

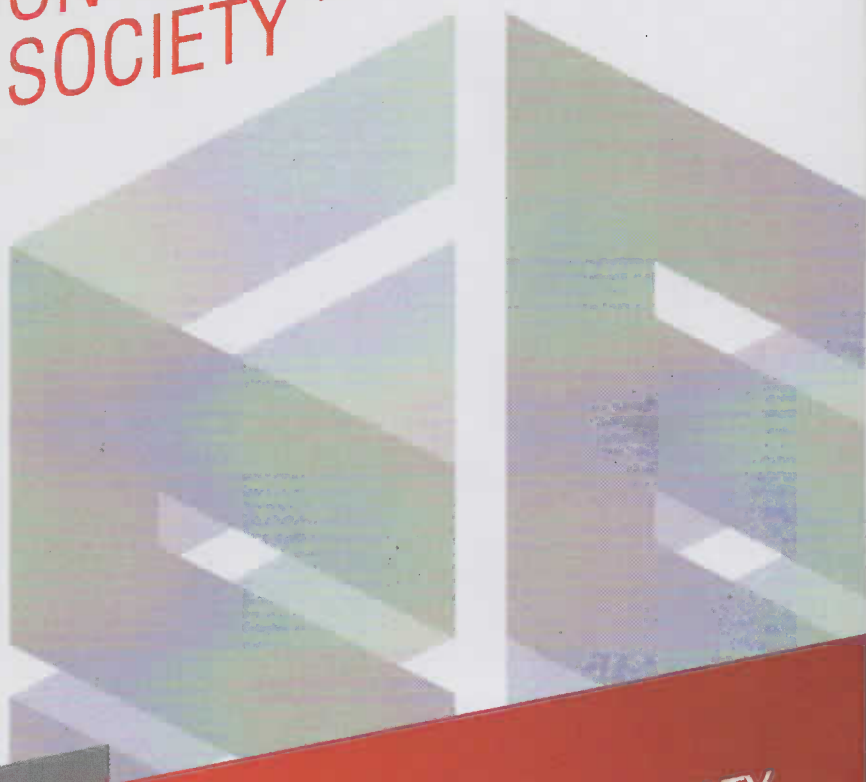
ISSN 2527 998X

ISE 2016

PROCEEDINGS

BOOK 2

INTERNATIONAL SEMINAR ON EDUCATION
"EDUCATION TRENDS FOR
FUTURE SOCIETY"



AUGUST 30, 2016

TEACHER TRAINING AND EDUCATION FACULTY
PONOROGO MUHAMMADIYAH UNIVERSITY
INDONESIA

ISSN . 2527-998X

PROCEEDINGS

INTERNATIONAL SEMINAR ON EDUCATION

Education Trends for Future Society

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**THE ANALYSIS OF STUDENTS’ AUTONOMY
BASED ON THE ACHIEVEMENT IN LEARNING MATHEMATICS
(A CASE STUDY)**

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Abstract

The college students could be categorized as adult learner. They have different learning culture with younger learner. The students should have the capability to manage their learning process. Students’ autonomy in learning has a positive correlation with students’ achievement. The more independent, the more stable their achievement. This article analyzes the level of college students’ autonomy based on students’ achievement in learning mathematics. The achievement that is referred in this paper was identified from the students’ test results. The students’ autonomy is ranked by using The Staged Self-Directed Learning (SSDL) Model (Grow, 1991). The results showed that students still have a low self-sufficiency in learning. Therefore, they need the guidance of the lecturer as a facilitator in the learning process.

Keywords: Autonomy, Self-Directed Learning, Students’ Achievement

INTRODUCTION

In the learning process, the older the person, the more he is required to take responsibility for their own learning process. At primary school level, teachers still have dominant role and responsibility for the students’ learning process. The higher the education level, the lower the teacher role in the learning process. In the college level, students have full responsibility for their own learning process. Students should be able to learn independently, both in collecting references, understanding the lecture material, and doing the tasks given.

