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Implementation of ICT as a Teaching Tool for Language and Literacy in Primary Schools in Mauritius: Teachers' Perspectives

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Authors' contributions

This work was carried out in collaboration between all authors. Author KS designed the study, performed the statistical analysis and wrote the protocol. Author LJB wrote the first draft of the manuscript and managed the analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

This study focuses on the implementation of ICT as a teaching tool for language and literacy in primary schools in Mauritius. It examines perceptions of primary school teachers of Grades 5 and 6 classes about the benefits, drawbacks and challenges of using ICT tools to enhance the teaching and learning of languages and literacy. The survey research design based on the quantitative research method was used to collect data from 100 primary schools in the district of Moka. The random sampling technique was used. The study indicates that teachers have an average level of perceptions of the drawbacks and challenges that they face in implementing ICT tools in their teaching, but they have a quite high level of perceptions of the benefits of using such tools. The most important finding is that they consider it difficult to use ICT tools in overcrowded classes that are common in Mauritian primary schools and that they are not well trained to use ICT tools to teach effectively and efficiently. It is recommended that, in the context of the new education reform called the Nine Year Basic Continuous Education, the Ministry of Education should review the teacher-pupil ratio and employ teaching assistants or support teachers to facilitate the effective use and implementation of ICT tools to accelerate its strategy towards the digitalization of education in the country.

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Keywords: Implementation; ICT tools; language and literacy; perceptions; primary school.

1. INTRODUCTION

Primary education in Mauritius is of utmost importance in the school life of a child as it determines his/her future. Relevant studies show that the period from birth to the age of eight is a critical period, and therefore it is the responsibility of the school authorities to provide quality primary education to pupils so that they may perform better in different skills such as languages, arts and mathematics [1]. Using ICT tools can enhance the traditional way of teaching and the learning processes. Information and Communication Technology (ICT) has changed our daily activities in various ways and one of the objectives for integrating ICTs in education is to enhance teaching and learning practices [2]. Information and Communication Technologies (ICTs) are an integral part of teaching and learning and thus, of education because they can change the learning environment and make the subject content more accessible to the pupil [3]. 21st-century skills are a set of abilities that pupils need to develop in order to succeed in the information age. ICT skills are essential to pupils in order to succeed in an information-based world and an information-based economy. With ICT as one of the pillars of our economy, the teaching of ICT is even more important in preparing the pupils to successfully integrate the modern information-based world. In the same vein, Mikre [4] stated that pupils who use ICT tools show superior knowledge gains than those who do not make use of it.

The Ministry of Education has continuously strived to develop the ICT infrastructure in primary schools since 2008. Some 2600 computers have been acquired for them. All primary schools have an ICT room with at least 10 PCs. Since 2011, under the SANKORE Project, 1615 interactive projectors and laptops have been supplied to STD IV –STD VI classrooms. Furthermore, 166 ICT Support Officers have been employed to offer support to primary school teachers in implementing the ICT as a tool to enhance teaching and learning. ICT in this study is defined as the use of interactive projectors, interactive whiteboards, the internet for Google search and use of Google Apps to learn, and the use of tablets. These related tools are used to enhance the teaching and learning process and experiences for the primary school children in language and literacy. Language and literacy means the teaching and learning of English, French and Asian languages as well as the acquisition of the basic language skills in early primary school classes.

The ICT Strategy for the education Sector, an integral part of the reform for Mauritius' learning sector, has presented the Digital Learning Programme by the Minister of Education and Human Resources, Tertiary Education and Scientific Research. The Mauritius Institute of Education (MIE), the Mahatma Gandhi Institute (MGI) and the India government-owned company, EDCIL, are working Collaboratively towards achieving the digitalisation of the education sector. India altogether prepared this programme in order to incorporate ICT in the primary schools via the use of adapted tablets. The digital pedagogical kit of these tablets contains videos and e-books; interactive animations; hands-on activities; and drawing and creativity tools. The Early Digital Learning Program (EDLP) is likely to support an early culture of IT use and practice that are in line with learning outcomes in ways appropriate to the developmental level of pupils. Besides, the Ministry of Education has provided 26,800 tablets and headsets across all primary government schools in Mauritius [5].

