

## Student critical thinking skills and student writing ability: The role of teachers' intellectual skills and student learning

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### Suggested Citation:

Amhar, Sabrina, R., Sulasmi, E., Saragih, M. (2022). Student critical thinking skills and student writing ability: The role of teachers' intellectual skills and student learning. *Cypriot Journal of Educational Science*, 17(7), 2493-2510. <https://doi.org/10.18844/cjes.v17i7.7683>

Received from February 24, 2022; revised from April 26, 2022; accepted from June 25, 2022.

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### Abstract

Students' writing ability has become an essential element for student success and may be influenced by the student and teachers skills; therefore, the subject has garnered the attention of regulators and researchers alike. Thus, the current research investigates the role of student critical thinking skills and teachers' intellectual skills on students' writing ability across private universities in Indonesia. The researchers also investigate the mediating impact of student learning among the nexus of student critical thinking skills, teachers' intellectual skills and student writing ability in the context of private universities in Indonesia. The present study has used primary data collection methods and employs the survey questionnaires for data collection. The current research also use the primary data analysis tools such as smart-PLS to test the study hypotheses as well as the items' validity and reliability. The results reveal that student critical thinking skills and teachers' intellectual skills have a positive influence on student writing ability in private universities in Indonesia. The results also show that student learning significantly mediates between the association of student critical thinking skills, teachers' intellectual skills and student writing ability of private universities in Indonesia. This study is meaningful for future researchers who want to investigate this area in a more in-depth manner in the future and provides the guideline to the regulating and developing authorities while formulating policies related to students' writing ability in the universities of Indonesia.

Keywords: Student critical thinking skills, teachers' intellectual skills, student writing ability, student learnings, private universities in Indonesia

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## Introduction

Indonesia is the world's fourth most populated country, with 264 million inhabitants. It is also the world's biggest archipelago. Its territory consists of about 17,000 islands that run 3,181 miles between the Pacific and Indian Oceans around the Earth's equator. About 87 per cent of Indonesia's population is Sunni Muslim, making it the world's largest Muslim majority country. However, the Southeast Asian country is also a varied, complicated, and cosmopolitan country with over 300 ethnic groups and hundreds of languages. Christians account for 10 per cent of the population, while Hindus account for 1.7 per cent. At the moment, Indonesia is struggling to offer its population an inclusive, high-quality education (Brookes, 2020; Deveci, 2020; Erdil-Moody & Thompson, 2020; Estriyanto, Kersten, Pardjono, & Sofyan, 2017; Kennedy, Schmitz, & DeLong, 2020; KOSE & KIZILTOPRAK, 2020; Mameche, Omri, & Hassine, 2020; Pribudhiana & Don, 2021). The country's literacy rate is significantly lower than that of other Southeast Asian countries. According to a World Bank study, 55 per cent of Indonesians who finish school are functionally illiterate, compared to only 14 per cent in Vietnam and 20 per cent in the Organization for Economic Cooperation and Development member nations. Similarly, the tertiary achievement is extremely low: in 2016, just under 9% of Indonesians over the age of 25 had earned at least a bachelor's degree, the lowest among ASEAN member states (ASEAN). There may not be much motivation to get a postsecondary degree, as university-educated Indonesians have the highest jobless rates. Indonesian universities' research output is quickly increasing, yet it remains low when compared to that of other nations.

On the up side, the average number of years spent in school among those over the age of 25 has increased from four in the 1980s to eight in 2016. Between 2004 and 2017, the pupil-to-teacher ratio in elementary school reduced from 20 to 16 to 1, despite the fact that the ratio has remained steady or even fallen at higher levels of education (Dhanapal, Salman, Sabaruddin, & Nazeri, 2020; Dmello & Bichler, 2020; França & Quevedo, 2020; Jaffal, 2020; Lubis, Fauzi, Lubis, & Fauzi, 2018; Sukmayadi & Yahya, 2020; Svoboda, 2020; Tolić, 2020). Despite being low overall, the tertiary gross enrollment ratio (GER) increased by 20% between 2004 and 2017. It presently stands at 36.3 per cent, compared to 28.3% in Vietnam, 42.3% in Malaysia, and 49.3% in Thailand (UIS). Indonesia has undergone a wide range of education changes since the mid-2000s, including decentralization of sections of its school system, increased teacher training requirements, and significant increases in education funding (as a share of the national budget). However, public education investment as a proportion of GDP has remained constant over the last decade and is still significantly below the levels suggested for growing nations (at 3.6 per cent of GDP in 2015). To address fundamental deficiencies in Indonesia's system and bring it at par with other fast-developing nations in the dynamic ASEAN nations, more rigorous efforts are needed.

