

Constructivist learning paradigm in the introduction to education subject

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ABSTRACT

This study examines the content of constructivist learning paradigms in the textbook and students' understanding of the Introduction to Education course. Data collection methods are the textbook, student answer documentation, focused review session and assignment of student resume. The textbook analysis found five substances of constructivist learning paradigm, namely the nature of human, lifelong education, learning independence, the role of information technology, and the integration of educational benchmarks, which are parts of the textbook chapters. Analysis of the answers to the tasks, quizzes and student exams indicates that the students' understanding of the substance of this material is still medium or partial but has increased significantly after a focused review session was held, i.e. 75% or more students have a good and complete understanding. From the results of this study, it is suggested that (1) the textbook of Introduction to Education is rewritten, to put the five substances of constructivist learning paradigm as separate chapters so as to obtain their broader and deeper study portion; and (2) the materials not yet understood well by the students should be reviewed through a focused review session.

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1. INTRODUCTION

Introduction to Education (*Pengantar Pendidikan*) is one of the compulsory subjects programmed in the first semester for prospective teachers at any institute for teacher training (LPTK) in Indonesia. This course aims to introduce the basic concepts of education and become a prerequisite for some subjects of education in the subsequent semesters including the Development of Learning Participants (*Perkembangan Peserta Didik*), Learning and Teaching (*Belajar dan Pembelajaran*), Teaching Profession (*Profesi Keguruan*) and other educational courses that are directly related to the study program expertise. Therefore, it is important to evaluate the extent to which students understand the basic concepts of education in this course through a systematic study.

The first semester in college is a critical time for changes in conceptual understanding, behavior and attitudes of students. A critical period is a time of change, for example for a person who is severely ill, whether he or she will survive or die. In terms of higher education, the critical period relates to whether or not there is a change in students' understanding, behavior and attitudes about the nature of education and the central themes underlying the work of teachers. Research on the success of students is important to do as one way to evaluate the performance of one of the researchers as a lecturer of the course. While understanding the importance of student-based learning, the researchers are fully aware that there is still a lecturer-centered

learning outlook of the lecturers despite the advancement of information technology that provides abundant exposure to lectures [1].

This research is focused on one main substance of lecture material of the Introduction to Education course, namely learning paradigm, especially constructivist paradigm, that is how students understand education as a process that occurs on their own as students or as a process they perceive to happen to the lecturer. The substance of this material is plainly absent as one of the chapters or sub-chapters of the Introduction to Educational textbooks, but is found implicitly to be the spirit in most of the material in question [2-4]. With these considerations, some of the questions asked in this study are:

- a. what is the substance of the constructivist learning paradigm contained in the subject material of the Introduction to Education?
- b. How do the students understand about the constructivist learning paradigm summarized in their answers of tasks, quizzes and exams in the course of Introduction Education?
- c. How do the students understand about the constructivist learning paradigm after they attended a focused session on the content of the learning paradigm in the Introduction to Education course?

2. THE COMPREHENSIVE THEORETICAL BASIS

This section discusses theories and studies relevant to the theme of the learning paradigm, that is a widely held set of beliefs about learning and teaching, with an emphasis on constructivist paradigms [5]. Widari [6] describes a paradigm of learning that has dominated the practice of education in Indonesia, i.e. the behavioristic paradigm, and one other paradigm that is expected to offset and take over the dominance of Indonesian education practice, that is constructivism. The behavioristic learning paradigm seeks explanations of simple behavior that can be demonstrated scientifically. Therefore, humans are considered to resemble machines. This theory utilizes two categories of explanations of learning, which are explanations based on stimulus and response behavior, and explanations based on the consequences of reinforcement and punishment behavior. Learning by repeating, memorizing and examining are some of the key features of behavioristic learning. In short, this paradigm has benefits in some ways, but it is not sufficient to explain or underlie all learning phenomena.

