Self-regulated learning of first-year students at physics education department, FKIP – Universitas Syiah Kuala

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Abstract. This study examines the problem of how the criteria for self-regulated learning of first-year students at the Physics Education Department and aims to determine the self-regulated learning of freshman year students in the department. Quantitative research methods and descriptive approaches used in this study. A total of 61 students in 2017 became research subjects and obtained 83.60% of students believed in their abilities (criteria; very independent), 75.40% of students were satisfied with their effort (criteria; independent), 70.50% of students were able to make decisions and have learning initiatives (criteria; independent), and 62.30% of students are responsible for their studies (criteria; independent). That shows the Physics Education Department, FKIP Unsyiah class of 2018 has the self-regulated learning with independent to very independent criteria. The results of the study become a reference for the preparation and improvement of the curriculum

1. Introduction

The average age of students in the first year of study (semester I and II) is around 18 years. Based on Havigurths' theory of cognitive development, they enter the early adulthood period [1]. The changes experienced can affect psychological stability and require a high degree of independence in adapting to obtain a new balance (equilibrium). Independence (autonomy) is the ability to compete (competence), independently (autonomously), free from intervention from other parties, believe in self-efficacy, and have the initiative to solve self-problems. Strong independence to learn will generate high interest and motivation to learn in completing lectures [2]. Conversely, if the independence of learning is weak, a disequilibrium condition will be created [3], so that students tend to (a) rely on friends to complete assignments, (b) copy assignments, (c) cheat on exams, (d) only study lecture materials in the dictates, (e) rely on lecturers' lectures during face-to-face lectures, (f) low discipline, initiative and creativity, and (g) high levels of plagiarism occur [4].

First-year students of the college are in the adjustment stage from the learning system at the Senior High School to College Student. At the Senior High School, the relationship between students and teachers is good. The teacher provides intensive and conducive attention and guidance in pursuit so that it can motivate students to learn [5]. At the University, the attention and guidance of lecturers in the learning process are not as intensive as at the Senior High School. Students are required to play a more active role in completing their learning. Changes in guidance patterns become one of the obstacles in student self-development. The results of research on students of various faculties in Finland show that guidance affects student academic success [6]. In addition to the guidance factor, other factors influence the success of the study, namely: (a) student interaction with the environment, (b) interaction between fellow students, (c) student interaction with course content/material, and (d) interaction students with a library [7].
Physics material is related to experiment, investigation, and empirical (mathematical) proof. Initial ability in the mastery of mathematics affects student interest in learning and success in physics [8]. Students who have low initial abilities, especially mathematical abilities, need high learning independence to complete their studies on time and get satisfactory achievements in the Department of Physics Education, FKIP - Universitas Syiah Kuala (Unsyiah). There is an influence between student learning independence and success in completing college, especially for first-year students because they are in (a) early adulthood psychological phase, where the cognitive maturity level is still unstable (b) is in the process of transitioning the learning system from senior high school to college, and (c) early adaptation to the environment study and a place to live. It is interesting to study the state of independent learning of first-year students at the Department of Physics Education. How the independence of first-year students studying at the Physics Education Department, FKIP - Universitas Syiah Kuala is a problem in this study. The purpose of this study was to determine the self-regulated learning of students at the Department of Physics Education, FKIP Unsyiah at the beginning of their lecture. The research results are expected to: (a) contribute to the theory of cognitive development (early adulthood phase) in terms of learning independence aspects, (b) become a reference for lecturers who teach courses in the semester I and II of the Department of Physics Education, FKIP Unsyiah in providing services and guidance to students.

2. Method
This research was conducted at the Department of Physics Education FKIP - Unsyiah in February to August 2019. The population of this study was students of the Department of Physics Education, FKIP Unsyiah class of 2018 (at the time of research, the subject was taking the second-semester lectures). A total of 61 students were used as research subjects (population research). The data were obtained by a questionnaire containing 24 questions. The questions are arranged based on the indicators of self regulated learning as follows; (a) being responsible for the work, (b) taking own decisions and having initiative, being creative and innovative in solving problems (c) having confidence in completing tasks (d) being satisfied with the results achieved by their efforts (Suharman, 2012). Each question has answer options as follows: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). This type of research is descriptive; data were obtained under natural conditions, without any treatment or intervention by researchers [9]. This research uses a qualitative approach. Data were analyzed using the percentage equation [10]. The criteria of self-regulated learning are set as in Table 1.

