



The Description of Medical Students' Interest and Achievement on Anatomy at Faculty of Medicine *Universitas Kristen Indonesia*

Nadeak Berndetha^{a*}, Naibaho Lamhot^b

^{a,b}*Universitas Kristen Indonesia, Jl. Mayjen Sutoyo No. 2 Cawang, Jakarta Timur, 13360, Indonesia*

^a*Email: benabeni336@gmail.com*

^b*Email: lnaibaho68@yahoo.com*

Abstract

This research is about the description of medical students' interest and achievement on Anatomy at faculty of medicine at *Universitas Kristen Indonesia*. The purpose of this study is to know the description of medical students' interest and achievement on Anatomy. The research method used was survey method by using qualitative research approach. The respondents were the students first, third and fifth semester of 2015-2017 which consists of 110 students. The instruments used in this study were questionnaires (consisting of 30 statements) and interviews. Likert Scale is used as a technique in analyzing the obtained data through questionnaires while descriptive techniques used to analyze the obtained data through interviews. From the data collected through questionnaires and interviews found that the description of student interest in studying anatomy is high (71%) while the learning achievement in the subject of anatomy is in low category. Thus, it can be concluded that student failure on Anatomy courses is not caused by their interest.

Keywords: interest; learning achievement; Anatomy; description.

* Corresponding author.

1. Introduction

It is a major problem that a learning process could not achieve maximum results, this can occur due to several factors. The factors that can cause it to happen can be categorized into three, such as; a) factors in the students (Internal factors) such as the spiritual and physical condition of students, b) factors that come from outside the students (external factors) such as environmental conditions around students, c) learning approach (learning approach) can affect learning outcomes [1].

The reality says that the faculty of medicine in anatomy courses. From the results of observations made by the author can be seen that 80% of students in each generation has a low learning achievement. Anatomy course as a basic course that becomes the foundation of science in other medical courses, should be studied very seriously so that students understand the course so that he/she can achieve maximum learning result or at least achieve the minimum value of completeness as required in that course is C score with the range (60-65).

Another observation found by the author from everyday circumstances in the classroom is the discovery of low student interest in the subject of anatomy. But this cannot be proven scientifically and also empirically, because it still tends toward assumptions obtained by the author of the daily learning activities undertaken. This is what must be proven scientifically by the author is to map or provide an overview of the interests of medical students in anatomy courses.

In learning activities, interest can lead to high learning activities, which ensure the continuity of learning activities, so that the desired goal by the subject of learning can be achieved [2]. With the interest, the students become diligent during the process of teaching and learning, and with that interest also the quality of student learning outcomes can be realized properly. Students who are in the process of learning have a strong interest and clearly will be diligent in learning and this is what makes him successful, it is very influential on the results of learning it has, because the high learning outcome is determined by interest in learning with learning achievement of learning owned by someone.

Based on the results and information obtained by the researchers that in the faculty there are still many students who have low achievement in learning, especially in anatomy course. The details of the level of anatomy learning outcomes in several classes of medical students (look at table 1 at the next page!).

From table 1 and the results of a small-scale survey conducted by the researchers found that more than 65% of the first semester students did not pass the course, and this is evenly distributed in each class of medical faculty for anatomy courses, both theory and practice.

From the results of a study, there is the influence of learning interest on improving learning achievement, where the interest can increase learning achievement by 21.4% [3]. Students' interest is more effective and more influential for learning achievement compared to the effort of learning, because with the interest, students can pay more attention and can be more active in learning. The low interest of students also resulted in a curious attitude towards the subjects of Anatomy Sciences and a sense of solidarity among students in Anatomy Science lessons. This condition is also coupled with the subjects that are considered difficult for most students and the

less interesting learning process causes the students less appreciate the usefulness of the course. Therefore, the authors designed a study with the title: "The Description of Medical Students' Interest and Achievement on Anatomy at Faculty of Medicine Universitas Kristen Indonesia". The purpose of this research is to know the description of interest and achievement of medical students on Anatomy. So a useful further research can be done to improve the students' learning interest on Anatomy and other courses.

