Correlation between motivation and learning behavior with learning achievement: A case study on the Biology Education Department Faculty of Teacher Training and Education University of Nusa Cendana

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Abstract. The purpose of this study was to analyze the correlation between intrinsic, extrinsic motivation and learning behaviour with learning achievement of the students on the Biology Education Department. This research is a correlational research. Variables of this research consist of internal motivation (X₁), extrinsic motivation (X₂), learning behaviour (X₃) and learning achievement (X₄). The number of respondents as many as 54 students from 229 students taken by proportionate stratified random sampling technique of each semester (II, IV and VI). The data obtained were analyzed descriptively and inferentially by correlation analysis. The results showed that the correlation between X₁, X₂ and X₃ with X₄ significant at the level of significance 1% and the three independent variables jointly have a strong relationship with learning achievement of the students on the Biology Education Department.

1. Introduction
In the graduate competency standards as confirmed by BNSP [1], that students achieve academic targets as expected and students can develop their potential as members of the community. The development of student potential is strongly influenced by content standards, process standards, educator standards and education personnel, infrastructure standards, financing standards and assessment standards. All these standards should receive serious attention. If ignoring one of the standards, then the standard of graduate competence in accordance with national education objectives will not be perfect. In addition, students as part of the education system at universities are a key factor in achieving the passing standards. Student with high motivation to learn and has a good learning behavior tend to achieve competency standards.

The fact shows that as many as 186 students on the Biology Education Department have a Grade Point Average (GPA) below 3.0. Other facts also show that a minimum GPA of 3.0 is one of the conditions for applying for a job [2], including as a SM3T participant. This fact provides an illustration that learning achievement is one of the conditions required in applying for a job. This fact is also an indication that there is still something wrong in academic activities on the Biology Education Department. Something wrong need studied in order to find the right solution to improve learning achievement. Factors are suspected as the causes of low learning achievement, among other things learning behavior, learning motivation, the competence of lecturers, supporting facilities and
good infrastructure, student lodgings conditions, relationships between students and society, excessive use of social media, parental support and other factors.

The focus of this research is to analyze the connectivity between learning motivation, learning behavior and learning achievement. Learning motivation has been studied by a number of researchers, however, in this study selected intrinsic and extrinsic learning motivation to determine the contribution of each to learning behavior and learning achievement. Motivation and learning behavior are two very important factors in determining learning achievement. Learning motivation, both from within or outside the students determine student's learning behavior. Motivation is defined as the act or process of motivating, the condition of being motivating, a motivating force, stimulus, or influence, incentive, drive, something (such as a need or desire) that causes a person or student to act [3], and the expenditure of effort to accomplish results [4]. The five key ingredients impacting student motivation are student, teacher, content, method/process, and environment [5]. Intrinsic and extrinsic motivations play a role in strengthening attitudes on behavior [6]. Typical lectures bring varying degrees of both intrinsic and extrinsic motivation to learning arena [5]. Motivation as a liaison between attitudes and behavior in the model TPB (Theory of Reasonable Behavior) [7].

In relation to this research, learning motivation is an external and internal impetus to take learning action to achieve the good learning outcomes. Motivation is not only important because it becomes the cause of learning, but also facilitate learning and learning outcomes. Contribution of motivation to the learning achievement of student class VII SMPN 13 Semarang of 29,766% [8].

Every individual's learning behavior varies in achieving of learning outcome. Student's learning behavior forms a definite pattern and indirectly affects every decision-making. Learning behavior is a combination of responses to the external and internal stimuli. Each student is expected to develop his own learning behavior. There are four ways of forming behavior, is a positive affirmation, negative assertion, punishment and annihilation. Positive learning behavior affects the student learning outcomes. Motivation, learning behavior and self-efficacy have positive and significant impact on academic achievement. The habit of following lessons, reading habits of textbooks, visits libraries, readiness to take the exams, math scores and english scores simultaneously affect the level of understanding of accounting subjects [9].

Based on facts and research results previously, the researchers formulate the research problems as follows: (1) how the characteristics of biology education students of FKIP Undana? (2) whether intrinsic and extrinsic motivation and behavior are correlated positively with students' learning achievement on the Biology Education Department?.

