculum learning outcomes in accordance SNDIKTI and KKNI in Plant Physiology courses for students as a biology teacher candidates in terms of mastery of concepts and science process skills of students. The object of research is the curriculum in accordance with SNDIKTI and KKNI. This research is quantitative descriptive. Data were analyzed by using quantitative analysis. The population of this research is the students of Biology Education Mulawarman with the study sample were students who programmed course Plant Physiology. The results showed that implementation of the curriculum in accordance SNDIKTI and KKNI in the subject plant physiology can encourage students to participate actively in the investigation, experiment, develop a sense of responsibility for their own learning, actively asking questions and solving problems. Curriculum development plant physiology courses that accordance to KKNI and SNDIKTI have met the eligibility criteria of a model, that is valid, practical and effective. The validity of the learning device which consists of Semester Lesson Plan and Worksheet declared 100% complete and proper for use in learning. Learning devices are arranged in a practical and its implementation can be conducted properly, and it also can improve student mastery of concepts with an average post test amounted to 85.71% and the average value of the gain medium and 48.86 with the classical criteria of science process skills obtained an average value of 3.4 with good criterion. Curriculum to SNDIKTI and KKNI on plant physiology courses can effectively improve student's learning outcomes in terms of mastery of concepts and science process skills.

**Key Words**: Curriculum, SNDIKTI, KKNI, Physiology of Plants

## 1. Introduction

Education Workforce Education Institutions (LPTK) was commissioned to prepare prospective teachers in Indonesia. Teachers need to educate and teach well, to set up a Human Resources (HR) Indonesia qualified in accordance with the demands of

ever-changing society. People want a quality education and produce graduates who are ready to work and ready to conduct further study. LPTK should follow the needs of the field, which not only provided supplies to prospective teachers about the implementation of the curriculum but should be more comprehensive, which give provisions on curriculum development, including planning, preparation, execution, and evaluation of the curriculum. Some of the policies advanced in the field of education that must be anticipated by LPTK as contained in the following documents: according to Education Law Article 3 No. 20 of 2003 national education goals to be achieved are: 1) Faith and fear of God Almighty (spiritual attitudes), 2) noble, healthy, independent, and democratic and responsible (social attitudes). 3) knowledge (knowledge), 4) capable and creative (skills) (Education in the Ministry of National Education, 2013: 19).

Regulation of the Minister of Research and Higher Education of the Republic of Indonesia Number 44 of 2015 on National Education

Standards include: 1) Standard Competency, 2) Content Standards of Learning, 3) Standards of Learning Process, 4) Assessment Standards of Learning, 5) Standard Lecturers and Personnel, 6 ) Infrastructure Standards of Learning, 7) Management Standards of Learning and 8) Financing Standards of Learning. National Education Standards referred to such a reference in preparing, conducting and evaluating curricula (Research and Higher Education, 2015: 6).

Indonesian Presidential Regulation No. 8 of 2012 on the National Qualifications Framework Indonesia (KKNI) Chapter I of Article 1.1 and Article 1.2 states that KKNI is the framework penjenjangan competence and qualifications to reconcile, equalize, and integrate the field of education and field work training and work experience in order granting recognition of the competence of work in accordance with the structure of employment in various sectors. Learning gains is the ability gained through the internalization of knowledge, attitudes, skills, competencies, and the accumulation of work experience (Deputy Public Affairs, 2012: 2).

Competency framework of the 21st century to improve the learning process to achieve proficiency: (1) Skills lives and careers (life and carrier skills) consisting of: 1) be fiexible and adaptive, 2) took the initiative and independently, 3) skilled social and cultural rights, 4 ) productive and accountable, 5) leadership skills and responsibility; (2) learning and innovation skills (learning and innovation skills) consisting of: 1) creative and innovative 2) critical thinking in solving problems, 3) communication and collaboration skills; (3) the capacity to obtain information, media, and technology (information media and technology skiils) consisting of: 1) literat information, 2) literat Media, 3) literat ICT (Tucson, 2009: 1).