Indonesia's higher education system, like its secondary school system, is binary in character. It features a research-oriented academic route as well as a vocational or professional track. The credentials framework for the country was developed in 2012 to allow mobility between academic programs and acknowledgment of past learning. Indonesia's higher education environment is huge, fast expanding, and immensely diversified. Over 4,500 higher education institutions (HEIs) educate nearly eight million students in 25,000 different majors (Bomfim, Ferreira, Rodrigues, Pontes et al., 2020; Bouso, Fornís, Vilamala, LOENEN et al., 2020; Muller, 2020; Ncube & Koloba, 2020; Silalahi & Yuwono, 2018; Talar & Gozaly, 2020). Universities, institutes, advanced schools, academies, polytechnics, and community academies are all examples of higher education institutions. While the number of students enrolling in Islamic schools is increasing, the majority of Indonesian higher education institutions are secular. In 2015, only approximately 16 per cent of schools, including 11 state colleges and 95 private universities, were faith-based. In 2013, they accounted for around 11% of the entire student population. In Indonesia, the great majority of higher education institutes (more than 90%) are privately owned. However, while private HEI enrollments are increasing, many private schools are small providers with 500 or fewer students, leaving public universities to enroll roughly 37% of all tertiary students.

Writing abilities are key elements of the education system in any country. It is the integral part of students' learning in any university. Irrespective of the education level, polishing the writing abilities of students is the key focus of the education system. The importance of writing skills is not limited to education level or academic qualification but it also impacts one's professional carrier (Antelm-Lanzat, Gil, Cacheiro-González, Pérez-Navío et al., 2020; Dunga & Dunga, 2020; Fejzaj, Kapaj, & Kapaj, 2021; Jagaiah, Olinghouse, & Kearns, 2020; Justice, Dynia, Hijlkema, & Chan, 2020; Mukama, John, & Massawe, 2020; Pratap, 2020). Both in higher education and in the workplace, effective writing abilities are essential. The capacity to write an extensive text is the single strongest predictor of freshman-year academic performance. Gains in informative and analytical writing abilities are also seen as a solid sign of higher education's usefulness. Finally, in a knowledge-based economy, a considerable portion of the value generated by enterprises is codified in written documents, putting a premium on a literate workforce. As it involves a test of memory, language, and reasoning skills, proper writing is a key cognitive task. It necessitates the quick recall of topic-specific domain information from long-term memory (Aragonés, Pérez, Lopez, Ric et al., 2020; Arrieta, 2020; Cavalier, Vilanova, & Torrents, 2020; Cristófoli & Fronti, 2020; Kuiken & Vedder, 2021). To produce coherent prose that clearly reflects the ideational content, a high level of linguistic competence is required. Writing skill is also influenced by the capacity to think clearly about important issues. Finally, the writing of long texts puts a strain on working memory. During text production, representations of the author's intended ideas, the meaning of the text as written, and even hypothetical meanings of the text as perceived by the anticipated readers must be kept under consideration. Furthermore, mature writers juggle the planning of ideas, the development of text, and the assessment of ideas and text all at the same time, putting a strain on executive attention.

The present study will address some gaps which exist in the literature such as 1) being one of the important topics of education, students' writing abilities although has been researched but the research has not reached its peak, 2) no evidence received regarding students' writing abilities particularly in Indonesia, 3) Cumming, Yang, Qiu, Zhang et al. (2018) investigated students' abilities for English writing in Chinese context where the present study a) is not limited to English but overall skills, b) is based in the Indonesian context and, c) considers only private universities. 4) The present study adds student learning as mediating variable which has not been tested before in relation to teachers-students relations. 5) Lo and Maa (2019) tested the writing abilities for elementary level whereas the present study will test the same at university level with the addition of mediating variable, 6) The present study is a combination of both students as well as teaching skills. The significance of the present study is 1) it will highlight the importance of writing skills for university students especially in Indonesia, 2) it will also help academics and professionals understand the importance of writing skills and abilities among students.

The structure of the present study is composed of several phases. The first phase includes the introduction and after an introduction, the second phase of the study deals with evidence regarding students' critical thinking skills, teachers' intellectual skills, students learning, and student writing abilities in light of past studies. The third phase of the study throws light on the methodology applied to collect the data regarding students' critical thinking skills, teachers' intellectual skills, students learning, and student writing abilities as well as to analyze its validity. The fourth phase compares the study results with the findings of other authors about the same subject and thus, approves these results. The paper ends with a number of study implications, conclusions, and future recommendations.

## Literature Review

Critical thinking is the renowned ability that helps and develops a person and system into developing insights about key questions. It is also the most productive way to ensure the comprehensive understanding of a task especially within the private universities of Indonesia. Cotugno (2018), analyzed the role of teaching techniques in enhancing and developing the critical thinking skills of students toward criminal justice. Using different theoretical and strategic

techniques to explore and understand the complexities of thinking skills, the techniques have yielded significant interpretations. Findings indicate that the establishment of a workplace for students and encouragement of criminal justice in students enhances the writing ability of students. Djamàa (2018), evaluated the incorporation of media for the development of student cognitive skills with critical thinking in university students. Deduction, induction, evaluation, inference, and analysis are the areas that are evaluated with the establishment of different statistical techniques. Results show positive induction of teaching skills through different techniques especially media that are a significant factor for enhancing students' writing ability.

