

A Study on Challenges Faced by Teachers in Teaching ICT

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Abstract

Information and communication technology has become an indispensable part of every field today. Its utility has been used for the development in all fields and its aim is to improve productivity and efficiency. In the field of education, the subject of information and Communication Technology has been used to improve the quality of the learning and teaching process. The objectives of this research are to identify the perceptions of teachers regarding ICT curriculum, to find out the effect of the teaching environment in teaching Shako, to identify the problems faced by teachers in teaching Shako, and to make suggestions to reduce the identified challenges. Purposive sampling was used to select the sample of this

research, which is conducted under mixed research method. Accordingly, factors such as lack of information and communication technology equipment, teachers' attitudes, principal's attitude, lack of student-centered curriculum in syllabus problems, lack of teacher training programs, lack of support from other teachers and parents were discovered through the research And provided sufficient facilities and resources to the school, developing infrastructure for ICT, obtaining support from parents and other teachers, pointing out the importance of ICT, revising the curriculum to reduce curriculum problems and providing teaching materials on time, organizing successful training programs for Shako teachers, research proposals presented.

Keywords: Curriculum, Efficiency, Information and communication Technology, Productivity, Teacher

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Received: 20 Feb. 2024, Accepted revised version: 20 June 2024.

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Introduction

Following the agricultural and scientific epochs, the technological era emerged, marking our contemporary milieu. Within this epoch, the ubiquitous dissemination of computers and the internet has catalyzed transformative shifts worldwide. Information and communication Technology (ICT) has thereby emerged as a potent force in enhancing human life quality. The advancement of nations is increasingly contingent upon the cultivation of knowledge-centric human resources. Consequently, nations worldwide have begun to revamp their educational frameworks to foster such human capital (Erden, 2010). Consequently, ICT assumes a pivotal role in educational curricula globally, including in Sri Lanka. Its integration within school curricula serves a dual purpose: as both a pedagogical tool and a subject of study. In Sri Lanka, ICT now holds prominence within the educational syllabus, albeit historically emphasized more as a tool for teaching other disciplines such as science, mathematics, and English, rather than being taught comprehensively in its own right (Silva, 2017).

Recognizing ICT's potential as a transformative tool for economic progress, the Sri Lankan government has underscored its significance in fostering human capital, particularly within the education sector. This led to the inclusion of ICT as a core subject for Advanced Level students in 2005 and as a technical subject for Ordinary Level students in 2006. Subsequently, the

government's aim has been to integrate ICT across primary and secondary education levels (**Importance of information and communication technology (ICT) in government schools of Sri Lanka, 2009**). The introduction of ICT at the secondary education level holds promise for revolutionizing the learning approach of the younger generation (Information and Communication Technologies in Secondary Education, 2004).

Teachers play a crucial role in implementing curricula and facilitating the teaching-learning process. However, teaching ICT or computer science within school curricula has posed significant challenges for educators, attributable to various factors (Silva, 2017). Addressing these challenges is paramount to ensuring effective ICT education at the junior secondary level. Among the hurdles faced by teachers are curriculum-related issues, challenges pertaining to the teaching environment, and obstacles encountered during the teaching-learning process. This study endeavors to elucidate the challenges confronted by teachers instructing ICT at the junior secondary level and proposes strategies to overcome them.

Literature Review

At present the development of a country is mainly geared to knowledge based economics, and quick access and right use of reliable information are fundamental for that. In that point Information and communication technology (ICT) plays a vital role. This brings a need for an ICT literate

workforce and integration of ICT into the school curriculum (Fernando and Ekanayaka, 2010). Sri Lankan government also views ICT as a key tool for transforming the economy, with the education sector playing an important role in developing the necessary human resources. Furthermore, they states ICT education as a human right and therefore all students have a right, to learn ICT from the school system. Then, at present, ICT plays a major role in education systems all around the world. (Importance of Information and Communication Technology (ICT) Curriculum in Government Schools of Sri Lanka: A Critical Review of Educational Challenges and Opportunities, 2009).

