

Integration of ICT in the Teaching-Learning Process: Challenges and Issues Faced by Social Science Teachers

Santhiyappan Karunakaran and Ranjanee Dhanawardana

ABSTRACT

The major objective of this study was to evaluate the challenges and issues faced by social science teachers on the Integration of Information and Communication Technology (ICT) in the teaching-learning process. This study was conducted in three education zones in Sri Lanka which represent the diverse socio-cultural and economic conditions of the country. Online interviews were conducted with twenty-four social science teachers teaching in junior secondary classes. The results revealed that (i) teachers are facing challenges in accessing ICT resources; (ii) they have issues in skill development related to ICT; (iii) there were disparities in the availability of ICT resources among schools and (iv) there was difference in the quality of ICT infrastructure among schools. Further, the study found that teachers are facing some barriers while using ICT in the teaching-learning process such as inadequate ICT resources, rigid rules and regulations in the school administration, absence of transition time between periods in the school timetable and non-availability of facilities to repair and maintain the computers. The study suggests that appropriate actions should be undertaken by educational policymakers and other relevant personnel to address this issue in the school system.

Keywords: Integration of Technology in Teaching, ICT Infrastructure, Social Science/Social Studies Teachers, Teaching-Learning Process.

Published Online: July 25, 2023

ISSN: 2736-4534

DOI: 10.24018/ejedu.2023.4.4.696

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I. INTRODUCTION

In the contemporary world ICT is one of the most important elements in many fields and education is no exception. ICT is used in the teaching-learning process in schools such as social studies in many countries (Abdullahi, 2014). The concept of technology integration in the teaching-learning process and the usage of technology in education have increasingly become an important concern in education not only in developed countries but also in developing countries as well. Integration and use of ICT will empower teachers to replace traditional teaching methods with technology-based teaching and learning tools and facilitate the improvement of the teaching-learning process (Ghavifekr & Rosdy, 2015).

The role of teachers is significant for ICT integration in the teaching-learning process in the classroom. The use of ICT in the classroom depends on teachers' attitudes towards professional improvement. Unless the teachers have a positive attitude regarding ICT integration, such integration would not succeed in practice (Hong, 2016). However, to improve the use of ICT in the teaching-learning process, professional development opportunities on ICT, views on the use of ICT, and barriers while using ICT should be identified. Therefore, the present study focused on the challenges and issues faced by social science teachers in the usage of ICT in the teaching-learning process.

A. The History of Social Science Subjects in the School Curriculum in Sri Lanka

The teaching of social science subjects in the school curriculum in Sri Lanka has a long history. Before 1972 the social science subjects namely history, geography, and civics were taught as three separate subjects in the school curriculum (NEC, 2003). In 1972, these three subjects were integrated as social studies, and later in 2003, social studies were again disintegrated as three separate subjects. Presently the three social science subjects are taught as three separate subjects in the school system of Sri Lanka. History is recognized as a core subject from junior secondary to senior secondary classes (Grades 6-11) and the rest of the two subjects are taught as core subjects only for junior secondary Grades 6-9. In the senior secondary stage, geography and civics are optional subjects.

II. REVIEW OF RELEVANT LITERATURE

The review of the literature was carried out on the following: (A) challenges and issues of social studies teachers in respect of experience in ICT; (B) its benefits and usage in classroom instruction; (C) factors influencing the integration of technology in teaching; (D) teachers' attitude towards the integration of technology; and (E) availability of ICT and technological tools.

A. Perceptions of Integrating ICT into Teaching and Learning

Mensah and Osman (2022) studied social studies teachers' perception of integrating ICT into the teaching and learning of social studies in the public senior high school in Ghana. The results revealed that the teachers had a positive perception of incorporating ICT into the social studies classroom which makes lessons more engaging, varied, and well presented, as well as allows the teacher to control the instructional time effectively, aids students in comprehending that they have been taught, makes lessons more concrete, and increases students' attention in class. The findings also showed that ICT tools like computers, Internet systems, educational software, printers, and overhead projectors were found insufficient in the schools.

