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## SELF-DIRECTED RESOURCES IN ONLINE LEARNING, MOTIVATION AND ACADEMIC ACHIEVEMENT AT OPEN UNIVERSITY

Murtiadi Awaluddin<sup>1</sup> Andi Sylvana<sup>2</sup> Subirman Musa<sup>3</sup> Nurliani Atjo<sup>4</sup>

### Abstract

Developing online learning resources is expected to empower students to take charge of their learning, which leads to a standpoint that highlights motivational factors and, ultimately, academic achievement given the flexibility and accessibility of learning at any time and from anywhere. This study examines the extent to which these learning resources affect academic achievement, both directly and indirectly, through learning motivation in highly autonomous learning environments. Data is gathered from 100 student respondents who attend online tutorials at UPBJJ-UT Makassar in the academic year of 2018.2 and use the virtual reading room. Data collection deals with the use of a questionnaire, previously measured to comply with the principles of validity and reliability, and is processed into two-stage multiple regression. Findings show that both self-directed learning resources and learning motivation fit into “very good” response category, while academic achievement (measured by final examination scores) indicates a “good” strength of agreement. In terms of the effect, self-directed learning resources is statistically positive and significant in learning motivation. The same statistic applies in the correlation between the learning resources and academic achievement. This implies that the dynamic influence of self-regulated learning resources facilitates learning motivation and, in turn, contributes to online academic success. This study promotes long-lasting and self-sustaining motivation that navigates students toward desirable academic achievement through the sustainable development of learning resources in self-regulatory online environments.

**Keywords:** self-directed learning resources, learning motivation and academic achievement

### Introduction

With the emerging rapid development of science and technology, the Internet becomes one of the means of fast data or information exchange. It becomes a platform where people search information related to entertainment, sports, politics, business, economy, education and other fields associated with daily lives. In its relation to education, the Internet has become a tool to obtain information or data stored in servers spread throughout the world which can be accessed quickly, easily and freely by internet visitors (recently known as netters). In other words, the Internet is a key place for education. The application of Information and Communication Technology (ICT) in learning is used by students to quickly obtain ideas and experiences across various communities. The increase in student competencies as a result of the use of ICT technology can develop a sense of initiative and willingness for self-directed learning in a way that students can self-regulate when and where to use the technology in a fast and optimal manner as well as considering its present and future implications.

At Universitas Terbuka, instructional materials are designed for self-directed learning. Pribadi (2004) argues that Open Distance Learning Resources (ODLR) is modular, self-contained and self-instruction. “Modular” refers to the characteristic of ODLR that consists of modules that, when studied comprehensively, enable students to gain course competencies. “Self-contained” refers to the nature of ODLR that contains complete learning materials. “Self-instruction” refers to the ability of ODLR to facilitate students to self-regulate their learning with minimal support by tutors.

From 1984 to 1997, Universitas Terbuka (Open University) provides print instructional materials or modules. Universitas Terbuka also offers face-to-face tutoring, tutoring via phone, fax or mails and radio tutoring as its learning support systems. Due to technological advancement and the supporting infrastructure, Universitas Terbuka has been striving to leverage technology tools for improving learning quality. Universitas Terbuka provides Core Learning Materials (Buku Materi Pokok or BMP) as its primary instructional materials supported by non print learning tools such as audio CD, audiographical CD, Video CD, interactive Video CD, computer-based materials and Online Enrichment Materials (Materi Pengayaan Berbasis Online or MPBO). Its learning support systems also develop TV tutoring, Internet tutoring or commonly known as online tutoring and webinar tutoring. Webinar tutoring is a face-to-face tutoring in a web-based seminar through the Internet that takes place synchronously (real time) (UT Team, 2016).

The program of Online Enrichment Materials is an online-supported learning media that benefits student to expand their language on a given material and assist them in enhancing learning quality. This program was first developed by Universitas Terbuka in 2004, which was then known as Web Supplement Material. The core concept of the development of Web Supplement Material was the delivery of up-to-date materials of BMP that had not been revised yet (Wahyuningsih, 2015). The concept developed, and Web Supplement

became Online Enrichment Materials, which not only presents updated materials, but also provide materials that can expand students' horizons of materials that are not highlighted in BMP.

