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Ni Putu Wulan Purnama Sari:

Thank you for submitting the manuscript, "THE APPLICATION OF FLIPPED CLASSROOM LEARNING METHOD FOR IMPROVING CARING ATTITUDE AND LEARNING ACHIEVEMENT OF NEW STUDENT NURSES ON NURSING INSTITUTIONS IN SURABAYA" to INDONESIAN NURSING JOURNAL OF EDUCATION AND CLINIC (INJEC). With the online journal management system that we are using, you will be able to track its progress through the editorial process by logging in to the journal web site:

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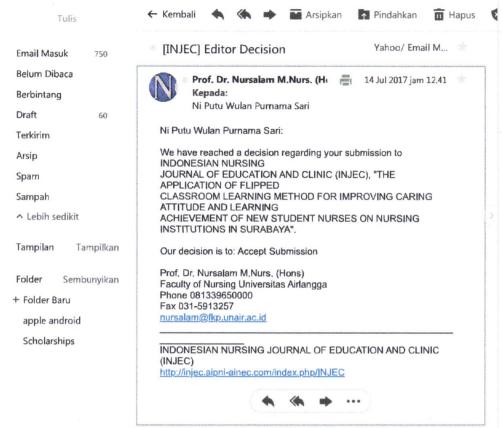INDONESIAN NURSING JOURNAL OF EDUCATION AND CLINIC (INJEC)

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We have reached a decision regarding your submission to
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Our decision is to: Accept Submission

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FLIPPED CLASSROOM LEARNING METHOD TO IMPROVE CARING AND LEARNING OUTCOME IN FIRST YEAR NURSING STUDENT

(Metode Pembelajaran Flipped Classroom untuk Meningkatkan Sikap Caring dan Capaian Belajar Pada Mahasiswa Perawat Baru)

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ABSTRAK

Pendahuluan: *Caring* adalah esensi dari profesi keperawatan. Stimulasi sikap *caring* perlu dimulai sejak dini. Metode pembelajaran yang efektif diperlukan untuk menumbuhkan sikap *caring* pada mahasiswa baru dan menunjang capaian belajar. Tujuan penelitian menganalisis pengaruh penerapan metode pembelajaran f*lipped classroom* terhadap sikap *caring* dan capaian belajar mahasiswa perawat baru. **Metode:** Jenis penelitian pra-eksperimental dengan pendekatan *the one group pretest post-test* dan *posttest only design*. Populasi adalah semua mahasiswa baru pada institusi keperawatan di Surabaya. Kriteria inklusi: perempuan, 18-21 tahun, masuk jurusan keperawatan atas kemauan sendiri dan pilihan pertama saat proses seleksi, status kemahasiswaannya aktif pada semester genap T.A. 2015/2016. Besar sampel 67 orang dipilih dengan *total sampling*. Variabel: 1) independen: penerapan metode pembelajaran *flipped classroom*; 2) dependen: sikap *caring,* capaian belajar. Instrumen: SAP, DVD bahan ajar, deskripsi tugas mahasiswa, daftar presensi, rubrik penilaian tugas, kuesioner sikap *caring*, tugas individu dan kelompok. Analisis data: *paired t test* dan *one sample t test*. Uji etik dilakukan untuk mendapatkan *ethical clearance*. **Hasil:** Mayoritas responden berusia 20 tahun (44,8%), lulus dari SMA di wilayah Surabaya (38,8%), tinggal dengan orangtuanya (68,7%) di rumah sendiri (64,2%). Semua data penelitian berdistribusi normal. Metode pembelajaran *flipped classroom* dapat meningkatkan sikap *caring* sebesar 4,13%. *Flipped classroom* terbukti efektif untuk meningkatkan sikap *caring* (p=0,021) dan capaian belajar (p=0,000). **Diskusi:** *Flipped classroom* efektif untuk meningkatkan sikap *caring* dan capaian belajar mahasiswa perawat baru. Direkomendasikan untuk melakukan penelitian lanjutan menggunakan paradigma *mix-method* dan sampel yang lebih besar.