Empowering students through critical thinking helps them academically in upbringing their writing ability in language skills as well as in various other subjects or skills. Pnevmatikos, Christodoulou, and Georgiadou (2019), established the idea of critical thinking skills within the education sector and among the students through a set of knowledge and values. Using various approaches like the Vake method, some specified courses were selected to ascertain critical thinking skills and the writing abilities of students. The finding shows that using the steps of dispositions, critical thinking, and multiple solutions positively help in developing the writing ability of university students (Tomteberget & Larsson, 2020; Wallenius, Alvinus, & Larsson, 2020). Zanden, Denessen, Cillessen, and Meijer (2020), analyzed different levels of critical thinking skills that help students in various stages toward a bright future and meeting the standards set by their teachers. Secondary education toward university education is also aimed at fostering critical thinking skills. Using various interviews and theoretical approaches, findings indicate that the cultivation of knowledge with the help of critical thinking skills enhances the writing ability of students. Cloete (2018), examined the influence of various assessments in critical thinking skills that instil different skills in university students. Using the working environment as well as the bulk of problems with solutions establishes capabilities in the students to meet assessments. Findings indicated after the statistical techniques, critical thinking skills tend to be the better indication of the development of writing ability.

Various levels of thinking exist in organizations and within the education sector where questioning is an important evaluation method in private universities of Indonesia. Therefore, critical thinking skills' development in students helps them analyze, interpret and evaluate the overall insights by forming and developing their writing ability. Keith, Stives, Kerr, and Kastner (2020), investigated the relationship between the academic achievement of writing-intensive and writing Centre with academic background. The incorporation of critical thinking skills into the writing achievements serves to uplift an individual's writing ability. The use of ordinary least square regression among the relationship provided significant results. The finding shows that effective use of critical thinking skills improves writing ability. Yao, Guo, Li, and McCampbell (2021), assessed the beliefs in writing ability developed by different learning skills influences the perceptions of assessments. It is the intelligence theories which are used in the critical thinking skills that can help induce motivation among students. Various structural and equation modeling helped the students in removing negative perceptions. Study shows that+- improvement in writing intelligence is a significant contribution of critical thinking skills.

**H1:** Students' critical thinking skills significantly influence students' writing ability.

Teachers' intellectual skills are not restrained to critical thinking but they also include various approaches that help private university students of Indonesia in the development of their abilities. Brokamp, Houtveen, and Grift (2019), analyzed the relationship between teacher skills, classroom behavior, and student performance in universities and educational institutions. Different factors related to teacher intellectual skills show positive contribution among student writing abilities which are assessed using various statistical and theoretical approaches. The compatibility of the student is mostly dependent on teaching skills that not only teach the students but also enhance their abilities. Viinikka and Ubani (2019), evaluated the expectations that exist among the students and their teachers on account of their learning abilities and teaching skills. It is the professional development of teachers in the twenty-first century that has raised the academic achievement standards of

students. Various approaches are employed to ascertain these expectations. The result shows that teacher intellectual skills are a prominent element that develops the writing abilities in students of universities. Zlatkin-Troitschanskaia, Kuhn, Brückner, and Leighton (2019), assessed the relationship between teachers' reflective and action skills toward students that help in the fulfillment of their academic pursuits. The performance of teaching involves various practices like representation and appearance among students. Based on different factors of teacher intellectual skills and writing abilities, the technology and evidence-based models have been applied. The study shows a positive relationship of teacher intellectual skills with student writing abilities. Owen, Palekahelu, Sumakul, Sekiyono et al. (2018), aimed to analyze how teacher intellectual skills upgrade student writing abilities in different universities. Various follow-ups of teacher skills and student abilities are assessed using theoretical and statistical models. Findings reveal that a professional approach in teachers which uses a variety of intellectual skills can help develop the students' writing abilities with a view to meet their academic achievements.

The tasks assigned by the teachers according to their intellectual skills are the best depiction of private university Indonesian students' upbringing in the critical atmosphere of education. Dolapcioglu (2020), examined the projected learning and intellectual skills are major contributors in enhancing the writing abilities of students. Questioning, the reflection of learning and the skills of teachers are mostly the main potentials that increase the student abilities. By applying different theoretical models, the study shows a positive relationship between the student abilities and teaching skills. Teacher intellectual skills are essentially important to increase the writing ability of students. Campbell, Choo, Lindsay, and Tan (2020), investigated the students writing ability by the intellectual skills of teachers as well as academic performance of students. Most of the learning and abilities of students are dependent on their own capabilities while the nourishment of teachers' roles could not be omitted. The application of different statistical and theoretical approaches analyzed the dominance of teacher skills. Finding revealed the positive contribution of the intellectual skills of teachers toward the writing ability of students. Mazloomi and Khabiri (2018), examined the influence of self-assessments of teachers over the writing skills of students studying in different universities. It is the training abilities invested on teachers to convey better knowledge to the students to improve their writing abilities. Using quasi-experiments among the factors of intellectual skills and writing abilities, the teacher's skills are more dominant in developing the writing abilities in students.

**H2:** Teachers intellectual skills significantly influences students' writing ability.

A variety of educational programs across universities in Indonesia are generating an interest in student learning that renders it effective for critical thinking. Oller, Engel, and Rochera (2021), examined the connection of students with the effectiveness of learning experiences, student learning, and thinking skills. The role of student learning among these factors is one of majorly and importantly increasing the writing skills. Using sociological and constructivist methodologies, the study indicated positive results. Study shows that student learning positively affects or is related to writing ability and students' critical thinking skills. Wiig, Silseth, and Erstad (2018), identified the limitations and opportunities of student learning emerging from the interaction of students and teachers. The role of critical thinking skills in establishing the writing abilities of students with student learning process and motivation is found to be effective. Dialogical and sociocultural approaches among these factors depicted positive indications. Results revealed that trajectories of student learning could be efficient between student learning and critical thinking skills. Nonis and Hudson (2019), checked the assessment and development of critical thinking skills among the students that are helpful in solving a variety of explicit problems. The courses taught to students through different techniques and various assessments of the writing ability share the positive experience of critical thinking skills. The problem-solving model significantly endorsed the positive depiction of critical thinking skills that reinforces writing ability among students with the help of student learning capabilities.

