

# Need Analysis Development of High Plant Taxonomic Practicum Guided in Guided Inquiry Approach for Students of STKIP PGRI West Sumatera

Rizaldi Putra Jamal<sup>1\*</sup> Ramadhan Sumarmin<sup>2</sup>

<sup>1</sup> Student of Master Program Biology Education Math and Natural Science Faculty, Universitas Negeri Padang, Padang, Indonesia

<sup>2</sup> Biology Department Math and Natural Science Faculty, Universitas Negeri Padang, Padang, Indonesia

\*Corresponding author. Email: [rizaldi.putrajamal@yahoo.com](mailto:rizaldi.putrajamal@yahoo.com)

## ABSTRACT

Education intends to develop the potential of students into quality human resources, to achieve this goal the government has endeavored through the establishment of various regulations to ensure that every citizen gets a quality education. The application or implementation of the curriculum can be seen from the development of the determination of the vision and mission, the formulation of learning outcomes, the weight of SKS, syllabus, RPS, graduate profiles, evaluation of learning and teaching materials. Taxonomy is the science that includes, identification, naming (nomenclature) and classification. Based on the results of questionnaire responses lecturer of High Plant Taxonomy courses on 1 April 2019, note that the practical guide taksonomi tumbuhan t Heigh used still have an approach. Guidance has not been able to make the students to work independently due to the work steps of her rudimentary in guiding the practitioner. Berdasarkan results of our analysis terhadap practical problems taxonomic tumbuhan high through a written questionnaire completed by the students shows that students have not been able to master the steps of the scientific method as define problems, formulate hypotheses, testing hypotheses, men ganalisis data and conclude. And the pratikum guide does not yet have an assessment column, students are less interested in the appearance of the taxonomy guide for tall plants. The results of the questionnaire showed that the practicum guides did not have attractive color combinations. This can hamper the process of practicum activities so that there is a need to develop a guide for High Plant Taxonomy based on a guided inquiry approach.

**Keywords:** Education, Taxonomy, Guide, Inquiry.

## 1. INTRODUCTION

Education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by themselves, society, nation and state. the government has endeavored through the enactment of various regulations to ensure that every citizen gets a quality education [1]. In order to achieve quality education, professional educators are needed. In order for the creation of professional teaching staff, it is necessary to provide an educational institution for prospective educators known as the Educational Workforce Education Institute (LPTK)[2]. The application or implementation of the

curriculum can be seen from the development of the determination of the vision and mission, the formulation of learning outcomes, the weight of SKS, syllabus, RPS, graduate profiles, evaluation of learning and teaching materials. The Biology Education Study Program equips students with compulsory subjects and elective courses. High Plant Taxonomy is a compulsory subject for Biology Education Study Program students with a course code BIO010009 with a weight of 3 SKS, 2 SKS intended for face-to-face activities and 1 SKS for practical activities (BAAK, 2018: 36). Based on the Semester Learning Plan (RPS) of the Biology Education Study Program, one of the learning achievements of the taxonomy of higher plant is mastering the concepts, principles and basic procedures of biology related to cell and molecular biology, genetic physiology, structure and development, biosystematics, evolution and ecology and

its application (unity, continuity, diversity and interaction) through scientific work and scientific thinking at least in accordance with the depth and breadth for learning biology in schools. To be able to realize these learning outcomes, the selection of strategies, teaching materials, and appropriate media is needed to achieve maximum student competency. To understand the concept that exists in the taxonomy of plants is high, the necessary activities to support that activity practicum. True learning science is not enough to just memorize and understand concepts that have been discovered by scientists. the most important thing is to habituate the behavior of scientists in discovering concepts carried out through experiments and scientific research. The concept discovery process that involves fundamental skills through scientific experiments can be carried out and improved through laboratory activities[3].

Supporting the implementation of taxonomy of high plant taxonomy activities, one of the tools that is highly needed is the guiding practicum. It states that practicum guides are practicum facilities that help praktikan in carrying out pre-practice activities [4]. Meanwhile, according to Wayan[5], a practicum guide is a student activity sheet containing instructions and questions that must be completed by students to find a concept and be presented in the form of experimental activities in the laboratory.