Meanwhile, constructivism is a learning paradigm that argues that humans build the meaning of the various structures of knowledge that exist in themselves. The constructivist paradigm explains how knowledge is internalized by the learner, i.e. through two kinds of processes, namely the process of accommodation and assimilation. When a person assimilates, he incorporates new experiences into the existing framework without changing the framework. On the other hand, accommodation is the process of recreating the mental representation of a person about the outside world in order to fit the new experiences received [6].

Rahadian [7] observes that there are four changes in educational practice that occur as the implications of globalization and education reform in Indonesia. First, the teaching paradigm that makes the teacher as the information center turns into a learning paradigm in which learners become a student-centered resource. In this case, the teacher's role turns into a facilitator. Second, the paradigm of classical learning turns into a more flexible paradigm of learning, such as education with a remote system. Third, the paradigm of learning formalities shifts into a quality-based learning paradigm. Fourthly, the popularity of lifelong education has increasingly blurred boundaries between education in school and out of school.

Sadjad [8] agrees with Rahadian above, but adds the importance of applying constructivist paradigms of education based on the four pillars as recommended by the United Nations educational and socio-cultural institution (UNESCO), namely that learners must: Learn to know, learn to do, learn to be, and learn to live together. Students learn to know the purpose and way of learning; then they learn how to do the learning process until they are finally able to learn independently; then, as a result of learning, the learner learns to be an aspired figure; and ultimately, they learn to live together and work together and work with others harmoniously and spread benefits to others.

There are several studies relevant to this research. First, Sudaryono [9] distributed questionnaires to 140 teachers in Wonosari, Semarang, Blitar, and Surabaya, and found that over 62% of teachers felt that they ran out of time to teach because they were pursued by curriculum targets, 82% of teachers saw children tended to learn by way of memorization, 82% of teachers often found children who were bored or saturated to learn in the class, and 70% of teachers found many parents dissatisfied with the results of the education of their children. While working in an atmosphere of discontent, 92% of the teachers consoled themselves with the word "devotion" as the spirit that is the key to success in teaching. The findings in this study are caused by a vacuum of learning paradigm and education among teachers. This happens because teachers feel they have no choice but to place themselves as implementers of education policy mechanics that have been established by the government. To that end, as the reform and autonomy of education proceeds, Sudaryono

offers constructivist learning paradigms, namely that knowledge is the form or construction that results from the learned person, which occurs on two levels (social and psychological) in which the teacher acts as a model for learners.

Second, Goodwin and Webb [10] administered open ended questions to 315 teachers in the US state of Arkansas consisting of two questions: "What is teaching?" And "How does learning take place?" The teachers studied had been or would soon be evaluated on the basis of constructivist learning which was the state policy. In the literature review, Goodwin & Webb summarizes the principles of the paradigm as proposed by the following paradigm figures:

Socrates	:	<i>Learners construct and uncover knowledge.</i>
Jean Piaget	:	<i>Comprehending changes in students as they obtain new knowledge.</i>
Lev Vygotsky	:	<i>Learning occurs socially.</i> <i>Learners should be facilitated and given challenges.</i>
Jerome Bruner	:	<i>Learning occurs actively.</i>
Seymore Papert	:	<i>Learners need technology to learn.</i>

The above principles serve as an analytical instrument for the answers given by the study participants. The data analysis shows that only 33% of teachers viewed teaching activities according to constructivism perspectives, and about 29% viewed learning activities according to the principle of constructivism [10]. As the development of education policy in various parts of the world, including Indonesia, that is to apply constructivism paradigm in learning and teaching activities, still low percentage of teachers practicing this paradigm is considered as a concern to be overcome.