Universities have the authority to develop or construct an effective curriculum appropriate to the circumstances and needs of the region, building on the National Standards for Higher Education (SNDIKTI) in accordance with the Minister of Research and Higher Education regulations number 44 in 2015 and peraturanPresiden Republic of Indonesia Number 8 of 2012 concerning KKNI. It holds the promise of a more tangible to improve the quality of education for the creation of quality human resources who have high competitiveness amid increasingly sharp global competition. Higher Education authority in preparing the curriculum requires the readiness of human resources professionals in their implementation.

Plant Physiology courses aimed at understanding the basic concepts and processes that occur in the plant life. Biology student teachers in Mathematics and Science Education Programs FKIP environmental education courses to get college biology Plant Physiology. Plant Physiology courses weighs 3 credits with course code 05015333. Competence plant physiology courses implemented to date has not led to Permenristek No. 44 2015 on the National Standards for Higher Education (SNDIKTI) and Presidential Regulation no. 8 of 2012 on the Indonesian National Qualifications Framework (KKNI), in this case need to be arranged Plant Physiology curriculum subjects that refer to SNDIKTI and KKNI.

To prepare students managed to live in the future necessary to change the form of improved curriculum Semester Lesson Plan (RPS) and the Student Activity Sheet (MFIs) in Plant Physiology courses that refer to SNDIKTI and KKNI. If implemented this curriculum are able to prepare students managed to live in the future, namely the students: 1) be able to apply the concepts and principles of didactic-pedagogic biology and the science of biology for the planning, management, implementation, evaluation by utilizing science and technology-oriented skills / life skills ( life and career skills), 2) have the skills / learning and innovation skills (learning and innovation skills). Students as prospective teachers have the ability to work not only prepared as a teacher, but had a job skills.

Concept is a unit of meaning which represents a number of objects that have the same characteristics (Winkel, 1991). While Dahar (1989) defines concept as the foundation of thinking, which is obtained through the facts and can be used to solve the problem.

Mastery of concepts by Dahar (2003), as the student's ability to understand the scientific meaning both theory and its application in everyday life. While the definition of the concept according to Bloom's is the ability to capture notions like being able to disclose a material that is presented in more understandable form, able to provide interpretation and able to apply. Based on those opinions can be concluded that students' mastery of concepts is the ability to understand the significance of learning and applying it to solving problems in everyday life.

In this research, through a series of learning implementation using SNDIKTI and KKNI accordance curriculum on plant physiology courses, students can master the concept of material provided so that students can resolve the problems associated with such materials. If a student can master the concept, it can be used as a basis for science process skills.

According to the Beaumont-Walters & Soyibo; Germann & Aram, 1996a; Eilam, 2002 (Karamustafaoglu, 2011: 26) science process skills are grouped into two categories, namely: 1) The basic process skills are: skills: observing, classifying, measuring and predicting. These skills provide the intellectual foundation in scientific inquiry, such as the ability to describe the events that occur in nature. 2) Integrated Process Skills comprising: identifying and defining variables, collecting and processing data, building data tables and graphs, depicting the relationship between variables, interpret the data, manipulate the data, formulate hypotheses, designing an investigation, make conclusions and generalizations.

Based learning skills improvement process is the strategy of "guided discovery" that help students learn how to learn, helps students acquire knowledge in a way to find it yourself. In this model also included the discovery of meaning, the organization and structure of the idea or ideas, so that gradually the students learn how to organize and conduct research. Science process skills emphasis on students' ability to find their own ( "discover") knowledge based on experiential learning, laws, principles and generalizations, so it provides an opportunity for the development of thinking skills high level (Houston in Haryono (2006: 4). Thus students are more empowered as a subject of study that should play an active role in the hunt for information from various sources of learning, and teachers act more as an organizer and facilitator of learning.

According to the Beaumont-Walters & Soyibo; Germann & Aram, 1996a; Eilam, 2002 (Karamustafaoglu, 2011: 26) science process skills are grouped into two categories, namely: 1) The basic process skills are: skills: observing, classifying, measuring and predicting. These skills provide the intellectual foundation in scientific inquiry, such as the ability to describe the events that occur in nature. 2) Integrated Process Skills comprising: identifying and defining variables, collecting and processing data, building data tables and graphs, depicting the relationship between variables, interpret the data, manipulate the data, formulate hypotheses, designing an investigation, make conclusions and generalizations.

