KnE Social Sciences
SIRES
Science and Technology Research Symposium (SIRES)
Volume 2022

Research Article

# Correlation Between Self-learning Readiness and Self-study Activities in Higher Education

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**Abstract.**
The dynamics of learning in higher education today, right down to the stage of producing graduates that oriented are towards sustainable learning needs (long life learning), and meeting the needs of a specific market need. This has resulted in universities implementing self-learning, which is characterized by the interaction of lecturers and students in organizing learning, giving a greater share to students. The readiness of universities in carrying self-learning, in this study emphasizes the interactions found of lecturers and students in accommodating forms of self-learning activities consisting of Apprenticeship, Urban Development, Student exchange/ interscience, Research Collaboration, Entrepreuneurial, Independent Project, Community Engagement, and Learning Society. The result on lecturer respondents using a linear regression approach, shows that the factors of Apprenticeship and Research Collaboration activities, have little effect on the readiness of universities in carrying out Self-Learning activities, which shows that lecturers have to provide the widest possible opportunity for students to engage directly, in Apprenticeship and research activities.

**Keywords:** Self Learning, Self Study, Higher Education

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**Published** 8 November 2022

Publishing services provided by Knowledge E



Selection and Peer-review under the responsibility of the SIRES Conference Committee.



## 1. Introduction

Education in the 21st century changed from the concept of Read, Write, and Arithmetic (3r') to an activity that makes everyone experience a learning process that results in skills characterized by critical thinking (CT), communication (CI), creativity (CY) and coordination/ collaboration (CN) known as 4C [1, 2]. This capability was driven by the development in manufacturing resulting in products and services, called Industrial Revolution version 4.0 characterized by the mastery of intelligent systems based on information technology to make decisions on producing goods and services, supported by the Internet of Thinks, Big Data, Augmented Reality, Cyber Security, Artificial Intelligence, Robotic Automation, Simulation, Additive Manufacturing, Integrated Systems, and Cloud Computing [3, 4].

The phenomenon faced by education to answer the challenges of the Industrial Revolution 4.0, impacted on how to transfer knowledge, attitudes and skills, originally from Teaching Centre Learning (TCL) which made lecturer actors as a center of transfer of knowledge, to Student Centre Learning (SCL) which made students as a science center and needed lecturers who have expertise in a field of science [5].

SCL methods should be enriched with the concept of 4C, where SCL must be able to accommodate that students have the ability to obtain and find ways to solve a problem that is present in the real world or referred to as critical thinking (CT), the ability to present an idea, knowledge and information about the application of a science in the real world called communication (CI), the ability to find an innovation through the application of a new knowledge to solve a problem in the real world or called creative thinking (CY) , and finally students have the ability to perform new scientific dissemination with other disciplines, in order to make a group decision to achieve a common goal, which referred to as coordination/ collaboration (CN) [2, 5].

The 4C concept is in line with the United Nation Educational Scientific and Cultural Organization (UNESCO) which deliver educational vision that presents four pillars of human characteristics resulting from the learning process by 2030, consisting of: Leaning to Know (LTK), Learning To Do (LTD), Learning to Be (LTB), Learning to Live Together (LLT), and Learning How to Learn (LHL) [1]. LTK is characterized by learning is a process of transfer of knowledge that changes behavior and is able to learn throughout life [2], LTD is characterized by the excavation of potential through science possessed to produce, a work that benefits itself and the surrounding environment [5], LTB characterized by the application of real-world work, as well as being an example for its environment [5], LLT characterized by the ability to collaborate in a group to apply and develop knowledge by collaborating with disciplines [2], and LHL characterized by the ability to bring new knowledge that is beneficial to future advances of mankind [5, 6].

The relationship between 21$^{st}$ century learning principles and the pillars of UNESCO education, is described as harmonious in efforts to create new people in the 21$^{st}$century through education that accommodated the Industrial Revolution 4.0. In the 4C component the first thing that wants to be produced from education is a human being who has a critical way of thinking or CT that is accommodated LTK and LHL, where there is a combination of the ability to find and find solutions in the real world as a way to develop lifelong learning. CY is accommodated by LTD which characterized the application of science owned to produce a work that can be used to solve problems that arise in the real world. CI is accommodated by LTB characterized by the ability to make a behavioral pronization that is characteristic in improving the environment, which is able

to be applied and widely accepted by the community. While CN is accommodated by LTT characterized by the ability to cooperate in groups, in order to make decisions and solve problems, through cross-scientific dissemination.