Third, one of the most recent diagnostic studies on education was conducted qualitatively in six districts of West Nusa Tenggara Province through a combination of document review, interviews and FGDs through snowball techniques. The study found that teachers were less open to learning new things, less creative, having less knowledge and ability to apply inclusive teaching practices, less skilled in using props, and just copying the RPP (lesson plans) from available examples. This resulted in less optimal curriculum implementation and low student learning outcomes [11]. These findings indicate that despite improved welfare through the provision of professional allowances, teachers generally have not yet improved their professional quality. Although not explicitly linked to the learning paradigm, it is apparent that teachers do not apply constructivist paradigms to develop their professional competence or to educate their students.

Fourth, in conjunction with the findings above, research by Pham [12] warrants a warning for introducing constructivist teaching policy. He discovered that in classrooms associated with Confucian Heritage Culture in such countries as China, Japan, Korea, Singapore and even Malaysia, constructivist learning method had been introduced to replace the dominantly teacher-dominated teaching method. However, much of the innovation had failed due to the nature of the policy which was top-down, global, and national. Therefore, Pham argues that to be a successful innovation, a constructivist method introduction policy should adopt activity theory which acknowledges and addresses many factors at various implementation levels, such as teacher perceptions, workload and current competency, accommodating the voices of teachers, students and many other stakeholders, considering past, present and future practices as continuum, and realizing that transformation takes time.

Fifth, Wang and Peyvandi [13] compared the contribution of short study abroad programs as a form of constructivist learning and on-campus teacher-transfer regular classes called as objectivist teaching towards students' diversity attitude. Two group of students of an American university took the same subject, used the same textbook, and were taught by the same teacher. They were different in that one group (177 students) was taught on-campus with the objectivist method, while the other group (145 students) were taught via the constructivist study abroad programs. The study showed that the constructivist method contributed very high scores in all aspects of students' diversity attitude, while the objectivist method contributed low scores. Thus, constructivist method is found to be a strongly excellent method in preparing students to participate and succeed in the world business dynamics and complexity. The research also raises concerns over the regular objectivist expert-driven teaching method and recommends that on-campus teaching adopt constructivist method by being equipped with dynamic learning environment and multimedia to access real materials and resources.

Finally, Xu and Shi [14] conducted a case study of a form of constructivist teaching method in their teaching called 'flipped classroom', which is the exchange of role from classroom as a place for teachers to teach and students to begin to learn to a place dominated by students to complete and evaluate their learning and to perform their learning results. Thus, outside the classroom students are provided with interesting learning materials, resources and access to media and discussion with peers and even teachers. Such materials accommodate local richness and may be self-chosen by the students. In other words, before coming to class, all students have learnt a lot and prepared themselves for what to be performed and shown in their

classroom. In the case study classroom, students consisting of eight groups of four members had one group to teach their own way and three students from the audience to record and provide critical evaluations, while the teacher played a facilitating role. The research showed that by mid of the semester the students had made a very substantial progress in their subject content mastery and showed self-management and independence and solid teamwork in learning.

From the discussion above, it can be concluded that the constructivist learning paradigm is theoretically expected to be the hallmark of learning practice to replace the behavioristic paradigm that has dominated the education system in Indonesia, even in the world. On the other hand, many teachers are still in a position not to move on to practice constructivist paradigms. Our literature survey indicates that so far there has no study focusing on questioning the load of constructivist learning paradigm especially in the textbooks of Introduction to Education in Indonesia and even the world. Therefore, with the target of prospective teachers who are still in college in the first semester, the intervention provided in this study is expected to strengthen students' understanding of the substance of constructivist paradigm contained in the Introduction to Education subject.

3. RESEARCH METHOD

The study was designed as a lesson study, a specific form of classroom action research focused on developing practical knowledge of educators. This design has been used in Japan since 1870 and has successfully improved teaching techniques and student achievement standards compared to some other countries [15, 16].

The study participants were the first semester students, totaling 60 people and spread in three classes of English Education Study Program at the college where the researchers teach. In this study, the researchers, consisting of lecturers of the introductory course of Education and one of the lecturers who specializes in curriculum and teaching materials, collect and use data from teaching practice including course syllabus, textbook, task sheets, quizzes and exam results of the students, and assigns the task of writing a personal opinion resume after a focused review session with an introductory subject agenda containing the substance of the constructivist learning paradigm.