Table 1: The Description of Students Learning Outcomes of 1st, 3rd, and 5th Semesters on Anatomy

Angkatan	Theory					Practice				
	Stundent number	Pass	%	Fail	%	Stundent number	Pass	%	Fail	%
2015 Block 6 : <i>life cycle</i> Block 9 : <i>moleculer endokrin</i>	-	-	-	-	-	218	102	46,79	116	53,21
	-	-	-	-	-	214	165	77,10	49	22,90
2016 <i>Biomedic</i> Block 2 : Anatomy	183	126	68,85	57	31,15	179	75	41,90	104	58,10
<i>Biomedic</i> Block 3 : Anatomi	182	25	13,74	157	86,26	181	81	44,75	100	55,25
Block 7 : <i>respiration</i>	-	-	-	-	-	183	69	37,70	114	62,30
Block 8 : <i>disgestion, Hepatobylerr and Pancreas</i>	-	-	-	-	-	183	19	10,38	164	89,62
Block 9 : <i>Kidney system and urination</i>	-	-	-	-	-	184	53	28,80	131	71,20
2017 <i>Biomedic</i> Block 2 : Anatomy	171	56	32,75	115	67,25	173	25	14,45	148	85,55
<i>Biomedic</i> Block 3 : Anatomy	162	83	51,23	79	48,77	166	46	27,71	120	72,29

Data source: Anatomy lecturer in semesters 1, 3 and 5

2. Literature Review

Education plays an important role in the development of quality human resources. Quantitatively, the progress of education in Indonesia is quite encouraging, but in quality, the development of science has not been evenly distributed [4]. From this learning process then learners will get the learning result which is the direct impact of learning events and teaching and learning process between students and teachers.

To be able to see the success of the process of teaching and learning activities, all factors related to lecturers and students must be considered. Starting from the behavior of lecturers in teaching up to student behavior as a reciprocal of the results of a teaching. Student behavior when following the teaching and learning process can indicate the student's interest in the lesson or vice versa, he was not interested in the lesson. This student interest is one of the signs of interest. Furthermore there are some notions of interest include: Interest is the tendency to

always pay attention and remember something continuously, this interest is closely related to feelings of pleasure, because it can be said that interest occurs because of the attitude of happiness to something, people who are interested in something means he his attitude is pleased with something [5]. Interest is the tendency of the soul to something, because we feel there is an interest in it, generally accompanied by feelings of joy about it [6]. Interest is a high tendency and excitement or a great desire for something [7]. Interest or interest may be related to the motive that forces us to tune in or feel attracted to people, things, activities, or can be effective experiences stimulated by the activity itself [8]. Interests are a source that encourages people to do what they want when they are free to choose [9]. Of the five meanings can be concluded that interest will arise when getting stimuli from the outside. And the tendency to feel attracted to a field is sedentary and feels a happy feeling when it is actively involved in it. And this happy feeling arises from the environment or comes from an interesting object.

It means that if a lecturer wants to succeed in doing teaching and learning activities should be able to provide stimulation to the students that he is interested in following the learning process. If the student already feel interested to follow the lesson, then he will be able to understand easily and vice versa if students feel not interested in doing the learning process he will feel tortured to follow the lesson.

Interest has several aspects including; cognitive, affective, and psychomotor aspects. Based on these descriptions, the interest in an anatomy subject that a person possesses is not innate, but is studied through a process of cognitive assessment and a person's affective judgment expressed in attitude. Relation to student interest then the indicator is as a monitoring tool that can provide a clue to the direction of interest. There are several indicators of students who have a high learning interest include: feelings of pleasure, attention in learning, learning materials and attitudes of lecturers are interesting, as well as the benefits and functions of subjects [10].

One of the driving forces in the success of learning is interest, especially high interest. That interest does not appear on its own, but many factors may influence interest. There are several factors that may affect student's learning interest, such as: a) motivation, b) learning [11], c) learning materials and attitudes of lecturers [12], d) family, e) social friend, [13,14], f) ideals, g) talent, h) hobbies, i) mass media, j) facilities.

Interests are divided into 2, namely: a) Primitive interest is also called biological interests, namely the interest that revolves around food and freedom of activity. b) Cultural interest is also called social interest, ie interest derived from higher-level deeds [15].

The interest of a person can be classified into 3 as follows: a) Low if someone does not want the object of interest, b) Medium if someone wants the object of interest but not in the immediate time, c) High if someone really wants the object of interest in the immediate time [16].