Instruction approaches are the connected factors of student learning among university students of Indonesia. Kuiken and Vedder (2021), assessed the establishment of writing programs and writing abilities among the students of different universities using critical thinking skills. Ultimately, student learning is also a positive depiction among these factors that indicates the support among skills and abilities. Academic achievement and student learning are significant indicators that instil critical thinking skills for the development of writing abilities. Gu, Zhang, and Gu (2020), analyzed the use of a learning environment with the help of constructive enhanced technology that induces critical thinking skills among students. Student learning itself is a major factor in the development of writing abilities and critical thinking skills and therefore, could not be eliminated. Student learning by management and effective tools is assessed by inducing different research models. The study demonstrates the significant relationship between student writing ability and critical thinking skills supported by student learning. Chizhik and Chizhik (2018), assessed the needs of student learning and the plans of teachers for the uplifting of critical thinking skills and writing abilities of students. For this purpose, extent of assessments, objectives, and instructions are used to assess the role of student learning. Using qualitative analysis, student learning has been proven to play a dominant role in terms of the development of students' writing capabilities and critical thinking skills. Sato and McKay (2020), ascertained the role of student learning in developing thinking skills and writing abilities of students. Various interviews of students and different factors related to student learning have been assessed using descriptive qualitative analysis. Findings show the dominant role of student learning which mediates the relationship or association between critical thinking skills and writing abilities of students.

**H3:** Students' learning significantly mediates among the relationship between students' critical thinking skills and students writing ability

Student learning is not only dependent on teacher's skills but is also dependent on individual student needs especially among the private university students of Indonesia. Shen, Tan, and Siau (2019), examined the challenges that are faced by the students due to a lack of student learning. Different strategies, assessment tools, and techniques are applied to student learning to ascertain the role of student abilities and intellectual skills. Using different approaches, the study focused on student learning as a significant approach that mediates the effectiveness of writing and teacher intellectual skills. Dabamona and Cater (2019), ascertained the role of student learning on student capabilities related to thinking skills and writing abilities. This formation of factors is used to understand student learning with the extent of its implication in universities. Integration of various techniques referred to as positive results show that student learning is a significant factor that asserts its impression over the writing abilities and intellectual skills. Burns, Devitt, McNamara, O'Hara et al. (2018), analyzed the intellectual skills of teachers that are generally known as the basic requirement for the writing abilities of students. This requirement is positively met by the student learning which mediates among the teacher intellectual skills and student writing ability. The findings indicate a positive role of student learning not only in nourishing the teacher's intellectual skills but also enhancing the writing ability of students. Johansson-Malmeling, Hartelius, Wengelin, and Henriksson (2021), investigated the production of written text and its link with the spelling and writing abilities of students in various universities. Knowledge and spelling abilities are the major contributions conveyed by the teachers' intellectual skills among students with their own learning. Using different measures and statistical tests, the study indicates the significant influence of teachers' intellectual skills in positively affecting the writing abilities among students all over the world.

Various aspirations and interests of student learning are seen as important factors that affect development of intellectual skills and writing abilities among private university students of Indonesia. Rodgers, Reed, Houchins, and Aloe (2020), assessed the writing abilities among the youth of the juvenile justice system through various confirmatory factors of intellectual abilities. Different factors related to student learning, writing abilities, and intellectual abilities are taken into consideration upon which the traditional and alternative models have been applied. Results show

that efficiency in teachers' intellectual skills help in the development of writing abilities with the significant support of student learning. Li, Kim, and Xiong (2020), examined the relationship between interactive and individual learning through positive factors of teacher intellectual skills and student writing abilities. These factors are ascertained by cognitive diagnostic analysis which demonstrates that student learning that mediates among the writing abilities and teacher intellectual skills. Lee (2019), analyzed the relationship between student learning experiences and tertiary education. This is widely supported by student learning which mediates the association between teachers' intellectual skills and students' writing abilities. Results are positive with mediating effectiveness of student learning among the teacher and student skills.

**H4:** Students' learning significantly mediates among the relationship between teachers intellectual skills and students writing ability.

## Research Methods

The researchers investigate into the impact of students' critical thinking skills and teachers' intellectual skills on students' writing ability and also examines the mediating impact of student learning among the association of student critical thinking skills, teachers' intellectual skills and student writing ability of private universities in Indonesia. The present study has used the primary data collection methods and employed survey questionnaires for the purpose of data collection. Students in their final year are the respondents selected based on sampling random sampling. The top hundred private universities of Indonesia are selected based on purposive sampling. In total, 1070 questionnaires were sent to the selected students, and after one month, only 760 valid questionnaires were received and used for analysis. These valid questionnaires show a 71.03 per cent response rate.

