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A Study of ICT Literacy of Grade 10 Students in Nuwara Eliya District

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ABSTRACT

Since ICT is fundamentally linked to the majority of human daily activities, exploring possible opportunities for improving ICT education is therefore seen as being extremely important in this era. This research aims to critically analyzing the ICT literacy level in grade 10 students in Nuwaraeliya district, to determine the factors that affect ICT literacy and to propose possible advancement to overcome the difficulties in ICT-based education in Sri Lanka. This is a quantitative study in which data were collected using questionnaires. The collected data were analyzed using statistical methods. Based on the analysis it was discovered that the students do not have adequate ICT literacy. The findings suggest that, ICT should be taught at school commencing as early as possible with more time being allocated, trained and competent teachers should be recruited to teach ICT subjects and infrastructure facilities should be enhanced.

1. INTRODUCTION

Technological improvement and inventions are life-long incentives for economic and educational development. Today's education extensively uses information and communication technology (ICT), including computers, the internet, and electronic devices such as radios, televisions, etc. The ability to accept, adapt, and use digital devices, applications, and services is referred to as ICT literacy (JISC, 2014). The terms "ICT literacy" and the wider concept of "information literacy," which serve as the foundation for the advancement of modern society, are becoming more and more common as a result of the quick evolution of ICT. Today, the majority of nations around the world include reading, writing, and math as core components of education, along with an understanding of information technology and mastery of its foundational skills (UNESCO, 2002). Sri Lanka's governments have taken numerous measures to improve students' ICT skills, although arrangements have been made to provide computers and staff training to the schools, there has not been an appropriate evaluation at the students' level. Consequently, the effectiveness of these strategies is questionable. The computer literacy rate among grade 6 to 10 students in Sri Lanka is about 21.3% in 2020 (Department of Census and Statistics Sri Lanka, 2020). According to these statistics, it is clear that there is a huge gap between students' education and their ICT literacy level. ICT integration into education is crucial for achieving the millennium development objectives of the United Nations and many other nations, which is for improving the education system to realize human development. Sustainable Development Goal No. 9 of the UN, "is making investments in ICT access and high-quality education to support long-term peace" (United Nations, 2017). Due to the significance of ICT and current global trends, ICT is being pushed into everyday life across all industries such as Education, Transportation, Engineering, Security and Defense, Natural Science, Entertainment, Banking and Accounting, and Research and Development. ICT has been used in schools for over 37 years, and it first appeared in Sri Lankan classrooms in 1982 (Perera, 2011). Even though ICT education was first introduced by the Sri Lankan Ministry of Education (MOE) 28 years ago (Fernando, 2017). According to several researchers and educationalists, ICT may play a significant role in education for the upcoming generation as well. Since there are many ways to use modern technology to enhance classroom instruction and the learning process, several earlier studies demonstrated that properly using ICT can improve education and link classroom instruction to real-world situations (Weert and Tatnall 2005). In 2004, as a step to integrate ICT into the education field, GIT (General Information Technology) was initiated in G.C.E. (A/L) streams. It was introduced by the Ministry of Education (MOE) and the National Institute of Education (NIE) as an extra subject (Fernando, 2017). According to the 700 empirical studies analyzed by Schacter (1999), students who have access to ICT in their classrooms are more involved and more likely to meet learning objectives than students without such access. Although teachers of rural areas bear certificates of ICT competencies they are not confident of their self efficay which could have a negative effect on students' ICT literacy (Musfira et al., 2022). This research draws attention to the knowledge level of grade 10 students about ICT literacy in the Nuwara-Eliya district, central province, Sri Lanka. This study will be beneficial to suggest strategies for successful ICT education implementation to meet future challenges in the country.

1.1 Research Problem

From 1983, Ministry of Education has invested heavily in ICT resources in the school sector. Due to lack of trained teachers and unequal distribution

of ICT resources in the country, the ICT literacy of students in underprivileged areas of the country has been found to be low. Nuwara-Eliya district is also such a district. Therefore it is worthwhile to inquire into the ICT literacy level of students in Nuwara-Eliya district.