The ways that can be done to generate student interest are as follows: a) generating a need, b) connecting with past experience, c) providing opportunities for better results, d) explaining to students , the reasons for a subject area included in the curriculum and its usefulness for life, e) linking the subject matter with student experiences

outside the campus, f) showing enthusiasm in teaching the subject of study, g) encouraging students to view learning on campus as a task not necessarily suppressing, so students have the intensity to learn and explain the tasks as well as possible; h) create a climate and atmosphere in the classroom that is appropriate to the student's needs; i) reproduce in the shortest time possible; j) use the form of competition competition) between students, k) intensive use like praise, ha diah naturally.

According Sardiman there are several forms and ways to foster interest in learning activities on campus. Some forms and ways of interest include: 1) Giving a number, 2) Gifts, 3) Competitors, 4) Repetition, 5) Knowing outcomes, 6) Praise, 7) Punishment 8) Passion to learn, 9) Interests, 10) A recognized goal [17]. Furthermore, will be presented some definition of learning submitted by experts. Some of them are; "Learning is a change in a person that comes about as a result of experience" [18]. That is, learning is the process of changing a person's behavior that arises as a result of experience. While Sujana said that learning is a change as a result of the learning process that can be shown in various forms such as changing knowledge, skills and abilities, reactions, acceptance and other aspects that exist in the individual [19]. Meanwhile, according to Slameto that learning is an attempt by a person to gain a whole new change of behavior, as a result of his own experience in interaction with his environment [20]. Muhibbinsyah added that learning is the stage of change in the overall behavior of individuals which is settled relatively as a result of experience and interaction with the environment that involves cognitive processes. So also according to Soemanto definition that learning is a process where behavior is caused or changed through practice and experience [21].

Based on some opinions above that learning is a conscious and routine activities conducted on a person so that will experience individual changes both knowledge, skills, attitudes and behavior resulting from the process of exercise and experience of the individual itself in interacting with the environment.

Learning achievement is a sentence consisting of two words, namely "achievement" and "learning", has a different meaning. To understand more about the meaning of learning achievement, researchers describe the meaning of both words. Achievement is an activity that has been done, created either individually or in groups. Another suggestion is that achievement is a result or in a shorter definition that achievement is a "result that has been achieved". In line with the above understanding, achievement is a result that has been achieved from what is done / already cultivated [22]. From the above understanding that achievement is the result of an activity a person or group that has been done and created then joyful heart obtained by way of work.

Learning achievement is the result of a process in which there are a number of factors that affect each other, the high low student achievement depends on these factors [23]. There are various factors that affect the process and the results of student learning on campus, the outline can be divided into two parts, namely [24]; 1) internal factors (factors from within students), ie the state or condition of the physical and spiritual students, and 2) external factors (factors from outside the student self), consists of environmental factors and instrumental factors as follows. Indicators of student achievement in this study will be obtained from the assessment in terms of cognitive, affective and psychomotor aspects are summarized in the student test scores in the field of anatomy [25].

Anatomy courses as subjects that form the basis of all medical courses [26;27;28] and also have close links in other fields of health sciences such as; normal and pathological physiology to genomics, pharmacology, biochemical implications of laboratory medicine for the patient's therapies, the physics of gas in the lungs, cell-level transport of oxygen for the acutely ill patient, as well as the human experience of illness and normal growth and development –and much more [29] must be understood or mastered by all medical students without exception. Anatomy as one of the Basic Medical Sciences is needed in studying and developing clinical medicine. Anatomy studying the shape, structure and location of organs, its position alongside other basic sciences, in this case is Physiology (body function), Biochemistry (biological process) and Histology (micro anatomy) which is actually part of the science of the anatomy also.

Basically, Anatomy courses are taught in semesters 1 to 5 semesters, where the theory and laboratory practice are incorporated in the two semesters. Anatomy course is basically a course that should be conditional i.e. the student must first pass the course before entering the other medical subject [30]. In addition, anatomy courses are also the basis for all health-related courses such as nursing, radiography, physical therapy assistants, occupational therapy assistants and many others. To be successful in the health profession, then a student should have good anatomy knowledge [31]. It has been documented in previous studies that good achievement in anatomy courses has a strong relationship to the success of future health programs [32;33;34].

Anatomy education fosters essential abilities for someone who will connect with the patient, and many of these abilities are not found in the same degree in other disciplines in the medical curriculum. In studying the science of Anatomy, students are introduced with the use of technical language description which is the basis of all medical terminology. In addition, the professional information received by students in Anatomy study allows him to understand the functional and clinical lessons. Anatomy is a significant foundation for the pathology and the material studied in Anatomy can help in establishing an appropriate diagnosis and assist in acting safely in emergency situations in clinical practice.