To obtain desirable learning outcomes, students need necessary motivation to attend tutoring. Without motivation, students will not gain learning outcomes that they desire. Therefore, it can be concluded that motivation serves as the driving force within individual students to learn. The use of media in learning processes becomes one of the practical ways for encouraging students' motivation to learn. In this sense, media has become a necessity in learning activities. As a result, tutors need to integrate media-supported model into learning setting.

## **Literature review and hypothesis development**

### **Online-Based Learning Materials.**

Within the context of ICT development, the Internet evidently has a key role in information dissemination. Rapid technological development helps ease the burden of doing tasks in a more efficient way. The convenience of technology will result in positive impact when it is properly utilized. The Internet narrows down barriers to time, space and distance when it comes to information dissemination throughout the world. The Internet as one of the world's biggest media can also be used to enhance educational technologies in Indonesia, particular at Universitas Terbuka, through website-based learning. The more advanced Internet-based ICT enables students to search learning materials in an unprecedented way. With a rich array of information available on the Internet, students are able to dig into information, exchange and discuss ideas in various platforms, such as e-mail, blog, other online forums.

Online Enrichment Material serves as an online-based learning aiming at quality learning. The content of Online Enrichment Material consists of two parts in general, i.e., material explanation and exercises presented using additional multimedia presentations (audio, video and animation). Learning developers cooperate with experts of learning materials to design this online material. Since its inception, Online Enrichment Material is constantly developed to serve the benefits for students who need to use it as a beneficial learning material. Online Enrichment Material is part of Open Educational Resource (OER) initiatives designed by Universitas Terbuka, commonly known as SUAKA-UT that becomes the gateway of accessible learning materials for its students and the general public.

Not every course available at Universitas Terbuka has Online Enrichment Materials. The development of Online Enrichment Materials encompasses steps of need analysis, design, development, implementation and evaluation. On a micro level, the steps of this development begins with target setting, topic selection, material mapping, goal formulation, arrangement of evaluation tools, reference collection, material arrangement, editing, uploading and testing (Taris in Lestari et al., 2005). With various learning media readily applicable in learning activities, tutors need to choose media most appropriately fits the formulated learning goals before using the media. An appropriate selection of media will lead learning processes to effective and optimal outcomes.

### **Learning Motivation.**

Sardiman (2016) explains that motivation originates from the word "motive" which means the driving force that encourages an individual to do something. This force is within individual self, which causes him or her to perform or behave. Motive cannot be directly observable, but can be interpreted in his or her behavior. A certain pattern of behavior is driven by stimuli and impulses.

Hamalik (2011) defines motivation as the change of energy within self characterized by a sense of feeling and reaction to achieve a purpose. Uno (2010) claims that motivation stems from a basic force that encourages people to behave.

Based on these views of motivation, it can be concluded that motivation is a force that comes from within and encourages the change in behavior to reach a goal.

According to Uno (2010), learning constitutes a relatively permanent change in behavior and potentially takes place as a result of reinforced practice based on a goal-oriented foundation. Cronbach in Riyanto (2009) defines learning as a change in behavior as a result of experiences. According to Gredler in Haling (2007), "Learning is individual development that manifests in how an individual behaves as a result of experiences and exercise." The concept of motivation and learning is inseparable. Haling (2007) defines learning motivation as the key agent that determines learning outcomes. The extent of motivation is largely influenced by the extent to which learning materials and activities are meaningful.

Learning motivation encourages and directs students toward learning (Endang Sri Astuti, 2010). Winkel (2008) contends that learning motivation is the whole driving force in individual students to create learning activities and give direction to it in a way that learning outcomes desirable for students are achieved.

Sardiman (2016) observes learning motivation in a similar sense and states that learning motivation is the whole driving forces navigating students toward learning, which assures the perseverance of learning activities.

### **Learning Achievement.**

Learning achievement is largely defined as the extent to which students accomplish tasks and understand learning materials over a certain period of time. Learning achievement is generally expressed in numbers or alphabets that can be comparable with one criteria. Learning achievement represents students' ability in high-thinking accomplishment. Learning achievement calls for three aspects, i.e., cognitive, affective and psychomotor. It is the best possible outcome by a student in education and the outcome a student accomplishes from learning process.

