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Investigating the Role of ICT toward Students' Higher Order Thinking in Writing Skills at Islamic University Students

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ABSTRACT

This study gave focused on ICT used by students in writing, the role of ICT toward students' higher-order thinking, and the dominant role of ICT toward students higher-order thinking. Samples of this research were English students of South Sumatra Islamic universities, namely UIN Raden Fatah Palembang, IAIN Curup, IAIN Bengkulu, UIN Jambi, UIN Lampung, and UIN Bangka Belitung. There were 30 English students from every university used as the research sample of this study. This study employed a survey research design. The researcher used an online questionnaire to find out the data about the role of ICT toward HOTS in writing skills. The data was analyzed by using percentage analysis (SPSS 25). The result showed students gave positive opinions when their lecturer used ICT in improving their Higher-Order Thinking in Writing skills (71.8%). This percentage is at a good level.

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1. INTRODUCTION

One of the visible changes in the modern world is the role technology has played in our lives. The development of technology or ICT (Information Communication and Technology) is growing rapidly in all fields, including in the field of education. University education and research can benefit from advances in information, communication, and technology (ICT) (Apriani & Hidayah, 2019). The world of education has moved from traditional learning to modern learning, and the use of technology can be considered one of its characteristics. Consequently, the usage of ICT in the education sector is found to be incorporated for interactive teaching and learning throughout the teaching and learning process in almost every scenario or activity. ICT is well-suited to many aspects of education, including lesson planning, technique, processes, media, content, and assessment (Apriani et al., 2020). Tinio described ICT as a broad range of technical instruments and resources used to transmit, generate, distribute, store, and manage information, as stated in Apriani (2016). In addition, ICT also helps to enlarge traditional learning activities.

In the learning English context, instructional media based on technology is one of the aspects that impact the learning process and can serve as a bridge to improve English education quality and maximize students' ability in learning English. The importance of ICT use in learning activities is very indispensable. ICT is recognized as one of the resources that may aid in the development of students' knowledge in a more engaging manner and gives exceptional chances to EFL students in particular. ICTs make it easier to get instant access to information resources for teaching and learning. According to Sife, as described in Arkorful & Abaidoo, ICTs can improve information accessibility, enable communication through electronic facilities, improve synchronous learning, and encourage cooperation and collaboration (2015). Students prefer weblogs because of five researcher-provided indicators, according to Sanjaya et al. (2020): student trust in writing, growth of writing talents, experience and understanding of ICT usage, promotion of critical thinking, and accessibility. This concluded that ICT facilitates students in learning and interestingly practicing English skills and accessing information quickly.

Islamic University's EFL students must also learn English in order to compete in today's digital world. Speaking, reading, listening, and writing are the foundational abilities that all EFL students must master in order to communicate effectively in the English language. Students who want to pursue further education at the university level will need to be fluent in English. Students learning English as a foreign language must master all aspects of the language, including the art of writing.

Diagnosed issues include a lack of L2 lexis and writing ability, as well as a lack of exposure to writing skills. As it turned out, students' negative feelings about writing mirrored their feelings of dissatisfaction and anxiousness. As a consequence, the findings of this study point to the need of implementing writing skills activities in EFL classrooms (Hena, 2017). Information and communication technologies (ICTs) have risen to prominence as a foundational pillar of contemporary society. New information and communication technologies (ICTs) are transforming how people learn, acquire, and share knowledge even if they are not designed to replace teachers. Social networking services like Facebook, LinkedIn, and Twitter are used by almost everyone. Higher education may greatly benefit from social media's collaborative nature, networking, knowledge-sharing and content-creation capabilities (Bakeer, 2018). It's certain that ICT will have a substantial impact on how we teach English as a foreign language in the future. The grammar-translation method (GTM), recitation, and the teacher-centered approach may all be replaced by blended learning and the flipped classroom, all of which rely on technology. Metacognitive talents such as critical thinking and problem solving are not encouraged by these tactics (Bachiri & Oifaa). Learning that is unabated, of the highest quality, may enable students to build competency so they can benefit from a student-centered 21st-century education and ensuring that technological investments are utilised in the program's goals.

