

Pronunciation Remedy of Scientific Plants Names with Pair Exercise Using Flash card Media at Students Plant Taxonomy Course

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Abstract— *The botanical nomenclature is a part of plant taxonomy. International communications of the name of plants in the oral and written forms are arranged in the botanical nomenclature system, using the scientific names of plants in Latin or Latinized language. From the point of view of Indonesian language the oral form or the pronunciation of the scientific names of plants are not always similar to Reviews their written form. The written form and the oral forms of scientific names of plants are arranged in the chapter of Pronunciation of the Scientific Names of Plants. In fact it was found that the pronunciations of the scientific names of plants are often pronounced wrongly by about 57.2% of the students. The improvement steps in terms of students' abilities in pronouncing the scientific names of plants are needed to be done using flash card media containing pictures and the scientific names of plants. The research result shows that after four training periods, the couple training using flash cards media can decrease the range of errors in pronouncing the scientific names of plants made by the students. The number of the students who Pronounce the scientific name of plants wrongly Decrease from the number of 57.2% into the number of 9.7%. As many as 17 scientific names of plants that are pronounced wrongly by the students now Decreased into 14 scientific names, from a total of 30 names.*

Keywords— *pronunciation, the scientific names of plants, flash card.*

I. INTRODUCTION

The nomenclature of plants is a part of Plant Taxonomy. The scientific names of the plants that are written in Latin or Latinized language have a different character with the Indonesian name or region. The scientific names in Latin, often differ between the written form and the oral form (or the pronunciation), so it can be something difficult for the students. The fact shows that college students do mistakes

in pronouncing certain names of plants which have been stipulated in the scientific nomenclature. For example, the name *Rhoeodiscolor*, where the letter *oe* on word *Rhoeo* should be spoken *e*, but it is pronounced *oe*. by 85% of the students, while only 15% of students who pronounce it correctly. Likewise for the other names, error rate of pronunciation is also high. Education Workforce Institutions like FKIP has the duty to prepare educators to be. Errors that occur in the *pronunciation* of scientific names of plants among college students, must be minimized, even should be eliminated. Errors that occur among prospective teachers, can cause errors among the students at the school, later in life.

Based on the description above, this paper discusses about the efforts made and implemented in Biology Education Study Program (P.BIO) FKIP University of Jember, particularly in Plant Taxonomy Course, in terms of pronunciation of the scientific names of the plants. This work is done in order to minimize pronunciations errors of scientific names of plants among students that are going to be teachers.

Pronunciation of the scientific names of plants

Scientific names of Plants are the names that are known by the whole world. The scientific naming of plants are based on the rules that have been defined in the *International Code of Botanical Nomenclature* (ICBN). The scientific names of plants use Latin words or Latinized words from some other languages (Tjitrosoepomo, 2009). New information about the type of plant, or a scientific name change must be authorized by ICBN (Llomas, 2003). One of the methods of Latin pronunciation method agreement used today is the *English method*. The use of English method of pronunciation has the consequence of following the English words pronunciation. Some general rules for the pronunciation of the scientific names of plants are;

1. If a single consonant exists between two vowels, consonant is read with vowels that follow it. Example: acer, is read a-cer
2. If two consonants exist between two vowels, then the first consonant is read with the first vowel, and the second consonant is read with the second vowel. Example: albidus, is read albidus.
3. The final vowel, is pronounced in a long way. Example: Alsine, is read al-si-nee, except the letter *a*, is sounded with *ah*.
4. Letter *ae* and *oe* are pronounced with a long *e*. Example: laevis is read lee-vis; rhoeas, is read ree-as.
5. The letter *C* is read with the sound *s*, letter *g* is read with the sound *j* if they meet the letter *se*, *i*, *y*, *ae* or *oe*. Example: Cedrus, see-drus; cyaneus, si-ne-us; -a g, eneralis je-ne-ra-lis. But the letter *C* will be read with the sound of *k*, if it is followed by the letters *a*, *o*, or *u*. Example: Candidus, is read kan-in-dus
6. If a word begins with one of these consonant pairs, the first letter is not pronounced: *cn*, *ct*, *gn*, *mn*, *pn*, *ps*, *pt*, *tm*. Example: *cnicus*, is read *nicus*; *ctenium* is read *te-ni-um*; *psyllium*, is read sil Li-um.
7. If a couple of letters *ti*, followed by the vowels: *a*, *u*, *e*, *o*. then *t* is sounded *s* example: *Opuntia* is read *Opunisia* (Radford, 1986) as well as some other rules, which generally are used to be spoken correctly.