Stages of data collection and analysis are described as follows. First, after the second half of the introductory course teaching, the researchers decided to examine the content of constructivist learning paradigms in the textbook and in the understanding of prospective teachers considering the importance of learning paradigm substance as the essence of the teacher profession. For that, through a discussion, it was agreed that the need for a document review that is the subject textbook of Introduction to Education with a focus on the search for material substance of learning paradigm. After that, the lecture duty sheets, quiz answers and student exams were recollected from the students with a focus on their answers on the material substance of the learning paradigm. Then, as part of the final lecture, the researchers conducted focus group discussions to review and dissect the material substance of the learning paradigm contained in the introductory course with students. After that, the students were given open-ended questions with a focus on the extent to which they absorbed and made a constructivist learning paradigm a self-identity and a commitment to be shared with others.

Thus, the data analysis was conducted qualitatively by selecting information relevant to the research question, and then codifying, reducing and displaying some sample data for strengthening the research report [17, 18].

4. RESULTS AND ANALYSIS

The results and analysis presented in this section respond to the research questions set out in the introduction, based on the content analysis of the textbook and the data collected from the students.

4.1. The constructivist learning paradigm in the introduction to education textbook

The textbook of Introduction to Education [2] used in this study consists of eight chapters, namely (1) human nature in development, (2) understanding and elements of education, (3) foundation and educational principles and (4) understanding, function, and type of educational environment, (5) educational streams, (6) educational problems, (7) national education system, and (8) education and development. The substance of the constructivist learning paradigm is contained in the main message of Chapter I and several sub-chapters in other chapters, as presented below.

In Chapter I there is a central message that the nature of human and all its dimensions are possessed only by humans and not in animals. The nature of human is defined as a set of characteristics that wholly, not partially, distinguish human from the animal (p.3). The nature of human includes the ability to realize

oneself, the ability to exist, the possession of conscience and morals, the ability to be responsible, the sense of freedom, the willingness to carry out the duty and realize the rights, and the ability to live happily (p.4). In addition, human nature is embodied in several dimensions: individuality, social, ethics and diversity (p.17). All human nature can and should be developed through education (p.27). The task of education is to develop the dimension of the essence of human (p.24). Thus, the researcher concludes that the paradigm of learning in the perspective of human nature is one that humanizes, liberates and is based on learners. This humanistic perspective is in line with one of Rahadian's observations about the changes in Indonesian educational practice that the students as humans should be the center of learning [5].

In subsequent chapters, there are several themes that are the substance of the study paradigm of learning, the concept of lifelong education; independence in learning; formal, nonformal and informal education as a system; and the development of science and technology.

First, lifelong learning is discussed in Chapter II (pp. 42-50) and Chapter III (pp. 119-122). It acknowledges that in fact people learn throughout their lives albeit in different ways and in different processes. Learning activities at all times are seen as the essence of humanity and should underlie the whole system of existing educational organizations (pp. 42-43). Thus, lifelong learning is principally in line with UNESCO recommendations that learners should (1) learn to know, (2) learn to do, (3) learn to be, and (4) learn to live together. That is, learning continues to be done for various purposes of life, namely seeking knowledge, doing things, finding one's identity, and living together in society [6].

Second, the independence of learning is discussed in Chapter II (pages 50-51) and Chapter III (pp. 122-123). Self-reliance in learning refers to learning activities conducted on the basis of their own volition, self-choice and self-responsibility from learners. The concept of independence in learning is based on the principle that each learner will achieve learning outcomes, in the form of knowledge, attitudes, skills and self-discovery if he or she experiences her/his own process and learning outcomes. The basic concept of independence brings implications to the concept of learning and teaching. Learning is a self-development through experience that rests on the learner's self-abilities under the guidance of educators. Teaching is the activity of directing and facilitating the way of finding something (not giving something) according to the ability of the learner (pp.50-51). Thus, learning independence constitutes an instrument for lifelong learning which is in line with one of Rahadian's observations that educational practice in Indonesia has blurred the border between formal dan informal educations [5].