Writing is one of the four language skills that need further effort. Oktavianti and colleagues (2021) claim that writing in English is an essential skill since it involves correct grammar and the capacity to convey ideas or concepts. Having a good command of the English language is essential for university students, especially in their final project. Due to its role in conveying information correctly and efficiently, it is a vital skill for language development (Fareed, Ashraf, and Bilal, 2016). (Banca, 2013). Quintero (2008), for example, describes writing as "a magnificent moment when words flow into our brains and we endeavor to link and arrange them to bring meaning to the variety of notions that move through our minds. The process of seeking and producing meaning, on the other hand, is according to Mitchell (quoted in Quintero, 2008). Learning to write in a foreign language is the most difficult part of the learning process (Dar & Khan, 2015). Students in universities, particularly non-native English speakers at Islamic universities, lack the knowledge and skills essential to communicate effectively and efficiently in English as a second language. According to the Irish National Teachers Organization, language teaching includes the development of vocal expression, writing abilities, literature, and creative thinking (2004). In contrast, Adas & Bakir (2013) found that children seldom write outside of the school, and that most of their time is spent in front of a desk. Students must actively engage in writing tasks in order for their educational experiences to be meaningful and enjoyable.

Benjamin Bloom's taxonomy was one of the first to stress the two phases of cognitive development when defining "critical thinking." Components one through three include: knowledge; understanding; and application (Bloom & Duron in Todorova & Koleva, 2021). Higher-Order Thinking Abilities are defined by the capacity to ponder a new problem for a long time (Feronica et al., 2021). Critical thinking is required at the second level, which is called "high-order thinking skills," which includes the ability to analyze, synthesize, and evaluate a situation or idea. "A Taxonomy for Teaching, Learning, & Assessment" was published in the journal *Cognitive Psychology* in 2001 by a group of cognitive psychologists and academics. For the new taxonomy's categories and subcategories, the authors opted to utilize verbs rather than the previous taxonomy's noun-heavy language. Using "action words" like these, we may better understand how youngsters learn and process new information. According to the constructivist learning paradigm, everyone's knowledge and worldview are built on their own experiences and cognitive models. So learning is a process of changing and using mental models via observation, absorption, and interaction with the environment. Constructivism holds that everyone has the capacity to create new knowledge in their thoughts. Students must find and change information if it is to be "theirs." Student progress and the discovery of "their own meaning" is encouraged by this strategy.... As a result, the definition of constructivism in education is "participatory constructivism."

It is rare for students in a traditional classroom to ask questions or engage in discussions, which is mostly comprised of lectures and seminars that allow students to learn more about the subject at hand. Students in most classes nowadays are taught via drills and error-repetition rather than direct instruction from the teacher. Computer technology can only be useful in the classroom if it is used in conjunction with a constructivist classroom model that puts students and users at the center. A student-centered learning technique, according to Feronica et al. (2021), involves the development of cognitive abilities that go beyond mere recollection and understanding, including the capacity to analyze, evaluate and even create based on previously acquired knowledge. Constructionist learning theories are built on project work, conversation and problem solving; performing experiments; literature study; portfolio building; and the integration of theory with practice... The usage of technology is required to implement the constructivist learning paradigm in e-learning.

In order to overcome these challenges, seize opportunities, and make long-term advances in student learning, Prakash (2015) argues that teachers must invest in continuing professional development. Through high-quality professional development, educators, lecturers, and instructors may build their confidence and expertise in pushing new models of learning and curriculum materials as well as reviewing approaches, media and technology. Additionally, it makes it possible for students to benefit from the most up-to-date educational methods and guarantees that the tools they use are compatible with one another.

In earlier investigations, a number of researchers have made claims about ICT and HOTS. Using learning media in the teaching and learning process may produce new interests, motivate students, promote learning activities, and have psychological affects on students, according to Arsyad (2006). Researchers found that incorporating HOTS elements into teaching and learning activities helped students better visualize and grasp the problem and, as a result, discover the best solution (ISTE, 2007). HOTS play a key role in producing graduates with critical thinking and problem-solving ability (Vidergo, 2017). In today's highly competitive workplace, graduates need to be prepared to deal with unexpected situations (Vidergo, 2017). Academic and professional achievement may be predicted by HOTS, according to Zohar and Dori (2003). As a result, colleges and universities have a critical role to play in promoting HOTS among students.