In addition to the observations found by the researchers, Abdullah and Gannon also found that almost all students who take the course has a low achievement. Harris also found that one-third of the students he taught earned D or F scores, and furthermore 8% (9 out of 107 students) dropped out of anatomy courses. While Maurer found that 50% of the students who took anatomy courses scored C in the class; so they lack of quality in the health program, then many of them were drop out [35].

3. Research methods

This research was conducted at *Universitas Kristen Indonesia* in Education Medical Faculty Study Program and was done in November 2017 - March 2018. In this research, the writers used descriptive qualitative research, and occurrence that happened in the field, and the technique of analyzing the data was qualitative analysis by describing the situation and description of the data found [36]. The subjects in this research were the students who were in the first semester, third and fifth from 2015-2017 batches which were amounted to 110 students. The research instruments used in this study are documents, questionnaires and interviews.

4. Research Results and Discussion

From the total questionnaires (110 questionnaire sheet) filled out by the 110 students, then the student's answers are classified as follows:

Table 2: Classification Student's Answer Score Average (1st Semester)

clarification	frequency	(%)
always	386	24.75
often	677	43.42
sometimes	378	24.24
never	118	7.56
total	1559	100%

Look at the Figure below!

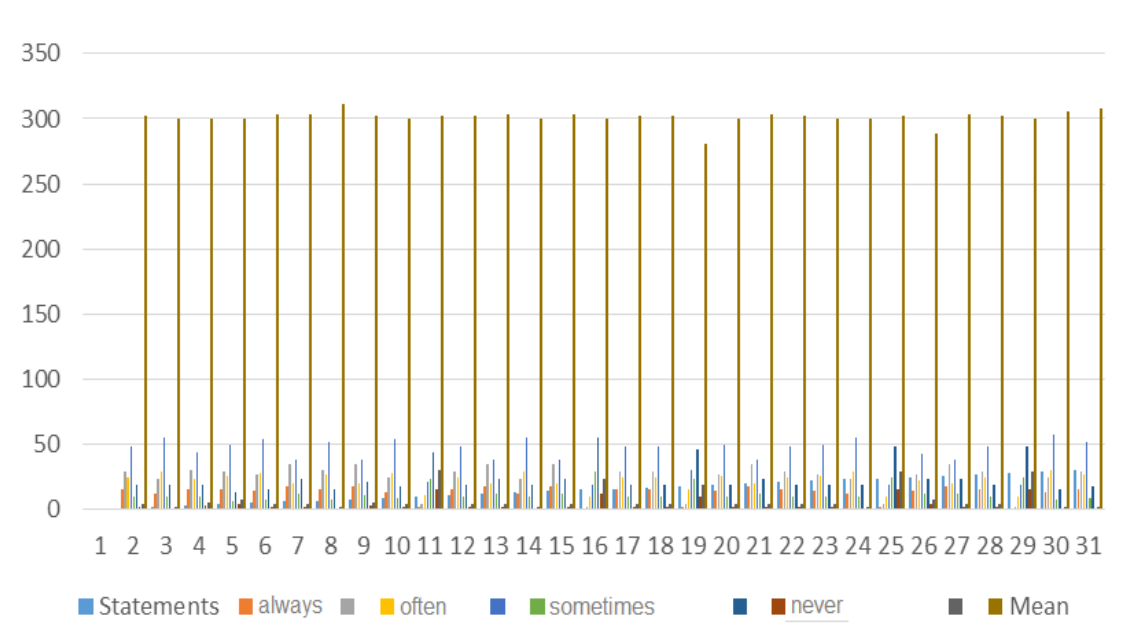


Figure 1: Classification of Student's Answer Score Average (1st Semester)

The diagram above shows that 78% of students in the 1st semester have a high interest in learning anatomy courses, but if they are concerned with the results they get at the end of the semester then 50% of the first semester students do not graduate in the course so they have to take remedial exams. It can be concluded that in fact, the failure of the students of first semester is not majorly caused by their low interest in studying anatomy subjects.

Table 3: Classification of Student's Answer Score Average (3rd Semester)

Clarification	frequency	(%)
Always	283	26.95
Often	459	43.71
sometimes	207	19.71
Never	101	9.61
Total	1050	100%

Look at the figure below!