## 2. Method

This research is quantitative descriptive. Data were analyzed by using quantitative analysis. The population of this research is the students of Biology Education Mulawarman with the study sample were students who programmed course Plant Physiology. The variables into the study of this study are:

1. Practicality seen from keterlaksanaan learning curriculum and obstacles encountered after the implementation of the learning curriculum and KKNI accordance SNDIKTI in Plant Physiology Course

2. The effectiveness of a curriculum model seen mastery of concepts and science process skills after learning implementation using SNDIKTI accordance curriculum and KKNI in Plant Physiology Course.

The instruments used to collect data in this study are as follows: 1) The instrument Practicality Curriculum National Standard of Higher Education (SNDIKTI) and the National Qualifications Framework Indonesia (KKNI) Subjects Plant Physiology and 2) Instrument effectiveness of learning outcomes Curriculum National Standard Higher Education (SNDIKTI) and the Indonesian National Qualifications Framework (KKNI) Plant Physiology courses in terms of mastery of concepts and science process skills

The data collection is done by setting up: 1) The instruments used to obtain data on student mastery of concepts before and after the implementation of appropriate learning tools and KKNI SNDIKTI. The shape of the test given in the form of essay test with a number of 10 questions that have been adapted to the learning objectives. Pre-test given before the learning begins while the post-test was given after learning. 2) instrument science process skills that are used for troubleshooting or performing science experiments. Results of the assessment of science process skills that students have meaningful learning experiences. Tests used in the science process skills, students carry out the activities contained in the MFI and define problems, formulate hypotheses, designing experiments, carry out experiments, collect data, analyze the data, draw conclusions, and communicate. With the provision of the section were scored: 1 if it is not done, 2 if it is done but not quite. 3 if done correctly, but less precise, and 4 if done correctly and appropriately.

Data Analysis Techniques, consisting of:

1) Analysis of Concept Mastery. Data analysis techniques to determine the completeness of the indicators is to use descriptive with the following formula:

$$P = (\Sigma A) \quad (\Sigma N) \times 100\% \quad \text{..... (Ratumanann and Laurens, 2012)}$$

Information:

P = Percentage of completeness indicator

ΣA = Number of students who answered questions correctly on each of the indicators

ΣN = Total maximum score on each indicator

To determine the learning outcome in this study using techniques normalized gain. The use of this technique as to determine the effectiveness of learning outcome of each student as indicated by the value of G (normalized gain) and with the following formula:

$$(g) = \frac{Spost - Spre}{S\,max - Spre} \ldots\ldots\ldots \text{(Hake, 2008: 1)}$$

Information:
(G) = Value gain
Spre = Value pre-test
Spost = The post-test
S max = maximum value

Furthermore, from the calculation of the N-gain is then converted to the following criteria:

Table 1. Criteria Normalized Gain

| Skor N-Gain | Criteria Normalized Gain |
|---|---|
| N-Gain > 0,70 | High |
| 0,30 ≤ N-Gain ≤ 0,70 | Medium |
| N-Gain < 0,30 | Low |

(Hake, 2008: 1)

Sensitivity index of an item is basically a measure of how well items that differentiate between students who are receiving students who have not received learning. An item is said to be sensitive to learning when S ≥ 0.30. To calculate the sensitivity of the item, then use the following formula:

$$S = \frac{Ra - Rb}{T} \ldots\ldots \text{(Grounlund dalam Ibrahim, 2005: 50)}$$

Information:
S = Sensitivity
Ra = Number of students who answered correctly on the test end
Rb = Number of students who answered correctly on the test early
T = Number of students who take the test

2) Science Process Skills Analysis

Data were analyzed using descriptive analysis is to look at the average value of the results of each meeting on the course. After the data are the focus of the research and collected. then the next data obtained in the form of qualification assessment reporting student success in science process skills are expressed in a range of customized SNDIKTI (2014): number 4 (four) category is very good; number 3 (three) good category; number 2 (two) categorized enough; number 1 (one) category lacking.