Learning achievement represents maximum accomplishment based on child ability in a certain period to work on, study, understand and apply something. Learning achievement is associated with the rate of student engagement in teaching-learning process, which is represented by teachers' evaluation results. Tirtonegoro (2005) states that learning achievement is an assessment of learning efforts expressed in the symbol of numbers, alphabets and clauses that reflect the outcome each individual student has accomplished over a certain period. Siti Partini (2005) claims that "Learning achievement is the result achieved by an individual in learning activities." In line with the definition, Sunarya (2008) argues that "Learning achievement leads to behavioral change that affects cognitive, affective and psychomotor aspects, which represent the measurement of student success. Sukardi (2008) explains that "Achievement test is used to measure learning achievement as a tool to capture the actual ability to learn." Suryabrata (2011) states that "Grades are the last formulation a teacher gives regarding student progress and achievement in a certain period." With report cards, students can obtain the understanding of their learning achievement. Good report cards mean students' high achievement, and vice versa.

Winkel (2008) states that "Achievement is the proof of successful effort, and learning is a mental activity that takes place in an active interaction with environment that creates change in knowledge, understanding, skill and attitude."

### **Hypothesis Development.**

The model of this study refers to theoretical framework and prior studies to propose the following hypotheses: (1) the development of self-directed learning materials has a direct and significant effect on student motivation; (2) the development of self-directed learning materials has a direct and significant effect on student achievement; (3) student motivation has a direct and significant effect on student achievement; and (4) the development of self-directed learning materials has an indirect and significant effect on student motivation.

## **Methods**

### **Research Design.**

This study is design as an explanatory research that seeks to examine hypotheses by explaining a given phenomenon based on scientific observation processes. This study deals with three independent variables, i.e., the development of self-directed learning material and student motivation, while the dependent variable is student achievement.

### **Participants.**

Data collection uses a cross-sectional method. The population of the study includes the entire students enrolled in online tutoring, and the target population is those who participate in online tutoring at UPBJJ-UT of Makassar (Distance Learning Program Unit-Open University) 2019.2. Random sampling is used to collect the information of interest, and questionnaires are distributed online. Data is acquired from 50 respondents.

### **Instrument.**

Data collection uses questionnaires as the instrument of the study on a 5-point Likert scale, with

1 denoting "highly disagree" and 5 denoting "highly agree".

### **Data Analysis.**

Data analysis in this study can be interpreted as follows: (1) instrument test is intended to identify the validity and reliability of an instrument and test whether it is appropriate for data collection. Validity test is

used to measure whether a questionnaire is valid or not. Reliability test is a tool to measure whether a given questionnaire has indicators for the variable or construct of interest. Cronbach's alpha ( $\alpha$ ) is used to measure reliability. A construct is reliable at an alpha of  $> 0,60$  (Ghozali, 2011); (2) path analysis is used to analyze the relations between variables in order to identify direct or indirect effect of exogenous variable on endogenous variable. Path analysis in this study adopts Sobel test that examines the effect of independent variable (X) on dependent variable (Z) through intervening variable (Y) by multiplying the path X – Y (a) by the path Y – Z (b) or ab.

## Results

### Validity and Reliability.

The result of validity and reliability test is presented in Table 1.

**Table 1 Output of Validity and Reliability Test**

Variable	Indicator		Validity	Cronbach's Alpha	Reliable
	Min	max			
X	0.338	0.883	Valid	0.747	Reliable
Y	0.341	0.674	Valid	0.638	Reliable
Z	0.537	0.732	Valid	0.735	Reliable

Source: SPSS Output 2019

Data in Table 1 shows that the overall minimum values of validity stand above 0.2, at an alpha above 0.6, indicating an appropriate measurement of the instrument for the study.

### Frequency Distribution.

The results of frequency distribution of respondents' answers regarding the development of self- directed learning material, student motivation and student achievement are presented in Table 2.

**Table 2 Recapitulation of the Development of Self-Directed Learning Materials**

**Variable X2 \* Answer Crosstabulation**

Count		Answer		
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		Moderate	High	Extremely high	Total
Variable X	x11	16	34	0	50
	x12	23	27	0	50
	x13	40	10	0	50
	x14	0	43	7	50
	x15	12	38	0	50
	Total	91	152	7	250

The variable of the development of self-directed learning materials in Table 2 is well perceived by the respondents.