Kata Kunci: *flipped classroom,* sikap *caring,* capaian belajar, mahasiswa perawat, pendidikan keperawatan

ABSTRACT

Introduction: *Caring is the essence of nursing profession. Stimulation of caring attitude should start early. Effective teaching methods needed to foster caring attitude and improve learning achievement. This study aimed to explain the effect of applying flipped classroom learning method for improving caring attitude and learning achievement of new student nurses at nursing institutions in Surabaya.* **Method:** *This is a pre-experimental study using the one group pretest posttest and posttest only design. Population was all new student nurses on nursing institutions in Surabaya. Inclusion criteria: female, 18-21 years old, majoring in nursing on their own volition and being first choice during students selection process, status were active in the even semester of 2015/2016 academic year. Sample size was 67 selected by total sampling. Variables: 1) independent: application of flipped classroom learning method; 2) dependent: caring attitude, learning achievement. Instruments: teaching plan, assignment descriptions, presence list, assignment assessment rubrics, study materials, questionnaires of caring attitude. Data analysis: paired and one sample t test. Ethical clearance was available.* **Results:** *Most respondents were 20 years old (44.8%), graduated from high school in Surabaya (38.8%), living with parents (68.7%) in their homes (64.2%). All data were normally distributed. Flipped classroom learning method could improve caring attitude by 4.13%. Flipped classroom learning method was proved to be effective for improving caring attitude (p=0.021) and learning achievement (p=0.000).* **Discussion:** *Flipped classroom was effective for improving caring attitude and learning achievement of a new student nurse. It is recommended to use mix-method and larger sample for further study.*

Keywords: flipped classroom, caring attitude, learning achievement, student nurse, nursing education

INTRODUCTION

Flipped classroom is an instructional model which is flipping the traditional learning method used in class now being the homework for college students, while classes are conducted face to face using collaborative learning and inquiry-based learning method. This model is often called inverted classroom because of what was previously done in the classroom is now done in-house or somewhere else and what used to be done at home is now completed in the classroom (Bergmann and Sams, 2012). Flipped or inverted classroom is a modification of instructional models centered on the student and has been developed for a long time (Felder, 2012). Various studies have been conducted to prove the effectiveness of flipped classroom learning method to improve students' learning motivation and satisfaction (Butzler, 2014). Flipped classroom can be applied to students who have high independence in learning and want some flexibility of time and place of learning. Related to nursing education institutions in Indonesia in its efforts to improve the attitude of caring and learning achievement of student nurses, flipped classroom learning method has not been widely implemented.

Caring attitude is the essence of nursing. Stimulation of caring attitude needs to be done early on to new students for the future they can be a nurse who cares for the clients and have high empathy. The learning method of flipped classroom support active learning process that provides greater opportunity for students to interact with various types of knowledge content through reading, writing, speaking and reflect on things that have been studied independently (University of Minnesota, Center of Learning and Education, 2008; in Hamdan, *et al.*, 2013). Research shows that active learning can improve students' academic performance (Michael, 2006; Freeman *et al.*, 2007; Chaplin, 2009; in Hamdan *et al.*, 2013); improve critical thinking skills and student engagement with the scientific field, as well as a positive attitude in learning (O'Dowd & Aguilar-Roca, 2009; in Hamdan, *et al.*, 2013). The result of the application of flipped classroom learning method for improving caring attitude and learning achievement of students, especially new student nurses, has not been much studied.

The general objective of this study is to explain the effect of the application of flipped classroom learning method to the caring attitude and learning achievement of new student nurses on nursing institutions in Surabaya. The specific objectives are: 1) apply the flipped classroom learning method in new student nurses, 2) identify the value of caring attitude of new student nurses before and after the application of flipped classroom learning method, 3) identify the value of learning achievement of new student nurses after the application of flipped classroom learning method, and 4) analyzing the effect of applying flipped classroom learning method towards caring attitude and learning achievement of new student nurse.

