EST **Journal of Educational Science and Technology**
Volume 8 Number 3 December 2022 page 198-209
p-ISSN:2460-1497 and e-ISSN: 2477-3840
DOI: https://doi.org/10.26858/est.v8i3.42357

Facilities and Merdeka Curriculum Influence Students' Achievement Through Knowledge and Learning Quality

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**(*Received*: 02-07-2022; *Reviewed:* 21-09 -2022; *Accepted:* 15-12-2022;
Available online: 19-12-2022; *Published:* 20-12-2022)**

Abstract: The study aims to identify the influence of facilities and the Merdeka Curriculum on students' achievement through knowledge and learning quality. It is quantitative research with an ex post facto approach surveying 120 students selected through a purposive sampling technique. Data were analyzed using path analysis and the Sobel test. The findings show that facilities directly negatively and significantly influence the students' achievement. Adequate learning facilities support the students' learning quality. Learning quality has a positive and significant influence on students' learning achievement. Facilities positively and significantly influence the Merdeka curriculum. It means that the presence of the Merdeka curriculum, which is being implemented, cannot be separated from the availability of facilities to support the learning activities at school.

Keywords: facilities, Merdeka curriculum, Learning Quality, and Students' Achievement

INTRODUCTION

Education is experiencing rapid development as a consequence of the implementation of science, technology, and digitalization (Nastiti, 2020). Education holds a very important role to build the nation, state, and citizens (Nasution, 2020) because it is considered as the main need of humans to continue their lives and face the challenges of era (Majid, 2019).

Laws of National Education System No. 20 of 2003 states that education is a conscious and planned effort to create learning conditions and learning process so that students can actively develop their potential to have strenghts of spirituality, self-control, personality, intelligence, noble attitude, and skills needed by societies, nations, and state.

Naibaho (2019) stated that there are many factors contributing to the development of education like facilties, curriculum, knowledge, learning quality, and achievement. Educational institutions should consider those aspects to develop education (Indana, 2018). Therefore, to develop education so that poeple can achieve higher and experience a better learning quality, it must be supported by a curriculum and reliable learning facilities (Fogarty, 2020).

To develop education in a country like Indonesia including South Sulawesi especially Makassar which has 24 Senior High Schools, government continuously tries to prepare the schools as the institution to develop education in general, and specifically to improve students' achievement. Lately, the students' achievement has not reached the target. In this case, in the last

two years, there are challenges and problems faced in improving students' achievement (Zaini, 2019). Most of school in Covid 19 pandemic era carried out learning activities *synchronousely and asynchronously* (Letina, 2020).

Both systems have benefits and drawbacks for teachers and students. At the first time they were introduced, they would highly likely influence students' achievement (Sunarti, 2021) in terms of cognitive, affective, and psychomotor skills (Bloom in Nursyamsi, 2019). Indicators of achievement directly and indirectly reduce because not all studets were ready to go with the system (Ramli, 2018). Until nowadays, some schools still face difficulties in introducing and operationalizing the learning system. Based on the observation, by the end of Sepetember 2022, the actualization of synchronous and asynchronous systems had not reached 80% due to some major problems consisting of the inability of teachers or students to purchase and operate the learning media, the access to Merdeka curriculum could not be actualized, and knowledge of technology and digitalization was still limited, and the learning quality had not been optimum.

Students' achievement from cognitive aspects (knowledge, understanding, analysis, synthesis, and evaluation in each lesson they receive) still need to be improved (Rahayu, 2021). Affectively, students still need to develop their ability to accept, participate, assess, and organize each learning material they receive (Rosyidi, 2020). Students' psychomotor skills like perception, readiness, guidance, habituation also need to be developed so that students can collaborate their cognitive, affective, and psychomotor skills to achieve better (Saputra et al., 2021).

It is undeniable that students could not achieve optimally because of the quality of their learning that still should also be improved especially in terms of their enthusiasm in following the learning based on the subject they concentrate on, group work they receive, activeness to raise and aswer questions, and the ability to explain the material they learn (Yamin dan Syahrir, 2020). There are still some students unable to stimulate themselves to improve their leanring quality and achievement. The learning quality has a positive and significant inlfuence on students' learning achievement improvement. The quality will trigges students to achieve better (Sriwana, 2018).