The material that can be found in the taxonomy of high plants in STKIP PGRI West Sumatra are: 1) Making simple determination keys, 2) Gymnosperms, 3) Monocotyledoneae Class, Helobiae Order (Alismatales), Spathyflorae Order, Principle Order and Glumiflorae Order (Poaceae), Class of the Helociae Order (Alismatales), Spathyflorae Order, Order Principes and Glumiflorae Order (Poaceae), 4) Monocotyledoneae class Order Farinosae (Bromiales), Scitaminae (Zingiberales) and Microsperms (Orchidaceae). 5) Dicotyledoneae Class Apetale (Monoclamidae) Ordo Verticillatae (Casuarinales), Piperales and Urticales classes. 6) Dyalipetalae Centrosperm (Caryophyllales) and Ranales Sub Clasis. 7) Dyalipetalae Sub Clasis Order Rosales, Malvales and Pariatales. 8) Sub Clasis Sympetalae of the Order Tubiflorae, Rubiales and Asterales (Campanulatae, Synandreae).

As a result of the questionnaire responses of lecturers in the subject of High Plant Taxonomy on April 1, 2019, it is known that the guide to the taxonomy of high plants used still does not have an approach. Guides have not been able to get students to work independently due to their imperfect work steps in guiding praktikan. According to Kanter *et. al* the prescription method is not optimal for developing students' scientific

process skills[6]. The prescription method does not help students develop critical thinking skills, and does not train students' skills in carrying out practical activities in the laboratory. If something like this is left out, it is feared it could produce prospective biology teachers who are less able to think critically, and cannot connect various concepts in daily life.

Based on these problems, it is necessary to develop a taxonomy guide for high plants that can facilitate students to work scientifically by using an inquiry approach that prioritizes students to find knowledge, ideas and information through their own efforts using scientific work steps. The inquiry approach basically emphasizes the process of finding a concept so that a scientific attitude arises in students. Guided inquiry can be designed for use by teachers based on ability or according to the level of intellectual development[7]. By inquiry is an approach that can facilitate students to be critical to the problem, can make provisional estimates, test hypotheses, analyzing data and can make a conclusion. Sanjaya[8] in Hosnah[9] Stating the guided inquiry model is a *inquiry* learning model in which the teacher provides extensive guidance / instructions for students. This *inquiry* model is usually used for students / students who have never experienced in learning with inquiry models. In line with the statement of Hosnah[9], it is said that in practicum guides using guided inquiry models, students will be guided by full practicum advisers such as giving problem formulations and providing investigation procedures to solve problems.

Several studies have shown that guided inquiry is able to improve learning competencies and learning activities, some of these studies include research conducted by Awaliyah[10] that guiding physiology-based animal physiology guidelines guided for UNP students can improve learning competencies such as (cognitive, affective and psychomotor). Then research conducted by Kenengsih[11], that the development of guided inquiry-oriented microbiology practicum guides guided by STKIP PGRI students in West Sumatra can improve learning activities, student motivation and can improve student learning outcomes. Furthermore, research conducted by Koksai *et. al* [12] by comparing 2 classes in turkey namely classes using guided inquiry and classes not using guided inquiry, the results of these studies indicate the results that students in classes using guided inquiry have an understanding of better scientific concepts, better inquiry better and experience an increase in scientific attitude compared to classes that do not use guided inquiry.

Based on the background, the researcher will develop a practicum guide with the title "Development of Tall Plant Taxonomy Practicum Guidance Based on Guided

Inquiry Approach for Students of STKIP PGRI West Sumatra".

## 2. RESEARCH METHODS

This research uses a descriptive method.

### 2.1 Analysis of problems and needs

In this phase is the stage of gathering information about problems in the process of practicing taxonomy of high plants and the need to develop practical guides as a medium that can assist in the learning process. Data collection by giving questionnaires that have been provided by researchers who will later be filled in by students who have taken taxonomy of higher plants before. The results of the analysis of problems and needs can be used as a counterpart in planning and developing practical plant taxonomy guides that are practical for lecturers and students.