According to David. (2005: 07), “ICT is a powerful change agent in all of these aspects of our formal educational system.” Vithanage. (2006) describes that. the 21st century has many challenges different from the agricultural era. and it is needs ICT knowledge to cope with those new situations. On the other hand Edirisuriya (2006) emphasizes “Information and Communication Technology (ICT) act as an important tool in achieving vital goals in education.” New emerging societies require ICT, to facilitate large scale learning needs for social and economic development. Also, ICT exceeds the traditional educational process (Information and Communication Technologies in Secondary Education, 2014).

Then it is very important to identify the importance of Information and

Communication Technology by Sri Lankan adults, the young generation, and also children to cope with 21st century challenges as Sri Lankans (Vithanage. 2006). Therefore, ICT plays a major role in school curriculum.

However at present ICT, or computer science is a key subject in the school curriculum in Sri Lanka. (Silva, 2017) “ICT was initiated in the Sri Lankan schools in 1982, and in this sense, Sri Lanka was one of the pioneers country to introduce computer education to the school system.” (Fernando and Ekanayaka, 2010. In the early 1980s, when computer science was available as a course for the first time in Sri Lanka, it was not meant for everybody who wished to learn computer science. Applicants had to face an aptitude test followed by a rigorous interview or viva. (Silva, 2017)

According to Karunanayake (2006), teachers are identified as a crucial element in the successful integration of technology in education. Also, Fernando and Ekanayaka (2010) state, that the quality of ICT education in schools depends on several factors, such as a well-defined and planned curriculum, human resource such as qualified teachers, and infrastructure facilities. However, according to Silva (2017), “Teaching ICT or Computer Science as part of the school curriculum has become a challenging task for teachers due to several reasons.” Various scholars regard challenges face by teachers in teaching ICT.

According to Silva. (2017). changing

the curriculum is a key requirement to keep the subject abreast of modern technology, and she recommended changing the ICT curriculum every four years. In conclusion, according to various studies that have been conducted focusing on the problems of ICT education, we can identify the importance of grade 11 ICT education in school curriculum. at the junior secondary level and what are the issues faced by teachers in teaching ICT related to the teaching environment, teaching learning process and the curriculum. In this context the present study is expected to make a contribution to the literature by identifying the problems face by ICT teachers in detail and taking the ideas of ICT teachers regarding the possible solutions.

Research Problem

What are the challenges teachers face when teaching ICT?

Objectives of Research

The main purpose of the study was exploring the challenges face by teachers in teaching ICT at the junior secondary level. There were four specific objectives of this study:

1. To identify the attitudes of teachers towards the curriculum of ICT
2. To find out the impact the of teaching environment in teaching ICT
3. To identify challenges encountered by the teachers in teaching ICT

4. To find out suggestions presented by sample to minimize the identified challenges.

Research Methodology

This study employs a convergent concurrent research design. Research design to investigate the challenges encountered by teachers in delivering ICT instruction at the junior secondary level. The qualitative research component is utilized to address inquiries pertaining to the "who, what, when, where, and how" of the research questions (Alexander, 2014). As articulated by Shusha (2012), qualitative methods aim to elucidate how individuals construct meaning from their lived experiences. This approach is deemed essential for comprehensively understanding social issues from multiple perspectives and for gathering pertinent information regarding the prevailing circumstances of the problem (Alexander, 2014). By employing convergent concurrent research method, this study seeks to garner diverse viewpoints and essential insights from both teachers and principals regarding the challenges faced by ICT instructors and to solicit recommendations for overcoming these obstacles.

Sample

The study population was large and purposeful sampling was used to come up with a small size, which was representative of the study population. According to Patton (2002), purposeful sampling is a technique widely used in qualitative research for the identification and selection of information – rich

cases for the most effective use of limited resources. (Palinkas, Horwitz., Hoagwood, 2015). This method is very useful in situations when need to reach a target sample quickly with a limited time frame. When consider about the characteristics of the population and availability of the population, purposive sampling was the most suitable method for this study. The researcher identified teachers and principals as the relevant sampling units and according to that the sample of this study consisted of 25 teachers who teach ICT as a subject at the junior secondary level and 05 principals representing 1C and 1 AB schools in Maho Educational Zone.