Also, students' knowledge in adopting a material also influences their learning achievement. Skills are highly helpful for students to achieve more highly, and knowledge with character help them to produce better output in learning (Saputra, et al, 2021). Knowledge of profesionalism on subject that students are interested on will help them to incresae their achievement. Learning creativtiy based on the knowledge they focus on will determine their learning achievement (Sunarti, 2021). Also, high innovation wi,, support students to achieve well. The more skillful, charactered, profesional, creative, and innovative students are, the bettter their achievement (Zaini, 2019).

Knowledge and learning quality will determine students' achievement etither to increase or decrease, it highly depends on the availability of learning facilites and relevant Merdeka curriculum (Fathurrokhman, 2020). Newest learning facilites can boost the knowledge, learning quality, and achievement (Hamalik, 2019). Some studies have proven that complete facilities including learning space, information media, and book can support students to wider their knowledge and improve their learning quality leading to a better achievement (Ferdiyanto, 2019).

Merdeka curriculum as the guidance for learning implementation is important to suceed in the educational goals (Ali, 2021). Rusman (2019) argued that high quality education can be formed if the curriculum is developed to help students achieve their targets. Almanthari (2022) stated that Merdeka curriculum which is being implemented today in Junior High Schools is correspondent to the semester program, learning goal flow, learning target, learning modules, learning goals, the criteria of learning goal completeness, summative, summative in the mid semester, summative at the end of the semester, assessment and formative indicators (Leny, 2022). Merdeka curriculum is the important alternative to improve knowledge and learning quality to bring students full of achievement (Nofri, 2021). Merdeka curriculum is an essential guideline for each learning activity to improve students' knowledge, quality, and achievement (Arifin and Muslim, 2020).

Discussion above show the importance of investigating the corralation between facilities and Merdeka curriculum on students' achievement through knowledge and learning quality. Facilities are necessary to support the development of knowledge and learning quality

to achieve well. Merdeka curriculum was used as the guideline standard in improving the students' knowledge and learning quality to achieve well.

METHOD

This study was carried out in Senior High Schools in Makassar city. It is quantitative research with ex post facto approach using survey method. Primary data were obtained from questionnaire supported with available secondary data. The research population were all students from 24 State Senior High Schools. Using purposive sampling techniques, we selected five students from every school as the research samples, so the total number of respondents was 120. Data were analysed using path analysis method to see the direct influence of each variable observed, and Sobe test to see if the variables had indirect influence.

RESULTS AND DISCUSSION

Result

Model of Path Correlation Between Variables in Substructur 1

The model of correlation between variables in substructure 1 consists of one endogenous variable (students' achievement), and four exogenous variables (facilits, Merdeka curriculum, knowledge, and learning quality). Based on the correlation, the path model of substructure 1 is as follow: $Z = \beta z1x11 + \beta z2x22 + \beta z3y13 + \beta z4y24 + \varepsilon_Y$

Calculation using SPSS 19 showed the path coefficient pf substructure 1 as presented in the table 1.

Table 1. Values of Path Coefficient at Substructure 1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.505	.525		6.679	.000
	Facilties (X1)	-.099	.048	-.193	-2.048	.043
	Merdeka curriculum (X2)	.045	.086	.048	.519	.605
	Knowledge (Y1)	-.056	.073	-.064	-.775	.440
	Learning Quality (Y2)	.337	.068	.414	4.978	.000

a. Dependent Variable: Students' Achievement (Z)

Table 1 above shows the path model of substructure 1. The empirical causal correlation framework of variables X1, X2, Y1 and Y2 and Z in substructure 1 is as follows: Z = -0.099X1 + 0.045X2 – 0.056Y1 + 0.337Y2. While the $R^2_{ZYX21} = 0.243$. The influence of other variables (apart of X1, X2, Y1, Y2) on Z is $\varepsilon y = 0.757$. Results of empirical model are presented in table 2.