B. Benefits of ICT Usage in Classroom Instruction and Its Challenges

A study conducted in Nigeria by Atubi (2022) outlines the benefits of ICT to students and teachers of social studies and identifies the challenges affecting its usage for social studies instruction. The result revealed that ICT resources and skills such as Android phones, internet browsing, PowerPoint projection, virtual learning, and computers assist in teaching social studies concepts. Secondly, ICT skills and facilities contribute meaningfully to social studies instructions when used by teachers, students will derive holistic knowledge when taught with ICT tools. Meanwhile, the findings showed that there exist many setbacks and challenges in ICT usage such as funding, capacity building, and lack of electricity supply amongst others. Based on the findings, one of the recommendations made was that stakeholders in the education sector should be concerned with the provision of ICT facilities in primary and junior secondary schools. This confirms a study conducted by Ghavifekr and Rosdy (2015).

C. Factors Influence the Integration of Technology in the Teaching

A study carried out in Ghana (Philemon, 2020) revealed that basic schoolteachers' integration of technology in their social studies lessons were heavily influenced by the ICT infrastructure of their school, ICT competence and the workloads they handled in a week, and other co-curricular activities. Moreover, limited accessibility and network connection, limited technical support lack of effective training, limited time, and lack of teaching competency were major barriers to using ICT in classroom teaching (Payal & Kanvaria, 2018). They discovered that ICT integration has great effectiveness for both teachers and students. According to Ghavifekr and Rosdy (2015), teachers' well-equipped preparation with ICT tools and facilities is one of the main factors in the success of technology-based teaching and learning.

D. Teachers' Attitude Towards ICT Integration in the Classroom

The majority of the teachers had a positive attitude toward ICT as an instructional tool and wanted to learn more about ICT's effective use in their classrooms (Hong, 2016). The study found that (i) low availability of ICT as a major barrier that limited their use of ICT in the classroom; (ii) economic and social issues, the most commonly identified issue was the

low availability of ICT. He further mentioned the barriers relating to teacher background, confidence and time, technological issues on ICT, long set-up times, and so on. Moreover, the lack of helpful technical support (especially from the IT department at school) and the huge disparity in students' level of technical ability were additional barriers.

The above studies reveal that adequate ICT infrastructure and in-service training for relevant teachers are important to integrate ICT into the teaching-learning process of social studies. However, the above-mentioned studies were conducted in other countries. There is a dearth of studies that focuses on Sri Lankan schools about the challenges and issues faced by social science teachers on the integration of technology in the teaching-learning process. Therefore, the present study intended to fill the knowledge gap and also attempt to make relevant suggestions to promote the integration and usage of ICT in the teaching-learning process of social science subjects in Sri Lanka.

III. OBJECTIVES OF THE STUDY

This study was conducted to achieve the following objectives: (i) Identify the opportunities and needs for the professional development of social science teachers on ICT; (ii) Explore the major barriers against the integration of technology in the teaching-learning process; and (iii) Evaluate the challenges and issues faced by social science teachers on ICT in the teaching-learning process.

IV. METHODOLOGY

This study adopted a qualitative approach to evaluate the perceptions of teachers on the integration of ICT in the teaching-learning process of social science subjects in junior secondary classes in Sri Lanka. The population of the study consisting social science teachers from three different districts in Sri Lanka namely Anuradhapura, Badulla, and Jaffna which represents the different socio-economic and cultural landscape. The sample includes popular schools as well as disadvantaged schools in both media.

Twenty-four participants were selected as samples from the target population by using the purposive sampling technique because the teachers who teach social science subjects in junior secondary classes face different problems in using and integrating ICT in the teaching-learning process. Open-ended interviews were applied to collect teachers' views, perceptions, and preferences. Twenty-four social science teachers in three different districts participated in this study which ran from September to December 2022. Each participant was contacted through Zoom technology. Each interview took less than one hour, and the responses were recorded and later transcribed.

This study used stratified random sampling for selecting schools due to the differences among schools. For example, the sample schools of the present study belong to three types namely type 1AB (Schools with Advanced Level science stream), type 1C (Schools: without Advanced Level science stream), and type 2 (Schools: up to Ordinary Level) schools. In this study majority of (eighteen) participants were female teachers and the rest were male.

The ethnic composition in Sri Lanka was also reflected in this study. Anuradhapura represents the Sinhala community and Jaffna represents the Tamil community. Badulla has a mixed ethnic composition. The sample represents urban, rural, and plantation areas.