The current research also used a primary data analysis tool, that is, the smart-PLS to test the hypotheses and check items validity and reliability. Smart-PLS is the effective primary data analysis tool that effectively works when the researchers have used a complex model and large data set (Hair, Hollingsworth, Randolph, & Chong, 2017). The current study has taken two predictors named student critical thinking skills (SCTS) with eight items and teachers' intellectual skills (TIS) with five items. Moreover, the study has also used student learning (SL) as the mediating variable with six items and also used students' writing ability (SWA) as the predictive variable with four items. Figure 1 given below highlights the theoretical framework of the study.

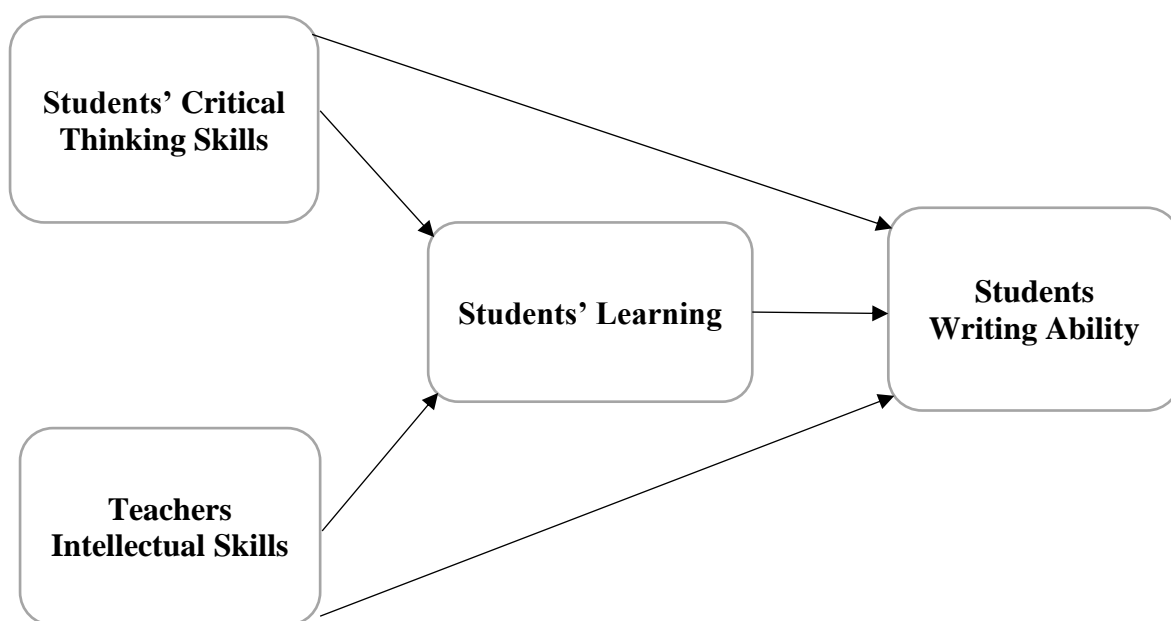


Figure 1: Theoretical model

## Research Findings

The current study findings highlight the convergent validity which refers to the correlation between constructs' items. The figures have revealed that Alpha and CR values cross the limits of 0.70. In addition, the results also revealed that loadings and AVE values also cross the limits of 0.50. Thus, the findings show valid convergent validity and a high association between items. Table 1 highlights the results of convergent validity.

Table 1: Convergent validity

Variables	Items	Loadings	Alpha	CR	AVE
Students' Critical Thinking Skills	SCTS1	0.653	0.888	0.913	0.601
	SCTS2	0.732			
	SCTS4	0.819			
	SCTS5	0.813			
	SCTS6	0.845			
	SCTS7	0.817			
	SCTS8	0.729			
	Students' Learning	SL1			
SL2		0.826			
SL3		0.855			
SL5		0.755			
SL6		0.730			
Students' Writing Ability		SWA1	0.789	0.840	0.893
	SWA2	0.828			
	SWA3	0.845			
	SWA4	0.826			
Teachers' Intellectual Skills	TIS1	0.807	0.823	0.879	0.596
	TIS2	0.866			
	TIS3	0.838			
	TIS4	0.579			
	TIS5	0.737			

The current study findings also highlighted the discriminant validity which refers to the the correlation between constructs. Fornell Larcker was used to check this correlation, and the figures have shown that the nexus with variable itself is bigger than the figures that show the nexus with other variables. Thus, the findings show valid discriminant validity and a low association between constructs. Table 2 highlights the results of Fornell Larcker.

Table 2: Fornell Larcker

	SCTS	SL	SWA	TIS
SCTS	0.775			
SL	0.612	0.801		
SWA	0.760	0.548	0.822	
TIS	0.564	0.466	0.540	0.772

In addition, the cross-loadings was also used to check the correlation between constructs. The result have revealed that the figures that show the nexus with the item itself are bigger than the figures that show the nexus with other items of the constructs. Thus, the findings show valid discriminant validity and a low association between constructs. Table 3 highlights the results of cross-loadings.