The use of ICT tools for teaching languages and literacy promotes a high level of interactivity among the pupils in the classroom. This interactivity, in turn, promotes collaborative learning. As opposed to the traditional blackboard or the modern whiteboard, both the teacher and pupils not only share and present information and knowledge but also enjoy working and learning together on tasks [6]. Indeed, with tablets connected to the internet and webcam, there can even be remote teaching and learning with task completion through interaction, namely the social presence of the teacher and the pupils. Moreover, with interactive teaching and learning, pupils discover their resources and they may even control their learning process and product to some extent [7]. In other words, they have the voice and choice in their learning content and process. So, they become more independent as there is some form of self-directed learning under the guidance of the teacher. In addition, with interactive teaching using ICT, pupils with various level of learning abilities may use their own comfortable pace and revise the learning content as and when they may do so. This has proved very helpful for

pupils with learning difficulties [8]. Pupils can, therefore, flexibly adapt their learning style to boost their learning. Using ICT tools may also boost the pupils' motivation to be well engaged in their learning in the classroom, and the teacher may make learning more fun and interesting. The teacher may teach through games and have the pupils participate actively in creating simple knowledge content by tapping on their creativity and imagination [9].

When ICT is used as a teaching tool for languages and literacy among young children in primary schools, there are several benefits. However, there are also many drawbacks as well as challenges in implementing digital education, especially in developing countries like Mauritius, which lag in the digitalisation of education. Hennessy [10] stated that the introduction of ICT tools could act as a way in stimulating educators and pupils to work in new ways. Teacher-pupil and peer dialogues, exploration, analysis and reflection, probing, assistance, and feedback characterize these. He also found that as pupils become independent, teachers feel that they should promote and support them in acting and thinking autonomously. Furthermore, he pointed out to differentiate about how to incorporate technology into the classroom. Firstly, in the cognitive approach, learners get the chance to maximize their experience of language and literacy in a meaningful way and construct their knowledge. Secondly, learning a language is inspected as a process of socialization where the social approach emphasises the social aspect of language and literacy acquisition. . Learners need to be given chances for authentic social interactions to practice real-life skills. This can be achieved through student collaboration on authentic tasks and Zhao [11] claimed that pronunciation is an essential element of language and literacy in education.

The aim of this study is to investigate the effectiveness of the implementation of ICT tools to enhance the teaching of languages and literacy to primary school pupils, from the teachers' perspective The objectives are:

a) To determine the benefits of using ICT tools to enhance the teaching of languages and literacy;
b) To examine the drawbacks and challenges that primary school teachers face in implementing ICT tools to enhance the teaching of languages and literacy.

The research questions are:

a) What are the benefits of using ICT tools to enhance the teaching of languages and literacy?
b) What are the drawbacks and challenges that primary school teachers face in implementing ICT tools to enhance the teaching of languages and literacy?

2. METHODOLOGY

The survey research design based on the quantitative research approach was used to examine the benefits, drawbacks and challenges of implementing ICT tools to teach languages and literacy in primary schools. A self-developed questionnaire was administered to 100 primary school teachers in the district of Moka. The random sampling technique was used to find representative sample that would avoid bias.

A questionnaire was used with teachers teaching languages and literacy in primary schools for pupils of Grades 5 to 6. The 100 questionnaires were distributed to all respondents who were asked to read the statements given and choose their answers based on a 5-Likert scale ranged from 5= Strongly Disagree, 4= Disagree, 3= Neither Agree nor Disagree, 2= Agree and 1= Strongly Agree. The questionnaires consisted of 4 sections. Section A is about the demographic background of the respondents consists of 10 items that include gender, age, teaching experience, school area, highest academic qualification and the ability to handle ICT in teaching. The three other sections in the questionnaire focused on the advantages and disadvantages of using ICT in language and literacy and the challenges that teachers experienced when utilizing ICT in language and literacy. The response rate was 100% and all the ethical issues were considered to ensure confidentiality and anonymity of the research sites and teachers in the sample. The SPSS Version 20.0 was sed for data analysis.

