Using ECL Media to Improve Information Literacy of Islamic Elementary School Students

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Using ECL Media to Improve Information Literacy of Islamic Elementary School Students

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Abstract. This study points to decide the use of ECL media to improve literacy information of Islamic elementary school students. The method used in this was repeated pre-experiment without a control class. The research design used was one group pre-test and post-test. Data were analyzed by paired t-test, n-gain calculation, and ANOVA using IBM SPSS Version 25. The results showed an increase in students' information literacy, which was statistically significant at 5% alpha after learning with ECL media. The mean n-gain for the three classes is in the medium category and does not differ in the three classes, and 90% or more students respond positively to the teaching method with ECL media. According to the result, ECL media effectively improves students' information literacy.

Keywords: early class literacy media; information literacy; Islamic elementary student.

How to Cite: Blank it.

1. Introduction

According to Piaget's theory, children's age is one of the vital cognitive development stages, where they climb up to four distinct phases in mental development. It is a golden age to shape and determine the future. Elementary students or groups aged 7-11 years old are expected to go through the concrete operational stage and take an active role in logical thinking, slowly shedding off their concrete operational state and becoming better at understanding abstract concepts. It is their first step at creating their view about the world, forming a unique approach to navigate their way in life. Reading is one of the primary methods to improve cognitive functions, and countries with high literacy rates have been scientifically proven to flourish, especially in technology, economy, and social aspects. Therefore, providing a good quality of education, including basic literacy skills, is key to setting a solid foundation for Indonesian children in elementary school.

Indonesian literacy indeed increased in recent years. Based on Population Census (SP2020) by Badan Pusat Statistik (BPS) Indonesia in 2020, the illiterate Indonesian level experienced a decline to 1.71% (Nugraha & Octavianah, 2020; Suryaman, 2015). It has been inversely proportional to the data result of UNESCO, which states that Indonesia is the second order of the lowest about World Literacy. Then, in spite of the literacy level being high, however, reading interest of Indon 22 an people is poor. According to UNESCO, Indonesian reading interest is very alarming; it is only 0,001%. It means, from 1,000 Indonesians are only one person who is diligent in reading. Indonesian children are struggling with literacy skills, and more than half who complete school are functionally illiterate, as in their level of comprehension is poor (Sari, 2018). The main causes for this phenomenon are lack of access to books and societies under evaluation of reading, resulting in an almost non-existent reading culture. This problem affected their difficulty in accepting and processing information. In the end, this also affect the quality and empowered human resources and make the risk of unemployment higher (Graber & Mendoza, 2012).

Indonesian students in this century tend to have limitations of knowledge, but it is difficult for them to describe the knowledge they found. In this opinion, educational priority should not be about the right or wrong answer but also students' scores. However, it should be prioritized



on how studen 62 nanage information, associate arguments, and conclude. These indicators are included in information literacy.

The rapid development of information is one of the advantages for everyone involved in learning (Piper et al., 2015). Information lite(13) describes those students who have information literacy will be able to identif(57) and determine the need for information, seek information, evaluate information, organize information, and communicate information in such a way as to answer and overcome various needs.

Information literacy is defined as the skill to know information needs, including identifying the location to serve users effectively (Mishra & Mishra, 2010). Through t³⁹ information literacy, there will be a transformation in students so that they feel the needs to find, understand, evaluate, and use information in learning to achieve the goals that have been set. Someone who has information literacy does not just obtain information but analyzes the information related to what the information contains, where it comes from, what it is used for, how it is beneficial, can it be used in daily life, does it not offend other people? (Gillen & Hall, 2013) It has a significant role in solving the problems encountered and other matters, such as improvied at home, at school, and in the community (Limberg et al., 2012). Information literacy to support their academic success and ensure the quality of graduates who are able to compete and adapt to the world with technological developments (Tewell, 2015).

The information literacy standards set by ACRL (Battista et al., 2015; Latham et al., 2019; Sample, 2020) consists of five standards (lannuzzi, 2000), but in this study, it was adapted into four indicators to alter 11 capabilities of early grade Islamic elementary school students, namely 1) determining the information needs needed, 2) finding the information needed affectively and efficiently, 3) critically evaluate information sources and combine some information into a knowledge base and value system, 4) use information to achieve certain goals. Each indicator has several goals of ability and learning outcomes; thus, this standard can measure a student's information literacy ability.