Table 3: Cross-loadings

	SCTS	SL	SWA	TIS
SCTS1	<b>0.653</b>	0.543	0.506	0.486
SCTS2	<b>0.732</b>	0.434	0.575	0.538
SCTS4	<b>0.819</b>	0.507	0.601	0.390
SCTS5	<b>0.813</b>	0.441	0.591	0.443
SCTS6	<b>0.845</b>	0.491	0.669	0.398
SCTS7	<b>0.817</b>	0.515	0.674	0.436
SCTS8	<b>0.729</b>	0.362	0.465	0.375
SL1	0.410	<b>0.830</b>	0.347	0.315
SL2	0.589	<b>0.826</b>	0.521	0.420
SL3	0.439	<b>0.855</b>	0.378	0.357
SL5	0.528	<b>0.755</b>	0.481	0.336
SL6	0.431	<b>0.730</b>	0.418	0.415
SWA1	0.598	0.459	<b>0.789</b>	0.433
SWA2	0.627	0.427	<b>0.828</b>	0.435
SWA3	0.645	0.463	<b>0.845</b>	0.457
SWA4	0.628	0.455	<b>0.826</b>	0.452
TIS1	0.392	0.339	0.391	<b>0.807</b>
TIS2	0.435	0.372	0.416	<b>0.866</b>
TIS3	0.385	0.349	0.379	<b>0.838</b>
TIS4	0.503	0.342	0.453	<b>0.579</b>
TIS5	0.430	0.373	0.417	<b>0.737</b>

Moreover, the Heterotrait Monotrait (HTMT) ratio was also used to check the correlation between constructs. The result reveal that the figures of the HTMT ratio are lower than 0.90. Thus, the findings show valid discriminant validity and a low association between constructs. Table 4 highlights the results of the HTMT ratio.

Table 4: Heterotrait Monotrait ratio

	SCTS	SL	SWA	TIS
SCTS				
SL	0.680			
SWA	0.873	0.630		
TIS	0.658	0.544	0.646	

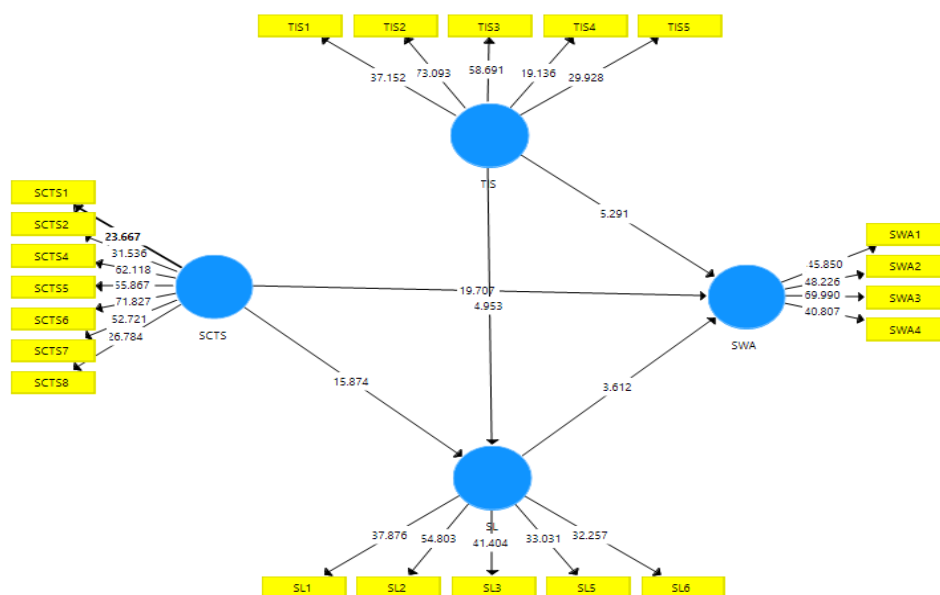


Figure 2: Measurement model assessment

Firstly, the path analysis shows the direct association between the constructs. The results revealed that student critical thinking skills and teachers' intellectual skills have a positive influence on the student writing ability of private universities in Indonesia and accept H1 and H2. Table 5 shows the direct association among the variables.

Table 5: Direct path analysis

Relationships	Beta	S.D.	T Statistics	P Values	L.L.	U.L.
SCTS -> SL	0.512	0.032	15.874	0.000	0.450	0.573
SCTS -> SWA	0.614	0.031	19.707	0.000	0.558	0.674
SL -> SWA	0.105	0.029	3.612	0.000	0.048	0.156
TIS -> SL	0.177	0.036	4.953	0.000	0.108	0.243
TIS -> SWA	0.145	0.027	5.291	0.000	0.078	0.193

Finally, the path analysis also shows the indirect association between the constructs. The results also exposed that student learning significantly mediates the relationship between student critical thinking skills, teachers' intellectual skills and students' writing ability in private universities in Indonesia and therefore, the study accepts H3 and H4. Table 6 shows the indirect association among the variables.