The dynamic lecture climate requires students to always be able to adapt and use appropriate learning strategies. Students need to be active to access all the learning resources, either through the library, the internet, and other media. Only students that can optimize all the learning resources would get the advantages. The students’ autonomy in find and determine their need in learning will contribute in their achievement.

The case that occurred in class C 2013 at Department of Mathematics Universitas Negeri Malang, the students freely attended the class that is appropriate with their schedule. For example, if he could not attend his course in his own schedule, he could attend the same course for the different class. The problem is the lecture material in these two classes is not always the same. Sometimes the students will miss some material. This condition will not be an obstacle for students who have a high learning autonomy. Meanwhile, students who don’t have autonomy in learning will not be able to catch up the material they missed.

Grow (1991) proposed four type of students based on their autonomy in learning: (1) self-directed learner, (2) involved learner, (3) interested learner, and (4) dependent learner. Besides, there are also four type of teacher that is appropriate with each type of students. Based on the background above, this research will analyze the students’ autonomy based on achievement in learning mathematics.

LITERATURE REVIEW

Grow (1991) stated that adult learner learnt in different ways from younger students. Long (1989) also stated that adult learner learnt independently (*self-directed learning*). Knowles (1975) stated that *self directed learning* describes a process in which individuals take the initiative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and implementing learning strategies and evaluating learning outcomes. According to Long (1989), self-directed learning is a purposive mental process, usually accompanied and supported by behavioral activities involved

in the identification and searching out of information. The learner consciously accepts the responsibility to make decisions about goals and effort, and is, hence, one's own learning change agent.

Grow (1991) proposed four stages of students' self-directed learning as follow.

Table 1. The Staged Self-Directed Learning (SSDL) Model (Grow 1991)

Stage	Student	Teacher	Examples	Possible Teacher Pitfalls
1	<i>Dependent</i>	<i>'The Expert'</i>	<i>Coaching with immediate feedback. Drill. Informational lecture. Directive and pedagogical in nature.</i>	<i>Can be too controlling that stifles learner initiative and enhances dependency.</i>
2	<i>Interested</i>	<i>Motivator</i>	<i>Inspiring lecture plus guided discussion. Goal-setting and learning strategies.</i>	<i>May end up entertaining well but leaving learners with little learning skills and/or motivation.</i>
3	<i>Involved</i>	<i>Facilitator</i>	<i>Discussion facilitated by teacher who participates as equal. Collaborative small group work. Non directive and truly andragogical.</i>	<i>May end up accepting and valuing anything from anybody; students then show little respect.</i>
4	<i>Self-directed</i>	<i>Delegator</i>	<i>Internship, dissertation, individual work or self-directed study-group. Creativity. Mentorship.</i>	<i>May withdraw too much and thus lose touch and fail to monitor progress.</i>

Furthermore, Grow (1991) mapped the types of students to the types of teacher. According to Grow (1991) the type of students must be matched with the appropriate type of teacher. The following help us to find the suitability between the type of students and teacher.

Table 2. Matching Learner Style To The Teacher Style

Type of Student	Type of Teacher			
	'The Expert'	Motivator	Facilitator	Delegator
Self-Directed Learner	<i>Severe Mismatch *1</i>	<i>Mismatch</i>	Near Match	Match
Involved Learner	<i>Mismatch</i>	Near Match	Match	Near Match
Interested Learner	Near Match	Match	Near Match	<i>Mismatch</i>
Dependent Learner	Match	Near Match	<i>Mismatch</i>	<i>Severe Mismatch *2</i>

*1 = Students resent authoritarian teacher. *2 = Students resent freedom they are not ready for.

Along with the development of many new ideas, there are some confusion between self-directed learning and many related concepts, such as self-regulated learning and autonomous learning. All these terms offer varied emphases. In case self-regulated learning, some experts stated that "self-regulated learning refers to one's ability to understand and control one's learning environment. Self-regulation abilities include goal setting, self-monitoring, self-instruction, and self-reinforcement" (Harris & Graham, 1999; Schraw, Crippen, & Hartley, 2006; Shunk, 1996). Autonomy often is associated with independence of thought, individualized decision making, and critical intelligent (Hiemstra, 1994). This article focused on students' autonomy in learning mathematics.