Table 2. Summary of Empirical Results of Substructure 1

Summary Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493[a]	.243	.216	.30175

a. Predictors: (Constant), Learning quality (Y2), Knowledge (Y1), Merdeka Curriculum (X2), Facilities (X1)

Path Diagram of Structure 1 is presented on Figure 1 below:

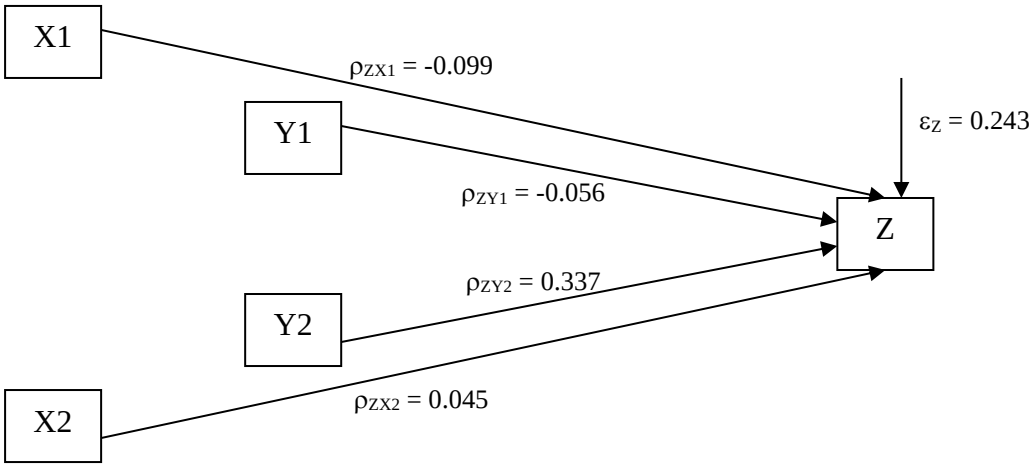


Figure 1. Model of Empirical Causal Correlation between X1, X2, Y1 and Y2, and Z

Model of Path Correlation Between Variables on Substructure 2

The model of correlation between variables on substructure 2 consists of one endogenous variable: knowledge, and two exogenous variables consisting of facilities and Merdeka curriculum. Based on this correlation, the path model of substructure 2 is as below: $Y1 = \beta y1x1 + \beta y1x2 + \varepsilon_{Y.}$ Results of calculation using SPSS 19 are the path coefficients of substructure 2 as presented in the table 3.

Table 3. Path Coefficient Values of Substructure 2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.614	.421		8.587	.000
	Facilities (X1)	.067	.060	.114	1.116	.267
	Merdeka curriculum (X2)	.133	.109	.125	1.223	.224

a. Dependent Variable: Knowledge (Y1)

Table 3 above shows the path model of substructure 2 that the framework of empirical causal correlation of between variables X1 and X2, and Y1 on substructure 2 is as below: Y1 = 0.067X1 + 0.133X2. While $R^2_{Y1X21} = 0.042$. The influence of variables apart of X1, X2 on Y1 is $\varepsilon y = 0.958$. The empirical model is presented in table 4.

Table 4. Summary of Empirical Results of Substructure 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.204[a]	.042	.025	.38346

a. Predictors: (Constant), Merdeka curriculum (X2), Facilities (X1)

Path Diagram of Structure 2 is presented on figure 2 below:

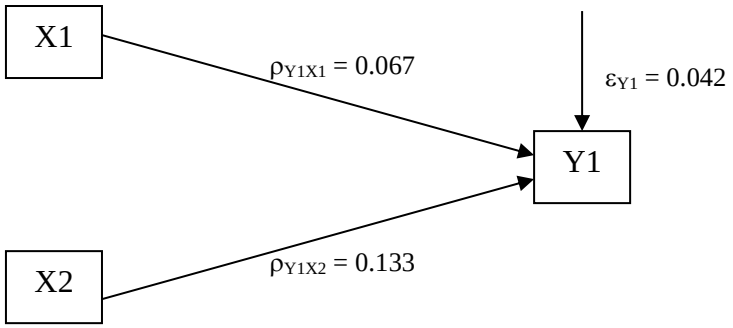


Figure 2. Model of Empirical Causal Correlation between X1, X2 and Y1

Model of Path Correlation between Variables on Substructure 3

The model of correlation between variables of substructure 3 consists of one endogenous variable (learning quality), and two exogenous variables consisting of facilities and Merdeka curriculum. Based on the correlation, the path model of substructure 3 is as below: Y2 = βy2x1 + βy2x2 + $\varepsilon_{Y.}$ Results of calculation using SPSS 19 show the path coefficient of substructure 3 as presented in the table 5.