Validity is defined as obtaining data that is appropriate for the intended use of the measuring instruments [12]. It is determined by the most appropriate and meaningful interpretation of the collected data following the data analysis [13]. To ensure the validity of the questionnaire, closed-ended questions were provided with a range of suggested answers by using the 5-point Likert scale. The questionnaire

was also pilot tested with respondents who did not form part of the survey. The outcome of the pilot testing was considered in order to amend the questionnaire. On the other hand, a questionnaire is reliable when it consistently displays the same results when it is used in repeated measurements, in the same sample and at different times, given that there is no significant change between the measurements [14]. To ensure the reliability of the questionnaire of this study, the following steps were followed: the participation and completion of the survey by the respondents were voluntary; it was electronically sent to the respondents using the Google Doc form. The Cronbach's alpha value was also satisfactory as it was 0.812. This also indicated that the questionnaire was reliable.

3. RESULTS AND DISCUSSION

The study examines the benefits, drawbacks and challenges of using ICT tools to enhance the teaching of languages and literacy in primary schools in Mauritius, from the teachers' perspectives. Teachers practising in the primary schools are the key informants about the theme and therefore, the findings reflect their views and perspectives. These findings are discussed in the following sections.

3.1 Benefits of ICT Tools in Languages and Literacy

Fig. 1.1 shows the views of the respondents as regards the benefits of using ICT in language and literacy. 80% of the teachers agree that ICT allows a student to work corporately and develop good communication skills and 68% believe that children's understanding is enhanced when ICT is used to teach language and literacy. It seems the use of ICT tools is very helpful in that it helps them to do activities. Teachers considered that ICT enables students to work better with special needs or those who have difficulties. It also helps to reduce the social disparities between pupils, since they work in teams in order to achieve a given task. Pupils also assume responsibilities when they use ICT to organize their work through digital portfolios or projects. In addition, the study showed that ICT has a significant impact on teachers and teaching processes. These findings are consistent with Suryani [15] and Considine, Horton and Moorman [16] who found that the use of ICT tools such as video clips, songs, editorial cartoons and other internet resources give the opportunities for pupils to become self-managed through dynamic, collaborative and engaged learning. These tools allow the pupils to learn through scaffolding which helps to improve language learning and literacy [17].

On the other hand, 12% of teachers disagree that the use of ICT makes teachers more confident. Resistance can be a result of a lack of confidence or fear of using ICT for learning. Teachers often worry that their knowledge level does not match those of their 'digitally native' pupils. In order to become confident user of ICT in the classroom, teachers need to take part in ongoing training. Indeed, the OECD [18] reported that new teachers lack training in the use of innovative pedagogical strategies while experienced teachers may lack the technical knowledge to use ICT tools for teaching and learning. This may have a negative impact on student engagement in using ICT to enhance their learning [19].

3.2 The Drawback of using ICT in Language and Literacy

Fig. 1.2 shows the views of the respondents as regards the barriers of using ICT in language and literacy. 40% strongly agree that teachers who lack technical support in teaching language and literacy act as a barrier to effective use of ICT in teaching.32% believe that inappropriate use if teaching materials and tools lead to ineffective language and literacy development. 20% consider that children with negative attitudes toward language and literacy show difficulties in learning. Hence, proper training for teachers and up-to-date equipment and materials should be provided to teachers so that they can work effectively. When there is no technical support and inadequate school-based technological resources, primary school teachers cannot be expected to use ICT tools effectively for teaching [20].

On the other hand, 32% disagree that teachers have with limited understanding of how to use ICT in language. This is because that the Mauritius Institute of Education and the Open University of Mauritius offer appropriate preservice and continuous training programmes regarding the use of ICT to teachers Furthermore, 44% disagree that children are reluctant to participate in classes when teaching is focused on teacher-centred learning. 4% strongly disagree that there is no teaching in large classes. Indeed, teaching large classes is challenging as it is pedagogically unacceptable

and psychologically irrelevant. These classes occupy most of the times, mixed abilities, language levels, inspiration, needs, interests, and aims. Pham, Tan and Lee [21] supported that it is very challenging to teaching English by using ICT in overcrowded classes.