Development of the questionnaire

In this study a questionnaire was administered to collect data on the challenges face by teachers in teaching ICT as a subject in junior secondary level. The instrument was developed by the researcher. The Each question in the questionnaire was related to the research objectives and the topic. Both closed and open ended questions were used. Open ended questions were help 16 supplement the information given in the closed ended questions and helped in obtaining more complete data. In the questionnaire, there are items related to the fields that can challenge arise, such as curriculum, teachers 'qualifications, teaching environment, teaching learning process, and also there were items related to their suggestions for minimize those challenges. According to that, teacher qualifications pertained to 1 item (item 2) with loading from 2.1, 2.2 etc. the teaching learning process

pertained to 3 items (item 3,4 and 5), the teaching environment pertained 2 items (item 6,7) , teachers attitudes on curriculum pertained to 1 item (item 8) and their suggestions for minimize those challenges pertained 3 items (3,4,7). In addition to that the questioner included 2 items (9, 10) to note down if there are any other issues and suggestions for those issues.

Interview

The interviews more conducted with the principals to identify problems that junior secondary level ICT teachers according to their views. Semi- structured face to face interviews were set up with sets of outlined questions about issues to be explored. The outlined questions were relevant to the research objectives and the topic. Mainly interviews focused an explore the challenges that can arise with the teaching environment. Interviews were suitable for principals since they had limited time to respond to a questionnaire and verbal interaction with them helped in detecting biased answers.

Data analysis

Both quantitative and qualitative data were collected in this study. Qualitative data collected will be presented using qualitative data analysis methods and quantitative data will be presented using quantitative data analysis methods. Thematic analysis is used for qualitative data analysis. Data from open ended and interviews were analyzed, indicating the magnitude of the response. Responses from structured questions were tabulated as frequency counts and percentages. It

was summarized and tabulated for easy presentation, assessment analysis, and interpretation. Rich output from the document source and interview with open-ended questions helped bring concrete evidence to the analyzed data.

Significance of the study

The main objective of this study is to identify the challenges encountered by teachers instructing Information and Communication Technology (ICT) as a subject at the junior secondary level. Previous research on ICT in school curricula has predominantly focused on its utilization as a tool rather than its role as a standalone subject. Consequently, there exists a research gap necessitating an investigation into the specific challenges faced by teachers in delivering ICT as a subject. These challenges, if unaddressed, can detrimentally impact the quality of education and impede the cultivation of a proficient human resource base crucial for national development. Hence, it is imperative to comprehend the potential issues faced by teachers and take proactive measures to mitigate their effects, facilitating the identification and implementation of effective coping mechanisms.

Findings

The focus was on the four main areas of teachers' attitudes towards the curriculum, the teaching environment, the teaching-learning process and suggestions for addressing the identified challenges. This is divided into four sections, i.e., demographic characteristics of respondents Sections

2, 3 and 4 present findings related to specific objectives. The information obtained was analyzed by items in frequency and percentage. Responses from interviews with principals were used to supplement responses from final interviewers.

Background information of responses.

The demographic characteristics illustrate the distribution of respondents' categories in relation to age, gender, duration of service, etc.

Table 1 : Number of respondents

Sample	Count	percentage
Teachers	25	83%
Principals	05	17%
Total	30	100%

In this study, a total number of 25 teachers (83%) and 05 principals (17%) participated in the responses. According to table 2 teachers (72%) are female while only 7 (28%) of them were male. From table 2, it can also note that 15 teachers (60%) were aged between 31 and 40 years. About 40% were aged between 21 – 30 years.

The researcher inquired into the duration of service of the teachers as teachers who teach ICT as a subject. This was intended to ascertain the teacher's level of experience in the teaching learning process. The data is as presented in Table 2. About 48% of teachers have 1 - 5 years' experience and 24% have taught 6 – 10 years and 28% of teachers have more than 10 years' experience in teaching ICT.