Third, informal, informal, and formal education as a system (also called a tripartite of education: school, community and family) is discussed in Chapter II (pp. 76-77), Chapter V (pp.166-187), and Chapter IX pp.305-306). As a system, the three educational paths complement each other and fill the learning needs of learners. Mutual complementarity means when a child does not formalize his education at school, the educational process can be complemented by nonformal education, even with informal education (such as homeschooling). Filling each other means that the three pathways cannot be separated because the success of the realization of human resource education output depends on the extent to which the three sub-systems play a role (p.77).

Fourth, the development of science and technology is discussed in Chapter II (pp. 46-47, 50), Chapter III (pp.112-116), and Chapter IV (pp.133-140), Chapter VII (pp.241-243). The development of science and technology, including the rapid development of communication and information technology in various parts of the world, has had a great impact on the changing of the social, economic and cultural aspects of people's lives. Access to information is also no longer dominated by a group of adults, including teachers. Students and adolescents can access and exchange information needed for learning, even for social and business needs (pp.46-47). In fact, the development of the Internet in recent years has strengthened the phenomenon of digital-based life that at the same time weakens, even destroys, the establishment of conventional life. For example, many large stores are closed because buyers switch to using online stores for shopping; ordering goods and services such as transportation and accommodation can be done by squeezing the gadget and within minutes of completion [19]. The educational world is expected within the next decade to be dominated by learning features without classroom spaces and educational institutions that are not adaptive are predicted to be left behind, perhaps even out of business [20].

4.2. Students' understanding of constructivist learning paradigm

The understanding of prospective teachers as participants is reviewed through two sources of data, the results or answers to the tasks, quizzes and exams that have been followed during the semester lectures, and through the writing of personal opinions after they have attended a focused-review session on substance in the load of constructivist learning paradigms in the Introduction to Education course material. The purpose of this review session is to optimize students' understanding of the paradigm. However, whether they view realistically and commit to implementing the paradigm in learning activities is a different domain and will be the substance of writing a personal opinion resume that students do after the review session.

4.2.1. Understanding students in accordance with the answers in tasks, quizzes and exams

In accordance with the students' answers in quizzes, assignments and midterm exam, students' trends in constructivist paradigm learning through four material substances are summarized in Table 1 – Table 4.

Table 1. Students' Opinions About the Nature of Human

No	Opinion	Students	
		N	%
1	human has logic and thinking skills to move on and change their life	24	55
2	human has reason and lust	6	14
3	humans have emotions, feelings and social characteristics	6	14
4	human has language and culture	3	7
5	human is social and religious creature	3	7
6	human has rules and decency	2	5
Total		44	100

Of the 60 students, some did not resubmit their sheets of answers, assignments, quizzes and exams for being included in the research. This also applies to other research items.

Table 2. Students' Opinion About Lifelong Education

No	Opinion	Students	
		N	%
1	Education as a process of applying science or teaching	14	30
2	Lifelong education, for the world and hereafter, religious and moral education	12	26
3	education that does not know the age, is done as long as there is willingness	4	9
4	education in the family and for spreading social and cultural spread values	4	9
5	[no comment]	4	9
6	education is done to follow the development of science and technology	2	4
7	education as to fulfill the nature of curious human	2	4
8	education that applies from kindergarten to the university	2	4
9	education as to reach life goals	2	4
Total		46	100

Table 3. Students' Opinion About Independence in Learning

No	Opinion	Students	
		N	%
1	The teacher teaches in a way that allows students to search their own learning materials.	35	71
2	Learning participants can gain knowledge without any order from other people. The willingness to learn lies within themselves.	14	29
Total		49	100