METHOD

This research is a case study research. The research data was collected from the test result of 5 undergraduate students at Department of Mathematics Universitas Negeri Malang who was taking on advanced calculus. The data was analyzed qualitatively. The students answer was

compared with the correct answer using rubric that identified what competences students should have to be able to solve the problems.

The indicators of student's autonomy in this article are (1) had the initiative to learn the material that is not delivered by the lecturers, (2) be able to learn without the help of others, and (3) be able to determine what material needs to be learned. The achievement in this article was identified from the result of students' written test. Assuming the student prepare for the test well, the results of the tests are able to describe the learning outcomes of students in general.

DISCUSSION

One way to determine the convergence of a positive series is by the integral test. This test is based on similarity between the convergence behavior of $\sum_{k=1}^{\infty} f(k)$ and $\int_1^{\infty} f(x)dx$. Formally, the integral test is stated in this following theorem.

Theorem B. Integral Test.

Let f be a continuous, positive, non-increasing function on the interval $[1, \infty)$ and suppose that $a_k = f(k)$ for all positive integers k . Then the infinite series

$$\sum_{k=1}^{\infty} a_k$$

converges if and only if the improper integral

$$\int_1^{\infty} f(x)dx$$

converge.

(Varberg, Purcell, & Rigdon, 2010)

From the theorem above, test item is arranged as follow.

Use the Integral Test to determine the convergence or divergence of the following series.

$$\sum_{n=2}^{\infty} \frac{5}{2x \ln^2 x}$$

That test item contain three aspects that must be mastered by the students: (1) integrating by substitution technique, (2) calculate the value of improper integral, and (3) use the criteria of integral test to determine the convergence of a series.

The students' answers of this item test were categorized into five types. From each category, one sample answer is taken to be analyzed. This analysis aims to identify the students' position base on Staged Self-Directed Learning (SSDL) Model.

Case 1. The student did not answer the test item. He only rewrote the question statement. In this case the student did not know what he supposed to do. He did not recognize the form of improper integral. This material should have been obtained in second semester. From informal interview, it known that the lecturer could not explain about it because of time limitation. He

also could not calculate the value of improper integral, even use the integral test criteria to determine the convergence of a series. This student was the type of dependent student.

Case 2. The student answered the question but use the wrong procedure. In integrating rational function $f(x) = \frac{5}{2x \ln^2 x}$, the student integrated the numerator and denominator separately. The criteria used to determine the convergence of the series is incorrect. The student concluded that the series given is a divergent series based on invalid criteria. Actually, the students did not use the integral test. Integrating the function is not sufficient to be said using integral test. This student was the type of dependent student.

Case 3. The student accomplished manipulating the improper integral but couldn't find its value. The process stopped here. The student did not using integral test to determine the convergence of the given series. The student probably had studied by himself about the improper integral but not about the integral test. This student was the type of dependent student.

Case 4. The opposite of the student in case 3, the student in case 4 understand the conditions of integral test but could not solve the improper integral. The student also could not integrate $\int \frac{5}{2x \ln^2 x} dx$ by using ordinary substitution. He could not continue the process. At least, he has studied about integral test and the criteria for a series to be convergent. This student was the type of dependent student.

Case 5. The student could solve the improper integral, but there is an error in determining the limit of $\frac{1}{\ln n}$ as $n \rightarrow \infty$. The student determined that $\lim_{n \rightarrow \infty} \frac{1}{\ln n}$ is ∞ . It makes the next process incorrect. Because he found that the integral value is infinity, so he concluded that the given series is divergent. Basically, the student understood the concept

but he made some error in calculation. This student was the type of involved student.

From these five cases, could be known that some students' error. First, students made some error in using substitution technique to solve the integral problem. This error might be caused students forgot the material they learnt in second semester. They could not identify what material they need to solve the problem given. The second error is the error in determining the value of the improper integral. Because the lecture missed this material, the students might not understand the importance of this material. They did not have an initiative to learn this material by themselves. The last error students commonly made was students did not understand the use of integral test criteria for determining the convergence of a series. The integral test was the material they missed because they attend different class. Similar with the second error, in this case students did not have awareness to catch up the material.