Consequently, ICT has a dominating role in students' higher order thinking and writing abilities. Therefore, based on the above explanation, the essay's title is intended to demonstrate the function of ICT in students' higher order thinking and writing abilities "Investigating the Role of ICT toward Students' Higher Order Thinking in Writing Skill at Islamic University Students".

Theoretical Framework

Writing skill refers to the act of encoding words and is a key component of language learning (Floyd et al., 2007). Despite the fact that ICT may be utilized to improve writing skills training (Melor Md Yunus, 2007), the parts that follow describe ICT, explain how to use students' higher-order thinking skills (HOTS), and examine the impacts of utilizing students' higher-order thinking skills (HOTS) in writing.

ICT/Information and Communication Technology

ICT is defined by Tinio (2002) as a facility, instrument, or piece of equipment that provides services for processing, storing, and transmitting information in all forms, including voice, text, data, pictures, and video. ICT refers to the technological tools and resources utilized for information communication, generation, storage, sharing, transfer, and exchange. Within the relatively limited scope of this study, ICT is defined in the context of education. Ho Chi (2014) declared that ICT is divided into two categories, namely computer-based technology and internet-based technology. There are several types of computer-based technology, such as multimedia technology, telecommunications technology, and computer network technology. In addition, internet-based technology is divided into three categories: social media, online libraries, and applications. Because this technology motivates and engages students in the classroom, the use of ICT in the teaching and learning process can help to enhance educational outcomes.

Higher Order Thinking Skills (HOTS)

Higher Order Thinking Skills (HOTS) are often utilized to bring variation to EFL classes. The three highest levels of cognitive ability (analyzing, evaluating, and generating) are subdivided into three knowledge levels (conceptual, procedural, and metacognitive) (Retnawati et al. 2018, p. 216). Higher-Order Thinking Skills (HOTS) are the ability to use information, skills, and values in order to reason, reflect, solve issues, make choices, innovate, and create new things. These tactics boost cognitive growth and higher-order thinking skills (Sulaiman et al. 2017, p. 1). Conceptual, procedural, metacognitive, analytic, evaluative, and creative capacity are examples of HOT skills.

Higher-order thinking skills depend on lower-order thinking skills for development; hence, higher-order thinking skills are based on lower-order thinking skills. According to Singh et al. (2018), they asserted that prior understanding of subject matter content is required to think critically. When confronted with novel challenges, doubts, questions, or dilemmas, students can apply HOTS.

HOTS skills arise when a student receives new information and stores it in his memory before correlating, organizing, or analyzing that knowledge to reach a certain goal. According to Abosalem (2016), the top three levels of Bloom's cognitive taxonomy must all be addressed: analysis, synthesis, and assessment. HOTS are mental processes in which students must use their thoughts to comprehend the hidden meaning of material presented to them, recognize the relationships between ideas, derive According to Keshta and Seif, students are able to apply concepts and rules, analyze and categorize, generate and integrate new ideas, and assess and evaluate the content supplied to them (2013). HOTS aims to improve students' abilities to assess, evaluate by extrapolating from existing data, and synthesize new knowledge (Chinedu & Kamin, 2015, p. 36). Analysis, synthesis, and assessment are sub-skills of HOTS.

The Effect of ICT in Writing Skill

According to Dhanya (2016), the instructor is no longer the exclusive provider of material, and students can design their learning in ways that are closely aligned with their everyday requirements. All of the preceding urge the user to interact with content in English, both officially and informally. These strategies can serve as a bridge for communication both within and outside of the classroom. These devices may also be very effective to be the tools of teaching and learning.

Sakkir, Rahman, and Salija (2016) conducted a research on students' perceptions about the use of social media in English instruction at an Indonesian higher education institution. According to the research, the majority of students surveyed viewed social media in the writing classroom favorably and were anxious to use it. On the other side, large classroom sizes, a lack of Internet knowledge, and a lack of infrastructure may all be obstacles to incorporating social media in the classroom.