## 3. Results

1) Description Results of Learning Device Test On Standards Compliance Implementation of the National Curriculum of Higher Education (SNPT) and the Indonesian National Qualifications Framework (KKNI) In Plant Physiology Course

Enforceability learning device was observed by 2 observers. Observations were made during three meetings (activities carried out in the classroom), which is an implementation of the RPS. On average enforceability of learning at the 1st meeting obtained a score of 3.85 and reliability of 95.6%. On average enforceability learning at the 2nd meeting obtained a score of 3.96 and reliability of 98.9%. On average enforceability learning at the 3rd meeting obtained a score of 3.92 and reliability of 97.8% (Ratumanan and Laurens, 2011).

2) Learning Outcomes Implementation of National Curriculum Standards Compliance Higher Education (SNDIKTI) and the Indonesian National Qualifications Framework (KKNI) In Plant Physiology Course:

a. Students Concept Mastery

Learning outcomes assessment to determine the extent of students' mastery learning concept that has been done. Pengusaan concept of students in the subject of Plant Physiology obtained from achievement test conducted prior learning (pre-test), and after learning (post-test). Giving tests before learning is done to look at the initial capabilities of students and giving the final test of learning aims to look at the ability of students after learning to do. Both the data is processed to calculate the achievement completeness mastery of concepts, with reference to the criteria in accordance with SNDIKTI with learning assessment criteria with numbers ≥ 3 lettered B categorized either equivalent to number ≥ 75. The pre-test results show there is one goal of the items mastery of concepts plant physiology who finished with a percentage of completeness average of 10%. However, at the post test eight (8) the purpose of item number completed with an average percentage of 80%. Sensitivity whole good item. This is because an item is said to be sensitive to learning when S ≥ 0.30 (Gronlund and Linn, 1995). Furthermore score results of pre-test and

post-test is used to determine the N-Gain of each student.

Table 2. Scores Results Concept Mastery Test Plant Physiology, Percent Complete Students, and N-Gain.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 1. | 67,5 | TT | 85 | T | 0,54 | M |
| 2. | 65 | TT | 80 | T | 0,43 | M |
| 3. | 70 | TT | 90 | T | 0,67 | M |
| 4. | 65 | TT | 82,5 | T | 0,50 | M |
| 5. | 67,5 | TT | 82,5 | T | 0,46 | M |
| 6. | 62,5 | TT | 77,5 | T | 0,40 | M |
| 7. | 70 | TT | 90 | T | 0,67 | M |
| 8. | 65 | TT | 85 | T | 0,57 | M |
| 9. | 75 | TT | 90 | T | 0,60 | M |
| 10. | 50 | TT | 67,5 | TT | 0,35 | M |
| 11. | 50 | TT | 60 | TT | 0,20 | M |
| 12. | 67,5 | TT | 85 | T | 0,54 | M |
| 13. | 62,5 | TT | 77,5 | T | 0,40 | M |
| 14. | 67,5 | TT | 82,5 | T | 0,46 | M |
| 15. | 67,5 | TT | 82,5 | T | 0,46 | M |
| 16. | 72,5 | TT | 90 | T | 0,64 | M |
| 17. | 67,5 | TT | 85 | T | 0,54 | M |
| 18. | 72,5 | TT | 85 | T | 0,45 | M |
| 19. | 57,5 | TT | 75 | T | 0,41 | M |
| 20. | 65 | TT | 87,5 | T | 0,64 | M |
| 21. | 55 | TT | 70 | TT | 0,33 | M |
| ∑ Kls | 0 | TT | 85,71 | T | | |

Information:
1 = Students's number
2 = *PreTest* Score
3 = Information
4 = *Post Test Score*
5 = Information
6 = N-Gain
7 = Information
Qty = Complete
T = Completed
TT = Not Completed
M = Medium

Based on the data in Table 1 above it can be seen that there is no classical completeness at pre-test and post test amounted to 85.71% and the average value of its gain of 0.49 with the criteria being. It shows that the learning process is given to increase student mastery of concepts in the subject of Plant Physiology students.

b) Science Process Skills

Science process skills used for troubleshooting or performing science experiments. Results of the assessment of science process skills that students have meaningful learning experiences. Science process skills assessment results can be seen in Table 2.