Interviews were transcribed and coded according to the themes. Content analysis was performed on the data obtained from the interviews. In content analysis, the stages of conceptualization of the data, the discovery of the themes, the presentation of the results with a descriptive expression, the direct citation of the results, and the interpretation of the findings within the themes (Yildirim & Simsek, 2013, *as cited in* Ozdemir, 2017, p.510) were followed. After the direct citations, the participants are encoded as P1, P2, etc. To ensure the reliability of results, triangulation, and member-checking strategies were conducted. The analyzed data were presented under eleven themes namely: professional development opportunities for ICT, inadequacy of ICT resources, inadequacy in finance, workload of teachers, background knowledge of technology in teaching, absence of transition time in the school timetable, inadequacy of proper mechanism and facilities to repair and maintain the computers, absence of Internet facility, inequality of resource distribution, inadequate instructional tools and materials, and rigid rules and regulations in the school.

A. Limitations of the Study

The present study was conducted in secondary schools in Sri Lanka. Hence, there is a limitation in applying the findings of this study to all schools in the country. However, the findings of the study may be relevant to similar schools.

V. FINDINGS AND DISCUSSIONS

The findings of the research based on themes are discussed below:

A. Inadequacy of Professional Development Opportunities for Non-ICT Teachers

In terms of professional development opportunities for non-ICT teachers is very important, because most of the social science teachers were not trained for integrating ICT into classroom teaching according to the training sources. Therefore, they should provide enough opportunities to improve their skills in ICT in relation to classroom application.

Professional development training programmes for teachers also play a key role in enhancing the quality of the teaching-learning process. In addition, teachers' readiness and skills in using ICT are playing an essential role in the use of ICT in education. Teachers need sufficient ICT skills to implement the technology and also have a high confident level to use it in a classroom setting. Especially for non-ICT teachers who are the population of this study need to be empowered with ICT skills in order to integrate and implement technology in the teaching-learning process. In the present study, some of the participants said that there is no sufficient training on ICT.

Here are some examples:

Statement: 1

I preferred to participate in the in-service training on ICT, but there are not enough training opportunities (...).

Statement: 2

I do not have enough in-service training opportunities or school-based teacher professional development programmes in order to improve my ICT skills (...).

Statement: 3

I don't have enough training opportunities in the school or zonal level to improve our skill on ICT. The training programmes for non-ICT teachers are very rare (...).

According to the interview results, almost all the participants expressed similar views to the above perceptions. Furthermore, some respondents said:

Statement: 4

There were no trained teachers for ICT subject in our school. Therefore, we are facing difficulties to get advice and help to use the technology for classroom instructions (...).

Further, Philemon (2016) stated that regular in-service training is a must to upgrade the teacher's knowledge of technology integration. Hence it is very important that ICT training facilities should be adequately available for the professional development of teachers. Moreover, these findings are in line with previous studies such as Ghavifekr and Rosdy (2015) found that professional development training programmes for teachers also played a key role in enhancing students' quality of learning. In addition, teachers need to be literate and have good skills and knowledge to improve their teaching methods.

B. Major Barriers to Technology Usage in the Classroom Instruction

According to the interview it was found that there were many barriers when using technology in the teaching-learning process of social science subjects. The major barriers are elaborated on below:

C. Inadequacy of ICT Resources

Proper ICT infrastructure in the school is very important for integrating technology into the teaching-learning process. The low availability of ICT resources in the school is one of the major barriers to using ICT in the teaching-learning process. The majority of participants (eighteen out of twenty-four) said:

(...) there was only one ICT laboratory available in our school. Therefore, non-ICT teachers or students can use it very rarely which means only forty minutes per week or once in two or three weeks. So, it's very difficult to allocate the time in the ICT laboratory to use for teaching or preparing materials or lessons for instructional purpose (...).

Generally, priority is given to advanced level and ordinary level students who offer ICT as compulsory in public examinations. Priority is also given to advanced-level students who are preparing for GIT (General Information Technology) examination. Non-ICT students and teachers are given low preferences.

One of the participants from an urban school said:

There are nearly 2000 students and more than a hundred and twenty teachers in my school. There are also many parallel classes. But there is only one ICT laboratory available. Only forty-five students can be allowed in the laboratory. Only twenty computers are in working order and others are dysfunctional. So, students have to work on sharing basis and are unable to do individual work (...).

The above statement was supported by another participant who said:

In my school, the ICT laboratory was always occupied by ICT subject students and teachers. So, the other subject teachers don't have enough time slot to enter the laboratory to use the facilities (...).