| No. | Interval            | Criteria of Self-regulated Learning |
|-----|---------------------|-------------------------------------|
| 1   | 81.0% - 100.0%      | Very High                           |
| 2   | 61.0% - 80.0%       | High                               |
| 3   | 41.0% - 60.0%       | Moderate                            |
| 4   | 21.0% - 40.0%       | Low                                |
| 5   | 0.0% - 20.0%        | Very Low                           |

3. Result and discussion
Figure 1 shows the frequency of research subjects who choose the answer option Strongly agree (SA) and agree (A) on the questions that are following the four indicators of self-regulated learning used. Judging from the criteria of self-regulated learning, the self-regulated learning level of first-year students at the Department of Physics Education, FKIP-Unsyiah is included in very high criteria for indicators of believing in their abilities, and high for indicators of being responsible, taking initiative and making their own decisions, and being satisfied with their efforts. (Table 2). The description of each self-regulated learning indicator of students will be explained in the next discussion.
Figure 1. Number of Physics Education Department students, FKIP Unsyiah class of 2018 who chose SA and A answers respectively self-regulated learning indicator.

Table 2. The criteria of self-regulated learning for first-year students at the Department of Physics Education, FKIP Unsyiah class of 2018 are based on the percentage (%) of the frequency of respondents who chose SA and A from the questions on each indicator.

| Indicator                                      | Percentage | Self-regulated learning |
|------------------------------------------------|------------|-------------------------|
| Responsible for their studies                  | 62.3       | High                    |
| Make decisions and have learning initiatives   | 70.5       | High                    |
| Believed in their abilities                    | 83.6       | Very High               |
| Being satisfied with their effort              | 75.4       | High                    |

3.1 Responsibility for their studies
Responsibility is an individual behavior in responding to the duties of themself, society, and other social environments. In the first year of college, students of the Department of Physics Education, FKIP Unsyiah already have a high responsibility for learning. The transition period from the high school system to the college has been going well. Equilibrium conditions can be achieved in this transition phase. Achieving a condition of psychological equilibrium causes a high degree of student responsibility for learning. This attitude of responsibility is a very important character that can support student learning success, especially the ability to learn independently [12]. This is because there are quite a lot of student independent assignments, especially for practicum courses. The challenges, tasks, and bigger responsibilities will build independent learning [13, 14] so that the lecture process does not experience significant obstacles and can build a career in the future [15].

The responsibilities of FMIPA students at Universitas Lambung Mangkurat in the Basic Physics course have also been studied using the same method as this research. The results of these studies indicate that most students have responsibilities in lecture activities [16]. The results of other studies were conducted on students of the Yogyakarta State University Geography Department; 81% of students who became respondents to the study had independence on indicators of responsibility [17]; This result is higher than the first-year students in the Department of Physics Education, FKIP Unsyiah, whose learning responsibility is 62.30% (Table 2). This difference is caused by differences in research subjects and the treatment given. In a study of UNY Geography students, the research subjects were semester VI students, so that these students had adapted for longer to the learning environment in College and their social learning environment for longer and experienced more resistances in the lecture process [18]. The responsibility attached to the individual is not an innate character factor but can be formed as a result of stimulation and environmental processes [3].
effect of adaptation on the environment was also obtained from the results of research on the Department of Biology students, Lancang Kuning Riau University, which showed that student independence increased from semester I to semester VII [19]. The amount of responsibility of UNY Geography students is also due to the treatment given; The tutorial treatment increased the responsibility of 49 students (81%) of the total respondents [16]. Increased learning responsibility as an effect of treatment was also obtained from other research results, namely, group guidance treatment with self-management techniques. The results of this study indicate an increase in the learning responsibility of students in the Department of Guidance and Counseling, the University of Mulawarman from 31.7 to 71.8% [20].

3.2 Ability to take own decisions, creative and innovative initiatives

Based on data and analysis results, it was found that 70.50% of the students of the Department of Physics Education, FKIP Unsyiah class of 2018 had independent learning (Table 2). Guided by the established criteria (Table 1), the independence of students in making their own decisions, initiative, and innovation in completing academic tasks is in the high category. The independence of students in taking initiative and making decisions is a good initial condition in the lecture process. Completion of college assignments can be completed faster so that it has the potential to accelerate the completion of studies. Research related to the initiative and the ability to make independent decisions has also been carried out on students in their first year of study at Bangka Belitung University. The results showed that these students could take initiative and make decisions independently with good criteria [4]. Self-regulated learning based on the decision-making ability variable is caused by several factors, including:

3.2.1 College Assignments. In the first year of college, students have faced relatively more college assignments than those at the Senior High School. As a result, students experience their respective activities. Decisions in solving a problem must be taken independently. As a result, the ability to take initiative, be creative, and innovative appears in themself.