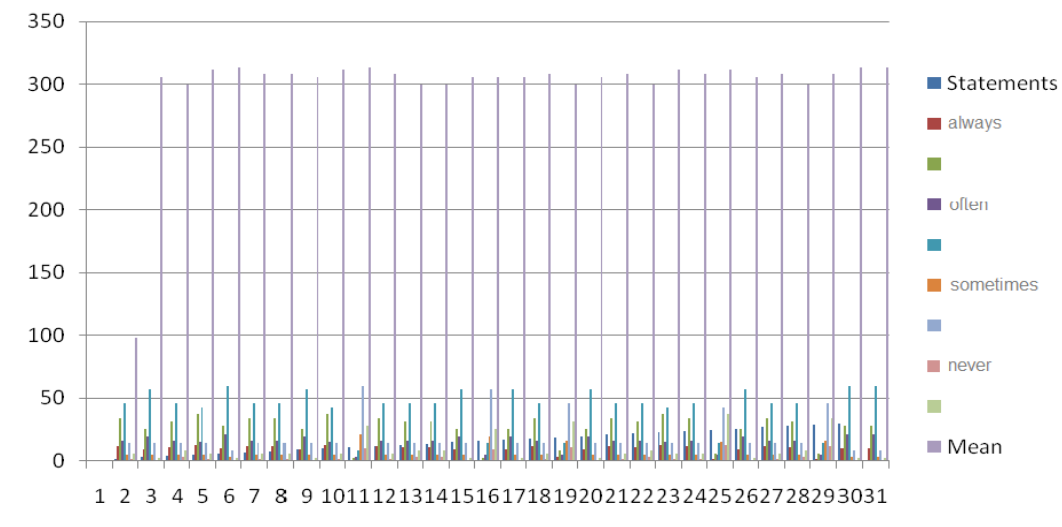


Figure 2: Classification of Student's Answer Score Average (3rd Semester)

The above diagram shows 71% of 3rd semester students have a high interest in learning anatomy courses. When compared with the results of the study they obtained from anatomy lecturers, it was found that 50% of students did not reach the prescribed graduation limit in the course. This resulted in all students who did not achieve the minimum score criteria should follow remedial. From this analysis it is found that the failure of the 3rd semester students in the Anatomy course was not due to their low interest in learning Anatomy, but caused by other factors which are not mentioned/analyzed in this study.

Table 4: Classification Student's Answer Score Average (5th Semester)

Clarification	Frequency	(%)
Always	229	32.62
Often	273	38.88
sometimes	120	17.09
Never	80	11.39
Total	702	100%

The diagram above shows the same thing with semesters 1 and 3, which is about 71% of 5th semester students have a high interest in learning Anatomy courses. When compared with the results of the study they obtained from anatomy lecturers, it was found that 50% of students did not reach the prescribed graduation limit in the course. This resulted in all students who did not achieve the minimum score criteria should follow remedial. From this analysis it was found that the failure of the 5th semester students in the Anatomy course was not due to their low interest in studying anatomy courses, but caused by other factors not mentioned/analyzed in this study.

Look at the figure below!

