



## **ANALYSIS OF LEARNING AND LITERATURES THROUGH WHO HAS FOLLOWED EDUCATION**

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### **Abstract:**

The purpose of this research is to analyze the influence of independent learning and literacy through artificial intelligence on the quality of education. Type of research with quantitative descriptive approach with samples based on purposive sampling of 236 state high school teachers from the region of the district of Tamalanrea. Data collection techniques in this research through questionnaires, library studies, and observations. Data analysis techniques using Structural Equation Modeling (SEM) software WarpPLS 7.0. Data analysis results, show that independent learning and literacy variables have a significant influence on artificial intelligence.

**Keywords:** *Freedom of Learning, Literacy, Artificial Intelligence and Educational Excellence*

### **INTRODUCTION**

Since its first launch, the Free Learning Program has successfully accelerated the country's education quality. (Makarim, 2020). Through the program, the Ministry of Education, Culture, Research, and Technology has successfully strengthened the various aspects of education. From curricula, student strengthening, and teaching (SDM) to educational aid. Decentralized learning is an approach that is done so that students can choose the lessons they want. Makarim (2020) said that Merdeka Learning is a concept of educational development in which all stakeholders are expected to be change agents. The ministry has raised three indicators of the success of the Free Learning program. It is the equal participation of students in Indonesian education, practical learning, and the absence of mentally disabled pupils. These three indicators can be achieved, among other things, by improving infrastructure and educational technology. The classroom infrastructure of the future must be better than it is today. Then, a national technology-based educational platform should also be encouraged.

Efforts to develop an independent learning system related to literacy in learning activities (Suryadi DKK, 2020). The literacy used demonstrates positive and significant contributions, as well as negative and insignificant contributions to the creativity of teachers and independent curricula (Marut, 2022). Literacy that contributes positively and significantly if the literacy indicator is the intensity of digital learning, with the media variation of digital-based reading materials, adds knowledge with digital thematic literature and digital-based educational information to be taught to pupils as an actualization of teacher creativity in the free curriculum system (Tira et al., 2023). (Riyanda, 2021). Literacy as teaching material and teaching needed by teachers and students to support effective teaching-learning processes.

Freedom of learning and literacy, of course, in the modern world of education, especially in teaching, has always correlated with educational technology (Makarim, 2020). Nowadays, in an increasingly competitive era, educational institutions still still

need to implement technology in teaching and learning activities in schools. (Tjahyanti, dkk. 2022). Schools use applications or media that can automate tasks such as giving feedback, choosing appropriate learning materials, or aligning curricula with students' needs. Artificial intelligence (AI) technology, or artificial intelligence, is constantly being developed by experts and can evolve rapidly. H. A. Simon (2023) claims that AI is a field that enables computers to perform tasks that are superior to humans. Knight and Rich (2023) state that AI is a branch of computer science that sees the effort to build computers as something that humans can do, even better than that. The alternative role of AI is to increase human intelligence and help humans perform effective and efficient learning activities (Simon, 2023). (Anas dkk, 2023). As the times evolved, they demanded that all fields, including education, adapt or collaborate to solve problems. Application of AI in learning activities as a virtual mentor, voice assistant, innovative content, and presentation translator.

The new universal Internet was created to spread information, knowledge, and thoughts on various topics. Virtual Mentor is one of the programs running alongside The Lab System, which operates more as a multimedia environment with eLearning integrated as an AI indicator. According to the Journal of Computer Information Systems paper, virtual mentor features are more valuable than ordinary class instruction (Zhang, 2022). Furthermore, users can learn without having to read thanks to the voice assistant or voice Assistant feature, the voice substitute (Simon, 2023). Reading information that activates voice assistants will differ from human cognitive processes, such as absorbing information from voice (Baharun, 2023). Voice Assistant is described in one example as a tool to understand the teacher's point of view. (Knight, 2023). The next application of AI is the Presentation Translator, or presentation translator, which has the utility to explain or present a text from a different language into the desired language. (Zhang, 2022). Users need to listen to various speech texts, articles, or digital books without reading and translating one at a time. (Marut, 2022).