Based on the problems, researcher argue that this research is very important to be done to reveal the factors that influence the learning achievement of biology education students. These findings can be used to improve the motivation and learning behavior so that the students' learning achievement of biology education is increasing in accordance with the predetermined standard of graduate competency. Identified significant correlation between learning motivation, learning behavior with learning achievement can help the study program to improvement program design of student academic achievement.

2. Method

This research was conducted in the Biology Education Department of FKIP Undana. The study period from July to December 2015. This research is a correlational research. Exogenous variables of this study consisted of internal motivation (X₁), extrinsic motivation (X₂), learning behaviour (X₃) and endogenous variables is learning achievement (X₄).

Population used in this research is all students on the Biology Education Department from FKIP Undana, academic year 2014/2015 from semester II, IV, VI and VIII. A total of 229 students. Therefore, learning behaviour and learning motivation are assumed to be different according to each semester, then the sample determination is done by proportional stratified random sampling technique. This sampling technique is the number of samples taken from each strata of a comparable amount,
corresponding to the proportion of its size [10]. The number of samples taken from the population of 54 students.

Data are grouped by semester. Further data were analyzed by using descriptive and inferential analysis. Descriptive analysis consists of the mean, median, mode, standard deviation and coefficient of diversity. Inferential analysis used is product moment correlation. The analysis was conducted with SPSS version 20 [11]. Interpretation of the strong or weak relationship between the two variables based on Sugiyono [10].

3. Result and discussion

3.1. Characteristics of respondents
The results showed that the response age ranged from 18 to 23 years. 25.48 of respondents are 20 years old. While based on sex, the number of male respondents was 33.3% and female was 69.7%.

3.2. Description of research data
The results of data analysis descriptively shown in table 1.

| Variables            | N  | Minimum | Maximum | Mean   | Std. Deviation | Variance | Category |
|----------------------|----|---------|---------|--------|----------------|----------|----------|
| Intrinsic motivation | 54 | 82.00   | 135.00  | 1.0520E2 | 11.87415       | 140.995  | Moderate |
| Extrinsic motivation | 54 | 85.00   | 126.00  | 1.0385E2 | 9.89455        | 97902    | Moderate |
| Learning behavior    | 54 | 126.00  | 226.00  | 1.7915E2 | 23.44919       | 549,864  | Rare     |
| Learning achievement | 54 | 2.35    | 3.66    | 3.1250  | .35148         | .124     | High     |

Based on the table 1 concluded that intrinsic and extrinsic learning motivation is in medium category, learning behaviour is in rare category and learning achievement is in high category.

3.3. Correlation between exogenous variables with endogenous variables
The result of product moment correlation analysis is shown in the form of correlation matrix as follows:

|     | X1     | X2     | X3     | X4     |
|-----|--------|--------|--------|--------|
| X1  | 1      | 0.904 ** | 0.635 ** | 0.763 ** |
| X2  | 0.904 ** | 1      | 0.532 ** | 0.664 ** |
| X3  | 0.635 ** | 0.532 ** | 1      | 0.860 ** |
| X4  | 0.763 ** | 0.664 ** | 0.860 ** | 1      |

**Figure 1.** The correlation matrix between variables.

Based on figure 1 concluded that the relationship between variables is at a very significant a level 1%. The strongest relationship occurs between variables X_1 and X_2 with a correlation coefficient of 0.904 and the weakest relationship occurs between variables X_2 and X_3 with a correlation coefficient of 0.532.

3.3.1. Correlation between intrinsic learning motivation and learning achievement. Based on the figure 1 concluded that there is a strong relationship between intrinsic learning motivation and learning achievement at the significance level of 1%. The strong correlation category if the correlation coefficient is between 0.60 – 0.799 [10]. Coefficient of determination of intrinsic learning motivation and learning achievement of $r^2 = 0.763 \times 0.763 = 0.582$. This means that the variance on learning achievement index of 58.2% can be explained through the variance on intrinsic
learning motivation or the learning achievement index of 58.2% is determined by intrinsic learning motivation.

Indicators of intrinsic motivation, such as interests, ideals and abilities directly affect learning behaviour of biology education student, consisting of the habit of attending lectures, reading books, visiting libraries, readiness to take the exams and search the internet. This learning behaviour arises because students have the desire to study biology, have the ideals of being a biology teacher and the ability to follow the lectures, tasks, lab work and the ability to take the exam.