Literature Review

According to Johnson (2013), flipped classroom is a strategy given by educators in ways that minimize the amount of direct instruction in student practices while maximizing interaction with one another. Methods of flipped classroom lessons allow students to access knowledge content anytime and anywhere. Educators can use multimedia technology, either made or downloaded from trusted sites (Hamdan *et al.*, 2013). Flipped classroom allows students to learn outside the classroom and during the learning process in the classroom the student is ready to apply what they have learned. The role of the teacher or lecturer in the classroom is as a facilitator who spends more time interacting with students. Based on the revision of Bloom's taxonomy (2001), flipped classroom makes the lowest level of taxonomy (understand and remember) is done outside the classroom, while the highest level (apply, analyze, evaluate and produce something) done in the classroom and facilitated by lecturers (Marshall, 2013).

There are several factors that support the need to implement flipped classroom learning method, including excess study materials and the students expect variations in the learning process (Bristol, 2014). By

motivating students to come to class with the preparation of the material to be learned, the more free instructional time is used to improve the application and analysis, resulting in a more practical learning ability. According to Valiga (2012), nurse educators no longer give a lecture by traditional way, but with a flipped classroom learning method, so that time with the students will be a focus on learning to think critically.

According to Hamdan et al. (2013), there are four main pillars in the implementation of flipped classroom learning method, namely: 1) a flexible environment, 2) change in the culture of learning, 3) the existence of clear learning objectives, 4) professional lecturers/facilitators. There are many benefits to be gained through the application of flipped classroom learning method, namely: 1) hours of classroom lessons more widely used to review and discuss a topic that is difficult to understand by students (Center for Digital Education, 2012); 2) students learn how to collaborate, communicate and practice leadership skills (Chen, 2014); 3) lecturer did not waste time to answer standard questions and questions repeatedly asked (Center for Digital Education, 2012); 4) students learn more from realistic learning experiences (Bristol, 2014); and 5) improve lecturers' competence (Bristol, 2014).

Research on flipped classroom learning method has not done much either qualitative or quantitative. However, there are some supporting studies that have the same principle with flipped classroom learning method. Research conducted by Chaplin (2009) showed that active learning increases student achievement. A similar study conducted at the University of Minnesota also shows that active learning gives students more opportunity to interact through reading, writing, listening, speaking and reflect on what they have learned (Center of Learning and Education, 2008). Active learning also improves critical thinking skills and attitude of students (O'Dowd, 2009). Musallam study (2010) showed that students who had studied the material beyond the previous class more easily understand the material provided in the classroom.

Research by Papadopoulos & Roman (2010) conducted in mechanical engineering students showed a video tutorial given by lecturer then studied by students alone, and after that, it was discussed in the class was able to make the students understand the materials more quickly, and they have a very good progress. Another survey conducted on 450 lecturers showed that lecturers who use flipped classroom learning method reported an increased ability / mark (66%) and attitudes (80%), and teaching satisfaction of lecturers (90%) (Flipped Learning Network, 2012). However, not all studies of flipped classroom learning method gave a positive result. The success of flipped classroom learning method is also influenced by students' interest towards particular materials or given subjects (Strayer ,2012).

METHOD

This is a pre-experimental study with the one group pretest-posttest and posttest-only design approach. The population was all new student nurses on nursing institutions in Surabaya. The affordable population was all new student nurses at Faculty of Nursing, University A (accredited A); Faculty of Nursing, University B (accredited B) and the College of Health Sciences C (accredited C) in 2015/2016 academic year. The sample was a freshman at the three institutions which meet the sample criteria. Inclusion criteria consisted of: female, 18-21 years old, majoring in nursing on their own volition and being the first choice during students selection process, students status were active in the second semester of 2015/2016 academic year. Exclusion criteria consisted of: resign in the middle of the study, did not attend all sessions of class meetings, do not collect assignments (individual or group) or not timely collect assignments. Of the 210 new student nurses population at all three institutions used as study location, it was obtained 67 students who meet the criteria. The sample size was not calculated based on any formula because all members of the population being studied samples (total sampling).