1.2 Objectives of the Study

To critically analyze the ICT literacy level in grade 10 students in the Nuwara Eliya district.

1. To propose possible advancement to overcome the difficulties in ICT-based education in Nuwara-Eliya district.

2. MATERIALS AND METHODS

2.1 Research Design

The study's goal was to investigate grade 10 students' perceptions of ICT literacy in the Nuwaraeliya district, Sri Lanka. A survey research was conducted to achieve the objectives.

2.2 Sample and Instruments

The sampling method used was random cluster sampling. Four schools were randomly selected from 36 schools in the Hatton Education Zone of the Nuwara_Eliya district. From each school, 25 students from Grade 10 classes were randomly selected.

The research instrument chosen for this study was a questionnaire with 11 Likert style items and five binary items. The questionnaire which was created by the researcher to collect information in four key areas such as the ability to use MS office, digital fluency, students' interest in ICT-based learning, and availability of equipment. (Mobile phones, tablets, desktops, etc.). The five choices were strongly agree (SA), agree (A), neutral (N), disagree (D) and strongly disagree (SD). The questionnaire was edited by a expert in the field of ICT in education. Further, the questionnaire was piloted with 10 Grade 10 students and items which were not clear to the students were revised. The questionnaire addressed four categories of ICT literacy: Skills in MS Office, digital fluency, interest in ICT-based education and access to ICT equipment at home.

2.3 The method of collection and analysis of data

Ethical clearance was obtained from the principal of each school to collect data. Questionnaires were administered physically to the sample. To get clear answers from students, every item in the questionnaire was explained in detail by the researcher. To protect the privacy of their answers, participants expressed a preference to remain anonymous.

Chi Squared statistical test was conducted on each item of the questionnaire for the goodness of fit. Frequencies and percentages were calculated on the votes received from the sample on each item of the questionnaire. The results are shown in the Table 1.These values were grouped in to the four categories as mentioned in the instrument section. According to the 4 major sections, the children's responses per each question were calculated, and the percentages were then calculated separately. Analyzed percentages were summarized using graphs and tables.

3. RESULTS AND ANALYSIS OF DATA

Table 1: Chi Squared statistics of the questionnaire

Item No.	Item	Calculated Chi Square	Critical Chi Square (At p=0.05 df=4)	Significant (yes/No)
	I have high proficiency of using MS word.	88.1	9.49	88.1 > 9.49 / Yes
	I have high proficiency in drawing using MS paint.	75.3	9.49	75.3 > 9.49 / Yes
	I have high proficiency in creating a slide show using MS PowerPoint.	35.3	9.49	35.3 > 9.49/ Yes
	I have high proficiency in creating graphs using MS Excel.	46.4	9.49	46.4 > 9.49 / Yes
	I can easily communicate by E- mail.	29.5	9.49	29.5 > 9.49/ Yes
	I managed my online learning activities very successfully during the pandemic.	59.8	9.49	59.8 > 9.49 / Yes
	I can enhance my learning through a blended learning model of computers and information technology.	143.9	9.49	143.9 > 9.49 / Yes
	I have the ability to find any location in Sri Lanka using Google maps.	37.7	9.49	37.7 > 9.49 / Yes
	I have high probability to use online services. E.g.: (eBay/ amazon/ aliexpress.)	84.8	9.49	84.8 > 9.49 / Yes
	I have high probability of finding a video that relevant to my choice on the internet.	43.6	9.49	43.6 > 9.49 / Yes
	I have high probability of finding something I want on the internet.	50.7	9.49	50.7 > 9.49 / Yes

Table 2: Frequency distribution of students' choices of the Likert style items of the questionnaire.