Table 2 : Distribution of respondents according to gender, age and duration of service.

Attributes	Category	Count	Percentage
Gender	Male	7	28%
	Female	18	72%
Age	< 21 years	-	-
	21 – 30 years	10	40%
	31 – 40 years	15	60%
	41 – 50 years	-	-
	51 – 60 years	-	-
Duration of service	>1 years	-	-
	1 – 5 years	12	48%
	6 – 10 years	6	24%
	11 – 20 years	7	28%
	>20 years	-	-

Findings concerning the issues related to the ICT curriculum with teachers' Perception on the curriculum of ICT.

Subject discipline, curriculum and teaching vision form the foundation for teachers teach their subjects (khoza, 2010) and 53.6% of teachers have negative perceptions about ICT curriculum. (Challenges facing

implementation of ICT curriculum in primary schools, 2019) According to that in this section, teachers' opinions of the items related to the curriculum are presented. Respondents were requested to react to the items by ticking (checking) the option that best described their opinion on a Likert scale ranging from strongly agree, disagree, and strongly disagree.

Table 3 : Distribution of respondents with their opinions on curriculum

		Opinion	Frequency	Percentage
01	ICT has a successful curriculum.	Strongly agree	-	-
		Agree	06	76%
		disagree	06	24%
		Strongly disagree	-	-
02	It is implementing as a student centered curriculum.	Strongly agree	-	-
		Agree	04	16%
		disagree	18	72%
		Strongly disagree	12	12%

03	direct contribution to the curriculum implementation	Strongly agree	22	88%
		Agree	03	12%
		disagree	-	-
		Strongly disagree	-	-
04	Subject objectives match with the national objectives.	Strongly agree	-	-
		Agree	23	92%
		disagree	02	08%
		Strongly disagree	-	-
05	There is a good connection with subject units.	Strongly agree	-	-
		Agree	18	72%
		disagree	07	28%
		Strongly disagree	-	-
06	It can cover the subject matter within the appropriate year	Strongly agree	-	-
		Agree	04	16%
		disagree	15	60%
		Strongly disagree	06	24%

The data reveals that a significant number (76%) of respondents expressed agreement with ICT being a successful curriculum, while only 24% of teachers disagreed with this assertion. Additionally, 72% of respondents disagreed with the notion that the curriculum is implemented as student-centered, with 12% strongly opposing this perspective. Conversely, only 16% of respondents agreed with the statement. The alignment of subject objectives with national objectives was affirmed by (92%), while 72% agreed that there exists a coherent connection between subject units. Conversely 8% and 28% of respondents disagreed with these two assertions, respectively. Furthermore, (60%) disagreed, with 24% strongly disagreeing, with the notion that the curriculum adequately covers subject matter within the designated timeframe,

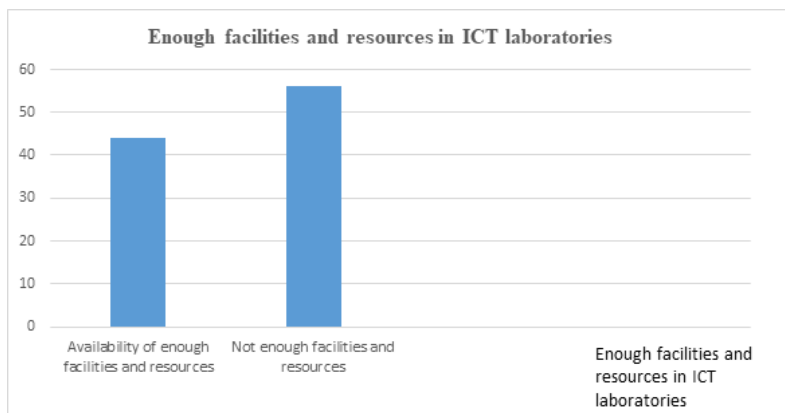
while 16% agreed with this perspective, as indicated in Table 4.3.