3.2.2 Living Environment. The resistances experienced by new students in the lecture process are problems that arise in the environment they live in. In general, students of the Department of Physics Education, FKIP Unsyiah come from the other city. During college, they lived in a rented house. Away from family, is a challenge in themself. New experiences and atmosphere experienced add to their insight. The new socio-ecosystem forges students’ ability to take initiative in independent decision making. The aspects experienced in the new life atmosphere can strengthen the independence of students in taking initiative and making decisions independently [3].

3.3 Be confident in completing assignments

Believing in their ability to complete academic assignments is an indicator of the highest self-regulated learning obtained by first-year students of the college at the 2018 Department of Physics Education, FKIP Unsyiah (Table 2). 51 students (83.60%) of the total students chose Strongly Agree (SA) and Agree (A) options on the questions in the indicator group to believe in their abilities. Based on the criteria in Table 1, the confidence of the Department of Physics Education students, FKIP Unsyiah class of 2018 in the first year of college is classified as very high. The results of other research on the independence of new students at the Department of Nursing, Unsrat Manado show that students are quite confident in their recovery process. 50% of new students at the Department of Nursing, Unsrat Menado have high self-confidence [21]. High self-confidence of students has a positive influence on their learning achievement [22]. Positive thinking about self-efficacy is very useful to stimulate new students to complete challenges in their lectures [3]. This challenge can be overcome if students have a high motivation to learn. Students who have high persistence in solving a problem will achieve maximum learning outcomes [28].

Confidence aspects usually arise in individuals after being able to pass a challenge well, one of which is achieving high learning outcomes. First-year students of the college have just finished the Higher Education entrance selection examination. Graduation is one of the dreams they have longed for and have long been attached to so that success has become a memorable experience. The
confidence of new students at College has been formed in the previous educational phases. This is confirmed by previous research reports. Teachers' treatments and students' environmental conditions forge aspects of their learning independence [5]. The self-confidence of the XI IPS grade students of SMAN 1 Porong is quite high; 68.3% of students are confident in completing their learning assignments [23]. The treatment of game techniques and group guidance of class students of SMAN 1 Sungkai Utara Lampung Utara increased students' self-confidence in learning by 48.75% from the initial conditions [24]. The obstacles that were experienced in the lecture process at College stimulated an increase in the existing potential. The lecture process at College accumulates student confidence to be higher. It is hoped that, when their lectures are finished, they will have very high self-confidence, so that they can resolve the resistances facing the world of work.

3.4 Satisfied with the results achieved
Satisfaction with the results achieved by their efforts is a picture of the pleasure that the individual experiences or shows after successfully doing or overcoming an obstacle. Students can receive optimal results achieved in completing their coursework. Based on the criteria of self-regulated learning (Table 1), new students of the Department of Physics Education, FKIP Unsyiah class of 2018 are included in the high category for indicators of being satisfied with the results of their efforts. Satisfaction with their efforts appears as a reflection of the high indicators of previous learning independence. Indicators of learning responsibility, ability to take self-decisions, creative and innovative initiatives, and confidence in completing previously acquired tasks are high - very high. This will lead to a sense of satisfaction with the results obtained by their efforts. Factors such as lecturer service and guidance, the ability of lecturers to master and present lecture material, learning facilities and infrastructure, and other factors can also affect the state of student satisfaction in the lecture process [25]. Student satisfaction with their efforts in completing their study assignments is a feeling of efficacy that can bring high hopes to achieve the next success to strengthen their self-regulated learning in the next semester [26]. Satisfaction with the results achieved with their ability will increase individual efforts to optimize their potential in responding to various challenges [27], increase interest in learning so that it will increase learning achievement [8]. This positive character can suppress negative habits, such as mocking, relying on friends in completing college assignments, plagiarism in writing articles, and other negative characters.

4. Conclusion
Based on the criteria of self-regulated learning, it was concluded that first-year students of class 2018 in the Department of Physics Education, FKIP Unsyiah had reached the independent criteria. Very independent for indicators of believing in their abilities, independent of indicators of satisfaction with the results achieved, independent for making decisions, and has the initiative to learn indicators, and be independent for indicators that are responsible for completing his studies. Therefore, they have a large enough opportunity to complete their studies at the Physics Education Department, FKIP Unsyiah with satisfactory and timely achievements. The results of this study can be used as a reference in preparing and refining the curriculum in the Department of Physics Education, FKIP - Unsyiah related to self-regulated learning.

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