1.1. Problem Statement



This study points to decide the use of ECL media to improve the information literacy of Islamic elementary school students. The main problems of this research are lack of information literacy in elementary school students on industrial revolution 4.0. It starts from the destratification of the phenomenon of students who believe hoax news and spread it even make it a reference for study or life. This study tries to increase students' information literacy not to be quickly affected by hoax news. It can analyze and evaluate the information correctly because information literacy is essential in this digital era. Without good information literacy, students will be easy to consume hoax news that is not necessarily true and can impact their social life.

1.2. Related Research

Quite a lot of prior studies about the important 2 of information literacy for elementary school students has been settled. According to Chu, information literacy and IT skills need to be reinforced over a longer period of time with proper scaffolding and guid 3 ce from the teacher (Chu et al., 2011; O'Callaghan et al., 2016; Prado & Marzal, 2013); it is no longer effective to provide information literacy instruction that is thought to be "good for" elementary students, but rather, instruction 3 ust focus on the learning styles and preferences of the target population (Brown et al., 2003). Information literacy is one of the competency measurements of the digital teaching competence. Its requirement inside the instructive community is crucial since it compromises the beginning point of the treatment of data for accomplishing the fundamentar formation and learning to be able to reply conceivable problems (Trujillo Torres et al., 2020). The domain of information literacy is considered as one of the challenges of the 21st century teachers. This competence allows them to be able to manage, to receive and to

decide what information is functional from what is not, and to carry out strategies for curing content when locating and selecting it (Andersson & Danielsson, 2021; Wilson et al., 2014).

Media f³⁶ literacy plays an important role to achieve the objectives of learning optimally (Cviko et al., 2013; Naila et al., 2021; Sukma et al., 2017; Wilson et al., 2014) Therefore, the importance of media in teaching information literacy cannot be separated.

Previous studies have shown no research on early class literacy (ECL) media to improve students' information literacy skills. Some findings indicate the importance of active participation of lower grade students in improving their information literacy skills using other media, such as web-based learning (Hatlevik 45 al., 2018; Piasta, 2016). Some studies suggest top-down initiatives for advancing media and informatian literacy among low-grade students (Feekery et al., 2021; Flewitt et al., 2015). Furthermore, adolescents run the risk of becoming irrelevant to the target group. That child participation in the design of such interventions should be seen as an end, at least if we subscribe to the idea of children's rights in the digital age. The novelty in this research is early class literacy media usage to enhance students' information literacy.

1.3. Research Objectives

This study aims at the information literacy enh 15 cement of Islamic elementary school students using ECL media. Increasing the information literacy of elementary school students is the purpose of this research. The expected outcomes of this research are an increase in information literacy so that elementary school students can process, analyze and evaluate all of the information they get. In addition, they can criticize and reject all the wrong or hoax information and uncredible.

2. Theoretical Framework

2.1. Early Class Literacy Media

Early Class Literacy (ECL) media is an innovation to facilitate the student in low grades to understand learning materials and improve information literacy (Bennett et al., 2018; Flores-Koulish et al., 2011; Wohlwend, 2015). ECL media contains various knowledge in the form of pleasant learning content without reducing the content of the main subject (Snow & Matthews, 2016). ECL media used in this research are big books, flashcards, story calendars, and picture media. This variety of media is expected to increase students' interest in learning to improve their learning outcomes, especially information literacy. There are seven units in total of this ECL media.

References to examples of relevant curriculum competencies can be found in each unit. These seven units contain: 1) What and why of literacy, 2) Big book, 3) Phonological awareness, 4) Reading words, 5) Reading fluency, 6) Reading comprehension, and 7) Writing skills. The unit's entire contents will complement and strengthen teacher teaching skills and address learning needs as outlined in the 2013 Curriculum, including higher thinking skills such as critical reasoning and understanding.

The Early Class Literacy Media was adapted to suit its use in Islamic elementary schools based on the description above. Adaptation is carried out by adjusting the present context, adapting to students' character, and planting the Islamic moral values as a characteristic of Islamic schools.