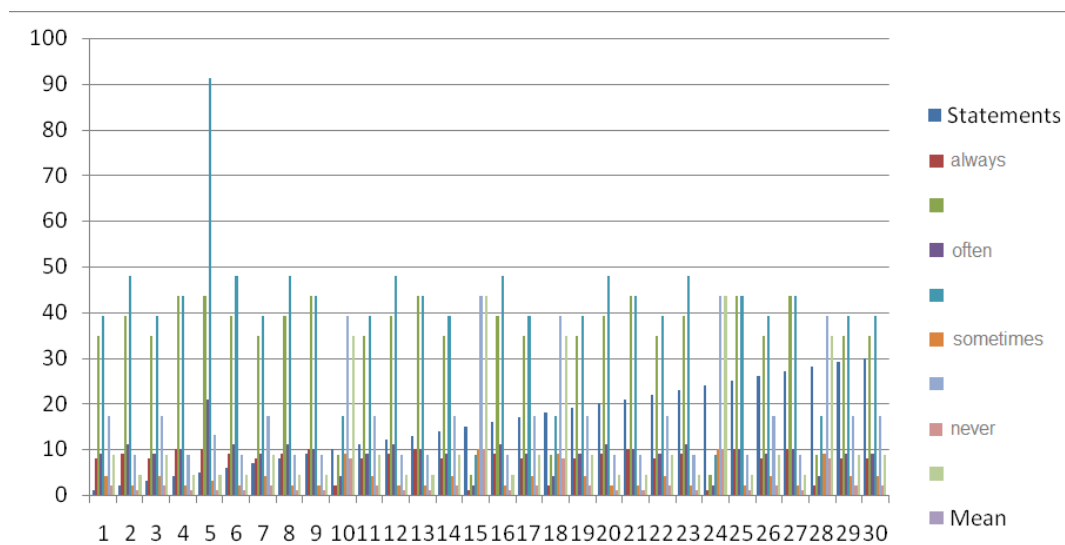


Figure 3: Classification Average Score Student's Answer Semester 5

Table 5: Classification Student's Answer Score Average (1st, 2nd and 3rd Semester)

Clarification	frequency	(%)
Always	893	27.06
Often	1408	42.66
sometimes	697	21.12
Never	302	9.15
Total	3300	100%

From the overall data taken in this study (Tabel 4) above shows that 70% of students with a total of 110 students who become respondents of this study, have a high interest in learning anatomy courses. When compared with the results of the study they obtained from anatomy lecturers, it was found that 50% of students did not reach the prescribed graduation limit in the course. It was found that both semesters 1, 2 and 3 have similar characteristics, namely: that their failure in anatomy courses is not due to their interest.

Look at the figure below!

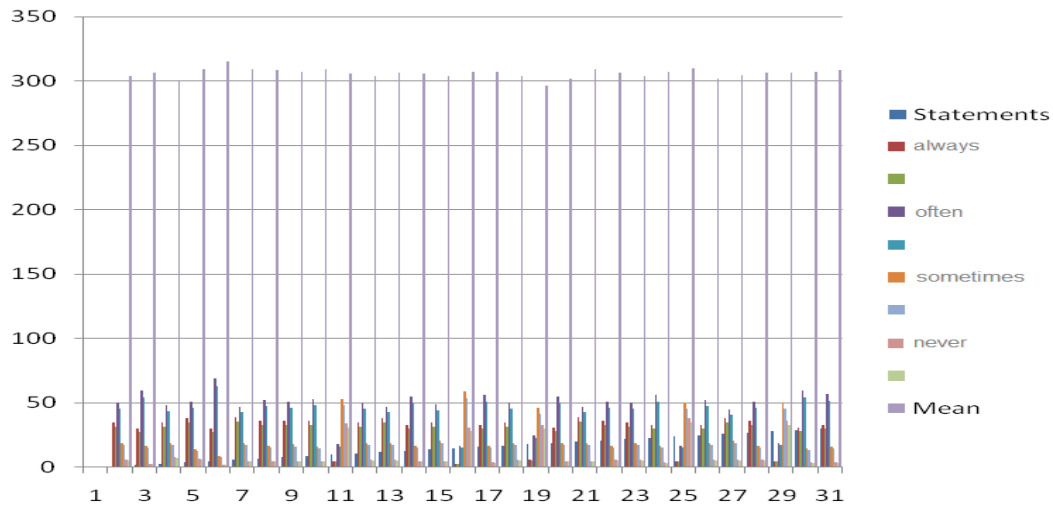


Figure 4: Classification Student's Answer Score Average (1st, 2nd and 3rd Semester)

If we look at the results of previous studies and theories used in the study of literature in this study, there are several factors that cause failure so that student achievement is low in a subject. The factors are as follows;

- a) Motivation: A person's interest will be higher if accompanied by motivation, whether internal or external. According to Tampubolon interest is a blend of desire and ability that can develop if there is motivation.
- b) Learning: Interests can be gained through learning, this is in accordance with the opinion that the interest will arise from something known and we can know something by learning, because it is increasingly learning the broader the field of interest.
- c) Learning Materials and Lecturers' Attitudes: Factors that can generate and stimulate interest are the factors of lesson material that will be taught to the students. As Slameto has pointed out that interest has an enormous influence on learning, because if the lesson learned does not match the student's interests, the student will not learn as well as possible, since there is no appeal to him. Lecturers are also one of the objects that can stimulate and arouse students' interest in learning. Lecturers who are smart, kind, friendly, disciplined, and well who are loved by students will be very influential in arousing student interest.
- d) Family: Parents are the closest person in the family, therefore the family is very influential in determining a student's interest in the lesson.
- e) Friends Intercourse: Through association someone will be influenced the direction of interest by friends, especially friends familiar
- f) Environment: Through the interaction of a person will be affected interest. This is underscored by the opinion expressed by Crow & Crow that interest can be gained from then as from their experience of the environment in which they live. The magnitude of environmental influences on growth and development depends on the circumstances of the child's own environment and physical and spiritual.
- g) Ideals: Every human being has an ideal in his life, including the students. Ideals also affect student interest in learning, even ideals can also be said as a manifestation of one's interest in the prospects of life in the future.
- h) Talent: Through talent a person will have an interest. This can be proved by example: when a person from childhood has a singing talent, he will indirectly have an interest in

