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An Analysis of Biology Oral Communication Skills and Cognitive Learning Outcomes: The Impact of Practicum-Based Two-Stay Two-Stray Learning Model

Egy Razka Likita[1], Dina Maulina[2], Darlen Sikumbang[3]

[1, 2, 3] Universitas Lampung, Indonesia

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*Correspondence email:
dina.maulina@fkip.unila.ac.id

ABSTRACT

Oral communication skills and cognitive learning outcomes are indicators of learning achievement. This research aimed to analyze students' oral communication skills and cognitive learning outcomes through the implementation of practicum-based TSTS. This research employed the quasi-experimental method with a pretest-posttest control group design. The samples were determined using the purposive sampling technique. The results showed that the practicum-based TSTS learning model contributed to students' oral communication skills with excellent categories. Teaching and learning activities using the practicum-based TSTS affected students' cognitive learning outcomes (Sig. 0.838> 0.05). Thus, this research showed that the implementation of the practicum-based TSTS learning model on the Plantae topic can train students' oral communication skills and affect their cognitive learning outcomes.

Analisis Peningkatkan Keterampilan Berkomunikasi Lisan dan Hasil Belajar Kognitif Biologi: Dampak Implementasi Model Pembelajaran Two Stay Two Stray Berpraktikum

Abstrak: *Kemampuan berkomunikasi lisan dan hasil belajar kognitif merupakan salah satu indikator capaian belajar. Penelitian ini bertujuan untuk menganalisis kemampuan berkomunikasi lisan dan hasil belajar kognitif siswa melalui implementasi pembelajaran Two Stay Two Stray (TSTS) berpraktikum. Penelitian ini merupakan quasi-eksperiment dengan desain kelompok kontrol pretest-postest, dengan kelompok kelas kontrol dan eksperimen. Teknik pengambilan sampel dilakukan dengan teknik purposive sampling. Hasil penelitian menunjukan bahwa pembelajaran TSTS berpraktikum memberikan kontribusi pada keterampilan berkomunikasi lisan siswa dengan kategori sangat baik. Kegiatan belajar mengajar menggunakan TSTS berpraktikum berpengaruh terhadap hasil belajar kognitif siswa (Sig. 0,838> 0,05).Dengan demikian, penelitian ini menunjukan bahwa implementasi pembelajaran TSTS berpraktikum pada materi Plantae dapat melatihkan keterampilan berkomunikasi lisan dan berpengaruh signifikan terhadap hasil belajar kognitif siswa.*

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INTRODUCTION

The modern life of the 21st-century demands competition in various fields (HASANAH et al., 2019; Muhali, 2019; Wijaya et al., 2016). Therefore, the mastery of reading, writing, and arithmetic skills are needed to succeed, although they are not present now (Muhali, 2019; Solichin, 2012; Zubaidah, 2016). The development of communication skills, critical thinking, collaboration, and creativity are needed in this modern era (Lase, 2019; Nugroho et al., 2019; Rachmantika & Wardono, 2019; Setyaningtyas, 2019). Communication skills are highly demanded in the 21st-century and they are ranked first in the soft skills (Normayanti, 2020; Wijayanti et al., 2017). Thus, there should be activities in the teaching and learning activities to meet the demands of communication skills (Arsyad & Sulfemi, 2018; Jailani & Hamid, 2016; Sulfemi, 2019), and activities to learn oral communication skills (Noviyanti, 2011; Putrawan & Suharta, 2014).

Teaching and learning activities will be more effective if teachers and students actively interact orally (Balqis et al., 2014; Bistari, 2017; Inah, 2015; Pane & Dasopang, 2017). Effective oral communication skills will help students to improve their academic performance, professional competence, and effectiveness (Alawiyah, 2013; Mulyawan, 2013; Ningsih et al., 2017). The educational facilities are crucial in skills development efforts. Also, the learning process should actively involve students (Hakim, 2019; Ramli, 2015; Ubaidah, 2014). One of the science lessons that can develop the ability to think about an object is biology. It is necessary to support the characteristics of science learning to apply the appropriate learning process (Jauhari, 2020).

The learning process that builds interpersonal competition and individual effort are less effective. Students should be more active in practicum learning activities (Widowati, 2011). Ideally, learning is not only centered on teachers but must build active students' involvement (Mahendra, 2017; Putrayasa et al., 2014). Teachers are required to be more creative using various learning strategies to improve oral communication skills and cognitive learning outcomes so that teaching and learning activities are varied and interactive(Nurwati, 2014; Restami et al., 2013). Based on its characteristics, the Two-Stay Two-Stray (TSTS) learning model can improve students' oral communication skills and cognitive learning outcomes. TSTS cooperative learning can build and increase students' oral activeness during the learning process (Baharun, 2015; Permata et al., 2015; Selvianti et al., 2015).