2.2. Information Literacy

Literacy is the ability to read and write. However, in line with booming technological progress in the recent era, literacy is not only related to reading and writing. Many types of literacy are developed, such as digital and physical literacy. Literacy develops depending on the factor which affects, for example, society, facilities, necessities, and functions. The rapid progress of technology and growth of information that is starting to fall uncontrollable is the forerunner of information literacy.

Education achievement requires students to construct their knowledge (Suprijono, 2016). So that, students have to search, pick, dig and find the information correctly. Constructing knowledge is part of thinking skills. Literacy of information is critical to building students' knowledge well. According to Piaget (Ghazi et al., 2016), children between the 7th and 11th can logically perform concrete operations and reasoning that the reasoning can be applied in the concrete sample. A child can construct his knowledge about the world. (Holzman, 2009) Based on Piaget's Theory, Neo-Piaget emphasizes how children can use their attention, memory, and strategy for processing information (Topciu & Myftiu, 2015).

Literacy of information is a personal ability to interact precisely with information, such as formulating needs, obtaining information, evaluating information to distribute information according to ethics, laws, and procedures applicable.

According to the American Paray Association, information literacy is the ability that a person needs to know when the information is needed and how to find, evaluate and use the information effectively (Association, 2060, According to the Association of College and Research Libraries (Association, 2009), information literacy is considered a b(29) need in learning throughout life that is useful for all disciplines and educational levels. Parents and teachers need to provide support to children to develop literacy abilities (Cameron et al., 2020; Santrock et al., 2004).

Information literacy alludes to unused gene 25 s craftsmanship that expands from knowing how to utilize computers and get to data to total reflection on the nature of data itself, its specialized foundation, and its social, social, and philosophical setting and affect. Information literacy or data proficiency prepares people to carry out extended-lasting learning, move forward basic considering abilities, and sort and assess data during transparently available data and from different sources more viably and effectively. Data proficiency can effectively move forward person capacities in communicating thoughts, building a contention or thought, learning new things, and sorting out and distinguishing which data is adjusted and precise and which is not.

3. Method

3.1. Research Design

This study was a repeated pre-experimental (Fraenkel & Wallen, 2012) without a control class, which was soposed on three sample classes. Before teaching with the Early Class Literacy (ECL) metal, all students were given a information literacy test and after learning using ECL media, the students were given a information literacy test on the same material and test.

3.2. Participant/Respondent

The samples of this study were 30 first grader (aged 6-7 years old, male and female) students of Muhammadiyah Islamic 34 mentary School in 3 cities (Surabaya, Malang, and Lamongan) of Indonesia who were in School A (10 students), School B (10 students), and school C (10 students) at 2021/2022 school year.

3.3. Data Collection

Prior to collecting research data, it is necessary to prepare research instruments consisting of (a) teaching tools which include: teaching implementation plans, learning media or ECL media, and student teaching materials; and (b) teaching instruments, which include: information literacy tests and student response questionnaires. To obtain the validity and reliability of the content and constructs of research in 53 uments that meet the requirements, this is done by giving validation sheets to two experts in the field of language and information education. Information literacy test (31) stions are based on indicators adopted from Rader (Rader, 2002), namely: 1) determining the information needs needed, 2) finding the information needed effectively and efficiently, 3) critically evaluate information sources and combine

some information into a knowledge base and value system, 4) use information to achieve certain goals.

3.4. Data Analysis

Before conducting data analysis, it is necessary to define in advance what is meant by the effectiveness of the ECL media. ECL media is said to be effective if: (1) there's an increment within the normal score of students' data proficiency after the ECL media learning is carried out, which is statistically significant at 5% alpha, (2) the average level of improvement (mean N-gain) is at least categorized moderate, (3) the mean N-gain was not different for the three experimental classes.