This confirms a study conducted by Plilemon (2016) who discovered that adequate ICT resources and infrastructure heavily influence the integration of technology in teaching. Further, it was found that the above factors would highly influence to integrate the technology in classroom teaching. Moreover, Mensah and Osman (2022) findings were similar to the present study that, ICT tools like computer was limited in the schools were negatively affected the technology integration in the teaching-learning process.

D. Inadequacy in Finance

Financing is an important factor in ICT integration in the teaching-learning process in schools. This study brought out to light that the above ICT integration is adversely affected by inadequate financial support in schools. The teachers who were interviewed explained this factor. The majority of participants (nineteen out of twenty-four) agreed that due to financial problems in the school, they faced barriers to improving and expanding the ICT infrastructure facilities in their school. Four teachers explained:

Teacher 1:

Telecommunication companies have increased the Internet data-related charges in an unbearable manner after the economic crisis of the country. Therefore, I have stopped using even my house (personal) internet facility to prepare the instructional materials for my classroom teaching (...).

Teacher 2:

In my school, we are facing difficulties to purchase software such as Google Maps to use in geography and history subjects due to the financial shortage in the school (...).

Teacher 3:

In my school, the usage of Internet is limited nowadays due to the hike of service payment by the telecommunication authorities (...).

Teacher 4:

In my school, the computers are running with outdated software. There is no funding source to purchase new updated software for teaching-learning purposes. Most of the time we use outdated software in the ICT laboratory because if we want to use licensed software, we need money to purchase it. In our school, the financial situation is not so good to purchase such an expenditure. In our laboratory, the computers are old version computers (...).

The above findings of this study support Atubi's (2022) study which discovered that inadequacy of finance is a major barrier to integrating technology into the teaching-learning process.

The study further mentioned that ICT resources were found insufficient in the schools due to the shortage in funding. Hence, it could be concluded that the inadequacy of finance directly affects ICT usage in the teaching-learning process.

E. Workload of Teachers

Integrating ICT into teaching is additional work for non-ICT teachers in Sri Lanka because they have been using traditional teaching methods for a long time. Further, the ICT component was not a main part of their professional training programme. This issue transpired in the interviews with teachers. Their opinions are given below:

Teacher 1:

I have to do a lot of paperwork in the school and at home rather than preparing for teaching. Therefore, I don't have enough time to prepare the teaching aids by using technology at school or home (...).

Teacher 2:

I have to work thirty-five to thirty-eight periods per week out of forty in the classroom. Due to the workload, we do not have enough free time to prepare lessons by using technology (...).

The above opinions were agreed by others too as given below:

Teacher 3:

Our traveling time is too long from home to school; therefore, we feel tired after work. So, we don't have enough energy to prepare lessons by using technology for classroom teaching (...).

Teacher 4:

I am facing difficulties to develop instructional materials with my workload...". (Therefore, they asked to) "... reduce the workload to provide opportunities to teachers for developing instructional materials by using technology (...).

These results support Hong's (2016) assertion that teachers do not have enough time to learn and practice technology in order to apply it in classroom instruction. This study further mentioned that most participants mentioned that there were busy during school hours teaching and preparing classes. Many teachers do not have enough time and do not want to spend their personal time learning and practicing ICT. The workload of teachers was further confirmed by Philemon (2020) that, the integration of technology in social studies lessons was heavily influenced by teachers' workload in terms of the number of periods they handled a week. The present study also found a similar finding from teachers' interviews.

F. Additional Barriers

According to the interview it was found that there were some additional barriers when using technology in the teaching-learning process of social science subjects. They are elaborated below:

G. Background Knowledge to Use Technology in Teaching

It was revealed in the interviews that high-level knowledge of English and Mathematics is not a must to use ICT in the teaching-learning process. Further, the participants confirmed basic knowledge in those subjects is more than sufficient to effectively use ICT in teaching.

This opinion was supported by Hong (2016) too. The following statement from a teacher supported this opinion:

Basic English knowledge is enough to use technology in the classroom teaching (...).

H. Absence of Transition Time in the School Timetable

Another barrier the teachers face is the time wasted during the transition from period to period. In many schools, the distance to go to the ICT laboratory and the classrooms are too long/wide that takes more time to reach the computer laboratory.