singing. i) Hobbies: For everyone a hobby is one of the things that cause interest. j) Mass Media: What is displayed in mass media, whether print or electronic media, can attract and stimulate audiences to pay attention and imitate it. k) Facilities: Facilities and infrastructure, both at home, on campus and in the community, have positive and negative effects.

Thus it is found that student interest in anatomy courses in 1st, 2nd, and 3rd semesters at *Universitas Kristen Indonesia* is quite high. This is supported by data analysis which says that 70% of students have a high interest in learning. The factors that cause student failure in this course are from factors outside of interest as mentioned above.

5. Conclusions and Recommendations

Thus, it can be concluded that the description of interest is not one of the factors that lead to low student learning outcomes, but rather tend to be influenced by factors beyond the interests of students. Thus, to look for factors that are more influential on the low learning outcomes, then this research needs to proceed to the further research, which is looking for what factors are the most dominant for students so that the problem of low student learning outcomes can be overcome by providing solutions that most appropriate.

References

- [1]. Syah Muhibbin. Psikologi Pendidikan dengan Pendekatan Baru. Bandung: PT. Remaja Rosdakarya, 2001, Cet. Ke-6, h. 136.
- [2]. Sadirman. Interaksi dan Motivasi Belajar Mengajar. Jakarta: PT. Raja Grafindo Persada, 2003.
- [3]. Sudarmanto. Kinerja dan Pengembangan Kompetensi SDM. Yogyakarta: Pustaka Pelajar, 2010.
- [4]. Sukmadinata N. Syaodih. Metode Penelitian Pendidikan. Bandung; Remaja Rosda Karya, 2007.
- [5]. Sabri. M. Alisuf. Psikologi Pendidikan. Jakarta: Pedoman Ilmu Jaya, 1995, Cet. Ke-11, h. 84.
- [6]. Marimba. D. Ahmad. Pengantar Filsafat Pendidikan Islam. Bandung: PT. Alma.arif, 1980, Cet. Ke-4, h. 79.
- [7]. Syah M. Psikologi Pendidikan dengan pendekatan Baru. Bandung: PT. Remaja Rosdakarya, 2001, Cet. Ke-6, h. 136.
- [8]. Abd. R. Abror. Psikologi Pendidikan. Yogyakarta: PT. Tiara Wacana, 1993, Cet. Ke-4, h. 112.
- [9]. Hurlock. Psikologi Perkembangan. Jakarta: Erlangga, 1995, h. 144.
- [10]. Imran Ali. Belajar dan Pembelajaran. Jakarta: PT Dunia Pustaka Jaya, 1996, Cet, Ke-1, h. 88.
- [11]. Singgih D.G. dan Ny. SDG. Psikologi Perawatan. Jakarta: BPK Gunung Mulia, 1989, Cet. Ke-3, h 68.
- [12]. Slameto. Belajar dan Faktor-faktor yang Mempengaruhinya. Jakarta: Rineka Cipta, 2003, Cet. Ke-4, h. 2.
- [13]. Crow dan Crow. op. cit. Surabaya: Bina Ilmu, 1988, h. 352.
- [14]. Dalyono. M. Psikologi Pendidikan, Jakarta: Rineka Cipta, 1997, h. 130.
- [15]. Witherington, 1999, h. 26. Accessed from Internet on 6 May 2011.
- [16]. Nursalam, 2003. Accessed from Internet on May 2011.
- [17]. Sadirman. Interaksi dan Motivasi Belajar Mengajar. Jakarta: PT. Raja Grafindo Persada, 2003.