Wardhani, et al., (2012: 14) states that after implementing TSTS, students seemed more active in discussions. Students discuss and exchange information through question and answer so that they can solve problems together and show interactions in the group. Other studies by Hamdanillah et al., 2017; Tigowati et al., 2017) shows that the increase of students' cognitive learning outcomes was related to the increase in students' learning activities built during teaching and learning activities. That research has never been done before by measuring modified TSTS with oral communication skills and cognitive learning outcomes (Permata et al., 2015; Rochani, 2016). Therefore, this research aimed to develop a modified TSTS with oral communication skills and cognitive learning outcomes. The purpose of this research was to analyze students' oral communication skills and cognitive learning outcomes by implementing the practicum-based TSTS learning model.

METHOD

This research was conducted in the second semester of the academic year of 2020/2021 at SMA Negeri 7 Bandar Lampung. The study population consisted of 216 tenth-grade students. The sampling technique applied was the purposive sampling technique by determining the

research sample based on certain criteria. The discussion method was applied in the control class, while the practicum-based TSTS was applied in the experimental class. This research employed the quasi-experimental with pretest and posttest control group design. The collected data were quantitative and qualitative data which were then processed descriptively. The quantitative data were obtained through students' pretest and posttest scores to be analyzed using the Independent Sample t-test assisted by SPSS 20.0 For Windows.

The research was carried out within three face-to-face meetings. The pretest was administered before learning at the first meeting and the posttest was administered at the third meeting after learning. The quantitative data contained the cognitive levels C1-C4 was used to determine the level of students' understanding regarding the material presented. The qualitative data has obtained the observation of students' oral communication skills. The aspects of oral communication skills are presented in figure 1.

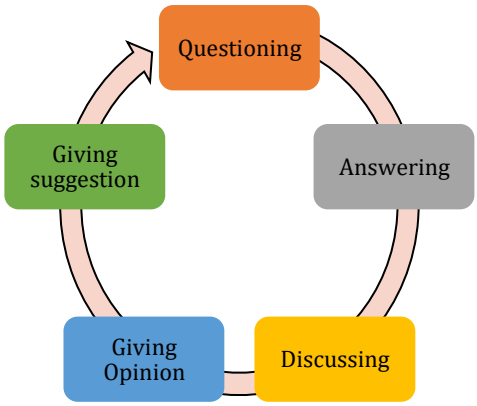

Figure 1. The Aspects of Oral Communication Skills

RESULTS AND DISCUSSION

The results in the research were the students' average score of oral communication skills in the experimental and control class obtained within three meetings. The oral communication skills scores were grouped based on each indicator's aspects. The implementation of practicum-based TSTS can foster a pleasant learning atmosphere for students. This pleasant atmosphere was obtained through working on tasks cooperatively, helping each other, and exchanging information to find the concepts learned. A clear division of tasks between students, being a guest and a host, indirectly fostered the level of students' activity because they must provide questions and convey answers. Thus, good oral communication skills and positive interactions between students are needed. Students will enjoy teaching and learning activities so that they can increase their knowledge of the material being studied (Nurfitriyanti, 2016).

The discussing aspect obtained the highest score compared to the other four aspects. When doing activities, the students were very active in conducting discussions in their groups. Students exchanged information with each other during practical activities. The discussing aspect at the first meeting obtained a higher score than the first meeting. At the first meeting, teachers cannot manage the class so that the students were not sure how to implement the practicum-based TSTS model. The learning activities improved students' discussion activities. This result can be obtained optimally if the students' oral communication skills are good (Gaffar, 2017; Haryanti & Suwarma, 2018).

Table 1. The Average Scores of Students' Oral Communication Skills in Each Aspect Category

No	Aspects	Meeting	Experimental Class		Control Class	
			Average (%)	Category	Average (%)	Category
1.	Questioning	1	81.11	Excellent	69, 44	High
		2	82.22	Excellent	71.66	High

		3	83.33	Excellent	75	High
2.	Answering	1	80.55	Excellent	72.22	High
		2	81.66	Excellent	76.66	High
		3	81.66	Excellent	77.77	High
3.	Discussing	1	88.33	Excellent	71.66	High
		2	88.88	Excellent	72.22	High
		3	89.44	Excellent	75	High
4.	Giving Opinion	1	82.22	Excellent	63.88	High
		2	81.66	Excellent	65.55	High
		3	83.33	Excellent	68.33	High
5.	Giving Suggestions	1	80	Excellent	72.22	High
		2	80.55	Excellent	71.66	High
		3	82.22	Excellent	75, 55	High

Based on Table 1, the students' oral communication skills in the experimental class on five aspects were in the excellent category. The aspect with the highest score was the discussing aspect with a score of 88.33% at the first meeting. At the third meeting, the score increased to 89.44%. In the control class, the scores of students' oral communication skills on the five aspects were in the high category. The aspect with the highest score in the control class was the discussing aspect with a score of 71.66% at the first meeting and increased at the third meeting to 75%.