Some of the teachers expressed the following:

Our school space (land) is quite wide; therefore, it will take more than 10-15 minutes to go to the ICT laboratory and return to the usual classroom. There is no allocated transition time in the school timetable to get ready for another period. Therefore, even though we got a chance to use the ICT laboratory rarely we won't use the facility because half of the period will be wasted to reach the laboratory. That will make conflict with other teachers who are waiting for the next period. Because most of the time we have allocated only one period (40 minutes) for ICT laboratory usage for teaching-learning purposes. This time slot will be given rarely (...).

The findings namely the limited time of this study support Payal and Kanvaria (2018) study which discovered that school time organization is one of the barriers to integrating technology into the teaching-learning process. They further confirmed that fixed timetables and short periods work as barriers to using ICT in the learning process. This is in line with a previous study conducted by Hong (2016) that said teachers have a lack of time available to learn and practice technology. Payal and Kanvaria (2018) further identified time limitations as an issue in scheduling computer time for classes. However, the finding of the present study is that the absence of transition time in the school timetable is not found commonly in the relevant literature.

I. Inadequacy of Proper Mechanisms and Facilities to Repair and Maintain the Computers

In the Sri Lankan school system, there are three teams such as national, provincial, and zonal level teams for repairing and maintaining the computers. Unfortunately, after the Covid-19 issue, these teams became slow and dysfunctional due to the financial crisis in the country. The following statements from the participant support the above issue.

Teacher 1:

Our school about the effectiveness of repairing service of computers that, there are two teams working on it namely, zonal level and provincial level. The repairing activities slowed down during the covid-19 period. Because of two reasons they couldn't purchase the spare parts. Due to the financial crisis, the spare parts prices have been increased. So, lack of spare parts affects the service (...).

Teacher 2:

ICT laboratory in our school is not air-conditioned. Therefore, the hot and dusty atmosphere will easily damage the computers and other related equipment (...).

Teacher 3:

In our schools, a considerable number of computers were dysfunctional. This situation also affects the use of ICT in the teaching-learning process (...).

The above findings are in line with a study conducted by Payal and Kanvaria (2018) in India.

J. Absence of Internet Facility

In terms of integrating technology into the teaching-learning process teachers and students should be provided with necessary technological devices and the Internet facility in the school to use for their study purpose. If not, it may be very difficult to meet 21st-century education goals.

There are no internet facilities even in the ICT laboratory in my school (...).

This statement was supported by nine participants (out of twenty-four) in this study. Further, almost all the participants of the study supported the following statement:

In my school, there are no internet facilities in the classroom (...).

This is in line with the previous studies conducted by Hong (2016), the U.S. Department of Education (2017), and Ozdemir (2017).

K. Inequality of Resource Distribution

Unlike the other studies found in the relevant literature, inequality of resource distribution is one of the special issues in the Sri Lankan school system. The following statement supports the above:

In some schools which were absorbed under special projects have more than one ICT laboratory. But the majority of schools have only one mini-laboratory. Further, some popular schools have more than the needed facilities. However, the majority of rural and plantation sector schools are facing difficulties towards technology usage (...).

Hence, inequality/disparities in the distribution of resources among schools are very common in Sri Lanka.

L. Inadequate Instructional Tools and Materials

Inadequate instructional tools and materials in the school is another barrier to integrating technology in classroom teaching. Inadequate instructional tools and materials would impact the teaching-learning process in schools. One of the participants said:

Even though I prepare and take teaching learning aids to the school, they cannot be exhibited as there is no multimedia projector (...).

Furthermore, the interview results revealed that the majority of schools (nineteen out of twenty-four) have only one computer laboratory. Due to this situation except for the senior secondary ICT subject teachers and students, others can't use this facility. Because there is no time slot available to use the laboratory.

The following statement supports the above problem:

In my school, there are more than five hundred students. But in the ICT laboratory there are only twenty usable computers. So, they have to use them on a sharing basis.

In addition, the majority of the participants (fifteen out of twenty-four) expressed similar opinions on the following:

In my school, the administration requests to use the ICT laboratory and teach the students at least eighty minutes (two periods) per week. Due to the inadequate facilities in the laboratory, it was not practical (...).

Inadequate space in the ICT laboratory and lack of computers are the main reasons for the above situation in the school.