Exercise In Couples

Pair pronunciation exercise of the scientific names of plants is intended to stimulate mutual peer correction. In essence, this activity gives students opportunities to practice activities pronouncing the scientific names of plants, more often. Mispronounce done by students, are expected to be corrected by the partner of training. Practicing in pairs with friends, give a better chance of success, rather than if it is performed alone. Learning in this manner substantially is similar to the discussion. Discussion train students to get used to listen to the others' opinions, even though it may be different from their own opinions; it also trains students to tolerate (Asmani 2010). Cooperation learning oriented between friends is essentially the Cooperative Learning model. Cooperative learning model, not only helps the students understand difficult concepts, but also improves the cooperative ability, social skills, and thinking ability (Susilo, 2007). Such conditioning effort is one of the classroom management elements. Classroom Management conducted by educators, aims at creating a good social atmosphere in the classroom, so that it can provide the satisfying conditions, discipline atmosphere, intellectual, emotional, positive attitude and appreciation for the learners (rusydie, 2011). Intellectual, emotional, positive

attitude and appreciation of the learners, enabling the better achievement of learning goals. Errors that are occurred, are expected to be minimized, in this case primarily scientific errors in pronouncing the names of the plants .

Media flashcard

Media comes from the Latin word *medius* which mean is central, introduction or intermediary. Learning media is a means of intermediaries in the learning process. Benefits of the media, are: it can clarify the message, overcome the limitations of space, time and senses, it also gives rise to common perception, stimulates learning, creates a positive attitude toward the subject matter and provides the condition of direct interaction between learners and learning resources (Daryanto, 2011). *Flashcard* media is a small card containing images, texts, or symbols that reminding or guiding students to something related to the pictures. The card size is usually 8 x 12 cm, or can be adjusted to the size of the class face (Arsyad, 2009). The images that are used in the cards can be selected in the form of photographs. A representative photograph gives an overview that can represent the real thing, gives the same perception to the learner. Photos that are selected and used in accordance with the specified learning objectives, can fulfill their functions to raise the motivation and interest of the students (Arsyad, 2009). Motivation determines the learning persistence, someone who has been motivated to learn something, will give his effort to obtain good results (Uno, 2011). Photos of a wide variety of plants are equipped with regional and scientific names. Some of the plants that are shown in the photos can be found in the students surrounding environments, and some of them are still unfamiliar for the students or they just seen them for the first time. Photos of the new plants that are first seen by the students, attract the students' attention, they give a real picture of what is imagined by the students from the names that they have ever heard or read. Watching photos of plants helps the students to remember the characteristics or the names of plants better than hearing or reading. Dale put the visual symbols experience more concrete than verbal symbols (Daryanto, 2011). Photographs of plants which accompanied the plant names both local and scientific names, give more impression for students. This impression is an extrinsic factors that can encourage students to learn more hard and diligent (Uno, 2011).

Plant Taxonomy Courses

Plant Taxonomy Course is one of the subjects in the Biology Education Studies Program at FKIP University of Jember. This course has 4 SKS (Semester Credit Units) , with details of 2 credits of practicum (1 time meeting), 2

credits lecture consists of two meetings a week. Total meetings are 3 times in a week. Plant Taxonomy Class syllabus contains competencies that must be achieved by the student after taking this course, those competencies are as follows: After taking this course, students can analyze the diversity of plants based on the classification system of plants and can apply it in daily life. Furthermore, to achieve these outcomes, the student must have the ability to describe, identify, apply the nomenclature of plants, including mention the scientific names of plants properly.

Plant taxonomy is the main part of the Plant Systematic consists of four components: *Description, Identification, Nomenclature, Classification* (Simpson, 2006). Formal naming plants and all the rules have been set in the ICBN. The scientific name of the plant is set on the term of writing and pronunciation.

The fact that encountered in the implementation of Plant Taxonomy courses, mainly on the part of the nomenclature, students often make a serious mistake when they pronounce the scientific names. The main cause is due to a lack of knowledge, lack of exercise on students, because between words and sounds are not always similar according to the Indonesian character. Mistakes made by students even have been done they were at the previous education level. Errors that have been occurred for a long time then become a habit for the students and it is very difficult to be repaired. That is why it needs special trick to fix it. The way in pronouncing the scientific names, as well as the language, needed to be practiced repeatedly. Exercises are performed with friends in pairs, where each other give correction and motivation. Practice with friends is more comfortable for the students because it reduces inhibitions and embarrassment when they are making mistakes, rather than if it is corrected by the teacher. How learning takes place, will determine the learning quality of the learners. Beside affected by external factors learning quality of the learners is also affected by individual factors of the learners, such as difficult to concentrate, less passionate, selfish, shy or less socialize with friends (Rusydie, 2011). Practicing in pairs, is expected to minimize those factors. Creating a pleasant situation in the learning process, is an attempt to attract learners attention to what they learn. Utilization of *flashcard* media that contains the scientific name of plants that are concerned with image (an image from the photo), beside increase the students' interest, also help the students to remember the names and characters of the plants. The learning activity is a complex process that involves several aspects and components that mutually affect each other, so it requires good management skill (Sobri et al, 2009). Integrating pair exercise and the use of *flashcard* media is an