Findings concerning the issues related to the teaching environment with impact of teaching environment in teaching ICT.

In curriculum implementation both personal and environmental factors are effective. (Erden, 2010). The classroom physical environment is an important element in creating a comfortable teaching environment (Puch, 2015). If there are available physical and human resources creates a good teaching environment. In view of this findings related to the teaching environment presented in figure

Physical resources.

Figure 1: Availability of enough facilities and resources in the computer laboratory



According to the figure 1, 56% of schools have not enough facilities and resources in the computer laboratory, while only 44% of schools have enough facilities and resources in their computer laboratories. Human resources many scholars emphasize poor supportive environment is a major factor that effect on ICT teaching (Habibu, Mamun and Clement, 2012, Edirisuriya, 2006). In relation to that, this point consider the support of administrative, other teachers, students and parents for teaching ICT.

Table 4 : Supportive environment for teaching ICT

Persons	Nature of the support	Frequency	Percentage
Principal (Administrative)	A support reached at maximum	11	14%
	A considerable Support	14	56%
	A Minor level support	-	-
	No any support	-	-
Other teachers	A support reached at maximum	03	12%
	A considerable Support	07	28%
	A Minor level support	09	36%
	No any support	06	24%
Students	A support reached at maximum	03	12%
	A considerable Support	18	72%
	A Minor level support	04	16%
	No any support	-	-
Parents	A support reached at maximum	02	08%
	A considerable Support	03	12%
	A Minor level support	06	24%
	No any support	14	56%

The Table 4 shows that the majority of principals of 56% and 72% of students give their support to ICT teachers. While only 28% of other teachers and 12% of parents give their support. According to interviews, can it also identify principals who give their maximum support to ICT teachers by illustrating the following statements. Principal 4: “We have an internal supervision program I personally participate in that program and give my full support to my staff.”

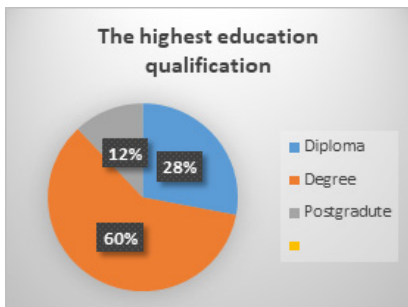
Principal 1: “Obviously, I give my full support for this process.”

Educational qualifications

The respondents were asked about their highest education qualifications and results are shown in the Figure 4

The highest educational qualifications of teachers who teach ICT as a subject

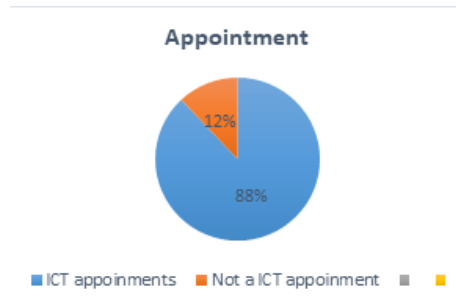
Figure 2: The highest education qualification



According to figure 2, it can be seen that 60% teachers have degree level education, 28% of teachers have diplomas and 12% of teachers responded as post graduate

Qualifications related to ICT

Figure 3: The nature of the appointment



According to figure 3, 88% of recruitments are for teaching ICT and about 12% are not ICT appointments.

The table presents teachers qualifications related to ICT.

Qualification	Count	Percentage
ICT Degree	15	60%
Subject in Degree	5	20%
Diploma	3	12%
Full time six month computer course	2	08%

In teaching ICT, updating with new knowledge, teaching confidence, and English knowledge are very important (Silva, 2017, Edirisuriya, 2006). Receiving teaching materials the respondents were asked about how they get teaching materials such as syllabus, teacher guides, workbooks and subject related books and magazines etc. Responses as how they get teaching materials were as in Table 4. 56% 44% Updating knowledge Internet &

training programs Internet & Magazine / Books According to that the majority of teachers (52%) point that receiving the syllabus was delayed and also (52%) pointed as they have not received teacher guides. 84% respondents' pointed as work book receiving also delayed. schools do not have received subject related magazines/books (84%) and software CDs (88%).