The quality of education determines the advancement of a nation. (Anas et al., 2023). To get a quality education, it takes perseverance to manage all the components that exist in education (Suryadi et al., 2020). The education component includes input, process, and output, which must get more attention from qualified educators to be realized. With a quality education and a generation of intelligent nations while making this nation more dignified. (Warisno, 2021). The quality standards of education are managed as a whole, ranging from input (all educational activities), process (the implementation of each teaching-learning activity), and output (output or achieving graduates), so that the quality of an educational institution is the qualities of some of the services provided by the educational institutions to the clients of the said educational establishment. (Salsabilah et al, 2021). Observing inside to see whether independent learning and literacy activities contribute directly and indirectly to AI and the quality of education becomes interesting.

## **RESEARCH METHODS**

This research uses quantitative descriptive research methods. Descriptive methods explain data by describing or describing data collected according to the facts, then deducing and making conclusions that apply to general generalizations. The quantitative method is one type of research whose specifications are systematic, planned, and structured clearly from the beginning to the research design. (Sugiyono, 2020). The population is the entire State of High School Teachers in the City of Makassar, which amounts to 2,473 teachers in Makassar City. Sampling was based on a purposive sampling of 236 teachers in the district of Tamalanrea as respondents. In this study, the data analysis technique used is Partial Least Square (PLS) using the WarpPLS 7.0 application. Abdillah & Hartono (2020) Outer Analysis This model specifies the relationship between the latent variable and its indicators. The convergence validity value is the factor loading value on the late variable with its indicator. The expected value is  $>0.7$ . Inner model analysis can be done with path

analysis and R Square (R<sup>2</sup>) (Ghozali, 2019). Structural path analysis (Path Analysis) determines how much exogenous variables influence endogenous variables.

## RESULTS AND DISCUSSION

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### Validity Test

The validity test is the degree of accuracy between the data that occurs on the object of the study and the power that can be by the researcher. (Sugiyono, 2020). The validation test criteria are the use of cross-loading factor criteria with a value of more than 0.50 and average variance extracted (AVE) with value of over 0.50 for conferencing validity tests and for discriminatory validity testing using AVE root comparisons with inter-variable correlations. (Sholihin & Ratmono, 2020). WarpPLS 7.0 results as follows

Table 1. Combined Loading and Cross Loading

	X1	X2	Y	Z	Type (a)	SE	P Value
X1.1	0.767	0.718	0.709	0.786	Reflect	0.070	<0.001
X1.2	0.881	0.761	0.708	0.783	Reflect	0.068	<0.001
X1.3	0.882	0.758	0.716	0.714	Reflect	0.068	<0.001
X2.1	0.847	0.890	0.784	0.778	Reflect	0.068	<0.001
X2.2	0.814	0.897	0.748	0.774	Reflect	0.068	<0.001
X2.3	0.763	0.883	0.835	0.703	Reflect	0.068	<0.001
X2.4	0.722	0.704	0.868	0.761	Reflect	0.068	<0.001
Y1	0.731	0.748	0.891	0.703	Reflect	0.068	<0.001
Y2	0.811	0.749	0.893	0.748	Reflect	0.068	<0.001
Y3	0.841	0.832	0.784	0.884	Reflect	0.068	<0.001
Y4	0.736	0.792	0.745	0.841	Reflect	0.068	<0.001
Z1	0.762	0.729	0.745	0.812	Reflect	0.068	<0.001
Z2	0.760	0.784	0.795	0.817	Reflect	0.070	<0.001
Z3	0.755	0.706	0.718	0.842	Reflect	0.068	<0.001

Source: Data processed

WarpPLS 7.0 calculations in table 1 show that each value on the cross-loadings factor has reached a value above 0.7 with a p value below 0.05. Thus the convergence validity test criteria have been met.

