



The Relationship of Self-directed Learning Readiness (SDLR) with Creative Thinking Skills in Graduate Students

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Abstract. Creative thinking skills and self-directed learning are skills needed by graduate students in the era of the industrial revolution 4.0. For this reason, it is necessary to know the level of graduate students' self-directed learning readiness and creative thinking and the relationship between the two skills to prepare students who can adapt to the era of the industrial revolution 4.0 post-pandemic. This study aims to: 1) see the level of SDLR of students in the industrial revolution 4.0; 2) see the level of creative thinking of graduate students in the industrial revolution 4.0 and 3) see the relationship between SDLR and creative thinking skills in the industrial revolution 4.0. This research is survey research using a cross-sectional design. The research sample consisted of 103 graduate students from Universitas Negeri Yogyakarta (UNY). The sampling technique used stratified random sampling. Questionnaire sheets were used in data collection and analysed by descriptive and inferential statistics. The result showed that: 1) the level of self-directed learning readiness of graduate students is in the average category (98.1%); 2) the level of creative thinking skills of graduate students is categorised as quite creative (66.9%), and 3) there is a significant relationship between SDLR and creative thinking skills of graduate students in the era of the industrial revolution 4.0. The closeness of the correlation is included in the moderate category, and creative thinking skills will increase along with the increase in the student's SDLR.

Keywords: Self-Directed Learning Readiness · Creative Thinking · Graduate Students · Industrial Revolution 4.0 Skills

1 Introduction

The world is currently facing the industrial revolution 4.0, which is a revolution that connects every machine and activity through network sensors to the internet [1]. The development of the industrial revolution 4.0 has impacted the need for skill adjustments that students must possess. The skills needed in the industrial revolution 1.0 to 4.0 may not be relevant to the era of the industrial revolution 4.0. For this reason, students need to develop skills relevant to the industrial revolution 4.0 to adapt to the skills needs of this era.

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This condition is worse because of the Covid-19 pandemic around the world. Covid-19 changed the students learning ways and higher education teaching methods [2]. Covid-19 also has an impact on the student' learning results. Students have a different quality before and after the pandemic because they are not ready for the new learning process. So, higher education has to know the needs of their students to determine teaching ways.

Creative thinking is one of the skills needed in the era of the industrial revolution 4.0 [3]. These skills are necessary for the context of the industrial revolution 4.0 because of very dynamic changes. Students who have creative thinking skills can quickly bring up new perspectives and lead to unusual solutions in solving problems, are more skilled, and have independence [4, 5]. Creative thinking is the process of constructing ideas to gain something new in insight, approach, perspective, or way of understanding a problem [6]. Creative thinking is divided into five categories: very creative, creative, somewhat creative, less creative, and not creative [7]. The creative thinking classification level shows students' ability to solve their problems creatively.

Creative thinking will be easier to develop with self-directed learning strategies because students become study subjects [8]. Independent learning skills are the ability of students to take the initiative with or without the help of others, assess learning needs, formulate goals and strategies for achieving them, and evaluate learning outcomes independently [9]. Self-directed learning emphasises personal responsibility in setting goals and achieving individual learning plans [8]. Based on this description, creative thinking skills and independent knowledge are skills needed by students in the era of the industrial revolution 4.0. For this reason, it is necessary to know the level of students' creative thinking and independent learning skills and the relationship between the two skills to prepare students who can adapt to the era of the industrial revolution 4.0. This study aims to determine students' creative thinking and self-directed learning ability and see the relationship between the two skills.

2 Method

This research is survey research using a cross-sectional design. A research design seeks information from a sample at a time [10, 11]. The research population was Graduate students of Universitas Negeri Yogyakarta. The sample in this study amounted to 103 students. The determination of the sample is based on the decision of the sample for survey research, which is a minimum of 100 respondents [12, 13].

Determination of the sample using a stratified random sampling technique through researchers selecting groups with unique characteristics that are homogeneous as a sample, then individuals in the group are given the same opportunity to be chosen equally [12–15]. The instrument for collecting data uses a web-based questionnaire sheet [14].

Students are asked to assess the 54 items according to the most relevant conditions—36 items for SDLR and 18 for creative thinking. The scale provided is 1 (Strongly Disagree) to 4 (Strongly Agree). Then, the data collected were analysed using descriptive and inferential analysis. Descriptive analysis was used to see the mean and describe the variance of scores. In addition, descriptive analysis is also used to know the level of SDLR and creative thinking skills of graduate students in the industrial revolution 4.0.