- [18]. Woolfolk & Nicolich. *Educational Psychology for Teacher*. New Jersey: Prentice Hall, Inc, 1984, h. 159.
- [19]. Sujana. *Dasar-dasar Proses Belajar Mengajar*. Bandung: Sinar Baru Algensindo, 2004, h. 28.
- [20]. Slameto, *Belajar dan Faktor-faktor yang Mempengaruhinya*. Jakarta: Rineka Cipta, 2003, Cet. Ke-4, h. 2.
- [21]. Soemanto Wasty. *Psikologi Pendidikan, Landasan Kerja Pemimpin Pendidikan*. Jakarta: Rineka Cipta, 1990, Cet. Ke-3, h. 98-99.
- [22]. Badudu J.S dan Sultan M. Zein. *Kamus Umum Bahasa Indonesia*. Jakarta: Pustaka Sinar Harapan, 1994, Cet. Ke 2, h. 1088.
- [23]. Naibaho, L. *Improving Students' Essay Writing Ability through Consultancy Prewriting Protocol at Christian University of Indonesia* in Robertson, P., Adamson, J., & Guzman, E. (2016). *TESOL Indonesia International Conference Edition*.
- [24]. Sabri. M. Alisuf. *Psikologi Pendidikan*. Jakarta: Pedoman Ilmu Jaya, 1995, Cet. Ke-11, h. 84.
- [25]. Gronlund, N. E. *Measurement and Evaluation in Teaching*. (New York: ACmillan Publishing Company, 1985, 5th ed, 514.
- [26]. Abdullahi, A., & Gannon, M. *Improving College Students' Success in Gateway Science Courses: Lessons Learned from an Anatomy and Physiology Workshop*. *American Journal of Health Sciences (AJHS)*, 3 (3), 159-168, 2012.
- [27]. Nguyen, A., & Tawde, M. *Engaging Allied-Health Students with Virtual Learning Environment Using Course Management System Tutorial Site*. *Journal of Microbiology & Biology Education*, 15(1), 2014. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4004745>.
- [28]. Sturges, D., & Maurer, T. *Allied Health Students' Perceptions of Class Difficulty: The Case Of Undergraduate Human Anatomy and Physiology Classes*. *The Internet Journal of Allied Health Sciences and Practice*, 11 (4), 2013. Retrieved from <http://ijahsp.nova.edu/articles/vol11num4/pdf/sturges.pdf>.
- [29]. Benner, P., Sutphen, M., Leonard, V., & Day, L. *Educating Nurses: A Call for Radical Transformation*. San Francisco: Jossey-Bass, 2009.
- [30]. Abdullahi, A., & Gannon, M. *Improving College Students' Success in Gateway Science Courses: Lessons Learned from an Anatomy and Physiology Workshop*. *American Journal of Health Sciences (AJHS)*, 3 (3), 159-168, 2012.
- [31]. Sturges, D., & Maurer, T. *Allied Health Students' Perceptions of Class Difficulty: The Case of Undergraduate Human Anatomy and Physiology Classes*. *The Internet Journal of Allied Health Sciences and Practice*, 11 (4). Retrieved from <http://ijahsp.nova.edu/articles/vol11num4/pdf/sturges.pdf>, 2012.
- [32]. Crane, J., & Cox, J. *More than just a Lack of Knowledge: A Discussion of the Potential Hidden-Impact of Poor Pre-Enrollment Science Background on Nursing Student Success in Bioscience Subjects*. *International Journal of Innovation in Science and Mathematics Education (formerly CAL-laborate International)*, 21(2), 26-36, 2013
- [33]. Harris, D. E., Hannum, L., & Gupta, S. *Contributing Factors to Student Success in Anatomy & Physiology: Lower outside Workload & Better Preparation*. *The American Biology Teacher*, 66(3),

168-175, 2004.

- [34]. Maurer, T., Allen, D., Gatch, D., Shankar, P., & Sturges, D. Students' academic Motivations in Allied Health Classes. *The Internet Journal of Allied Health Sciences and Practice*, 10(1), 1-12, 2012.
- [35]. Abdullahi, A., & Gannon, M. Improving college students' success in gateway science courses: Lessons learned from an anatomy and physiology workshop. *American Journal of Health Sciences (AJHS)*, 3(3), 159-168, 2012.
- [36]. Naibaho, L. Improving Students' Essay Writing Ability through Consultancy Prewriting Protocol at Christian University of Indonesia. *The Asian EFL Journal*, 3, 147, 2016. Retrieved from <https://www.asian-efl-journal.com/wp-content/uploads/AEJ-Special-Edition-December-2016-TESOL-Indonesia-Conference-Volume-3.pdf>.