Furthermore, the research data in the form of information literacy test scores and student response questionnaires werg analyzed using quantitative descriptive and inferential statistics. Inferential statistics include: paired t-test or Wilcoxon test, n 43 in calculation, and analysis of variance (ANOVA) or Kruskal-Wallis's test. Two-tailed paired t-test with was used to determine 2 hether or not there was an increase in students' information literacy scores. Test criteria: reject H0 which says there is no difference in the mean scores of pre-tests and 33 st-test only if the value of sig (p) 0.05. In addition to these prices H₀ is accepted. Meanwhile, to find out the posttest score) is greater than the pre-test score only if the t-count is negative. N-gain calculation is done using the equation: n-gain = (post-test score - pre-test score) / (maximum score - pre-test score), with the following criteria: (1) if n-gain .7 (high), (2) if .3 <n-gain < .44 medium), and (3) if n-gain .3 (low). ANOVA is used to determine whether or not there is a difference in the average level of improvement (n-gain) of information literacy in the three schools. Test criteria: reject H0 which says there is no difference in the mean n-gain of the three classes only if the value of sig (p) 0.05. In addition to these values H0 is accepted. Inferential statistics were carried out with the help of IBM SPSS 25 software.

3.5. Validity and Reliability

The validity (1977) reliability of the content and construct of the research instruments are presented as shown in Table 1.

Table 1. The validity and reliability of research instruments					
Learning Tools	Validity	Category	Reliability (%)	Category	
Lesson plans	3,95	Very Valid	86%	2eliable	
ECL media	3,97	Very Valid	86%	Reliable	
Teaching Materials	3,91	Very Valid	86%	Reliable	
Test Instruments	3,93	Very Valid	86%	Reliable	

Table 1. The validity and reliability of research instruments

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Table 1 shows that teaching tools include teaching implementation plans, ECL media, student teaching materials; and teaching instruments, all of which are highly valid and reliable, so that they are appropriate to be used as learning tools in this study.

4. Findings

4.1. Information Literacy Scores

The data obtained are the initial test scores of students' information literacy (pre-test), and the final test scores (post-test). Pre-test is given to students before the learning begin, while the final test is given after the learning is finished. The 41t instrument for pre-test and post-test used essay questions. The following is a recapitulation of students' information literacy:

Table 2. Data results of Students' Information Literacy

School	Student Code	Pre-Test	Post-Test	16 N-Gain	Category
	1	55	78	0.51	Medium
	2	50	84	0.68	Medium
	3	60	78	0.45	Medium
	4	65	84	0.54	Medium
	5	45	75	0.55	Medium
Α	6	60	84	0.60	Medium
	7	55	90	0.78	High
	8	65	90	0.71	High
	9	50	78	0.56	Medium
	10	50	90	0.80	High
	11	60	90	0.75	High
	12	60	96	0.90	High
	13	55	90	0.78	High
	14	55	85	0.67	Medium
	15	80	96	0.80	High
В	16	45	78	0.60	Medium
	17	55	78	0.51	Medium
	18	55	84	0.64	Medium
	19	65	84	0.54	Medium
	20	75	96	0.84	High
	21	55	84	0.64	Medium
	22	65	90	0.71	High
	23	55	84	0.64	Medium
	24	60	90	0.75	High
6	25	35	72	0.57	Medium
С	26	55	78	0.51	Medium
	27	40	75	0.58	Medium
	28	45	72	0.49	Medium
	29	65	84	0.54	Medium
	30	40	78	0.63	Medium
AVE	RAGE	55.83	83.83	0.64	Medium

The information literacy of students is tested using an information literacy test instrument to he form of 10 descriptive questions. Based on the table above, each school experienced an increase in the average value of students' information literacy.

4.2. Statistical Test Result

The homogeneity test in the initial test (pretest) and the final test (posttest) used the Levene test with a significance level of 5% or 0.05(Sugiyono, 2011), meaning that if the result of the signified nce count is more than 0.05, the data variance is said to be homogeneous. The following results of the homogeneity test calculation can be seen in Table 3.

Variable	Significancy	Standard	Data Variance
Pretest	0.071	0.05	Homogen
Posttest	0,083	0,05	Homogen

Based on the results of Table 3, it can be seen that the homogeneity test in the pretest and posttest is greater than 0.05 (5%), this indicates that school A, school B and school C have homogeneous data variants.

The results of the normality test on the pretest and posttest scores, students' information literacy in school A scored 0.158>0.05, school B scored 0.110>0.05 and school C scored 0.183>0.05. Thus, it can be stated that all the data obtained from the knowledge test, the **main** test scores and the final test scores of critical thinking skills were normally distributed. The data is said to be normally distributed if the Kolmogorov-Smirnov value > 0.05 (significance level 5%) (Trijono, 2015).