Table 3. The Statistical Test Results of the Pretest and Posttest Data

Scores	Classes	X±Sd	Normality Test	Homogeneity Test	Independent Sample t-test
Pretest	E	64,22±7,27	*Sig 0,644* > 0,05	*Sig. 0,871> 0,05*	*Sig. 0.000 < 0,005* (BS)
	C	57,00±7,05	*Sig 0,255 > 0,05*		
Posttest	E	82,72±6,25	*Sig 0,265> 0,05*	*Sig. 0,490> 0,05*	
	C	69,50±8,20	*Sig 0,075> 0,05*		
N-Gain	E	0,524±0,134 (Moderate)	*Sig 0,596> 0,05*	*Sig. 0,*838*> 0,05*	
	C	0,296±0,149 (Low)	*Sig 0,426> 0,05*		

Based on the results of the calculation, it can be concluded that the practicum-based TSTS significantly affected students' cognitive learning outcomes on Plantae material at SMA Negeri 7 Bandar Lampung. A significant effect on students' cognitive learning outcomes was obtained by comparing the N-gain mean value between the experimental and control classes. The average score of the experimental class was 0.52 ± 0.13 (moderate). The result was higher than the control class's average score, namely 0.29 ± 0.14 (Low). These results were derived from the pretest and posttest which consisted of twenty-five items each.

The cognitive learning outcomes difference between the experimental and control classes was influenced by the treatments, namely the practicum-based TSTS applied in the experimental class (Sig. 0.838> 0.05). The teaching and learning activities using this model were interesting for students. Real objects used in studying

the Plantae material made it easier for students to understand and find information. This understanding was strengthened by visiting and receiving guests. The students compared the findings in their group with the findings of other groups.

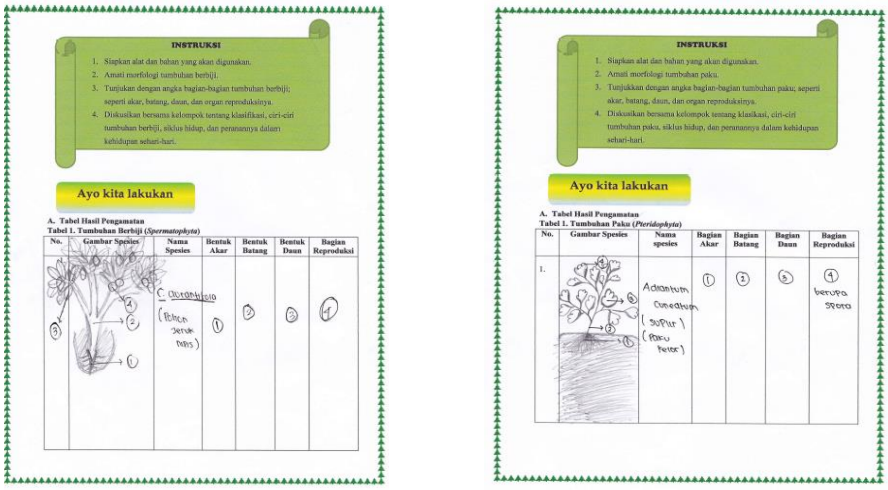

Figure 1. Student Worksheet in the Experimental Class

Based on Figure 1, the students directly compared the plant morphology so that the next learning process, such as studying the life cycle of each division, can be easier to understand. They have seen the sporophyte and the gametophyte parts of the moss, spore pockets, and flowers in seed plants. The students can also know and understand the benefits of these plants. The experimental class students' characteristics affected the learning process. They prefer real objects in the practicum-based TSTS to improve their understanding and concept discovery. Suraji and Sari (Suraji & Sari, 2017) state that learning by direct observations assisted by real objects in the outdoor classroom can significantly influence students' conceptual understanding.

The results obtained by the researchers are also in line with previous research by Sutrisno (Sutrisno & Retnawati, 2015; Yuniyarsih, 2017) who states that the TSTS learning model is effective in improving students' learning achievement and communication. Furthermore, the results obtained were that learning using the TSTS model could hone and improve oral and communication skills (Pamungkas, 2020). Oral communication research can improve learning outcomes (Ningsih et al., 2017). Learning using oral communication can hone and improve learning performance and results (Abdullah et al., 2019).

TSTS learning model can improve students' cognitive understanding because concept discovery is carried out through exchanging information and discussing a discovery to find out the truth and produce accurate and complete answers (Mishra et al., 2014). Students who are taught using the TSTS model will experience increased cognitive learning outcomes because they have more mastery of the material. This mastery is obtained through actively exchanging information so that they can express their opinions and provide complete answers or conclusions (Rakhmawati, 2019)

CONCLUSIONS AND SUGGESTIONS

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Based on the results of the research, it can be concluded that the students' oral communication skills can be categorized as excellent. Besides, the practicum-based TSTS model significantly affected the tenth-grade students' cognitive learning outcomes in the Plantae material at SMA Negeri 7 Bandar Lampung. It is suggested to conduct further research in other materials and other abilities. Also, further researchers can improve oral communication skills using alternative models. This research can be used as a reference for further research.

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