Table 3. Average Value At Every Indicators Process Skills Student Class A

| Indicators of Science Process Skills | Student's number / Average indicator |
|---|---|
| 1 | 3,72 |
| 2 | 3,57 |
| 3 | 3,56 |
| 4 | 3,56 |
| 5 | 3,33 |
| 6 | 3,21 |
| 7 | 3,13 |
| 8 | 3,05 |
| Average of Science Process Skills | 3,34 |

Description: Indicators of Science Process Skills:
1 = formulating the problem
2 = formulate hypotheses
3 = designing experiments
4 = carry out experiments 8 = communicate
5 = collect data
6 = analyzed data
7 = draw conclusions
8 = communicate

Reporting in the form of qualification assessment by referring to student success criteria in accordance with the National Standards for Higher Education (SNPT) with learning assessment criteria with numbers ≥ 3 lettered B categorized either equivalent to ≥ 75 numbers.

Based on Table 4.6 in mind that the average value of science process skills in formulating indicators of problem 3.72, 3.57 formulate hypotheses, designing experiments 3.56, carry out experiments of 3.56, 3.33 collecting data, analyzing the data of 3.21, draw conclusions and communicate 3,05 3.13. In classical science process skills gained an average value of 3.4 with good criterion.

## 4. Discussion

1) Description Results of Learning Device Test On Standards Compliance Implementation of the National Curriculum of Higher Education (SNPT) and the Indonesian National Qualifications Framework (KKNI) In Plant Physiology Course

Implementation of the application of the learning device was observed by 2 observers. Observations were made during three meetings (activities carried out in the classroom), which is an implementation of the RPS. Based on the observed data can be seen that all the learning

activities very successfully. On average enforceability of learning at the 1st meeting obtained a score of 3.85 and reliability of 95.6%. On average enforceability of learning at the 2nd meeting obtained a score of 3.96 and reliability of 98.9%. On average keterlaksanaan learning at the 2nd meeting obtained a score of 3.92 and reliability of 97.8% (Ratumanan and Laurens. 2011).

The average score of the high and the excellent category were able to be obtained because all aspects of the learning activities successfully implemented so that students have a learning experience. Scope curriculum subjects Botany Advanced not only the content but also a learning experience (Rezulli, 1986). Important aspects of the observation are: the lecturer clearly communicate the learning objectives and activities undertaken ensure achievement of objectives. Step-by-step learning activities are interrelated and facilitate students to understand the concepts learned. Hands-on / teaching materials used in the study support the achievement of objectives.

The method used in the teaching and learning process have been effective and have been appropriately with the goal of learning. Some of the methods used in the classroom is the method of discussion, question and answer, presentations, assignments, observation, experimentation and practice material processing for further needs, as well as the practice field. Methods provided are appropriate to the learning strategy. The strategy used is the PPP approach, PBL, inquiri, STAD cooperative. Learning activities carried out in conformity with the characteristics of the High Level Botanical assess learning theory can be used and a basis for achieving the objectives through learning, ie learning theory of constructivism. James (2000: 31) states that constructivism widely embraced by the science teacher as a constructivist epistemology is fully consistent with the approach of inquiry, we see the principles are realized through laboratory investigation activities, cooperative learning to produce a positive thing in science. Furthermore Driver et al (1994); Kearney (2004) in Lee (2006: 8) states that constructivism provides a perspective on teaching and learning of science in the classroom, with a view to increasing the effectiveness of the teaching of science in improving student learning.

2) Learning Outcomes Implementation of curriculum based on the National Standards for Higher Education (SNDIKTI) and the Indonesian National Qualifications Framework (KKNI) In Plant Physiology Course

a. Mastery of Plant Physiology Concepts

Implementation of the curriculum that has been developed according to the National Standards for Higher Education (SNDIKTI) and the Indonesian National Qualifications Framework (KKNI) In Plant Physiology courses can improve student mastery of concepts. It is shown from the results of the evaluation data analysis concept mastery in the subject of plant physiology students between before and after the implementation of both the class A and class B. Pre-test was used to determine student mastery of the initial concepts before learning takes place. while the post-test was used to determine mastery of concepts students after the implementation of the National Standards Compliance Curriculum implementation of High Education (SNDIKTI) and the Indonesian National Qualifications Framework (KKNI) in the subject of Plant Physiology.