### 2.2 Analysis of guiding practical

Analysis of practical guide aims to look at the suitability of the material with the learning outcomes, the truth of the concept, as well as guiding the approach used practical it.

## 3. RESULTS AND DISCUSSION

The results of the analysis of researchers on the problems of taxonomy of tall plants through written questionnaires that have been filled in by 32 students who have participated in the activities of plant taxonomy practicum in the Biology Education Study Program STKIP PGRI West Sumatra, can be found several problems regarding the implementation of the practicum which can be explained as follows. *First*, student practicum implementation tends to be passive and not fully involved. The results of the questionnaire showed that only 53.1% of students were active in practicum activities. *Second*, practicum guides have not facilitated students in working scientifically. It can be seen from the results of the questionnaire which shows that 62.5% of students have not been able to master the steps of the scientific method such as formulating problems, formulating hypotheses, testing hypotheses, analyzing data and concluding. And 56.3% pratikum guides do not have an assessment column. *Third*, students are less interested in the appearance of the guide for taxonomy of high plant taxonomy. The results of the questionnaire showed that 59.4% of the practicum guides did not have a dancing color combination k.

Based on the problems such, it is necessary to pengembangan guiding practical taxonomy of plants high nuanced guided inquiry that can facilitate students to work scientifically by using the pen dekatan

inquiry that prioritize the students to find the knowledge, ideas and information through the efforts of its own using of scientific work. The inquiry approach basically emphasizes the process of finding a concept so that scientific sciences appear to students.

## 4. CONCLUSION

The students have not been able to master the steps of the scientific method. Guidance on taxonomy of plant-based taxonomy of inquiry needs to be developed.

## REFERENCES

- [1] Hermawati N W M 2012 Pengaruh Model Pembelajaran Inkuiri Terhadap Penguasaan Konsep Biologi dan Sikap Ilmiah Siswa SMA Ditinjau dari Minat Belajar Siswa *J. Pendidik. IPA*
- [2] Chotimah U 2009 The role of LPTK in realizing professional teachers: a challenge and hope. *Natl. Educ. Semin. held by Sriwij. Univ.* **Vol. 14**
- [3] Subagyo Y and Marwoto P 2009 Untuk Meningkatkan Penguasaan Konsep *J. Pendidik. Fis. Indones. (Indonesian J. Phys. Educ.*
- [4] Kilinc A 2007 The Opinions of Turkish Highschool Pupils on Inquiry Based Laboratory Activities. *Online Submiss.*
- [5] I Wayan Widana 2017 *Modul Penyusunan Higher Order Thingking Skill (HOTS)*
- [6] Kanter D E, Smith H D, McKenna A, Rieger C and Linsenmeier R A 2003 Inquiry-based laboratory instruction throws Out the "Cookbook" and improves learning *ASEE Annual Conference Proceedings*
- [7] Dewi N L, Dantes N and Sadia I W 2013 Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Sikap Ilmiah dan Hasil Belajar IPA *J. Progr. Pascasarj. Univ. Pendidik. Ganesha*
- [8] Sanjaya W 2010 Strategi Pembelajaran Berorientasi Standar Proses Pendidikan *System*
- [9] Hosnah W M 2017 Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Hasil Belajar Fisika di SMA *J. Pembelajaran Fis.* **6 No. 2** 190–5
- [10] Awaliyah. F. K 2016 Development of Guided Inquiry Animal Physiology Development Guidance for Biology Students of Padang State University. *Thesis. not Publ. Padang UNP Postgrad. Program.*
- [11] Kenengsih. S 2017 Pengembangan Penuntun Praktikum Mikrobiologi Berorientasi Inkuiri

Terbimbing Untuk Mahasiswa Stkip Pgri Sumatera  
Barat *J. Saintifik* **1** (2)

[12]Koksal E A and Berberoglu G 2014 The Effect of  
Guided-Inquiry Instruction on 6th Grade Turkish  
Students' Achievement, Science Process Skills, and  
Attitudes Toward Science *Int. J. Sci. Educ.*