Table 5. Path Coefficient Values of Substructure 3

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.667	.453		10.303	.000
	Facilities (X1)	-.155	.064	-.246	-2.416	.017
	Merdeka curriculum (X2)	.092	.117	.079	.781	.436

a. Dependent Variable: Learning quality (Y2)

Table 5 above shows the path model of substructure 3, indicating that the framework of the empirical causal correlation between variables X1, X2 and Y2 on substructure 3 is as below: Y2 = -0.155X1 + 0.092X2. While R^2_{Y2X21} = 0.049. The influence of other variables apart of X1, X2 on Y2 is εy = 0.951. results of empirical model is presented on the table 6.

Table 6. Summary of Empirical Results of Substructure 3

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.220[a]	.049	.032	.41276

a. Predictors: (Constant), Merdeka curriculum (X2), Facilities (X1)

The path diagram of structure 3 is presented on the figure 3.

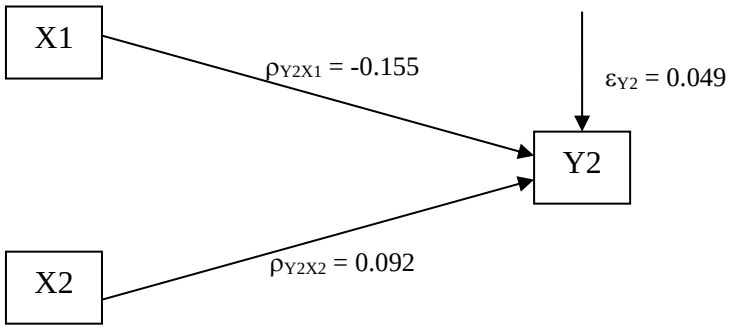


Figure 3. Model of Empiral Causal Correlation between X1, X2 and Y2

Path correlation model between Variables on Substructure 4

The model of correlation between variables on substructure 4 consisting of one endogenous variable = achievement, and two exogenous variables consisting of facilities and Merdeka curriculum. Based on the correlation, the path model of substructure 4 is as below: $Z = \beta zx1 + \beta zx2 + \varepsilon_{Y.}$ Calculation using SPSS 19 shows the path coefficient of substructure 4 as presented in table 7.

Table 7. Path Coefficient Values of Substructure 4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.872	.363		13.436	.000
	Facilities (X1)	-.155	.051	-.302	-3.016	.003
	Merdeka curriculum (X2)	.068	.094	.073	.726	.469

a. Dependent Variable: Students' achievement(Z)

Table 7 above shows the path model of substructure 4. Thus, the framework of the empirical causal correlation between variables X1, X2 and Z on substructure 4 is as below: $Z = -0.155X1 + 0.068X2$, While the $R^2_{ZX21} = 0.076$. The influence of variables apart of X1, X2 on Z is $\varepsilon y = 0.924$. Results of empirical model is presented on table 8.

Table 8. Summary of Empirical Results of Substructure 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.276[a]	.076	.060	.33038

a. Predictors: (Constant), Merdeka curriculum (X2), Facilities (X1)

Path Correlation Model Between Variables in Substructure 5

The model of correlation between variables of substructure 5 consists of one endogenous variable (achievement) and two exogenous variables namely knowledge and learning quality. Based on the correlation, the path model of substructure 5 is as below: $Z = \beta zy1 + \beta zy2 + \varepsilon_{z.}$ Calculation using SPSS 19 shows the path coefficient of substructure 5 as presented in the table 9.

The path diagram of structure 4 is presented in the figure 4.

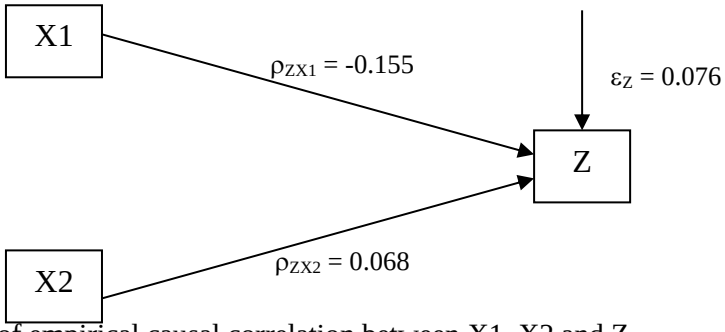


Figure 4. The model of empirical causal correlation between X1, X2 and Z

Table 9. Path Coefficient Values of Substructure 5

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.258	.440		7.411	.000
	Knowledge (Y1)	-.078	.072	-.088	-1.079	.283
	Learning quality (Y2)	.368	.067	.453	5.522	.000

a. Dependent Variable: Students' achievement(Z)

Table 9 above shows that the path model of substructure 5, thus, the framework of the empirical causal correlation between variables Y1, Y2 and Z on substructure 5 is as below: Z = -0.078Y1 + 0.068Y2. while R^2_{ZY21} = 0.214. The influence of variables other than X1, X2 on Z is εy = 0.786. Results of empirical model is presented on table 10

.