**Table 3 Recapitulation of Student Motivation**

**Y1 \* answer Crosstabulation**

Count

		Answer				Total
		Low	Moderate	High	Extremely High	
Y	y11	0	6	44	0	50
	y12	0	44	6	0	50
	y13	4	40	6	0	50
	y14	24	26	0	0	50
	y15	0	0	25	25	50
	Total		28	116	81	25

Source: SPSS Output 2019

The variable of student motivation in Table 3 is well perceived by the respondents.

**Table 4 Recapitulation of Student Achievement**

**Y2 \* Answer Crosstabulation**

Count

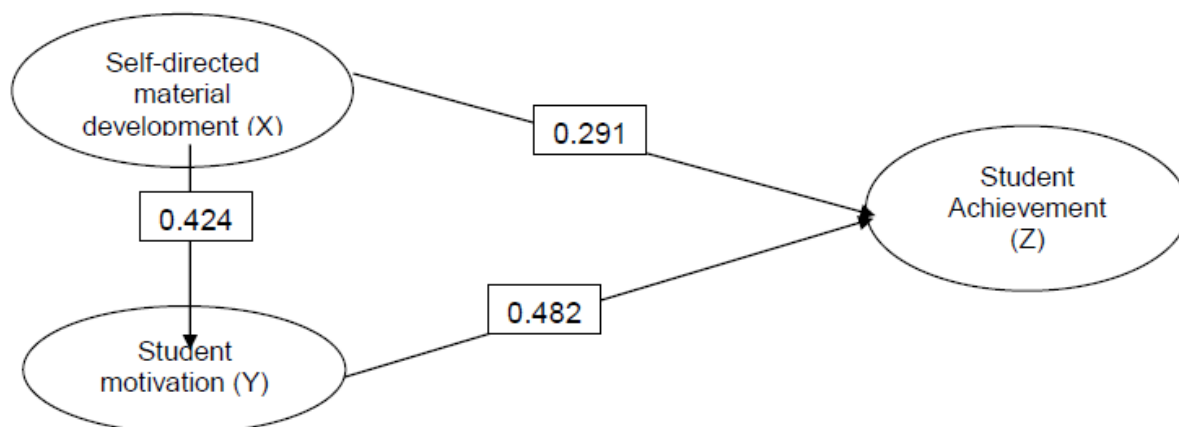
		Answer			Total
		Moderate	High	Extremely high	
Z	Z11	14	36	0	50
	Z12	0	44	6	50
	Z13	0	43	7	50
	Z14	0	44	6	50
	Z15	0	38	12	50
	Total		14	205	31

Source: SPSS Output 2019

The variable of student achievement in Table 4 is well perceived by the respondents.

**Path Analysis.**

Path analysis is an extension of regression analysis to predict causal relations between variables that have been determined previously based on a theory (Ghozali, 2011). In the figure below, path analysis examines the effect of the development of self-directed learning materials on student motivation and student achievement. The next step is to identify whether the effect of the development of self-directed learning on student achievement is mediated by student motivation.



**Figure 1. Path Analysis**

In Figure I, the variables develop direct and indirect effect.

**Direct Effect.**

To better understand the analysis of functional relations between variables, coefficients are calculated and arranged in Table 5.

**Table 5 Direct Effect**

Independent Variable	Dependent Variable	Symbol	Beta Coe	Sig	SE
Self-Directed Material Development (X)	Student Motivation (Y)	X--> Y	0.424	0.000	0.077
Self-Directed Material Development (X)	Student Achievement (Z)	X--> Z	0.291	0.000	0.064
Student Motivation (Y)		Y--> Z	0.482	0.000	0.103

Source: attached computation results

Data of direct effect between variables in Table 5 can be interpreted as follows:

1. Direct effect of self-directed material development on student motivation

Beta coefficient of the effect of self-directed material development (X) on student motivation (Y) is 0.424 with SE of 0.077 at a significance of 0.000. This coefficient shows that self-directed material development (X) has a positive effect on student motivation (Y), indicating that the increase in self-directed material development (X) leads to the increase in student motivation (Y) assuming that the other factors influencing the magnitude of self-directed material development (X) are constant. Beta coefficient of 0.424 at 0.000, which is less than 0,05, indicates a positive and significant effect of self-directed material development (X) on student motivation (Y). Hypothesis 1, that there is a direct and significant effect of self-directed material development on student motivation, is accepted.