The results of the homogeneity and normality test of the two data showed that the data obtained were homogeneous and normally distributed. Then, the paired t-test hypothesis was tested which is used to determine the significance of the ECL media. The results of the calculation are as follows.

Table 4	Paired	T-Test Results	
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t-count	Sig. (p)	Description			
	0002	There is a significant difference			
3.930	0002	between pretest and posttest			

Based on table 4, calculations using the paired t test obtained t-count of 3230 with a significant of 0.002. So, it can be concluded that the significance value (0.002) < 0.05. Thus, it can be stated that there is a significant difference in students' information literacy using ECL media. 10

Furthermore, the one-way ANOVA test was used to test whether the learning impact was consistent (didn 28) iffer in the three classes) or inconsistent (different in the three classes). Summary of ANOVA results are shown in Table 5. 11

	Table 5. Summ	nary of Or	ne-way ANOVA Te	est Results	
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	,037	2	,019	,364	,696
Within Groups	3,662	72	,051		
Total	3,699	74			

Based on the table above, the data obtained for the F-count value of 0.364 and a significance value of 0.693. If a comparison is made of F table (3.12) > F count (0.364) and the value of sig. (0.696) > 0.05. Thus, it can be stated that learning using ECL media is consistent in the three classes.

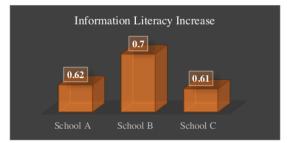


Figure 1. The increase of students' information literacy

5. Discussion

Industrial Revolution 4.0 has had an incredible impact on education. Technology sophistication results in the spread of information without limits and filters across the community, even children or students. The Internet has mastered the world currently, compliance with the impact of the pandemic COVID-19 that makes everything done and got virtually. In addition, current globalization that offer the world's culture are beginning to change people's mindsets. It can be seen from the many provocative contents, not a few that have low quality. With the rise of these different content, people are often trapped and participate in spreading information that is not necessarily true and low-quality. It appears spread fact and hoax information, which ultimately tests people's ability to assess useful or useless information. As human beings and products of society, people need information literacy in every aspect of human life (Purwaningtyas, 2018).

The idea of information litera 23 refers to determined information performs in a society characterized by almost boundless access to information and where information performs in digital environment (Limberg et al., 2012). It will not be easy for those who cannot sort out the information well to compete in this globalized world. The importance of information literacy, especially for Islamic elementary school students, is to classify which information is good or bad, docess information correctly, critically evaluates information sources, combine some information into a knowledge base and value system, avoid misleading concepts, and use the information to achieve specific information goals. Information literacy can improve people competence by evaluate, organize and using information wisely (Compton-Lilly, 2013).

School is a strategic area to build conscizioness of literacy culture. Eisenberg explains there are elements of information literacy, first Visual literacy, second media literacy, third computer literacy, fourth digital literacy, and fifth network literacy (Eisenberg et al., 2006). In addition, several things must be done to increase information literacy. First, environmental conditions to be literacy friendly. Support literacy culture by displaying the literacy student work. Besides that, the student must easily access the book and other literature (digital literature). Benjamin suggests that librarians and institutions integrate information literacy goals within curriculum development situations (Harris, 2013). Second, develop a social environment as literate communication and interaction model. Third, characterize literacy in every lesson. So, the habit of reading and writing can take students on an intelligent measure in accessing and processing information. Ainiyah (2017) argues that if students have information literacy skills, they have the expertise as lifetime learners (Pattah, 2014).

Teaching tools of information literacy consists of seven units. Each unit is equipped with students learning material, ECL media, and test. These tools were developed because it was found that the teachers of Muhammadiyah Elementary School in East Java needed broader knowledge and skills in order to solve the literacy information their students faced (Harini, 2018). It also builds on the critical components of learning to read and introduces various teaching strategies and ideas to support other literacies.

The tools, especially ECL media, contain the value of AI Islam Muhammadiyah as a characteristic of Muhammadiyah schools and some adjustments regarding material development, such as several unique features that reflect AI Islam Muhammadiyah are given through stories, pictures, and videos. In addition, Islamic values in the written vocabulary. The material from this package was developed collaboratively with input from PTMA representatives in East Java, tested in schools to ensure its suitability and relevance, and applied to Muhammadiyah Elementary School in 3 East Java cities; Surabaya, Malang, and Lamongan.