Table 10. Summary of Empirical Results of Substructure 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.462[a]	.214	.200	.30482

a. Predictors: (Constant), Learning quality (Y2), Knowledge (Y1)

The path diagram of structure 5 is presented on figure 5 below:

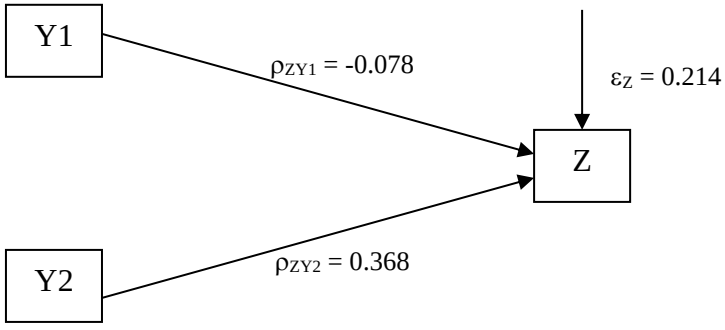


Figure 5. The model of empirical causal correlation between Y1, Y2 and Z

Path correlation model between Variables on Substructure 6

Model of correlation between variables on substructure 6 consists of one endogenous variable, namely Merdeka curriculum and one exogenous variable, namely facilities. Based on the correlation, the path model of substructure 5 is as below: $X2 = \beta x21 + \varepsilon_{z.}$ Calculation using SPSS 19 shows the path coefficient of substructure 6 as presented in the table 11.

Table 11. Path Coefficient Values of Substructure 6

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.319	.182		18.247	.000
	Facilities (X1)	.253	.045	.462	5.653	.000

a. Dependent Variable: Merdeka curriculum (X2)

Table 11 above shows the path model of substructure 6. Thus, the framework of empirical causal correlation between variables X1 and X2 on substructure 6 is as below: X2 = 0.253X1. While $R^2_{X1} = 0.213$. The influence of variables apart between X1 and X2 is $\varepsilon y = 0.787$. Results of empirical model is presented on table 12.

Table 12. Summary of Empirical Results of Substructure 6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.462[a]	.213	.206	.32398

a. Predictors: (Constant), Facilities (X1)

The path diagram of structure 6 is presented on figure 6 below:

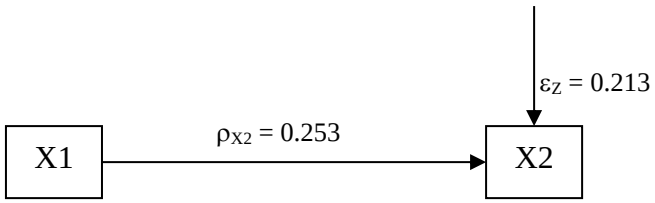


Figure 6. The model of empirical causal correlation between X1 and X2

As reported in all tables, and in all figures, among nine coefficient, there were four path coefficient significant at $\alpha = 0.05$. The diagram of the empirical path of the study can be seen on figure 7.