Based on data analysis (Table 4.4) it can be seen that the success of the students completed the test items on concept mastery indicator has increased after the implementation of learning in the subject of plant physiology. Increased thoroughness of items contained in the item number 1, 2, 3, 4, 5, 7, and 10. Meanwhile, on items 6 and 9 is not finished, it is because on item number 6 percentage completeness 70% and items number 9 percentage completeness 67%. It is not yet meet the criteria in accordance with SNPT with learning assessment criteria with numbers $\geq$ 3 lettered B categorized either equivalent to $\geq$ 75 numbers. The results of the analysis of the average n-gain: students with moderate criteria. Based on the data in Table 4.5 above it can be seen that there is no classical completeness at pre-test, whereas in the post test amounted to 85.71% and the average value of the gain was 48.86 criteria (Hake, 1999). It shows that the learning process is given to increase student mastery of concepts in the subject of plant physiology.

Increasing student mastery of concepts in plant physiology due course curriculum coverage includes: content, experience, and product provided to students as a biology teacher candidates. Materials / subject matter combined with experiential learning (learning experiences), so the scope of the curriculum in terms of curriculum subjects plant physiology is not only the content of the form of understanding the basic principles of taxonomy, nomenclature and classification and function Spermatophyta, but the learning experience using a variety of teaching strategies teaching and learning process (Herliani, 2016: 6). Teaching strategies used are: PPP approach, PBL, Inquiry, kooperatip STAD

and experimental methods, discussions, presentations, frequently asked questions, experiment and practice LAB, assignments, observation, and practice field. Colin (2009: 4), states that the curriculum emphasizes the development of reflective thinking, developing individual and emphasizes the strategies used to achieve the curriculum, so that there is a curriculum that sense until the determination of the strategy is not just limited to the material to be learned by the students. Furthermore, Kennedy (2005: 37), paying attention to the curriculum in the context of a very important experience for the students a chance to add his experience.

At the time of the learning process takes place looks all students are actively involved in the activities and the orientation changes in learning, namely: learning more empowering all aspects of students' abilities; student-centered learning (student centered learning), independent study (self-directed learning) and self-understanding; learn to 'find' and 'build' (construct) its own draft, which is proven to improve student mastery of concepts; and a group of cooperative and collaborative learning are not only to teach thinking skills but also the capacity to teach students other skills.

b. Science Process Skills

Skills approach is part of the implementation process of learning in the curriculum of the National Standards Compliance Higher Education (SNDIKTI) and the Indonesian National Qualifications Framework (KKNI) In Plant Physiology Course. Science process skills can help students to solve the problem or performing science experiments. Indicators of science process skills consist of: 1) to formulate the problem, 2) formulate a hypothesis, 3) designing experiments, 4) carry out the experiment, 5) collecting data, 6) analyzing the data, 7) draw conclusions, and 8) to communicate. Results of the assessment of science process skills is students have meaningful learning experiences. From the analysis of the data evaluation process skills in the subject plant physiology, student values obtained with both criteria.

Based on the analysis of the data in Table 4.6 in mind that the average value of each indicator with the science process skills criteria. The lowest value of 3.13 on the indicator and the highest score of 3.72 on the criteria formulate problems. In classical results science process skills gained an average value of 3.4 with good criterion.

The explanation above shows that the students are able to carry out activities with good science process skills. Science process skills is an intellectual activity that is practiced by scientists to solve problems and produce the products of science. Skills processes performed by the students in accordance SNDIKTI curriculum implementation and KKNI on plant physiology courses among which define problems, formulate hypotheses, designing experiments, carry out experiments, collect data, analyze the data, draw conclusions, and communicate. Science process skills approach provides the opportunity for students to begin learning to understand learning problems first, then engage actively in activities and group discussions, and eventually skilled in science process learning outcomes obtained. On science process skills focused on understanding the problem first, is expected to provide exercise and abilities of each individual to be able to resolve the problems faced.

Process skills approach provides the opportunity for students to explore. It is seen from the students' ability to perform any activities both activities in formulating the problem, formulate hypotheses, designing experiments, carry out experiments, collect data, analyze the data, draw conclusions, and communicate. Karamustafaoglu (2011: 26), states that the science process skills are skills that enable students to develop a sense of responsibility in their own learning, improving learning permanency, and to teach them methods of research.

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