Table 6: Indirect path analysis

Relationships	Beta	S.D.	T Statistics	P Values	L.L.	U.L.
SCTS -> SL -> SWA	0.054	0.016	3.431	0.001	0.025	0.080
TIS -> SL -> SWA	0.019	0.006	2.975	0.004	0.008	0.030

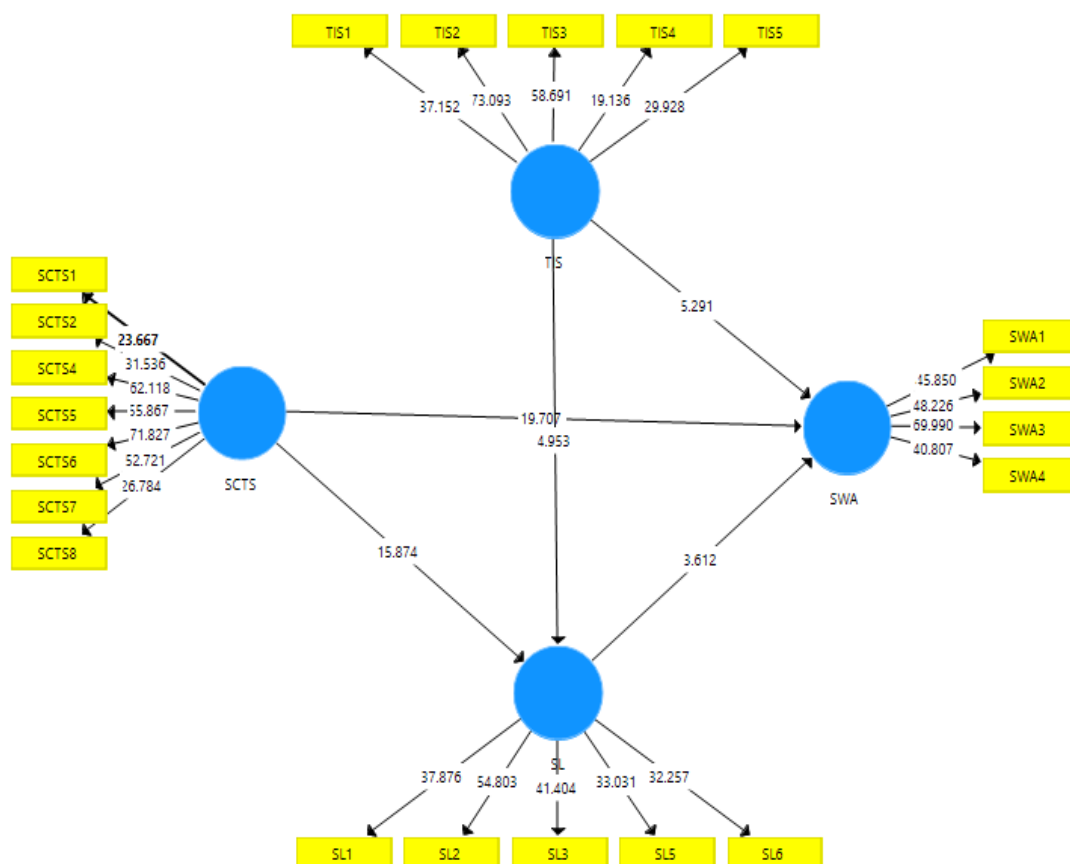


Figure 3: Structural model assessment

## Discussion and Implications

The study results have indicated that students' critical thinking skills have a positive association with students' writing ability. These results are supported by the past study of Cargas, Williams, and Rosenberg (2017), which shows that when students have critical thinking skills like observation, analysis, inference, communication, and problem-solving, metacognitive, creative, decision making, inductive reasoning, and conceptual thinking, it is easier to identify and remove the weaknesses in terms of their writing skills. This helps students in developing better writing skills like error-free grammar, planning a writing strategy, and communicating ideas clearly and concisely. These results are also supported by the previous study of Widana, Parwata, Parmithi, Jayantika et al. (2018), which analyzes the impact of students' critical thinking skills on students' writing abilities. This study concludes that when the students have the ability to observe their own writing skills and writing of other students, analyze the difference, find a weakness, understand the causes, and identify the ways to remove those problems, they can improve and maintain quality writing skills to secure distinctive marks with clear, correct, and concise writing. These results are also supported by the research of Norton and Gregson (2020) which states that students who have the cognitive abilities to observe, understand, have quick problem solving and decision-making skills, and better communication skill can present their ideas in a better way through clear, correct, and concise writing and quick answering to the questions asked.

The study results have indicated that teachers' intellectual skills have a positive association with students writing ability. These results are supported by the past study of Teo (2019), which analyzes the influences of teachers' intellectual skills on students' writing skills. The study highlights that teachers who have intellectual skills like observation, open-mindedness, analytical thinking, critical thinking, judgment, synthesis thinking, creative thinking and problem-solving skills, can evenly observe their students, evaluate their writing performance during classwork, test or exams, find gaps in the students to accept improvement, and motivate them to adopt clear, correct, and to the point writing to express their ideas. These results are in line with the previous study of Gilson, Carter, and Biggs (2017), which states that intellectual teachers have critical and creative thinking skills, they analyze the problems in the way of teaching, find the weak areas of in students learning and writing, and develop new ideas to bring improvement in students' learning and writing performance. Under the guidance of intellectual teachers, students can develop effective writing skills. These results are in line with the previous study of Villegas, Saiz de La Mora, Martin, and Mills (2018), which shows that teachers with effective intellectual skills keep an eye on the situation, educational trends, and effective sources of teachings, and they invent new ideas and channelize these ideas into strategies to educate the students. The effective implementation of these strategies enables teachers to instill better learning and writing skills to prove their intelligence in the tests.