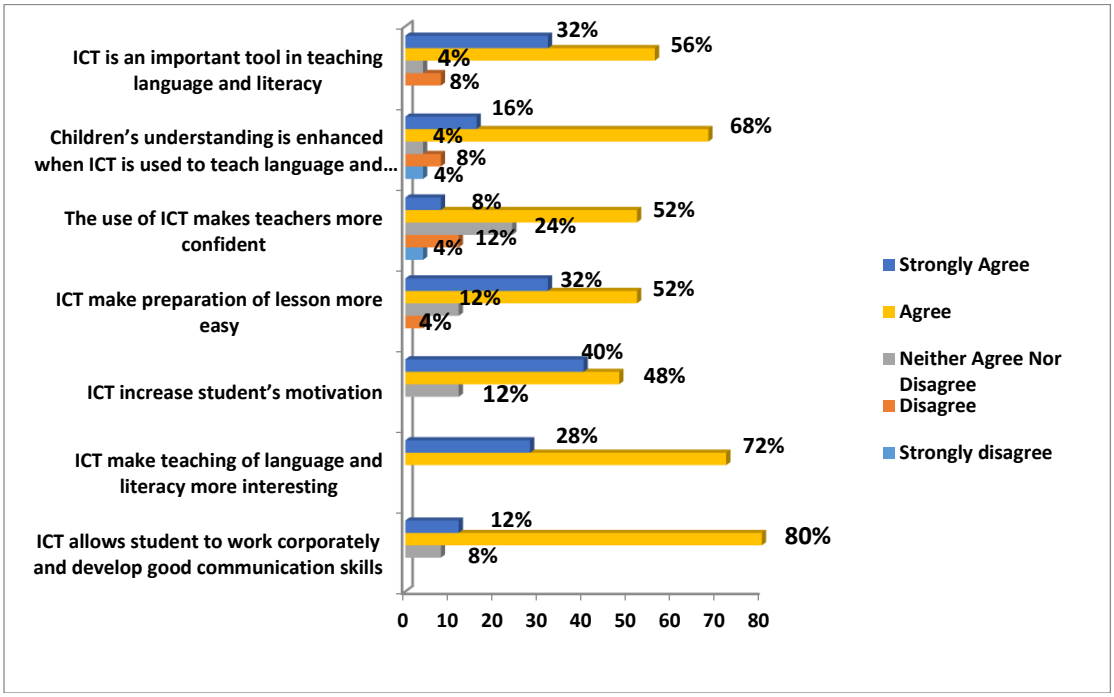

Fig 1.1. The benefits of utilising ICT in language and literacy

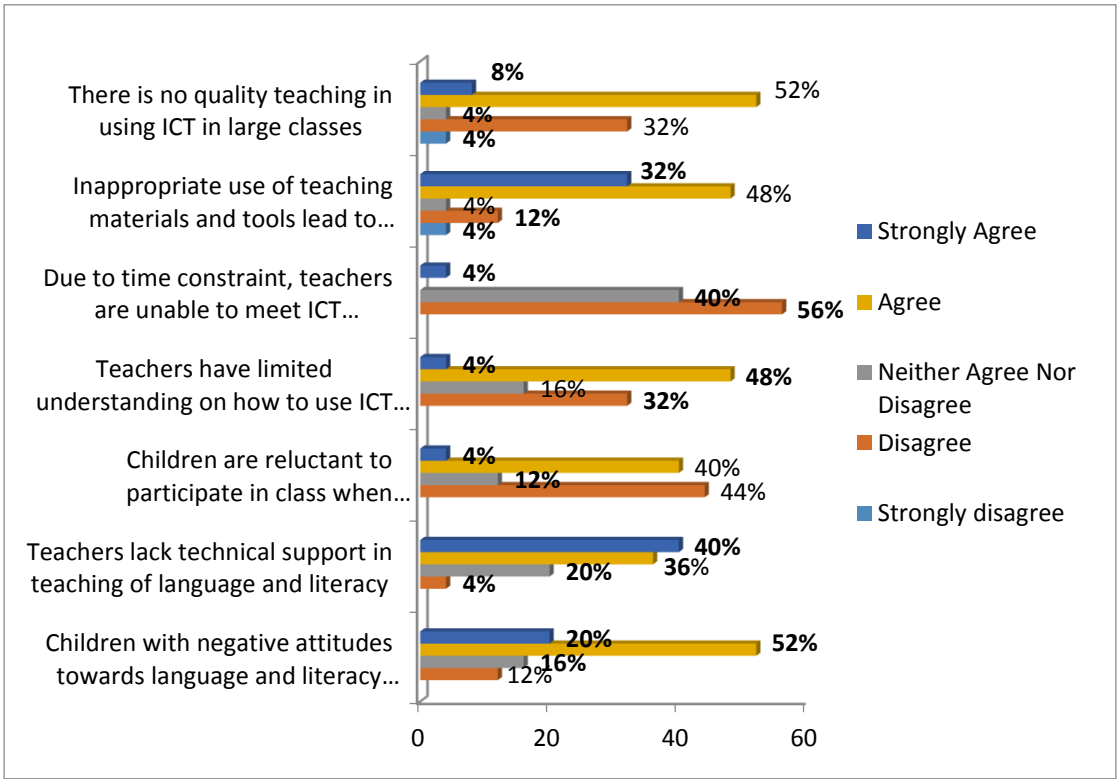

Fig 1.2. The drawback of using ICT in language and literacy

3.3 The Challenges that Teachers Experience when using ICT in Language and Literacy.

Fig. 1.3 shows the views of respondents as regards the challenges that teachers experience when using ICT in language and literacy. 52% of respondents agree that a loaded curriculum discourages teachers to use ICT as teaching aids. Indeed, teachers find it very difficult to complete the syllabus within the academic period [21] as preparing the lesson plans and the technology-enhanced teaching and learning activities are time-consuming [19] Teachers cannot implement the curriculum and orchestrate the learning activities that are technology-based within the allocated teaching time [18]. 56 % of teachers believe that lack of technical support may be a challenge in using ICT in teaching language and literacy and 60% agree that lack of training program may face up to challenges in teaching ICT. Hence, to overcome these challenges, the present curriculum should be redesigned to prescribe the technology-based learning activities in the subject manuals. However, in the context of Mauritius, the Early Digital Learning Programme which is a national policy for the digital transformation of teaching and learning in primary schools, is being implemented up to pupils of Grade 4 in 2020 [22]. This implies that pupils of Grades 5 and 6 cannot use ICT tools for more effective learning.

Furthermore, 40% disagree that teachers may lack knowledge of how to use ICT in language and literacy. During their training, teachers have a module on how to use ICT thus; most of them have a basic knowledge of how to use ICT in their class. However, some teachers who had not used ICT for several years may lack experience or are not acquainted with the newly updated programs - for instance, Grades 5 and 6 teachers are not using ICT for teaching and learning of language and literacy and they have not yet been trained to use ICT for teaching – may not be technology savvy enough to be effective in their classes. Therefore, some of those teachers who have not used ICT for a long time in their class face difficulties. 32% disagree that added time pressure is a challenge. It is a fact that teachers enjoy using ICT as using it is yielding positive results and it has proved to be an excellent teaching aid.