The form of educational activities that have been developed by some of the world's leading universities and some experts to anticipate the pillars of education in The Industrial Revolution 4.0 and UNESCO, among others is Apprenticeship which is a form of learning that gives students the opportunity to apply science by accepting an industry's offer to complete a job that exposes certain knowledge and skills, within the time specified by the company [7, 8]. The second form is Urban Development or building a village where students are encouraged to apply science, to solve village development problems, through knowledge and skills [9, 10]. The third form is Student Exchange / Interscience which gives students the opportunity to study across the field of science, or adapt to various disciplines and cultures either in the same way [11, 12].

Research Collaboration based on a study is the fourth form developed to provide self-learning stimulants, which give students the freedom to conduct research at a research institute to implement their knowledge and skills [13, 14]. The fifth form is Entrepreunerial Learning model, which gives students the opportunity to create a business project, by applying the knowledge and skills it has and its development [15, 16]. The sixth form is Independent Learning/ Problem Based Learning or independent study project, which gives students the freedom to conduct learning independently to discover, search, and solve problems in the real world [17, 18]. The seventh form is Community Engagement or so-called Social Work, in which students are given the freedom to discover, search, and solve humanitarian problems that arise in society, using their knowledge and skills [19, 20]. The last form is the Learning Society or dissemination of science to the community, where students are given a platform to trasfer science to the community from various layers[2, 21].

Concernig with the existence of the relationship between eight forms of learning activities, the pillars of 21st century education and the pillars of UNESCO education in 2003, it can be drawn a comprehensive relationship to produce humans who have the ability to learn independently. Self-learning skills should be centered on the concept of SCL, with the support of the pillars of Industrial Revolution 4.0 and UNESCO Vision, shown in Table 1.

Based on these relationships, the main demand of self-study is the readiness of lecturers to give a larger share to students. The phenomenon found in universities in general in Indonesia is that lecturers are still the main center of knowledge, while students are listeners who are required to understand what lecturers are conveying.

Table 1: Relation Between Learning Activity and Education Pillar.

| No | 21 Century Learning Activity | Education Pilar | |
|---|---|---|---|
| | | Industrial Revolution 4.0 | UNESCO |
| 1. | Apprenticeship (A) | CT, CY, CI, CN | LTK, LTD, LTB, LTT |
| 2. | Urban Development (UD) | CT, CY, CI, CN | LTK, LTD, LTB, LTT |
| 3. | Student Exchange/ Interscience (I) | CT, CI, CN | LTK, LTT |
| 4. | Research Collaboration (RC) | CT, CY, CI, CN | LTK, LTD, LTB, LTT, LHT |
| 5. | Entrepreunerial (E) | CT, CY, CI, CN | LTK, LTD, LTB, LTT |
| 6. | Independent (IN) | CT, CY, CI, CN | LTK, LTD, LTB, LTT, LHT |
| 7. | Community Engagement (CE) | CT, CY, CI, CN | LTK, LTD, LTB, LTT |
| 8. | Learnig Society (LS) | CT, CY, CI, CN | LTK, LTD, LTB, LTT, LHT |

While the new paradigm demands that students must seek knowledge and knowledge independently under the guidance of lecturers, in order to discover, find and solve real-world problems, or meet the needs of students' lives in the future. Regarding the phenomenon, the research will focus on evaluating the readiness of a college affected by self-learning activities.

The self-learning activities in this study consist of 8 aspects namely Apprenticeship (A), Urban Development (UD), Interscience (I), Research Collaboration (RC), Entrepreunerial (E), Independent (I), Community Engagement (CE), and Learning Society (LS). The readiness factor of the universities in this study is influenced by the factor of understanding lecturers towards concepts, excellence, infrastructure, curriculum, assessment system, scientific consortium, institutional collaboration, lecturer readiness, student readiness, and educational personnel to carry out independent learning activities in universities. Readiness will be assessed by determining learning activities that have a strong correlation to the readiness of universities to carry out self-learning. These results will be used as material to evaluate the curriculum, and improve the knowledge and skills of lecturers in managing learning independently. While the correlation results are not strong on the readiness of universities in carrying out learning activities independently, as a reference to overhauling the curriculum, in order to improve the ability of lecturers in carrying out self-learning activities [6].

## 2. METHOD

The research took object on one of the universities that has A accreditation status, namely Universitas Islam Bandung (UNISBA), which has eleven faculties, and thirty-two courses, among them has A status. UNISBA has 34 partner universities spread from the islands of Sumatra, Java, Kalimantan, and Sulawesi, and has international relations with more than 20 universities in Asia, Europe, the Americas, and Australia.