This study was conducted on the new student nurses at three nursing institutions in Surabaya (accredited A, B, and C) in 2015/2016 academic year with the facilitator was the research team itself. Face to face meetings in the classroom planned as much as 4 times @100 minutes in 2 weeks carried in the classroom of each institution by taking extra hours apart from the formal ongoing learning process. Data collection of pretest and post test was conducted in June-August, 2016.

Study variables consist of 1) the independent variable: the application of flipped classroom learning method, 2) dependent variables: attitude of caring and learning achievement, 3) control variables: teaching materials, frequency of face to face meetings in class, given assignments, facilitators; and 4) confounding variables: learning motivation, independence, study load, stress, and environment. The instruments used for applying flipped classroom learning method were teaching plan, assignment description (individual and group), presence list and DVD of study materials. Teaching plan provided details of teaching-learning activities between facilitators and respondents in four scheduled meetings @100 minutes. Assignment description contained problems / topics, systematic report writing, deadline, etc. DVD materials divided into 11 folders consisting of theoretical study materials, such as critical thinking, flipped classroom, health issue, nursing concept, family health, public health, environmental health, nursing innovation, chronic diseases, student-centered learning (SCL) and the theory of caring.

The caring attitude was assessed by a questionnaire designed by Rika (2012) which slightly modified by the research team. This questionnaire consists of 36 statements made based on 10 carrative factors in the theory of caring proposed by Jean Watson. Each statement was assessed by a Likert scale of 1 to 4, with details: always = 4, often = 3, sometimes = 2, never = 1. The results of instrument testing in 33 respondents proved that this questionnaire is valid (r = 0.346 to 0.796) and has a high reliability (α = 0.939). The data scale was an interval. Score range was 36 to 144. Each item of all statements assessed by scoring guidelines then summed to obtain the total score and put into a statistical test (test of data normality and paired t test). The study hypothesis was accepted if the significance of the data is less than α (0.05).

Learning achievement was assessed through individual, and group assignments collected timely by assignment assessment rubrics. The individual assignment was done independently while group assignment was done collaboratively with group members @ 5-6 students. Assignment assessment rubrics of individual and group were made differently in order to facilitate a more detailed assessment; given a group assignment has the aspects of team work/cooperation, leadership, tolerance, and communication which were not found on the individual assignment. The data scale was a ratio. Score range was 0 to 100. The score of individual assignment summed with the group assignment then averaged, and then put into a statistical test (test of data normality and one sample t test). The study hypothesis was accepted if the significance of the data is less than α (0.05).

The research team proposed ethical review in Faculty of Nursing, Airlangga University, Surabaya, Indonesia, to obtain ethical clearance. The other ethical aspects applied were informed consent, anonymity, and confidentiality.

RESULT

The sample size was 67. The demographic characteristic of study respondents is presented in Table 1 below.

Most respondents are 20 years old or young adults (44.8%), graduated from high school in Surabaya (38.8%), living with her parents (68.7%) in their own homes (64, 2%). In this study, the majority of nursing students were first exposed to a clinical environment (clinical nursing practice) is at the age of 19-20 years.

Primary data reflects the motivation of respondents in choosing nursing majors and institutions. Primary data is important to be identified because it could potentially

influence students' learning motivation, where researchers assume that learning motivation correlates to learning achievement. The primary data of respondents are presented in Table 2 below.