The Effects of Using Students' Higher Order Thinking Skills (HOTS) in Writing Skill

According to Retnawati et al. (2018), students must be familiar with the HOTS exercise in order to adjust to a new environment and establish views on a given issue. Higher-order thinking abilities (HOTS) are constituted of both creative and analytical reasoning (Retnawati et al. 2018, p. 216). (Retnawati et al. 2018, p. 216). According to Sulaiman et al. (2017), HOTS may be leveraged in pedagogy and evaluation to aid students build HOTS and boost their performance, such as through inquiry-based learning and high-level questioning.

Questions demanding higher-order thinking may drive students to study the subject in greater detail (Kusuma et al. 2017, p. 28). (Kusuma et al. 2017, p. 28). Advanced students may apply HOTS assignments to address questions utilizing inductive and deductive reasoning, as well as to discover and analyze current scientific evaluations of evidence (Wahyuni, 2018, p. 84). (Wahyuni, 2018, p. 84). Students may learn more quickly if they are pushed to integrate and apply multiple levels of concepts, ranging from basic to complex. Learning is the process of accumulating subject-related information, abilities, or attitudes that results in behavioral changes (Abosalem, 2016, p. 5). (Abosalem, 2016, p. 5). When students apply higher order thinking abilities, they are driven to think critically, investigate knowledge, and boost their learning.

The findings of a study done by Kusuma et al. (2017, p. 30) suggested that "the constructed HOTS instrument may benefit students in developing their higher-order thinking skills as an assessment for learning." According to the findings of Singh et al. (2018), "the HOTS module acted as a guide for instructors in applying and integrating thinking skills in the writing teaching process." In addition, the students were eager about utilizing the resources supplied by their instructors to build higher-order thinking skills in order to increase their writing talents (Singh et al. 2018, p. 98). (Singh et al. 2018, p. 98). HOTS is a fundamental component of both creative and critical thinking, and creative thinking pedagogy may benefit students in the creation of more unique ideas, ideal viewpoints, and innovative discoveries (Chinedu & Kamin, 2015, p. 36). (Chinedu & Kamin, 2015, p. 36). Higher Order Thinking Skills (HOTS) may be utilized as a framework for integrating thinking skills into writing instruction, giving students with techniques to increase their writing performance and aiding them in developing more creative, idealistic, and imaginative ideas.

2. METHODS

The survey research design was used in this study. A survey research design is a quantitative research process used to gain a description of the population's views, habits, and attributes using samples from the population (Creswell, 2012). This study was conducted to find out what types of ICT are used by students in improving writing skills; what role ICT plays in students' high-level thinking; and what is dominant in the role of ICT towards high-level thinking students. This research is aimed at English students of South Sumatra Islamic universities, namely UIN Raden Fatah Palembang, IAIN Curup, IAIN Bengkulu, UIN Jambi, UIN Lampung, and UIN Bangka Belitung, which will be taken by each of the 30 English students who will be used as research subjects. In this study, an online questionnaire served as the research tool. The questionnaires were sent to 30 English students from each institution in order to gather information about the forms of ICT used to improve writing abilities and the function of ICT in the development of higher-order thinking skills. Each statement item offers four Likert-scale response options: Strongly Disagree, Disagree, Agree, and Strongly Agree. This research employs percentage analysis methods (SPSS 25). The descriptive percentage data analysis approach is used to identify the state of variables, namely the influence of ICT on Islamic University students'

Higher Order Thinking in Writing Skills. In general, the research process consists of data collecting, data reduction, data presentation, and conclusion drafting. Figure 1 illustrates the several phases of this inquiry.

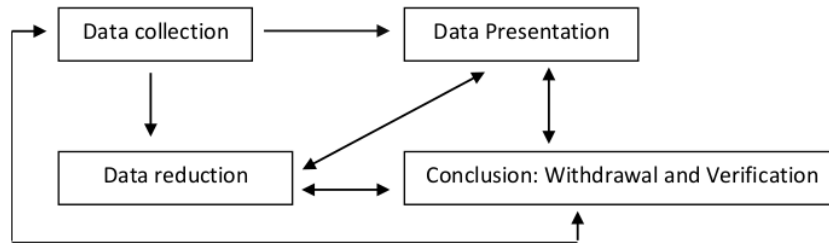


Figure 1. Research Stage Flow

3. FINDINGS AND DISCUSSION

FINDING

The quiz results revealed three parts of HOTS (Bloom Taxonomy): analyzing, evaluating, and generating. First, examine. The fourth sign of Bloom's taxonomy is analyzing. Analyzing information requires disassembling it into constituent elements and determining how the constituent parts relate to one another and to the overall total. The table below describes the percentages of students who improved higher-order thinking abilities with the use of ICT in the areas of analyzing, evaluating, and producing.