The study results have also indicated that student learning plays a mediating role between students' critical thinking skills and students' writing skills. These results are supported by the past study of Ali-Abadi, Babamohamadi, and Nobahar (2020), which indicates that students' critical thinking skills like observation, analysis, inference, communication, and problem-solving, metacognitive, creative, decision making, inductive reasoning and conceptual thinking are helpful in developing an effective learning environment. As teachers have the ability to find and remove hurdles in the way of learning, they introduce innovative sources of learning to the students and creative skills to interact with these sources of learning. The affecting learning skills enable them to learn how to write effectively without any grammatical, syntactic, or semantic error. These results also agree with the study of Bezanilla, Fernández-Nogueira, Poblete, and Galindo-Domínguez (2019), which states that the learning process of students is improved when they have critical thinking skills like observation, analysis, decision making, and creativity, and the improved learning of students which result in the development of students' writing skills. These results are also in line with the past study of Stuppel, Maratos, Elander, Hunt et al. (2017), which shows that when students have critical thinking skills, they can better understand the subjects under study and adopt effective sources of

learning to learn better about the subjects. Having learnt effectively, the students are more equipped to develop good writing skills. The study results have shown that student learning plays a mediating role between teachers' intellectual skills and students' writing skills. These results are supported by the past study of Kaharuddin (2018), which shows that educational institutions where teachers have intellectual skills like observation, open-mindedness, analytical thinking, critical thinking, judgment, synthesis thinking, creative thinking and problem-solving skills can foster and promote an innovative learning environment which ultimately improves the learning abilities of students. The increased knowledge and awareness help develop their writing skills. These results are also in line with the previous study of Claro, Salinas, Cabello-Hutt, San Martín et al. (2018). This study shows that teachers who have intellectual skills like analytical skills, problem-solving skills, decision-making skills, and creative ability are in a better position to adopt innovative and digital ways to teach the student. In this way, the students can learn more effectively, and their overall knowledge and awareness levels improve their ability to develop writing skills.

The current study has key theoretical significance. It assumes a distinctive position in the literature because of its remarkable contribution to the literature on education development. The current study gives a detailed description of the significance of the development of students writing skills in the education sector and checks the influences of two important factors, students' critical thinking skills and teachers' intellectual skills, on the development of students writing skills. Students and teachers skills have long been researched by many authors as the constructs of students learning or writing abilities, but the specification with students' critical thinking skills and teachers' intellectual skills for determining students writing skills has not been explored enough in previously conducted research. The current study, which has specified the students' critical thinking skills and teachers' intellectual skills to analyze the development of students writing skills, is a therefore a pioneer contribution of its kind to the existing body of literature on the subject. This study is meaningful for future researchers who want to investigate this area of study in the future. Moreover, the study also provides guideline to the regulation developing authorities while formulating policies related to students' writing ability in the universities of Indonesia.

Moreover, the current study also holds significance in the practical education world for emerging economies like Indonesia. This study offer valuable insights for the education ministry and management in education institutions while they are making education policies as well as for students when they make a decision during their academic journey. This study provides a set of guidelines to bring about an improvement in the development of students' writing skills. This study shows that students can develop better writing skills if they have critical thinking skills and if their teachers have effective intellectual skills. The study also suggests that student's critical thinking skills and teachers' intellectual skills are helpful to students for effective learning, which leads to the development of students' writing skills.

## **Conclusion and Limitations**

Indonesia is a developing economy that has a large education system. However, there is a fewer number of private universities in this country relative to the population of the country. The performance of universities is dependent on the performance of students in exams or tests. As the performance of the students is low, the development of universities is affected. The current study was conducted with the intention to highlight the ways to build writing skills among students. The study has aimed to check the role of students' critical thinking skills and teachers' intellectual skills in the development of students writing skills as well as to test the linking role of students' learning among the students' critical thinking skills and teachers' intellectual skills and the development of students' writing skills. The authors analyzed the influences of students' critical thinking skills and teachers' intellectual skills on students' learning and the development of students writing skills in the universities of Indonesia to collect the data and present results. The results indicated that a student's critical thinking skills like observation, analysis, inference, communication, and problem-

solving, creativity, decision making, inductive reasoning, and conceptual thinking are helpful in developing better writing skills. The results showed that intellectual teachers have critical and creative thinking skills; they analyze the problems and weak areas in students' learning and writing while teaching and overcome these by encourage the students to develop effective writing skills. The results also concluded that students' learning develops a link between students' critical thinking skills and teachers' intellectual skills and the development of students' writing skills.

The current study has several limitations which present an opportunity for future works to challenge their intellectual ability while replicating this study. The current study focuses only on two personal factors like, students' critical thinking skills and teachers' intellectual skills, while analyzing the development of students writing skills. Many other factors which can also influence the development of student writing skills, like institutional policies and sources of learning, have received no attention from the current authors, and as a result, the study framework is limited. Moreover, this study collects data on the influences of factors, students' critical thinking skills and teachers' intellectual skills on students learning and the development of students writing skills from the private universities of Indonesia. Indonesia is a developing country with a specific culture and education system. Therefore, the study outcomes are not general. Future authors must analyze the aforementioned factors in the larger area of the world.

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