The respondents to the study were lecturers, who ammounted 492 people, with the dissemination of questionnaires through google form. The research was conducted through the following stages:

Step 1. Questionaire Arrangement.

The preparation of the questionnaire was conducted by taking into account the fixed variable readiness of UNISBA in carrying out self-learning activities (Y) consisting of [5, 6]:

1. The lecturer's understanding of the concept of self-learning activities.
2. The lecturer's understanding of the excellence of self-learning activities.
3. Availability of self-learning support infrastructure.
4. Availability of curriculum based on self-learning activities
5. Availability of credit scoring and transfer systems on self-learning activities.
6. Availability of scientific consortiums to support self-learning activities
7. Availability of institutional collaboration to support self-learning activities.
8. Readiness of lecturers in carrying out self-study activities
9. Student readiness in carrying out student learning activities, from the point of view of lecturers
10. Readiness of Education Personnel supports self-learning activities.

While dependent variables ($X_i$) consist of:

1. Apprenticeship (A) embodied by internship or practical work [7, 8].
2. Urban Development (UD) marked by the thematic real work lectures, or field practicum [9, 10].

3. Interscience (I) characterized by the activity of study collage between the same or different studies in the UNISBA environment, or with Institutions outside unisba either regional, national, or international [11, 12].
4. Research Collaboration (RC) marked by unisba cooperation in carrying out joint research with national and international research institutes [13, 14].
5. Entrepreunerial (E) marked by the activities of students and lecturers carrying out small and medium business activities [15, 16]
6. Independent (IN) marked by the research activities of lecturers and students independently, through final assignments, journals, or book chapters [17, 18].
7. Community Engagement (CE) marked by the involvement of students and lecturers in social activities in the form of research, held by a humanitarian organization [19, 20].
8. Learning Society (LS) marked by teaching activities in high school or Community Learning Activity Center by lecturers and students [2, 21].

Step 2. Determine Number of Respondent.

Determination of number samples in this study, using the Solvin formula in Cochran (2007) [22]. The population (N) of respondents is lecturers, amounting to 150 people with a confidence level of 5%.

Step 3. Detemine Validity Test for Questionnaire.

To ensure that the questions contained in the questionnaire can be used as a measuring instrument to assess the influence of learning activities on the readiness of universities in carrying out self-study activities, a constructed validity test was conducted with pearson product moment correlation technique [23].

$$r_{comp} = \frac{n\left(\sum XY\right) - \left(\sum X\right)\left(\sum Y\right)}{\sqrt{\left(\left(n\sum X^2\right) - \left(\sum X\right)^2\right)\left(\left(n\sum Y^2\right) - \left(\sum Y\right)^2\right)}} (2)$$

Where n = Respondent number; X = variable score; Y = variabel total score; $r_{comp}$ = moment product correlation

Step 4. Determine Reliability Test for Questionnaire.

The number of respondents that more than one, causing the question to give a consistent measure if the questionnaire is used many times. To ensure the consistency of the questionnaire, in this study used alpha cronbach technique [22], with the following stages:

1. Determine variance value from each questionnaire.
2. Determine total variances.
3. Determine Instrument Reliability.

Step 5. Determine Regression Test.

In this section will be seen whether the regression model, can be used to measure the influence of eight learning activities on the readiness of the implementation of self-learning activities in UNISBA, using formula:

$$Y= b_0+ b_1A + b_2UD + b_3I + b_4RC + b_5E + b_6IN+b_7CE+b_8LS \quad (6)$$

In this study, UNISBA's readiness to carry out self-learning activities was influenced by eight predictors of self-learning activities, so a partial correlation test was conducted using pearson correlation technique (Walpole, 2011), where the formula form is the same as the formula (2).

Step 6. Determine Correlation Test.

In this study, UNISBA's readiness to carry out self-learning activities was influenced by eight predictors of self-learning activities, so a partial correlation test was conducted using pearson correlation technique [23], where the formula form is the same as the formula (2).

Step 7. Analysis.

In this section, a discussion of the final results of regression testing and correlation by looking at the linear relationship of eight self-learning activities, to the readiness of UNISBA to carry out self-learning activities using the r test.

Step 8. Conclusion.

In this section will be established components of self-learning activities that must be improved, and self-learning activities that need to be improved the implementation of learning.

## 3. Result

The implementation of testing of the questionnaire is carried out after the question item is finished, the next step is to calculate the respondent by using, formula (1) for the number of N of 150 respondents, at confidence level (α) of 5%. The result of the sample determination was obtained that at least 109 respondents had to be netted, while the

number of respondents who filled in the google form was as much as 116, so that the respondent's data was declared sufficient to be processed at the level of validity and reliability. The calculation was calculated using the help of statistical processing software Statistical Package for Social Sciences (SPSS) version 18.0.