Table 1.
Percentage of Analyzing, Evaluating, Creating (Blooms' Taxonomy of HOTS)

Indicator	Statements	D	D	A	SA	Total	
		F	F	f	f	Score	%
Analyzing	1. My English writing skill is good because I can specify in details different text genres based on their functions and intentions by using ICT.	2	14	38	24	240	71.43
	2. My English writing skill is good because I can specify in details different text organizations based on their functions and intentions by using ICT.	1	20	33	24	236	70.24
	3. My English writing skill is good because I can specify in details a variety of language features based on their functions and intentions by using ICT.	4	13	40	21	234	69.64
Evaluating	4. I can write good English texts because I can evaluate text genres based on their functions, purposes, and intentions by using ICT.	3	10	41	24	242	72.02
	5. I can write good English texts because I can evaluate language features based on the genres'	2	17	36	23	236	70.24

classifications by using ICT.							
Creating	6. I can create my own English written texts by using my comprehensive knowledge about English genres with ICT used.	1	12	37	28	248	73.81
	7. I can create my own English written texts by using my comprehensive knowledge about English text organizations with ICT used.	2	10	46	21	244	72.62
	8. I can create my own English written texts by using my comprehensive knowledge about English language features with ICT used.	3	9	43	25	250	74.40
Total						71.8	(Good)

The first indicator is "analyzing." Statement 1: (My English writing talent is good because I can explain in detail different text genres depending on their functions and intents by utilizing ICT). For the first statement, the researchers found 240 as the overall score and 71, or 43 percent, as its percentage. From the percentage, the researchers found that 2 students severely disagreed, 14 students disagreed, 38 students agreed, and 24 students highly agreed. Statement 2 (I may explain in detail different text organizations based on their roles and objectives by utilizing ICT). From the statement 2, it showed that the overall score is 236 with a total percentage of 70.24 percent. This percentage indicated that 1 student chose strongly disagree, 20 students chose disagree, 33 students chose agree, and 24 students chose highly agree. By utilizing ICT, I can explain in detail a variety of linguistic elements depending on their purposes and intentions. For this statement, the researchers found 69.64 percent with a score of 234. This percentage is calculated from 4 students choosing to strongly disagree, 13 students choosing to disagree, 40 students choosing to agree, and 21 students choosing to highly agree.

The second indicator is evaluating. For this indicator, the researchers had 2 statements to answer all the curious. In Statement 4, I can compose good English texts because I can analyze text genres based on their functions, purposes, and intentions using ICT. This statement showed that the score was 242 with 72.02 percent as the percentage. All of this score came from 3 strongly disagree votes, 10 disagree votes, 41 agree votes, and 24 highly agree votes. I can create good English writing because I can analyze language aspects based on genre classifications using ICT. This statement has a score of 236 and 70.24 percent. All this data was concluded from 2 strongly disagree votes, 17 disagree votes, 36 agree votes, and 23 very agree votes.

The third indicator is creation. Creating became the last indicator in Bloom's Taxonomy, which is that this indicator has 3 statements. It started from Statement 6 (I can construct my own English written work utilizing my extensive understanding of English genres and ICT). From this statement, the result found that the score was 248 with 73.81 percent. It was summed up by 1 student very disagreeing, 12 students disagreeing, 37 students agreeing, and 28 students highly agreeing. I can construct my own English written texts utilizing my extensive understanding of English text organizations and ICT. This statement showed that 2 students highly disagreed, 10 students disagreed, 46 students agreed, and 21 students strongly agreed. The total score is 244, with a percentage of 72.62 percent. Statement 8 (I can construct my own English-language written works using my extensive understanding of English language characteristics and ICT) is the final statement. This last statement gives the researchers a score of 250 with 74.40 percent in the data. It came from 3 students who severely disagreed, 9 students disagreed, 43 students agreed, and 25 students highly agreed.