The inferential analysis is used to see the relationship between SDLR with creative thinking skills.

3 Findings and Discussion

Respondents amounted to 103 graduate students of UNY taken randomly. Respondents consisted of 44 males (42,7%) and 59 females (57,3%). Respondents are first and second-year postgraduate students who are still actively studying and were facing learning in the Covid-19 pandemic.

3.1 The Level of Self-directed Learning Readiness of Graduate Students

Based on the data obtained, the self-directed learning readiness of graduate students is 98,1% in the average category. Students in the intermediate class can study independently successfully. Still, they do not like taking full responsibility for determining needs, planning, implementing, and evaluating their learning [16]. These reports of graduate students' self-learning readiness can be seen in Table 1. This finding has a different result from research by Tekkol that reveals the SDLR level of university students in Ankara, Turkey, was generally high [17]. This result can be evaluated for universities in Indonesia to improve students' SDLR.

3.2 The Level of Creative Thinking of Graduate Students

Based on the data obtained (as mentioned in Table 2), the creative thinking of graduate students is in the quite creative category. Students in this category can show flexibility

Table 1. Self-directed learning readiness (SDLR) scale categorization

Score range	Category	Frequency (n)	Percentage (%)
108 – 144	Above-average	2	1,9
73 – 107	Average	101	98,1
36 – 72	Below-average	0	0

Table 2. Creative thinking scale categorization

Score range	Category	Frequency (n)	Percentage (%)
62 – 72	Very creative	0	0
51 – 61	Creative	34	33,1
41 – 50	Quite creative	69	66,9
30 – 40	Almost not creative	0	0
18 – 29	Not creative	0	0

Correlations

			SDLR	Creative Thinking
Spearman's rho	SDLR	Correlation Coefficient	1,000	,460**
		Sig. (2-tailed)	.	,000
		N	103	103
	Creative Thinking	Correlation Coefficient	,460**	1,000
		Sig. (2-tailed)	,000	.
		N	103	103

** . Correlation is significant at the 0.01 level (2-tailed).

Fig. 1. Spearman's Correlations

and novelty in solving and posing problems without fluency. They say that constructing a problem is more complex than unravelling because they are unfamiliar with the task and find it difficult to estimate numbers, formulas, or solutions. They have understood that different methods or strategies in solving problems can be represented by other means with different representations, but these efforts are not various [7].

3.3 The Relationship Between SDLR with Creative Thinking Skills in the Industrial Revolution 4.0.

Based on the data obtained from Spearman's correlation test, it was found that the sig. (2 tailed) is 0.000 smaller than 0.05, it means that there is a significant relationship between SDLR and creative thinking skills. This finding is relevant to the research conducted by Torrance that there is a significant relationship between SDLR and the originality of creative thinking [18]. The originality of creative thinking is rare answers, which appear only occasionally in a given population, are considered genuine [19]. So, we know that students with readiness for independent learning skills also have creative thinking skills. Students with self-study readiness tend to be able to come up with ideas that other people rarely find in the population (Fig. 1).

The correlation coefficient between SDLR and creative thinking skills is 0.460. The level of relationship (closeness) between SDLR and creative thinking skills is a significant moderate positive correlation. This finding is relevant to the research conducted by Cox that states a significant moderate positive correlation was found between creativity and self-directed learning readiness, and this relationship, if used together, will help the achievement of the graduate students [20]. A positive correlation indicates that the relationship between the two variables above is unidirectional. This means that if the SDLR increases, the creative thinking skills will also increase. Based on this study, graduate students who want to develop their creative thinking skills must develop self-directed learning and vice versa to face the industrial revolution 4.0.

4 Conclusion

The conclusions that can be drawn from the research are: 1) the level of self-directed learning readiness of graduate students is in the average category; 2) the level of creative thinking skills of postgraduate students are categorised as quite creative, and 3) there

is a significant relationship between SDLR and creative thinking skills of postgraduate students in the era of the industrial revolution 4.0. The closeness of the correlation is included in the moderate positive correlation, and creative thinking skills will increase along with the increase in the student's SDLR.

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