effort in managing instructional activity to achieve the learning objectives.

II. METHODOLOGY

Application of cooperative learning with pair exercises using flash card media containing photographs and scientific names and characters of plants in the subject of Plant Taxonomy, aims at repairing the pronunciation errors of the scientific name of plants that are often done by the students. Furthermore, to achieve competence in Plant Taxonomy courses generally. Cooperative learning with pair exercises using *flashcard* media, in the subject of Plant Taxonomy consider the aspects that are contained in the National Education Act No. 20 of 2003 (Iskandar, 2011). Those aspects are included in the lesson plans of learning and applied in the learning process and evaluated at the time or at the end of the lesson. Steps taken in this study were as follows:

As many as 40 students of Plant Taxonomy course are required to read the scientific names of plants at the beginning of the course, as the initial data. They do this by saying / reading 30 scientific names of plants in rotation and marked on a list of names that are spoken wrongly by the students. After all students read and marked on the names that are spoken wrongly by the students, then counted how many students who do the mistakes in reading the scientific names of plants. Errors that are already on the list, then discussed based on the theory of plant nomenclature set out in the ICBN. After the rules of nomenclature and *pronunciation* / pronunciation have been known and mastered by the students, then the students are trained to pronounce the name.

Flash card plants names are made by the students. Each student make a card with the prefix letters in the order, each letter on 5 different plants names, so the number of *flash card* that are made are as many as $5 \times 26 = 130$ pieces for one series. As many as 200 pieces cards are made by 40 students by repeating the series, each student makes 5 pieces with different name for every letter. Plants cards that have been made by students, then verified and compliance with the provisions, including the names which are often pronounced wrongly.

The implementation is set as follows: 40 students divided into five major groups, each group consists of 8 students. Each group set themselves sitting opposite in pairs. A pair of students hold 10 sheets of *flash card* / card. One person practice reading scientific name, while his partner to listen and observe. if something goes wrong, the partner tries to correct. This be repeated in 5 minutes duration, then change the turn with their partner. After completion of the partner turn, exchange the cards with another couple in the same

group, and it is repeated in the same way for each pair. Once completed in one group, exchange the cards with another group, until all groups have read all the cards available. The exercise is repeated until 4 meetings.

Evaluation was conducted in the same manner by obtaining initial data. The results then compared with the initial data, the analysis is done for each of the representatives of the plants names, to count how many students pronounce wrongly. After it is viewed as a whole, see how many pronunciation errors made by the students after being trained in learning. Interviews are done to the students, at the end of the study. Interviews provide an opportunity for students to express what they feel after what happened in

the learning with in pairs training methods using *flashcard* media. For students who do not have the opportunity to speak, are excused to write their opinion to be submitted to the lecturer.

III. RESULTS AND DISCUSSION

After the evaluation to the pronunciation of scientific names of plants, it was obtained 17 scientific names of plants that were pronounced incorrectly by some students of 30 scientific names of plants selected. The result can be seen in the following table;

Table.1: Scientific names of plants spelled wrongly and the number of student who pronounce wrongly

	scientific name of plants	beginning	the end of the course
1	<i>Caesalpinia pulcherima</i>	32	4
2	<i>Eugenia aromatica</i>	28	2
3	<i>Flacourtia rukam</i>	34	8
4	<i>Gnetum gnemon</i>	26	4
5	<i>Hedychium coronarium</i>	12	8
6	<i>Ipomoea aquatica</i>	37	4
7	<i>Justica brook</i>	21	7
8	<i>Kaempferia rotunda</i>	19	5
9	<i>Leucaena glauca</i>	21	4
10	<i>Morinda citrifolia</i>	8	0
11	<i>Nephelium litchi</i>	7	4
12	<i>Opunthe vulgaris</i>	32	4
13	<i>Psidium guajava</i>	29	0
14	<i>Pteris ensiofrmis</i>	29	0
15	<i>Psilotum nudum</i>	29	2
16	<i>Rhoeo discolor</i>	34	7
17	<i>Triticum aestivum</i>	12	4
	Total	389	66
	average	22.88	3.88