Distribution of respondents with their opinions on receiving teaching materials

Teaching materials	Status	Frequency	Percentage
Syllabus	Received in time	08	32%
	Delayed	13	52%
	Not received	04	16%
Teacher Guides	Received in time	07	28%
	Delayed	05	20%
	Not received	13	52%
Work book	Received in time	04	16%
	Delayed	21	84%
	Not received	-	-
Books/ magazines related to the subject	Received in time	01	04%
	Delayed	03	12%
	Not received	21	84%
Software CDs	Received in time	01	04%
	Delayed	02	08%
	Not received	22	84%

The figure shows results related to respondents' views on not availability of a text book for junior secondary level ICT subject and according to that teachers (68%) state it as a major barrier on teaching learning process, and 32% of teachers state fairly as a barrier.

Conclusion

This study investigates the effect of physical and human environment on the ICT teaching, and this established the unavailability of enough facilities and ICT resources. 56% respondents stated that there were not enough facilities and resource in their computer laboratories. Some ICT resources such as computers,

and projectors, were fairly adequate and not fully adequate. According to that fairly adequacy of computers in the laboratory and projectors were cited by the respondents 64% and 72%. According to Putch.M (2015) the classroom physical environment is an important element in creating a conducive and simulating learning environment. A conducive learning environment creates a comfortable teaching and learning environment.

The study further reveals principals 56% and 72% students give their support to ICT teachers. While only 28% other teachers and 12% parents give their

support. For teachers, collaborative environment is a necessity (Erden, 2010)

According to that the following conclusions are drawn,

01. ICT infrastructure of schools must further develop. Some ICT resources such as computers,

Projectors, were not fully adequate. Therefore the biggest challenge on ICT Teachers is not enough facilities and resources for teaching ICT.

The support of other teachers, parents and students must further develop.

01. The support from other teachers, parents and students for ICT teachers is in a low level.

The support of other teachers, parents and students must further develop.

The respondents disagree with the opinions that ICT curriculum implements as a student centered curriculum and it can cover subject matters within the appropriate year.

4. Another important result is found with regard to teaching materials. Teachers not received

Syllabus, teachers guide, text book and other teaching materials in time.

5. There is an issue with successful tanning programs for teachers.

Recommendations

Based on the findings the following

are the recommendations for above challenges.

1. Develop the infrastructures for ICT by providing enough facilities and resources to school Laboratories.

2. To get support from parents and other teachers point out the importance of Information and Communication Technology.

3. Revise the curriculum to minimize issues related to the curriculum.

4. Providing teaching materials in time.

5. Organize successful training programs for ICT teachers. Overall this research found some challenges face by teachers who teach ICT as a subject in junior secondary level and suggestions to overcome those identified challenges.

References

- Abunmaid, A. (2011). ICT training courses for teacher professional development program in Jordan. *The Turkish online journal of Educational Technology*, 10,195-210
- Alexander, Humphry. (2014). Challenges face by teachers when teaching learners with developmental disability, Master of Philosophy, University of OSLO.
- Edirisuriya, M.A.V (2006). The sustainability of ICT Education in Sri Lanka, Retrieved March 03, 2019, from <https://www.dl.lib.mrt.ac.lk>
- Erden, Emine. (2010). Problems that preschool teachers face in the curriculum implementation, Master of science, Middle East Technical University.

Ekanayaka, T.M.S.S.K.Y. (2012). How to overcome challenges caused by lack of ICT resources in Sri Lankan Schools. Department of Education, University of Peradeniya.

Fernando, M.G.N.S. Ekanayaka, M.B. (2012). Sustainable quality improvement of ICT education in Secondary School Curriculum of Sri Lanka.

Fernando, N. (2017). Quality of Information and Communication Technology (ICT) Education at G.C.E. (O/L) in Sri Lankan Schools, Retrieved April 8, 2019, from <https://www.researchgate.net>.