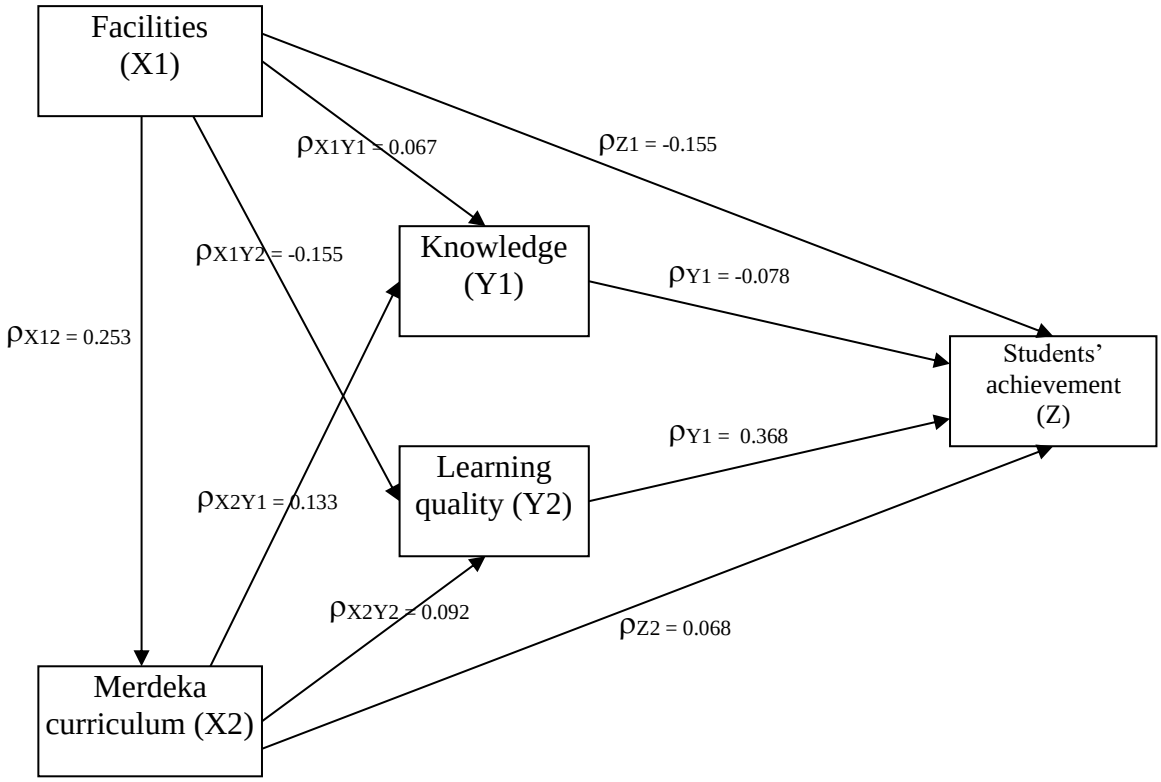


Figure 7. Path coefficient of Direct Influence of Facilities, Curriculum, Knowledge and Learning quality on Students' Achievement

As there are some path coefficients of direct influence that are not significant, we carried out a trimming method to fix the path analysis structure model by excluding the insignificant exogen variable. The variables are the influence of training (X1) and entrepreneurship (X3) on entrepreneurship success (Y). The model of path analysis structure through trimming model is illustrated on figure 8.

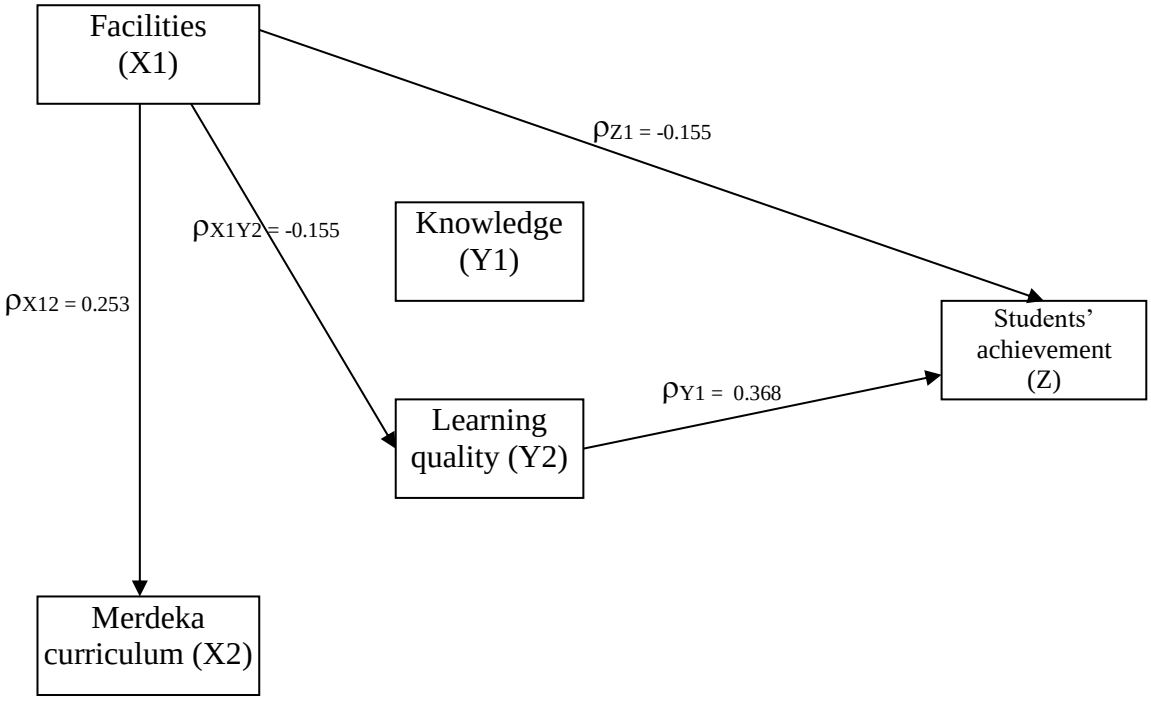
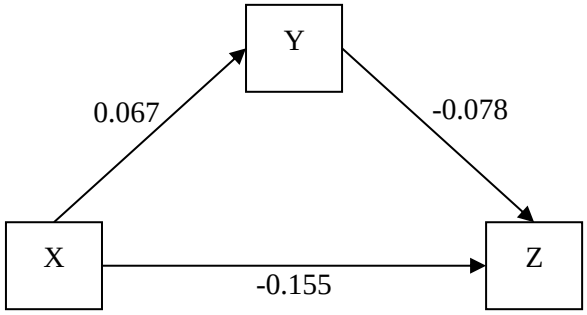