Table 2. Comparison of the root of AVE with the correlation between variables

	X1	X2	Y	Z
X1	0.8566	0.0070	0.0036	0.0020
X2	0.0306	0.8586	0.0384	0.0148
Y	0.0026	0.0156	0.8534	0.0384
Z	0.0229	0.0121	0.0144	0.8475

Source: Data processed

Information can be obtained that the same variable's AVE root value has been higher than that of AVE's root value on different variables. It shows that the criteria for testing the validity of discrimination have been met. Thus, the instruments used in this study have met all the validity test requirements.

### Reliability Test

Reliability testing is carried out with the aim of ensuring that the research instruments used can present conceptual measurements consistently without any bias. WarpPLS data processing results are as follows:

Table 3. Reliability test

Composite Reliability Coefficients		
X1	X2	Y
Z		
0.882	0.920	0.915
0.931		

X1	X2	Y
Z		
0.797	0.869	0.861
0.911		

Source: Data processed

The basis used in the reliability test is the value of Composite reliability coefficients and Cronbach's alpha coefficients above 0.7. The results in Table 3 show that the questionnaire instruments in this study met the reliability testing requirements.

### Internal Model Evaluation

#### Direct Influence Path Coefficient Calculation

Each tested path showed direct and indirect influence of independent learning (X1) and literacy (X2) on AI (Y) and educational quality (Z). The value of the line coefficient can be seen in the following table:

Table 4. Direct Influence Path Coefficient Value

Path Coefficients				
	X1	X2	Y	Z
Y	0.283	0.553		
Z	0.194	0.136	0.629	

P values				
	X1	X2	Y	Z
Y	<0.001	<0.001		
Z	0.008	0.047	<0.001	

Source: Data processed

Test results (path analysis) on the model and research path coefficients are as follows:

- Based on the path coefficient value of 0.283 and  $\rho$ -value of 0.001, it can be concluded that there is a significant influence of independent learning (X1) on AI (Y).
- Based on the path coefficient value of 0.553 and  $\rho$ -value of 0.001, it can be concluded that there is a significant influence of literacy (X2) on AI (Y).
- Based on the path coefficient value of 0.194 and  $\rho$ -value of 0.008, it can be concluded that there is a significant influence of freedom of learning (X1) on the quality of education (Z).
- Based on the Path coefficient value of 0.136 and  $\rho$ -value 0.047, it can be concluded that there is a significant influence of literacy (X2) on the quality of education (Z).
- Based on the Path coefficient value of 0.629 and  $\rho$ -value of 0.001, it can be concluded that there is a significant influence of AI (Y) on the quality of education (Z).

#### Non-Direct Influence Path Coefficient Calculation

The indirect influence test is performed by looking at the test results of the path

passed, if all the paths passed are significant then the indirect impact is also significant, and if there is a non-significant path then the implied impact is said to be not significant.

Table 5. Direct Influence Path Coefficient Value

Indirect effects for paths with 2 segments			
	X1	X2	Y
Z			
X1			
X2			
Y			
Z	0.178	0.347	
P values of indirect effects for paths with 2 segments			
	X1	X2	Y
Z			
X1			
X2			
Y			
Z	0.005	<0.001	

Source: Data processed

The indirect impact of independent learning (X1) on the educational quality variable (Z) through the intervening variable AI (Y) of 0.178 is less than the direct influence of the independent learning variable X1 on the education quality variabel (Z), which is 0.194. Thus it can be stated that independent learning (X1) affects the quality of education (Z) through AI (Y) with a smaller value than its direct influence. However, literacy (X2) affects education quality (Z), through AI(Y), with a greater value than it affects it directly.