Table 1. Demographic characteristic

Characteristic	Frequency (n=67)	Percentage (%) (n=67)
1. Age		
a. 18 years old	5	7.5
b. 19 years old	28	41.8
c. 20 years old	30	44.8
d. 21 years old	4	6
2. Graduated from		
a. High school in Surabaya	26	38.8
b. High school in East Java	21	31.3
c. High school in Java	5	7.5
d. High school outside Java	15	22.4
3. Living with		
a. Parents	46	68.7
b. Siblings	9	13.4
c. *Extended family*	4	6
d. Friends	15	22.4
4. Housing status		
a. Owner	43	64.2
b. Renter (house)	7	10.4
c. Renter (room)	17	25.4

Table 2. Primary Data

Characteristic	Frequency (n=67)	Percentage (%) (n=67)
1. The reason why choose nursing major		
a. Making family proud	7	10.4
b. Willing to care the family member	13	19.4
c. Dream / personal preference	36	53.7
d. Helping each other	23	34.3
e. Teacher's advice	1	1.5
f. Many job market	9	13.4
g. More quota available	4	6
h. Friends' recommendation	1	1.5
2. The reason why choose current institution		
a. Near from home	13	19.4
b. Good image in community	31	46.3
c. Good accreditation	5	7.5
d. Great alumni exist	2	3
e. Teacher's advice	4	6
f. Unaccepted in public institution	3	4.5
g. Friends' recommendation	7	10.4
h. Low tuition fee	11	16.4
i. Perceived to be able to fulfill personal goal	7	10.4
j. Randomly chose	1	1.5
k. Being forced to choose	1	1.5

Table 3. Caring attitude pretest and posttest

Score	Pretest		Posttest	
	n	%	n	%
36-72	1	1.5	0	0
73-108	13	19.4	11	16.4
109-144	53	79.1	56	83.6

Table 4. Cross table of pretest-posttest data of caring attitude

Pretest	Posttest						Total	
	36-72		73-108		109-144			
	f	%	f	%	f	%	F	%
36-72	0	0	0	0	1	1.5	1	1.5
73-108	0	0	3	4.5	10	14.9	13	19.4
109-144	0	0	8	11.9	45	67.2	53	79.1
Paired Mean ± SD		*Std. Error Mean (SEM)*			*Paired t test Sig. (2-tailed)*			
4.94 ± 17.12		2.09			p = 0.021			

Table 5. Posttest-only data of learning achievement

Score	Individual Task		Group Task		Mean	
	n	%	n	%	n	%
0-33	0	0	0	0	0	0
34-67	0	0	0	0	0	100
68-100	67	100	67	100	67	100
Mean ± SD	*Std. Error Mean (SEM)*		*One sample t test Sig. (2-tailed)*			
86.19 ± 5.1	0.62		p = 0.000			

Most respondents chose nursing majors with reason having a dream to be a nurse or having a personal preference to study health sciences especially nursing science (53.7%). The majority chose current institution because of a good image in the community (46.3%).

Kolmogorov-Smirnov test result showed that the data pre test and post-test of caring attitude were normally distributed (p=0.642). Caring attitude data of before and after the application of flipped classroom learning method is presented in Table 3 and 4 below.

The results showed that the score of pretest mostly 109-144 as many as 53 respondents (79.1%); while the score of post-test was also mostly 109-144 as many as 56 respondents (83.6%).

There was an increase of 4.13% of caring attitude after the application of flipped classroom learning method.

One respondent (1.5%) showed a significant increase in caring attitude, namely from 36-72 into 109-144. In addition, there are 10 respondents (14.9%) experienced an increase in caring attitude, namely from 73-108 became 109-144. It was also found 8 respondents (11.9%) who were impaired, the score of caring attitude decrease from 109-144 into 73-108.

Paired Mean value was 4.94 with SD 17.12. The mean value of caring attitude pretest was 119.5 and post-test was 124.4. SD value of less than Mean indicates a low standard deviation of the caring attitude data. SEM value of 2.09 indicates the value of Mean representative to describe the entire data of caring attitude. The paired t test result showed that p value = 0.021 which means there was an effect of the application of flipped classroom learning method towards caring attitude in

new student nurses. The implementation of flipped classroom learning method was proved to be effective for increasing caring attitude in new student nurses.

Kolmogorov-Smirnov test result showed that the posttest-only data of learning achievement were normally distributed (p = 0.204). The results of learning achievement after the application of flipped classroom learning method are presented in Table 5 below.