The type of students requires the suitable type of teacher in order to encourage the learning process. The teacher can only move the students to the more directive learner if the teacher figure out where the students currently are and match them. The matching is important because there will be a problem if dependent learners are mismatched with non-directive teachers, vice versa, when self-directed learners are mismatched with highly directive teacher. According to SSDL Model by Grow (1991), the suitable type of teacher for dependent learner is "the expert". Teacher can give students some coaching and feedback immediately. The lecture must be informational lecture. The teacher, in this case the lecturer, should give some drill that could be in form of exercises, small group tasks, or quizzes. While the suitable type of teacher for interested learner is "motivator". The teacher could insert some motivation or inspiration in the lecture process. The lecture must be inspirational lecture. The teacher can organize the students in group and guide a discussion.

CONCLUSION

From the above discussion, students get low achievement when they learnt independently. This shows that the self-learning ability of students still are not enough to learn without the guidance

of a lecturer. Based on SSDL Model by Grow (1991), the students in this research still on stage dependent and interested learner. The types of teachers that suitable with the students' type are the expert and motivator respectively.

The suggestion can be proposed based on the results is teacher should give appropriate helps to the students based on their state of dependency. To move up the dependent to the interested learner, the teacher could starts with lifting their self-esteem by helping them realize they did it and that they can do it again. The teacher should balancing between encouraging, motivating, and demanding performance so the students don't see the teacher as a pushover. To move up the interested to the involved learner, teacher could starts with training students some basic skills in managing their own learning, such as goal setting. Next, teacher could help the students realize that they have different personality and learning style and encourage them to have willingness to explore and express it.

REFERENCES

- Grow, Gerald O. 1991. Teaching learners To Be Self-directed. *Adult Education Quarterly*, 41: 3, 125-149. (Online) diakses 8 Desember 2014.
- Harris, K. R., Graham, S., Mason, L. H., & Sadler, B. 2002. Developing self-regulated writers. *Theory into Practice*, 41, 110-115.
- Harris, K. & Graham, S. 1999. Programmatic Intervention Research: Illustrations from The Evolution of Self-regulated Strategy Development. *Learning Disability Quarterly*, 22, 251-262. (Online) diakses 8 Desember 2014.
- Hiemstra, R. (1994). Self-directed learning. In T. Husen & T. N. Postlethwaite (Eds.), *The International Encyclopedia of Education* (second edition), Oxford: Pergamon Press.
- Jeanne M VanBriesen, Professor Department of Civil and Environmental Engineering Carnegie Mellon University. Tanpa Tahun. *Self-directed Learning*. (Online) diakses 8 Desember 2014.
- Knowles, M. (1975) *Self-directed learning: A guide for learners and teachers*, New York: Cambridge Books.
- Long, H.B. (1989). *Self-directed learning: Emerging theory & practice*. USA: Oklahoma Research Center.
- Schraw, G., Crippen, K., & Hartley, K. 2006. Promoting Self-regulated in Science Education: Metacognition As Part of A Broader Perspective on Learning. *Research in Science Education*, 36, 111-139. (Online) diakses 8 Desember 2014.
- Shunk, D. 1996. Goal and self-evaluative influences during children's cognitive skill learning. *American Educational Research Journal*, 33, 359-382. (Online) diakses 8 Desember 2014.
- Umar Tirtarahardja dan La Sulo. 2005. *Pengantar Pendidikan*. Jakarta: PT Rineka Cipta.
- Varberg, Purcell, & Rigdon. 2010. *Calculus 9th Edition*. Penerbit Erlangga.
- William J. Rothwell, Kevin J. Sensenig. 1999. the source book of self-directed learning. Amherst: HRD Press, Inc. <http://education.jhu.edu/PD/newhorizons/lifelonglearning/higher-education/medical-schools/>