The respondent's answer was further tested for validity using the formula (2), with the decision pattern that the statement item is declared valid if the $r_{comp} > r_{tabel}$. The result α 5% and the degree of freedom k = Sample Count - 2, or 114, is obtained a rtabel value of (interpolation) of 0.183. While the reliability test results are obtained by testing $r_i$ results should be worth greater than 0.6. Validity and reliability test results are presented in Table 2 and Table 3.

| | | VARIABEL | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Y | A | UD | I | RC | E | IN | CE | LS |
| Question | 1. | 0.438 | 0.728 | 0.668 | 0.904 | 0.845 | 0.880 | 0.891 | 0.932 | 0.686 |
| | 2. | 0.613 | 0.843 | 0.730 | 0.873 | 0.893 | 0.921 | 0.894 | 0.940 | 0.746 |
| | 3. | 0.637 | 0.863 | 0.833 | 0.919 | 0.887 | 0.916 | 0.929 | 0.931 | 0.802 |
| | 4. | 0.676 | 0.846 | 0.805 | 0.895 | 0.862 | 0.930 | 0.932 | 0.881 | 0.857 |
| | 5. | 0.613 | 0.872 | 0.863 | 0.908 | 0.884 | 0.857 | 0.901 | 0.940 | 0.874 |
| | 6. | 0.780 | 0.821 | 0.846 | 0.947 | 0.856 | 0.898 | 0.936 | 0.957 | 0.844 |
| | 7. | 0.672 | 0.809 | 0.525 | 0.889 | 0.857 | | 0.954 | | 0.830 |
| | 8. | 0.790 | 0.818 | 0.775 | | 0.783 | | | | 0.709 |
| | 9. | 0.800 | | 0.822 | | | | | | 0.908 |
| | 10. | 0.787 | | 0.824 | | | | | | |
| | Result | valid | valid | valid | valid | valid | valid | valid | valid | valid |

**Figure** 1: Result of Validity Test.

Validity test results show that all question items have a value above 0.183, so that all question items can be used to measure the influence of self-learning activities on UNISBA's readiness to carry out self-learning. In the reliability test all self-learning activities have a value of ri above 0.6, so all question items are stated to have significant value to be used repeatedly measuring the influence of self-learning activities on UNISBA's readiness to carry out self-learning.

The next stage is to determine the relationship between, the component of self-learning activities and the readiness of UNISBA to carry out self-learning, carried out by obtaining regression and correlation coefficients as presented in Table 4 (calculations assisted by SPSS version 18.0):

Table 4. Result of Korelation and Regression Test.

Based on Table 4, linear regression models can be formed, representing the relationship between the items that are the focus of the research in which the $F_{comp}$ yielded 11,291, as follows:

Table 2: Result of Reliability Test.

| No | ITEM | Result | Decision |
|---|---|---|---|
| 1. | Y | 0,931 | Reliable |
| 2. | A | 0.873 | Reliable |
| 3. | UD | 0.918 | Reliable |
| 4. | I | 0.963 | Reliable |
| 5. | RC | 0.948 | Reliable |
| 6. | E | 0.953 | Reliable |
| 7. | IN | 0.969 | Reliable |
| 8. | CE | 0.968 | Reliable |
| 9. | LS | 0.970 | Reliable |

Table 3: Regression and Correlation Test.

| NO. | Item | Coefisien | Partial Correlation | Significance |
|---|---|---|---|---|
| 1. | Y | 3.419 | | 0.284 |
| 2. | A | -0.015 | -0.17 | 0.864 |
| 3. | UD | 0.105 | 0.087 | 0.367 |
| 4. | I | 0.116 | 0.113 | 0.242 |
| 5. | RC | -0.094 | -0.069 | 0.475 |
| 6. | E | 0.058 | 0.035 | 0.720 |
| 7. | IN | 0.166 | 0.091 | 0.349 |
| 8. | CE | 0.123 | 0.076 | 0.434 |
| 9. | LS | 0.726 | 0.426 | 0.000 |

$$Y= 3.419-0.015A + 0.105UD + 0.116I – 0.094RC$$
$$0.058E+0.166IN+0.123CE+0.726LS \quad (7)$$

## 4. DISCUSSION

Based on the results of the test, further hypothetical tests will be conducted against linear regression equations, through the following stages:

1. Hypothesis.

$H_0$ : The regression model cannot be used to predict the readiness of self-learning implementation in UNISBA which is influenced by eight types of self-learning activities.