According to Usman (2010), teachers are aware of what they teach to students. Teachers prepare a learning media and method to create positive impacts, i.e., nurturing students' confidence in teachers in a way that they will feel enjoyable and determined to learn. Teachers will motivate students to emulate their good virtues and discipline. What teachers do is more important than what they say when it comes to effectively educating students.

2. Direct effect of self-directed material development on student achievement

Beta coefficient of the effect of self-directed material development (X) on student achievement (Z) is 0.291 with SE of 0.064 at a significance of 0.000. This coefficient shows that self-directed material development (X) has a positive effect on student achievement (Y), indicating that the increase in self-directed material development (X) leads to the increase in student achievement (Z) assuming that the other factors influencing the magnitude of self-directed material development (X) are constant. Beta coefficient of 0.291 at 0.000, which is less than 0,05, indicates a positive and significant effect of self-directed material development (X) on student motivation (Z). Hypothesis 2, that there is a direct and significant effect of self-directed material development on student achievement, is accepted.

Sudjana and rivai (2011) propose the benefits of learning media in learning processes, that is, learning materials will be more meaningful in a way students can understand to a greater extend, thus allowing them to gain mastery skills and reach learning goals. When learning goals are achieved, learning outcomes enhance.

### 3. Direct effect of student motivation on student achievement

Beta coefficient of the effect of student motivation (Y) on student achievement (Z) is 0.482 with SE of 0.103 at a significance of 0.000. This coefficient shows that student motivation (Y) has a positive effect on student achievement (Y), indicating that the increase in student motivation (Y) leads to the increase in student achievement (Z) assuming that the other factors influencing the magnitude of student motivation (Y) are constant. Beta coefficient of 0.482 at 0.000, which is less than 0,05, indicates a positive and significant effect of student motivation (Y) on student motivation (Z). Hypothesis 3, that there is a direct and significant effect of student motivation on student achievement, is accepted.

Iskandar (2012) explains that effective motivation can encourage students to become active in learning and enhance learning achievement in class. Sugihartono et al. (2007) argue that high learning motivation reflects on perseverance and determination despite all odds ahead. Dimiyati and Mujiono (2009) classify internal aspects as one of the factors affecting learning achievement, i.e., learning behavior, motivation, concentration, confidence, intelligence, ambition and study habit.

### 4.6. Indirect Effect

Sobel's formula frames the indirect effect of self-directed material development on student achievement through student motivation.

$$Sab = \sqrt{b^2Sa^2 + a^2Sb^2 + Sa^2Sb^2}$$

$$Sab = \sqrt{(0.482)^2(0.077)^2 + (0.424)^2(0.103)^2 + (0.077)^2(0.103)^2}$$

$$Sab = \sqrt{0.001377 + 0.001907 + 0.000063}$$

$$Sab = \sqrt{0.003347}$$

$$Sab = 0.057853$$

To test the significance of the indirect effect, t value of coefficient is calculated with the following formula:

$$t \text{ value} = \frac{a \times b}{sab}$$

$$t = \frac{0.424 \times 0.482}{0.057853}$$

$$t = \frac{0.204368}{0.057853}$$

$$t \text{ calculated} = 3.533$$

$$t \text{ table} = 1.675$$

Ghozali (2011) explains that if t calculated (or t count) is greater than t table, it can be concluded that there is an effect of mediation.

### Conclusion

Based on the result and discussion, it can be concluded that:



- 1) The development of self-directed learning has a direct significant effect on student motivation. This indicates that the efforts of enhancing student motivation require the development of self-directed materials.
- 2) The development of self-directed materials has a significant effect on student achievement.  
  
This indicates that the efforts of enhancing student achievement require the development of self-directed materials.
- 3) Student motivation has a direct significant effect on student achievement. This indicates that the efforts of enhancing student achievement require the development of student motivation.
- 4) The development of self-directed learning has an indirect significant effect on student achievement through student motivation. This indicates that the development of self-directed materials can enhance student motivation, and its impact can enhance student achievement.

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## **Virtual University of Pakistan**

M.A Jinnah Campus, Defence Road, Off Raiwind Road,  
Lahore. Ph: +92 42 99203897 Fax: +92 42 99200604, 99202174