Data on tabel.1 showed that at the beginning of the lecture, of 30 scientific names of plants chosen, there are 17 names of plants were pronounced incorrectly by the general students, while the rest, which were 13 plants names (not diagramed), generally pronounced correctly by students, or pronounced incorrectly by no more than 3 students. The error occurred on the pronunciation of the underlined letter in tabel.1 above. At the beginning of the term, from 30 scientific names of plants that should be read by all the 40 students, there were 17 scientific name spelled wrongly by more than 3 students. Data show that 17 scientific names

plants pronounced incorrectly by an average of 22.88 students, which means 57.2% of the 40 students.

After the students getting an explanation about the correct pronunciation, and after practicing in pairs using *flashcard* media during the four periods, the error were greatly reduced. From 17 scientific names of plants that were spelled wrongly by an average of 22.88 students, which means 57.2% of the 40 students, after the learning process the number decreased into 3.88 students, which means that 9.7% of 40 students. From the information obtained from the students, it was known that they pronounce the namely wrongly way since before entering

the college level. Although they pronounce the name correctly, they claimed that they did not know grammatical rules. Their mistakes sometimes were corrected by a friend or an assistant on the course before the taxonomy of the plants, then they changed the pronunciation. But then they forgot again afterwards. After learning grammar pronunciation rules, the student tried to change the wrong habits with practicing in pairs with friends. Practicing in pairs is a more effective way rather than discussing with the crowd. The discussion becomes ineffective if the group is too large, the group could be dominated by certain people who like to talk (Asmani, 2010). Practicing in pairs is also approved by the students, it gives them the opportunity to develop their potential. Atmosphere of learning and the learning process that allow students to actively develop their potential, is one of the things implied in the Act Sis Dik Nas 20 yrs, 2003 (Iskandar, 2011). Learning is doing and it is a process that makes the learners more active, means that learners should dominate the activity (Sardiman, 2007).

Flashcard media give a more concrete pictures of the plants studied, and also help the students to remember how to pronounce the names correctly. In general, the students stated that the Flash card containing photos of plants are very helpful to remind how to pronounce the scientific name, especially if they can see the plant everyday in their surrounding environments. Data showed that as many as 3 of 17 plants, even pronounced correctly by all of the students. Those plant are *Morindacitrifolia*, *Psidium guajava* and *Pterisensiformis*. the first 2 plants mentioned are well-known by all students, because there are many of them that can be found in the daily life. The picture of Dale cone experience put the visual symbol more concrete than verbal experience (Daryanto, 2011). Visual symbols contribute larger memory than the verbal symbol. Pictures from the photo illustrate the plant are easily remembered by the students, and it also make them easier in considering how to pronounce it. Visualizing images in the mind is also called visual imagery, it is one way to improve memory (Waid, 2011). Practicing pronounce the scientific names correctly and repeatedly, is the way of habituation. The more frequent the practice, the more accustomed students to pronounce correctly. It is proved that after practicing repeatedly, during the four periods, errors which were performed by as many as 22.88 or 23 students in the beginning, were reduced to an average of 3.88 or 4 people. Information obtained from the students both orally and in written, providing information that practicing with friends provides emotional flexibility, eliminates awkward feeling and provides free-error-correcting by friends. Media containing

photos of plants studied were also very helpful in remembering the object and pronouncing the scientific names correctly. Considering the object of the photograph is the mental activity of each individual learner. Practice saying in pairs is a group activity. In Teaching and Learning Activities (KBM), the approach taken by the lecturer will produce various learners activities, whether individually or in groups, and the combination of both will produce better learning outcomes (Djamarah, 2002). It was proven that after the end of the lesson students pronounce the scientific names of plants wrongly, which had an average of 22.88 students from 40 students or 57.2% down to an average stay of 3.88 students from 40 students, or 9.7%. Plant Scientific names that were spelled wrongly were also decreased from 17 names into 14 names.

IV. CONCLUSIONS

1. Learning Application with pair exercise using flashcard media can fix the faulty pronunciation of scientific names of plants on students who took Plant Taxonomy course. Error which was previously performed by an average of 22.88 from 40 students or 57.2% of students, decreased to an average of 3.88 out of 40 students, or 9.7%.
2. The number of the scientific names of plants which were spelled wrongly by most of the students, decreased from the number of 17 names into 14 names. Those 14 scientific names of plants were still pronounced incorrectly by a few students.

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