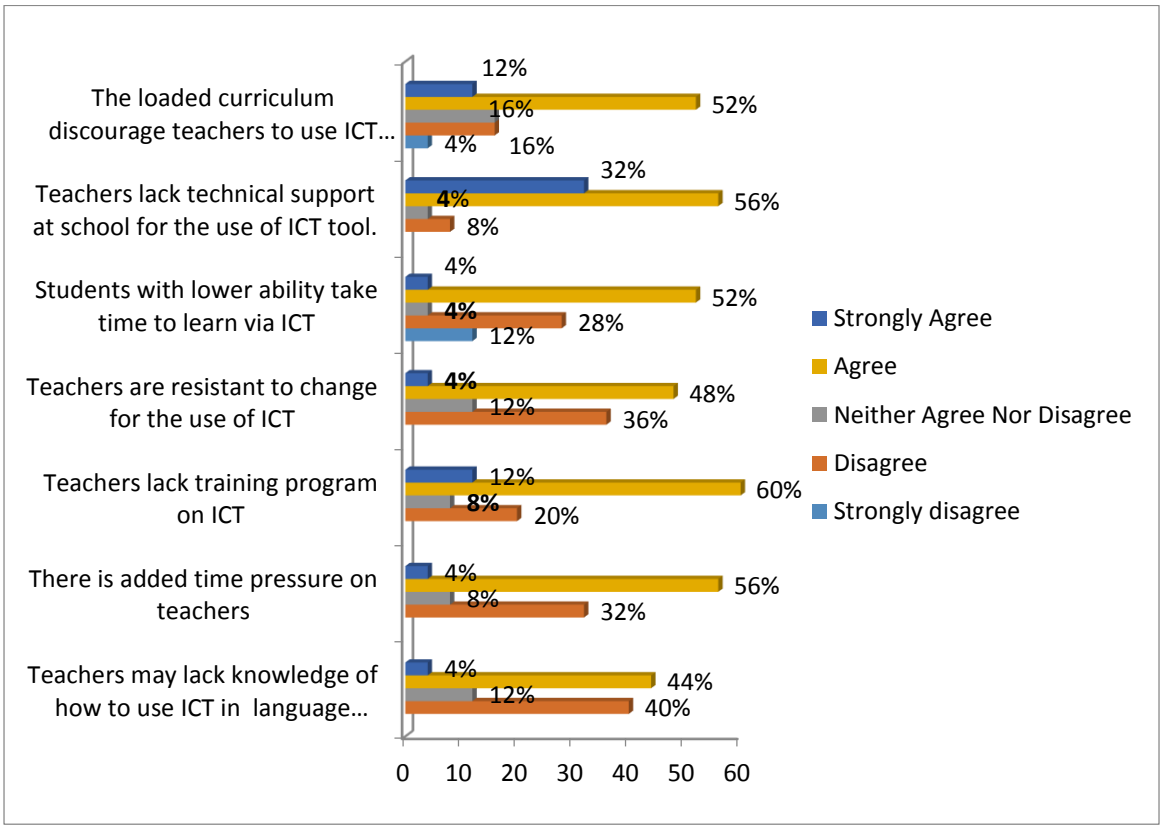

Fig1.3. The challenges that teachers experience when using ICT in language and literacy

4. CONCLUSION

This study is related to the perceptions of primary school teachers in implementing ICT tools in the teaching of languages and literacy to their pupils. It examines the benefits, drawbacks and challenges of using them to enhance the teaching and learning of languages and literacy. The findings indicate that teachers perceive the benefits of using and implementing ICT tools to enhance the teaching of languages to be quite high. They have an average level of perceptions about the drawbacks of implementing ICT tools, with very low perceptions concerning the extent to which they cannot do so due to time constraints and the extent to which their pupils are reluctant to actively participate in the teaching and learning process which is technology-embedded. Besides, primary school teachers have an average level of perceptions about the challenges in implementing ICT tools in their teaching to enhance the learning of languages and literacy.

The findings of this study are consistent with those of Ghavifkr, Kunjappan, Ramasamy and Anthony [20] that indicate that the level of perceptions of teachers about using ICT tools is average in Malaysian schools. However, the most important finding in this current study is that teachers have an average level of perceptions about their inability to use ICT due to a lack of training and there is no quality teaching when teachers use ICT tools in large classes. This is basically related. It implies that the Ministry of Education should reduce the class size in primary schools and also train teachers how to use ICT tools effectively and efficiently. Following the Nine Year Basic Continuous Education reform which is in the implementation phase, the Ministry has employed holistic teachers, but it would also be recommended to hire teaching assistants or support teachers in large classes in an attempt to facilitate the use of ICT tools in teaching and learning. Providing primary schools with interactive whiteboards, overhead projectors and pupils with individual tablets would not promote effective instruction and accelerate the digitalization of education in Mauritius. Additional policies related to the school effectiveness and improvement need to be considered. With the reduction in the number of school-going children, it would not be impossible to have a smaller class size with two teachers per class. There is indeed a positive relationship between the class size and effective teaching and learning when using ICT tools, in particular.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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