Results of descriptive statistical analysis showed that the average score of intrinsic learning motivation of 105.20 or in middle category. Intrinsic learning motivation is the driving force from within the students in the form of desire, aspirations and the ability to become a biology teacher. Intrinsic learning motivation is related to psychological problems. Motivation as a force that exists within the individual, which causes the individual to act. Zhu, et al. explains that motivation is a psychological tendency and an internal drive that stimulates and regulates the actions of an organism [12]. The same is also conveyed by Hilda, et al. suggests that intrinsic motivation as a motivation derived from within a person, which is associated with satisfaction [13].

### 3.3.2 Correlation between extrinsic learning motivation and learning achievement

The result of data analysis showed that strong correlation between extrinsic learning motivation and learning achievement at 1% significance level. Determination coefficient of extrinsic learning motivation and learning achievement of \( r^2 = 0.664 \times 0.664 = 0.4408 \). This means that the variance that occurs in 44.08% achievement learning variable can be explained by the variance that occurs in extrinsic learning motivation variable or 44.08% learning achievement index is determined by extrinsic learning motivation. The results showed that extrinsic learning motivation with indicators of parental impulse, lecturer competence, facilities and infrastructure and social communication showed a strong relationship with student achievement.

Based on the results of this study, it is necessary to take corrective action to increase extrinsic motivation. Things that need to be corrected are related to indicators of extrinsic learning motivation, ie application of strategies, models, methods and learning techniques. Learning with PAIKEM needs to be improved. Utilization of IT in learning is not limited to the preparation of material in the form of power point but need to be created with animation to explain the concepts related to the process [14, 15]. Aspects of lecturers' personalities and emotional relationships between lecturers and students need to be considered and developed. Students will feel comfortable when there is a harmonious emotional bond between students and lecturers [16,17]. Learning by linking things that factual need to be developed by the lecturers. If learning is only centered on the material in modules, dictates or textbooks without relating to facts and field phenomena it will generate boredom for students.

Another limiting factor is the lack of facilities and laboratory infrastructure is still limited to be an inhibiting factor in learning. Students who are not directly involved in the lab because of the lack of tools and practicum materials cause students to be lazy to come in the laboratory. A cramped lecture and lab room, hygiene, and unstable electricity will lead to an uncomfortable atmosphere.

The results showed that the extrinsic learning motivation has a strong relationship with learning achievement. This means that to improve learning achievement there needs to be an outside impulse. Motivation is the provision of the driving force that creates the enthusiasm of one's work, so that they are willing to cooperate, effectively and integrated with every effort to achieve satisfaction [18,19].

### 3.3.3 Correlation between learning behaviour and learning achievement

The results of data analysis show a strong relationship between learning behaviour and learning achievement. The determination coefficient \( r^2 = 0.860 \times 0.860 = 0.739. \) This means that the variance that occurs in 73.9% variable learning achievement can be explained by the variance that occurs in the learning behaviour variable or learning achievement index of 73.9% is determined by learning behaviour. Results this study illustrates that the learning behaviour correlates with the achievement of
biology education students. The more often biology education students exhibit positive learning behaviour, the higher or better the learning achievement.

Student learning behaviour, such as the habit of following the lectures, reading books, visiting the library, readiness to take the exam, and search the internet can affect learning achievement [20-23]. Habits take the classes, such as come on time, listening intently to lecturer, ask when do not understand, read the course material before the lecture takes place, make a summary, discussing with friends the positive things that can increase learning achievement.

Other learning behaviour, such as visiting university libraries, departments and regional libraries [22], preparing for the exam schedule, searching for online courses can improve student achievement. Several factors have an effect on learning achievement such as: (1) class condition (class size) and infrastructures [24], Evaluation of learning [25,26]. Learning evaluations by a lecturer can motivate the students to pass the correction of learning behaviour. Is the learning behaviour that has been undertaken by the student enables the relevant to obtain high learning achievement or vice versa, (3) competence of lecturer [27,28]. In this study the quality of lecturers is not only seen from the professional competence but also can be seen from the pedagogic, social and personality competence.

The results of this study illustrate that learning achievement is determined by many factors. These factors interact with each other. Student's academic achieved is result of interaction of the various factors that influence it, both from internal and external factors.

4. Conclusion
Based on the results and discussion, it is concluded that there is a very strong correlation between intrinsic learning motivation and learning achievement, a very strong correlation between extrinsic learning motivation and learning achievement, and a very strong correlation between learning behaviour and student achievement in the department of biology education.

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