Figure 8. Path coefficient of Significant Direct Influence

Then, to identify the indirect influence, we carried out the Sobel test (*computing Sobel Test of Mediation for Baron & Kenny Approach*), and the results are as follows:

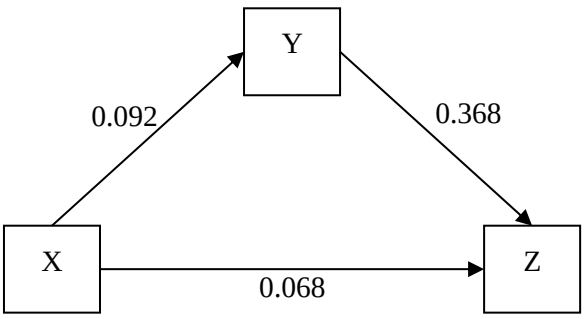
Facilities influence students' achievement through knowledge indirectly, negatively, and insignificantly with the Sobel test values of -0.778 and p-value = 0.437, which is higher than 0.05.

Results	
Indirect Effect $(a \cdot b)$ =	-0.005
Sobel's SE = $\sqrt{[(a \cdot SEb)^2 + (b \cdot SEa)^2]}$ =	0.007
Z = Indirect Effect ÷ Sobel's SE =	-0.778
p =	0.437
Standardized Indirect Effect = $(\beta_a \cdot \beta_b)$ =	-0.010
Portion of (X → Y) due to M = $(c - c')/c$ =	100.0%



Merdeka curriculum influences students' achievement through learning quality indirectly, positively, and insignificantly with the Sobe test values of 0.778. and p-value = 0.436 or bigger than 0.05.

Results	
Indirect Effect $(a \cdot b)$ =	0.034
Sobel's SE = $\sqrt{[(a \cdot SEb)^2 + (b \cdot SEa)^2]}$ =	0.043
Z = Indirect Effect ÷ Sobel's SE =	0.778
p =	0.436
Standardized Indirect Effect = $(\beta_a \cdot \beta_b)$ =	0.036
Portion of (X → Y) due to M = $(c - c')/c$ =	100.0%



CONCLUSIONS AND SUGGESTIONS

Based on research findings, we concluded: 1) facilities directly negatively and significantly influence the students' achievement. It means that learning facilities like study rooms, information media, and books should be provided because they contribute to the increase of student's achievement at school; 2) facilities directly negatively and significantly influence the students' learning quality; 3) learning quality positively and significantly improves students learning achievement. It indicates that students who are enthusiastic to follow the class, concentrate well, collaborate in study groups, actively raise and ask questions and are able to explain materials will have their achievement improved; and 4) facilities positively and significantly influence Merdeka curriculum, meaning that the implementation of the curriculum is inseparable from the availibility of facilities to support the learning activities at school.

Based on the conclusions, we suggest improving insignificant influential variables, namely students' knowledge, because to face the era of the Merdeka Belajar curriculum, students should be skillful, have character, and profesional, creative, and innovative in knowledge development so that later they can have their learning quality and achievement improved.

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