$H_a$ : The regression model can be used to predict the readiness of self-learning implementation in UNISBA which is influenced by eight types of self-learning activities.

### 4.1. Decision

Accepted $H_0$ if $F_{comp} \leq F_{tabel}$

In yhis case $F_{tabel}$ calculated from factor (0,05;8;107), so that 2.04 indeks dtermined, and then the result show:

11.291 > 2.04

Reject $H_0$ rejected and accept $H_a$

### 4.2. Conclusion

Based on the decision-making process at stage 2, it can be concluded that linear regression models can be used to predict the readiness of self-learning implementation in UNISBA which is influenced by eight learning activities.

Although the model can be used to predict relationships, which are found in the variables observed in this study, there are two variables that will make the readiness assessment will decrease one unit, if the other activity rises one unit. The phenomenon shows that the performance of self-learning implementation will be better if madiri learning activities in the form of Apprenticeship and Research Collaboration are implemented comprehensively, taking into account the prorsi of more student involvement.

Testing of correlations is carried out partially, using a probability approach where a hypothesis can be established in general as follows:

$H_0$ : There is no partially significant effect of self-learning activity ”X” on the readiness of self-learning implementation in UNISBA.

$H_a$ :There is partially significant effect of self-learning activity ”X” on the readiness of self-learning implementation in UNISBA.

In the probability approach (Sig) then the probability of precision of 0.05 will be the parameter of decision making. The approach is done from two directions so that Sigref is worth 0.05/2 = 0.025. If $Sig_{comp} < Sig_{ref}$ then $H_0$'s decision is accepted. The Test Results are presented in Table 5.

In part only the Learning Society has a strong influence on the readiness of self-learning implementation in UNISBA, while other components do not have a strong influence. The phenomenon is shown with a low contribution of each component shown in Table 6.

Based on Table 6 phenomenon of self-learning implementation, not yet fully applicable, seen from a very small contribution that is below 10%. According to Pearson [23]

Table 4: Partial Correlation Result.

| Self- Learning Activity | $Sig_{comp}$ Value | $Sig_{ref}$ Value | Decision |
|---|---|---|---|
| Y | 0.284 | 0.025 | Terima $H_0$ |
| A | 0.864 | 0.025 | Terima $H_0$ |
| UD | 0.367 | 0.025 | Terima $H_0$ |
| I | 0.242 | 0.025 | Terima $H_0$ |
| RC | 0.475 | 0.025 | Terima $H_0$ |
| E | 0.720 | 0.025 | Terima $H_0$ |
| IN | 0.349 | 0.025 | Terima $H_0$ |
| CE | 0.434 | 0.025 | Terima $H_0$ |
| LS | 0.000 | 0.025 | Tolak $H_0$ |

this fact shows that the correlation is very weak. Taking into account these conditions it is important that UNISBA evaluates the 10 components of implementation readiness, especially evaluating the curriculum, infrastructure, as well as improving the knowledge and skills of lecturers, students and educational personnel, in managing learning based on self-learning activities.

Table 5: Contribution Result.

| NO. | Item | Partial Correlation | Contribution |
|---|---|---|---|
| 1. | Y | | |
| 2. | A | -0.17 | 2.89% |
| 3. | UD | 0.087 | 0.76% |
| 4. | I | 0.113 | 1.3% |
| 5. | RC | -0.069 | 0.5% |
| 6. | E | 0.035 | 0,12% |
| 7. | IN | 0.091 | 0.8% |
| 8. | CE | 0.076 | 0.6% |
| 9. | LS | 0.426 | 18.1% |

Especially for teaching activities in schools, as part of learning activities learning society, conducted intensively by the Faculty of Islamic Religious Education, needs to be improved to other faculties, to utilize this learning vehicle especially in the preparation of curriculum, infrastructure and knowledge and skills in applying science to the community.

## 5. CONCLUSION

UNISBA's readiness to carry out self-learning is still constrained by the interaction of lecturers and students. Lecturers have not actively engaged students in various forms of self-learning activities, especially Apprenticeship and Research Collaboration. Students still depend on the materials provided by lecturers, so it is important for UNISBA to conduct curriculum evaluations including the availability of infrastructure, and the level of knowledge and skills of lecturers in managing a learning activity independently. Especially for Learning Society activities where the activity is teaching in schools, it is necessary to socialize understanding to faculty and programs in UNISBA to carry out such activities, as part of the dissemination and dissemination of science to the public at large.

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