Table 4. Students' Opinion About the Role of Technology

No	Opinion	Students	
		N	%
1	taking advantage of the advanced information technology by preventing its negative influence by giving guidance and understanding to the society about the use of such technology and keeping good social relations with others in the real world	40	71
2	children need to be accompanied and guided in accessing technology	2	4
3	children must not use internet for its negative influence	2	4
4	checking children's history of gadget use is to minimize bad effect	4	7
5	assertive rules for is using internet is needed	2	4
6	good intention in using internet is needed	2	4
7	social media to be designed especially for children	2	4
8	technology as media of entertainment in spare time	2	4
Total		56	100

In Table 1 related to the nature of human nature, approximately 55% of the students explicitly state that humans have the intellect and the ability to move forward and change their lives. They argue that with the intellect, man can do things and be able to choose the best for himself. Meanwhile, 45% of other students mention the nature of human nature partially, that is, humans have language and culture; human beings as social and religious beings; human has reason and lust; humans have emotions, feelings and social characteristics; and man has rules and decency. The essence of human nature mentioned partially is true, but by not including the elements of reason and mind as the foundation of realization of initiative and creativity, constructivist learning paradigm does not get a share in the understanding of the students.

According to the data in Table 2, only 17% of students are well-informed about lifelong education, that is, education that does not know the age, is done as long as there is willingness, and to follow the development of science and technology. Meanwhile, quite a lot of students (39%) see lifelong education as valid only for religious education, morality, and socio-culture, whereas it should cover all the needs of self-development and science. In addition, almost half of the students (47%) have an inaccurate understanding of lifelong learning, as a process of applying science or teaching, limited to higher education, goals to be achieved and no comment at all. These data suggest that lifelong educational material needs to be emphasized in the material review at the next meeting.

Table 3, on students' understanding of self-reliance in learning, shows that the majority of students (71%) understand the independence of learning in a narrow or teacher-based way, that is, teachers are engaged to teach and train their learners to find their own learning materials. In other words, it is possible that learners will not learn independently or independently if there is no direction from teachers or lecturers. Approximately one-third of students (29%) understand this concept correctly that self-reliance is rooted in self and is not bound by the commands of others. Thus, the concept of independence in learning still needs to be emphasized in the material review at the next meeting.

Table 4 shows that the majority of students (71%) have a positive understanding of the advantages of information technology for learning and advancement with the notes that the negative effects or impacts remain but can be denied by providing an understanding to the community that the use of such technology does not reduce the relationship of silaturahmi with others in real life everyday. Some other students (21%) notes how to counteract the negative effects parents can make on their children by providing guidance and guidance about healthy features or internet links, checking child gadget history, enforcing child-specific social media, and for users the general still needs to be a firm unity about the use of the internet and every user has good intentions in using the internet. Meanwhile, 2 students (4%) thought that children should not use the internet because of unavoidable negative effects, and two other students (4%) who only see information technology as a medium for entertainment and leisure.

From the presentation and analysis of the data above, it can be concluded that most students understand the role of information technology and the nature of human nature well. This finding is positive as it supports the principles of constructivism that education is necessarily humanistic in the sense of its being learner-centered [5] and that technology is a useful tool for learning [8]. Meanwhile, the students have not understood the concept of lifelong learning and independence in learning well so it needs to get more in-depth discussion. The points related to the integrity or synergy relationship between home education, community and school are not contained specifically in the task, quiz and exam students. The question of this is posed separately (on each of the educational paths) so that no clear integration of the three relations can be formulated. The lack of students' awareness on lifelong and independent learning may be attributed to their prior school education whereby, as observed by Palladium Group recently that teachers in West Nusa Tenggara were less creative and take less initiatives in teaching [9].