The values of learning achievement posttest were entirely in the range of 68-100, as many as 67 people (100%). There was no respondent who got scored less than 68 because of intensive supervision from the flipped-class instructor.

Mean values obtained was 86.19 with SD 5.1. SD value of less than Mean indicates a low standard deviation of the data observations of learning achievement. SEM value of 0.62 indicates the value of Mean representative to describe the entire data of learning achievement. The one sample t test result showed that p value = 0.000 which means there was an effect of applying flipped classroom learning method on learning achievement in new student nurses. The implementation of flipped classroom learning method has a positive effect on new student nurses' learning achievement.

DISCUSSION

Bishop and Verleger (2013) describes flipped classroom learning as a learning technique that requires two things, the interactive group learning activities in the classroom and direct computer-based individualized instruction outside the classroom. Flipped Classroom makes the lowest level of Bloom Taxonomy (understand and remember) done outside school hours, while the highest levels (apply, analyze, evaluate and produce something) done in the classroom and facilitated by lecturers.

In this study, the student is given two tasks in the form of individual and group assignments. Students are free to choose the topics (health problem) that exist around

them as individual tasks and another health issues with broader coverage as the group task. Students are then asked to make papers contains proposed solutions to health problems they have chosen, to assess their caring attitude to the surroundings.

Based on this study, there is a significant effect of the application of flipped classroom learning method on caring attitude in new student nurses (p = 0.021). Flipped classroom benefits both students and faculties. In terms of students, there are increases in learning flexibility because they are required to be more focused and not only learning in the classroom but also outside the classroom (Moraros *et al.,* 2015). Students are required to improve their critical thinking skills and more importantly their "peer teaching" and active discussion in the classroom. From the perspective of faculties, flipped classroom makes it easier to engage and trick students to be more active in the learning process. Flipped classroom not only allows faculties to give students a broader variety of teaching materials sources and deeper understanding of the studied materials, but also active discussions in the classroom to help students to be more enthusiastic in understanding studied problems (Moraros et al., 2015).

A survey of 450 lecturers showing that lecturers who implemented flipped classroom learning method reported an increased ability and attitude of students, job satisfaction of the lecturers. 66% of lecturers reported an increase in the students' score. Eight out of 10 lecturers reported an increase in student attitude. Nearly 90% of lecturers report increased the satisfaction of their work, with 46 reported a very significant increase (Flipped Learning Network, 2012).

Research of Gillispie (2016) conducted on medical students using case control design, in which the class using the traditional method as the control group and the class using flipped classroom learning method as the intervention group. Results showed that the intervention group had increased score significantly compared with the control group.

Research of Papadopoulos & Roman (2010) conducted on mechanical engineering

students. Students are given a video of tutorial and learn it by themselves, then held discussions in class. Based on observations of researchers, students capture the knowledge more quickly and have a very good progress. But not all studies on flipped classroom gave a positive result. The success of flipped classroom application is also influenced by the student interest in the material provided (Strayer, 2012).

Overall flipped classroom gives students the opportunity to be more critical in thinking, more independent in their learning process, and more active in interacting and discussing both with peers and the faculty. In this study, researchers also found 8 respondents (11.9%) who impaired in caring attitude posttest. According to the research of Lape (2014), there are some challenges in implementing flipped classroom namely students who have a slower ability to understand the material left behind by students who have a quick comprehension. Acedo (2013) describes some cons opinion of a flipped classroom learning, such as the flipped classroom cannot be applied to the student with the poor ability of economy that requires them to have a laptop, flipped classroom depends on the preparation and confidence; lecturers must trust students that they study the material given independently, in fact, there is no guarantee that students will be cooperative and do independent learning outside the classroom. By applying the flipped classroom, students spend more time in front of the computer.

Based on this study, there is a significant effect of the application of flipped classroom learning method on learning achievement in new student nurses (p=0.000). Learning achievement operationally defined as the students' comprehensive understanding of a discussed topic on caring attitude expressed in written paper through individual and group assignments and scored using a special rubric. The task making respondents feel active self-learning experience and are able to individualize their learning experience. Respondents were asked to scrutinize health issues within the family and community and then required to propose a solution to the problems found. The important aspect emphasized in the task given is the caring attitude to be able to recognize health problems well and critical thinking to be able to analyze the actual or potential health issues.