M. Rigid Rules and Regulations in the School

In some schools, the administration prohibits removing computers and other related equipment from the laboratory even for teaching purposes in the classroom. Unlike the other studies in the relevant literature, the participants (nineteen out of twenty-four) of the present study agreed with the above. The following statements from the participants support the above issue:

Teacher 1:

In my school teachers are facing difficulties to move even the laptop and other related instructional tools and materials from the laboratory to the classroom due to the rigid rules and regulations of the school administration.

The majority of the participants agreed with the above statement. This situation discourages teachers to use ICT in their teaching-learning process.

Teacher 2:

Even though I have technology facilities in the school, the non-ICT teachers who teach by using technology later avoid using technology in the classroom instructional purposes due to the rigid rules and regulations of the school administration or the in-charge teacher for the technological tools such as laptop computer, multimedia projector, etc.

Teacher 3:

If a teacher wants to bring the above instruments from the ICT laboratory to the classroom he/she has to follow a frustrating administrative process (...).

That means special permission is needed not only to take the tools outside of the ICT laboratory but also for the use of the ICT laboratory for their instructional purpose as well. Therefore, non-ICT teachers are not interested in using technology for instructional purposes. Most of the time non-ICT teachers avoid using technology for classroom teaching due to the above bureaucratic system in the school administration.

Teacher 4:

Sometimes the teacher who is in charge in the ICT laboratory, will not allow to bring the technological devices or instruments to outside from the laboratory due to the inventory problem (...).

These results support Dinc's (2019) assertion that lack of equipment is one of the significant barriers to integrating technology in classroom teaching. This is because in Sri Lanka as a developing country due to the very limited number of computers and other ICT or technology-related equipment, the school administration is following such rigid rules and regulations regarding accessing the technology available in the school.

VI. CONCLUSION

According to the findings of this study, it could be concluded that the majority of schools have very limited ICT and related resources compared to the student-teacher ratio in their school. Due to the above limitations, the majority of non-ICT teachers are using traditional teaching methods in

their classrooms including social sciences. Moreover, the majority of social science teachers prefer to improve their skills in ICT. However, the training opportunities and their effectiveness are very low compared to the needs. In addition, there are no ICT-related instruments, instructional tools, and materials in the classroom. Therefore, teachers are facing difficulties to access them when the need arises.

Inadequate ICT resources are seriously impacting on the usage and integration of technology into classroom applications. Specifically, resource distribution inequality among schools negatively affects teaching in disadvantaged schools. Moreover, rigid classroom rules and regulations to use ICT will decrease access and demotivate the teachers to integrate technology into their instructional process. Such frustration will affect the initiatives taken by the teachers toward the integration of ICT into the teaching-learning process.

VII. RECOMMENDATION

It is suggested that appropriate actions should be undertaken by educational policymakers, administrators, and other community organizations to effectively address this issue in the school system. The following recommendations are made:

- There should be coordination among distributions of computers and other related facilities and technical instruments to avoid inequality of resources among schools and also disadvantaged schools should be given reasonable priority in this regard.
- Further, the ICT skill development programmes and opportunities should be expanded to improve the ICT skills of teachers. It is better to take more attention to the school-based teacher professional development programme as the teachers need individual care and support during the practical sessions.
- Further, there should be a transition time between periods in the school timetable to facilitate the movement of teachers from place to place.
- The school's ICT resources, and related facilities should be expanded into the classrooms. It will reduce space crisis and run with a tight time schedule in the ICT laboratory with limited resources.
- As a result, the schools can provide effective service to their teachers and students. This will improve the ICT usage of teachers and also the integration of technology into the teaching-learning process.
- In order to make the smooth process of the usage of ICT and related resources in the school premises it is very important to be more flexible with regard to regulations in the school.

A. Suggestions for Future Research

This study is limited to the challenges and issues faced by teachers in the integration of ICT in the teaching-learning process. It is suggested the following issues could be studied: attitudinal problems of teachers as well as students and parents; inclusion of technology in social science curriculum and inclusion of ICT in the teacher training programmes.

ACKNOWLEDGMENT

This research received grant from the National Institute of Education in Sri Lanka.

CONFLICT OF INTEREST

There are no conflicts of interest, such as personal or professional relationships, academic competition, or any other factors that could impact the integrity and impartiality of our work. We assure the readers that this declaration of no conflict of interest is accurate and comprehensive to the best of our knowledge.

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