Results sh27/n in Table 2, school A which obtained an n-gain value of 0.62 o27 n increase of 62%, school B obtained an n-gain value of 0.70 or an increase of 70%, school C obtained an n-gain value of 0.61 or experienced an increase of 61%. The only that the study was the ECL media. In addition, the ECL media helps students' prior knowledge as 13 e basis for further knowledge of literacy. The teacher's role is to be a facilitator for students to construct their own knowledge through learning, students are trained to determining the information needs needed, finding the information a effectively and efficiently, critically evaluate information sources and combine some information into a knowledge base and value system, use information to achieve certain goals.

The study outcomes, which are supported by Figure 1 indicate that information literacy has increased with the use of ECL media. School A has increased by 62%, School B has increased by 70%, and School C has increased 61% for the students' information literacy. In line with research by Mishra & Mishra, the use of appropriate media can improve student literacy(Mishra & Mishra, 2010). The research of Marseno et al. also supports this result, that information literacy of Indonesian elementary students is still below the level of understanding, so that real action is needed to improve it, including creating an innovative media (Marseno et al., 2014).

Based on the above results, it can be stated that there is an increase of students' information literacy when teachers use ECL media. Following the theory of Vygotsky (1896-1934), which argues that children can construct knowledge when applying the attached world with attention, memory, and strategies for processing and managing information (Topciu & Myftiu, 2015). This result supported by Muhajang and Trudell that information literacy affects students' learning effectiveness because information literacy activity will encourage students to improve their knowledge (Mul stand & Pangestika, 2018; Trudell et al., 2012). In line with this, Septiyantono (2014) argues that information literacy is the primary key to improving students' knowledge. Information literacy makes students learn independently because they understand the time of information is needed, how to access information efficiently, evaluate accurately, and communicate information in various methods (Septiyantono, 2014).

6. Conclusion

The results of the validity and reliability of the content and constructs of the research instrument (Table 1) indicate that the information literacy learning tools are very valid and relia 560, so they are feasible to be used as learning tools. Students' information literacy was sted using a test instrument in the form of 10 descriptive questions using ACRL adapted information literacy indicators.

Based on the research data, the ECL media is effective for improving students' information literacy. This is seen from the results of the re10 pitulation of students' information literacy using ECL media that each class experienced an increase in the average value of students' information literacy. This is evidenced by the acquisition of n-gain scores in school A which increased by 0.62 18 62%, school B obtained 0.70 or 70%, and class C which obtained 0.61 or 61% (Table 2), so that the mean value of n-gain is not different for the three experimental classes.

Furthermore, through the paired t-test with homogeneous and normally distributed data (Table 3 and 4), it is stated that there is a significant difference of 0.002 <0.05 in students' information

literacy using the ECL media which is presented in Table 5. Thus, ECL media can improve students' information literacy.

Limitation

This study has limitations that can influence the result. The limitations of this research are as follows:

- 1. The result of this study is highly dependent on teacher activity in applying steps for using Early 20 lass Literacy (ECL) media.
- 2. This study was limited just to the discerning increase of information literacy, not other kinds of literacy.
- 3. This study was limited to early classes in Islamic elementary school, first until the second class in elementary school. However, it can be practiced in Islamic schools and public schools as long as it is still within the scope of the elementary school level.
- 4. This study has a limitation in the collecting data process. The result is dependent on student concentration to pay attention and make literacy duties from the teacher.
- 5. The conceptual framework used in this study only connects variables estimated to have a relationship with dependent variables, so there are still possibilities for other variables that have not entered the conceptual framework.

Recommendation

Based on the conclusion of the research, recommendations for other researchers, stakeholders, or practitioners of education are as follows:

- 1. Stakeholders are concerned about literacy education, especially information literacy, in a structured curriculum.
- 2. Teachers used the learning method by considering the improvement of students' information literacy to prepare them for the era of unlimited information spread.
- 3. Other researchers examine and develop Early Class Literacy media from a different point of view. In addition, they also research information literacy from various perspectives.

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Conflict of Interests

The Authors declare that there is no conflict of interest.

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