DISCUSSION

Concerning the first indicator, "Analyzing", most students have the benefit of using ICT in writing. According to Thamrin, Widodo and Magana (2014), analyzing will break the information down into sections in order to investigate their understandings and the linkages of the information. This stage consists of comparing, arranging, dissecting, probing, and discovering. Accordingly, analysis skills in higher order thinking skills give the students' ability to dig up the information and spare it into some parts and comprehend the meaning of it.

In the case of "evaluating," in the higher order thinking skills concept, the students have to score or evaluate their product by themselves. In accordance with this, Barbara (2010) contends that in order to make learning more active, teachers must incorporate experiential learning and chances for reflective discourse. Students must use primary and secondary sources to offer arguments, express opinions, and evaluate evidence in order to participate in higher-level thinking. Furthermore, Thamrin, Widodo, and Magana (2014) said that appraisal examines the reason for a choice or course of action. It entails verifying, hypothesizing, analyzing, testing, and assessing any knowledge acquired from any source. Evacuating skills give the students' positive impact. Using this evaluation, students are able to crosscheck their own arguments with other sources. The students can evaluate the text genres based on the genre classifications. The students are able to It includes checking, hypothesizing, critiquing, experimenting, and judging every piece of information they receive from any source.

The last sign is "Creating." According to Chinedu (2016), when students are able to generate and integrate these talents into their learning activities, they have demonstrated HOTS. Furthermore, Anderson (2001) confirms that evaluating is the process of combining divergent pieces to form a new whole or reorganizing existing elements to create a new structure. The process of creation includes generating, planning, and producing. This conclusion is consistent with Thamrin (2014), who states that producing is the process of developing new ideas, goods, or perspectives. It includes designing, building, planning, creating, and inventing. This is the last indicator of higher-order thinking skills. Creating skills give students' positive impact. They are able to apply all the skills that they have mastered; they are able to speak up without reading text; they are able to write the text in English with good structures of grammar; and they are able to make a product by the way of their idea.

We have gained three levels of higher order thinking competence in writing by utilizing ICT at the conclusion of this Bloom's taxonomy. In brief, the major goal of HOTS is for students to be able to gather information, classify it, and come up with new ideas that they can use in whatever circumstance they find themselves in, including outside of the classroom. Accordingly, the students' writing skills by using higher order thinking skills is very good with all of the percentages of the respondents.

In addition, the findings indicate that ICT proficiency is an additional essential element that impacts the integration of ICT in teaching and learning activities to promote HOTS among students. This is due to the fact that if the learners have a better level of ICT proficiency, they may confidently incorporate the technology into their teaching activities, which may lead them to implement more engaging teaching methodology to increase HOTS among learners. According to Wei et al. (2016), the ICT competence of academicians dictates the efficient integration of ICT into their teaching and learning activities in order to achieve good academic results.

This study reported that ICT plays an important role in promoting HOTS among learners. At the same time, they also suggested other approaches such as interactive teaching and learning activities, quality resources, and a variety of pedagogical approaches to promote HOTS among learners besides using ICT. Similarly, Jerome, Lee, and Ting (2010) stated that an innovative pedagogical approach and interactive teaching and learning tasks could promote HOTS among learners.

4. CONCLUSION

This research is aimed at English students of South Sumatra Islamic universities, namely UIN Raden Fatah Palembang, IAIN Curup, IAIN Bengkulu, UIN Jambi, UIN Lampung, and UIN Bangka

Belitung. From those universities, in this study, the authors have concluded that the benefit of using ICT in learning writing skills by EFL students can be summed up as the researchers found that the students perceive that all students have a positive opinion when using ICT in enhancing their writing skills. ICT can build up their motivation, independent learning, critical thinking, creativity, and discipline time and provide a favorable environment for students. However, as an effective additional and helpful complementary learning aid, ICTs should be included into foreign language instruction. Higher order thinking abilities helped pupils improve their understanding and application in their courses, according to the research. It also improves their ability to think critically, solve problems, and think creatively. As a result, ICT plays a critical role in students' writing higher-order thinking skills.

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