### Calculation of total impact path coefficient

The calculation of total effect or total influence is to sum up the values of direct and indirect influence. The coefficient of the total influence path is presented in table 6:

Table 6. Total Effects

Total Effects			
	X1	X2	Y
Z			
X1			
X2			
Y	0.283	0.553	
Z	0.32	0.483	0.629
P Values for Total Effects			
	X1	X2	Y
Z			
X1			
X2			
Y	<0.001	<0.001	
Z	<0.001	<0.001	<0.001

Source: Data processed

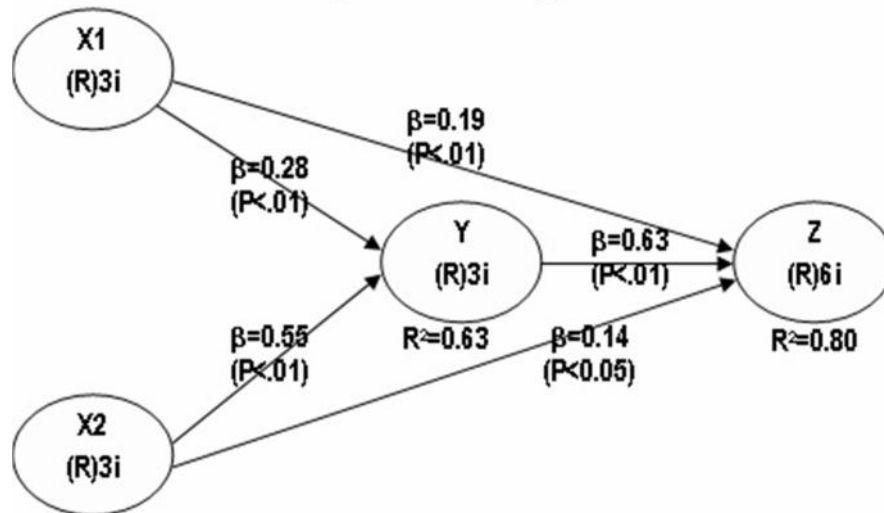
Based on the results of the calculation of the path coefficient, it appears that: The total influence of independent learning (X1) on the quality of education (Z) is 0.372 with details of direct influence 0.194 and indirect influence 0.0718.

From the above calculations, the independent variable that has the strongest influence on the AI (Y) variable is the literacy variable (X2) which is 0.553. Whereas the independent variant that has most influence over the quality variable of education (Z) is the AI(Y) that is 0.629.

**Hypothesis Model**

In the PLS model, AI variables can be added as intervening variables in providing additional contributions in explaining the quality of education. Thus, the proposed hypothesis can be tested more accurately and can give more valid results.

Figure 1. Model Hypothesis



**Determination coefficient**

The results of the internal model test can be seen on the R-square (R²) of each endogenous structure, the value of the line coefficient, the t value and the p value of each path relationship between the structures. The results of the analysis of the influence of independent learning and literacy on AI, showed the value of the determination coefficient or R² of 0.627, of which the result meant that the whole free variable (also learned as literacy) had a contribution of 62.7% to the bound variables (AI), and the remainder of 37.3% was influenced by other factors that were not included in the research. The result of the analyze of the independence of learning, literacy and AI influence on the quality of education, showing the determination coefficient value or R square of 0.799, of which means that the entire free variables(also learning, Literacy, and AI) contributed 79.9% to the tied variables, and the rest of 20.1% was affected by the other factors which were not involved in the study.

**CONCLUSION**

Based on the research findings that have been outlined, it is concluded that the test results prove the independence of learning and literacy, each having a positive and significant effect on AI. The test results demonstrate the Independence of Learning and Literature, each with a positive, significant impact on the quality of education. Test results also prove that AI has a significant and positive effect on education quality. The results of the test showed that there is an indirect influence of the independent learning variable on the educational quality variable through the intervening variable of AI whose value is smaller than its direct influence.

Recommendation and recognition of the results of this research to consider the importance of developing independent learning using AI-based literacy to guarantee the quality of education by introducing digitization technology to teachers and students, by following a lot of training in accordance with the development of modern and superior learning methods.

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