In this study, the students do the individual and group tasks collaboratively with the facilitators in the classroom where the originality of the idea/topic comes from the students themselves according to their learning needs. The duty of the facilitator is to help the completion process of all tasks through consultations/guidance and interactive discussions. In principle, flipped classroom emphasize the aspects of collaborative learning in the scheme of student-centered learning in a constructivist learning environment.

The core concept of constructivism applied to the learning process is the student-oriented learning environment where students knowledge and understanding are socially constructed (Felder, 2012; Perkins, 1999; Sternberg, 2008; in Butzler, 2014). The application of flipped classroom learning method involves combining multiple teaching methods, namely problem-based learning (PBL), inquiry learning, just-in-time teaching (JiTT), process oriented guided inquiry learning (POGIL), and Peer Instruction (PI) (Crouch & Mazur, 2001; Herreid and Schiller, 2013; Prince & Felder, 2006; Prince & Felder, 2007; in Butzler, 2014). Students build their own thoughts and change the existed mindset at the interaction time with learning material and collaborate socially with other students and instructors / facilitators (Felder, 2012; Perkins, 1999; Prince & Felder, 2006; Prince & Felder, 2007; Sjöberg 2007; Sternberg, 2008; in Butzler, 2014).

Flipped classroom learning method has a complex structure that requires instructional design compiled carefully, as well as in its implementation. The focus of this method is a set of inversion and connection between instructional design and implementation of learning methods. The main goal of this method is the emergence of an active learning environment in the classroom. This method builds good relationships between faculty and student to create a more differentiated learning

instruction (according to the progress of student learning) and the increased involvement of students in the classroom (Brown, 2012).

Research of Hantla (2014) concerning the application of flipped classroom focused on aspects of critical thinking showed that the students' argument written in their paper uses rational and better scientific reasons and evidence when compared with traditional method (p < 0.001). Viewed from the aspect of innovation and internalization of the learning experience, flipped classroom provide a more conducive learning environment than traditional classes. The lecturer who became an instructor of flipped classroom also stated that he had more time in the classroom to be able to focus on the written arguments. Additionally, the method also makes the students become more innovative in the classroom environment with full autonomy.

Actually, there are two major problems in the application of flipped classroom learning method. The first problem is there is very few scientific evidence indicating that the achievement of student learning better on the application of flipped classroom instead of the traditional method (Lage *et al.,* 2000; Mazur, 2009; Strayer, 2012; Zappe *et al.,* 2009; in Butzler, 2014). The second problem is that not all students are ready academically or have the necessary motivation to achieve success in learning in a constructivist learning environment as happened in the flipped classroom (Kirschner *et al.,* 2006; Lavasani & Ejei, 2011; Liu *et al.,* 2012; in Butzler, 2014). The effectiveness of flipped classroom learning method application on learning achievement in new student nurses potentially influenced by various unidentified factors in this study that need further investigation.

The first factors that potentially affect the effectiveness of flipped classroom learning method application are individual characteristics. The success and satisfaction of learning in any learning environment are influenced by individual characteristics (Baeten et al., 2010; Baeten et al., 2013; in Butzler, 2014). The first characteristic is learning motivation. In this study, the inclusion criteria include the incoming student in the nursing study program

should be based on their own volition and becoming the first choice during the selection process. By these criteria, the researchers hope that all respondents already have a good motivation to seriously study the science of nursing, particularly the matter of caring as the essence of nursing. The results showed that the majority chose a nursing major because of personal interests/aspiring to be nurses (53.7%). Learning motivation level can influence learning achievement and satisfaction in the implementation of a constructivist learning environment as happened in the model of flipped classroom (Hill, 2013; Jaschik, 2013; Lavender, 2005; Liu et al, 2012; Lopez-Perez, et al, 2011; Ning & Downing, 2012; Rastegar, et al, 2010; Soenens & Vansteenkiste, 2005; Vansteenkiste, et al, 2009; in Butzler, 2014). Typically, the intrinsic motivation of students increased in a constructivist learning environment (Baeten *et al.,* 2010; cent and Tarhan, 2010; Vansteenkiste *et al.,* 2009; Vos *et al.,* 2010; in Butzler, 2014).