Item No.	Item	SA%	A%	SA+A%
	I have high proficiency of using MS word.	10	25	5
	I have high proficiency in drawing using MS paint.	23	36	59
	I have high proficiency in creating a slide show using MS PowerPoint.	16	21	37
	I have high proficiency in creating graphs using MS Excel.	5	22	27
	I can easily communicate by E-mail.	21	18	39
	I managed my online learning activities very successfully during the pandemic.	37	15	52
	I have high probability of finding something I want on the internet.	41	12	53
	I have high probability of finding a video that relevant to my choice on the internet.	40	14	54
	I have high probability to use online services. E.g.: (eBay/ amazon/ aliexpress.)	24	20	44
	I have the ability to find any location in Sri Lanka using Google maps.	20	24	44
	I can enhance my learning through a blended learning model of computers and information technology.	65	22	87

Table 3: Frequency distribution of responses on binary items in the questionnaire

Item No.	Item	Yes%	No%
	I would like to study information and technology which I am currently studying in school.	99	1
	I like an education pattern that combines computer and modern technical knowledge.	100	0
	I have a computer (laptop/desktop) at home?	65	35
	I have internet enabled devices (mobile phone/ tab) at home?	53	47
	I have a fixed internet connection or mobile internet access at home?	98	2

According to chi-square calculation, all the questions of Likert style obtained values greater than the critical value. The answers to questions were categorized into major four categories and table 3 shows the summary of the data obtained from the students related to those categories.

Table 4: ICT literacy percentages of students

Category	Percentages
1. Use of MS office.	**34.3%**
2. Digital Fluency	**44.2%**
3. Interest In ICT Based Learning	**91.05%**
4. Availability Of Equipment	**72%**

4. CONCLUSION AND SUGGESTIONS

The questionnaire's data was primarily divided into four different categories, and percentages were tabulated for each category. According to results, only 34% of the students had a high ability to use MS office, while the remaining 66% received negative feedback. According to this category, the number of students who are able to use MS word and MS paint were slightly higher than the students who are able to use MS PowerPoint and

MS excel. Accordingly, less than 50% of students have the ability to use MS office, which proves that their level of literacy is low.

Considering the students' digital fluency, it stated that 44% of the students have some level of literacy. Among them, there was a slightly higher percentage of students who could find the required information on the internet, in videos, and via other online resources. The percentage of students who use Google Maps and other frequently used online services is limited. It is confirmed that the student's level of digital literacy is lesser since less than 50% of them are digitally fluent.

According to the ratings, students have a higher interest in ICT based learning because the 91% of students stated that they preferred an ICT based learning. Accordingly, it addressed that they have a positive attitude toward ICT based learning.

It was determined from monitoring the availability of ICT applications for use in households that only 72% of students have even the most basic access. According to this category, they were observed for having computers, tablets, and internet connections at home. Since more than 50% of them accepted it, it can be said that they have access to ICT at home.

Overall, despite not receiving supportive home environments, the students are eager to accept an ICT-based education. However, students' proficiency with the crucial programs that are widely used in today's society is really limited.

It stated that students show negative results for the usage of MS office application. MS Office applications have evolved into a necessary and widely used application in today's society. As a result, it is extremely unfortunate that the students lack a higher level of knowledge. MS Word, Excel, Paint, and PowerPoint applications are critical for students' future educational careers, so having a strong understanding of them is essential. Since digital fluency was revealed to be less than 50%, more attention should be paid to digital practices as well. It is a problem in today's digitalized society that less than 50% of students who are most interested in dealing with technology are digitally literate. According to the data, students are almost entirely interested in the blended learning model. It has been demonstrated that most of the students have positive attitudes to engage in an ICT integrated curriculum. This indicates that the current traditional curriculum concentrates only on the major subjects, and the current level of ICT knowledge that students are acquiring through the curriculum is insufficient.

It is suggested that in order to enhance students ICT literacy, ICT should be incorporated into the curriculum starting in first grade since it is now only taught in Sri Lankan schools through the sixth grade. There should be adequate exposure as the allocated time period for learning ICT is 40 minutes per day which is not sufficient to enhance students ICT proficiency. Moreover, it is crucial to select teachers who are qualified to teach ICT. As a result, when hiring ICT teachers, consideration must be given to both their educational background and level of ICT knowledge. In order to give them proper ICT knowledge in school, adequate infrastructure facilities should be provided, therefore, it is necessary to provide adequate equipment and other facilities.

Larger sample size would have rendered the finding more generalizable, and this can be termed as a limitation in this study.

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