4.2.2. Student understanding after focus review sessions

One lecture meeting (90 minutes) for each class is dedicated by a lecturer / researcher to explicitly examine five courses of Introduction to Education that contain the substance of the constructivist learning paradigm, then ask students to question, explore, and criticize the reviews given. After the review and questioning process was conducted, the students were asked to write a resume of their personal opinion about the five substances. They are not required to follow lecturer / researcher reviews if the review is not in accordance with their personal opinion of the material substance of the constructivist learning paradigm. A summary of the students' opinions on the 5 substances of the constructivist learning paradigm in the Introduction to Education is presented in Table 5.

Table 5. Summary of Student Opinions After Focus Review Sessions (N = 60)

No	Opinion	Students	
		N	%
1	Role of information technology: information technology should be utilized as well as possible for the advancement of life, become a source of knowledge, social media and entertainment in a balanced	60	100
2	The nature of human nature: man has the intellect and the ability to think to progress and change his life	50	83
3	Life-long education: age-old education, undertaken as long as there is a will, and to follow the development of science and technology	47	78
4	Independence learning: learners are able to gain knowledge without any command from others	46	77
5	The integration of home, community and school education: what is learned in school can be strengthened by home-study on their own initiative, or in communities through study groups or with citizens; or otherwise knowledge acquired at home or in the community can be strengthened in the other two paths	45	75

From the summary of the data in Table 5, there is a significant increase in the number of students who have a good understanding of the five substances of constructive paradigm learning material contained in the Introduction to Education course. Particularly related to the role of technology, all students demonstrate the same understanding of the importance of using information technology such as the internet for various purposes of a good life, support and facilitate various activities in everyday life. The students have the same qualitatively good understanding that by focusing on the use of information technology for good use, the inherent and potential negative impacts will be minimal, even eliminated. The students also agreed about the need for socialization training to the public to use the internet in a good, smart and healthy. In relation to the nature of human nature, virtually all students also have correct opinions, but a small percentage (17%) fails to stress the importance of minds used by humans to learn, and to explore and exploit nature to achieve a better life. With approximately the same percentage, a small percentage of students (12%, 13%, and 15%) still have different understandings or do not support the constructivist learning paradigm fully related to lifelong educational concepts, self-reliance in learning, and the integrity of education at home, in the community and at school. They are still at the first opinion that lifelong education covers only certain aspects such as religious and social education. The independence in learning is still related to the role of the teacher. This understanding apparently influences their opinion on the educational center by considering that each educational center tends to fill different sections, namely that home education is appropriate for religious education, community education focuses on social values, and schools focus on knowledge-based education. Meanwhile, the majority or more than 75% of other students have a very supportive understanding of the constructivist learning paradigm associated with the three conceptions.

5. CONCLUSION

This lesson study is done as an effort of the lecturer/researcher to improve learning performance in Introduction to Education subject. The benefits are not only intended to improve the quality of student learning, but also the quality of materials and teaching methods of lecturers. Based on the analysis of the textbook, it is found that the substance of the learning paradigm is generally a subset of several chapters whereas the essence of education is contained in these five substances. Therefore, it is suggested that a more constructivist textbook be written by including the five material substances as the titles of separate chapters so that the study portion can be deepened and expanded.

Students' understanding of the material substance of constructivist learning paradigm is still low as shown in the analysis of answer data on assignments, quizzes and student exams. This is most likely due to adequate book material coverage including materials beyond the substance of the learning paradigm so that student attention is still spreading. The implementation of focused review sessions, i.e. a combination of lectures, question-answer, and discussion, has consolidated students' understanding of the five material substances (75% or more of the students). Thus, the use of review techniques is recommended to be used to anticipate the lack of understanding or mastery of the material in the previous sessions.

In addition, further research on the load of constructivist learning paradigm in the textbooks of all other education subjects (e.g., teaching profession, learner development, and teaching and learning) for prospective teachers should be conducted. It is so that the expectation of governments for teachers to implement constructivist method of teaching, which is a global trend nowadays, will not be blocked by the teachers' lack of theoretical expertise molded during their preservice education.

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