The second characteristic is the student's interest in the topic / study material. The success of flipped classroom learning method application is affected by the interest of students to the material provided (Strayer, 2012) Flipped classroom learning method is able to make students learn actively and independently, students can individualize their learning experiences so that they can learn things that are considered important for them according to their learning needs (McDonald & Smith, 2013). The third characteristic is prior knowledge. The level of students' knowledge possessed before the application of flipped classroom method affect the students learning achievement and satisfaction with the implementation of this method (Kettle, 2013; Niemic & Ryan, 2009; Ning & Downing, 2012; Vansteenkiste *et al.,* 2009; in Butzler, 2014).

The second factor that could potentially affect the effectiveness of flipped classroom learning method application is the study materials. The current university student population is often labeled with the Net Generation. The students nowadays using digital technology to construct their own knowledge and thinking based on information

obtained from the electronic media. Study materials used in the application of flipped classroom learning method is in digital/ electronic format. Therefore, the Net Generation should be satisfied to learn by using flipped classroom learning (Prensky, 2001; Beyers, 2009; Oblinger & Oblinger, 2005; Roberts, 2010; Tapscott, 2009; in Butzler, 2014).

The third factor that can potentially influence the effectiveness of flipped classroom learning method application is an instructor/facilitator. This method requires professional faculty as an instructor. There are four phases that need to be passed by lecturers before they can change the way of ordinary teaching into instructional models of flipped classroom, namely: 1) motivation for change, 2) preparation of cognitive, curriculum and notification of students, 3) changes in pedagogy and teaching practices into the constructivist learning environment, and 4) reflects the benefits and challenges of adopting new learning model (Yemma, 2015). Lecturers need to be prepared before facilitating the flipped classroom method of learning through courses / special training (Kowalski & Horner, 2015). McDonald and Smith (2013) argue that the effectiveness of this method depends on the flipped classroom professional educators who are trained in observing and monitoring the progress of students in learning.

The fourth factor that could potentially affect the effectiveness of flipped classroom learning method application is the time for study. Flipped classroom very effective to be used when there is not enough time / very limited time available for face to face meeting in the classroom. Often known term Just in Time Teaching (JiTT) on the application of this method, which means face-to-face in class only held at any time according to needs (Butzler, 2014). This method is very effective in students who are very busy because of the study materials can be learned on their own outside of class at a very flexible time / anytime (McDonald & Smith, 2013).

Respondents gave a positive response on the implementation of flipped classroom learning method in this study. Respondents said they can understand how to make a good paper better the task and the workmanship, lecturers also do not need to explain too much about the subject matter but direct application through tasks, the method does not make students and lecturers bound by exact time for face to face meeting in the classroom / class schedules, the way of learning more effective so that students could explore the subjects given. It is recommended to conduct further studies using mixed-methods paradigm and a larger sample size together with experienced / trained flipped classroom instructors so that the effectiveness in many aspects of nursing education could be identified and evaluated.

CONCLUSION

The application of flipped classroom learning method is effective for improving caring attitude and learning achievement in new student nurses. The lecturers are advised to follow a course / training about flipped classroom model before applying it to students and conducting surveys of student learning needs before making study materials. The students are suggested to increase their learning independence and motivation to be more cooperative in a flipped class learning environment. Other researchers can then conduct further research using mixed-method paradigm and a larger sample size together with experienced / trained flipped classroom instructors so that the effectiveness in many aspects of nursing education could be identified and evaluated. (PDPI 2011; Notoatmodjo 2003)

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