ICT INTERVENTIONS IN INCLUSIVE EDUCATION

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The emergence of information communication technology in educational institutions made a fast change of pace in teaching-learning process as well as in the communication strategies among teachers, learners, parents, and other stakeholders in the society. It is proven fact that the innovative initiatives in ICT by industrialists and educationists ensure a paradigm shift from traditional monotonous way of educational transactions for special learners too to interesting and sustainably motivating learning habits. Most of the special learners today have been using smart phones, tablets and other digital game devices to play and learn since they could hold it. So it is justifiable and logical to align their learning process with their interesting digital play devices. Hence, along with the formal classroom learning, digital devices can also be supplemented with in-built provisions for guided and unguided practices, particularly among the differently abled learners. If paid more attention and policy support to develop e-contents, inclusive education can be imparted more effectively than ever. In the present paper, the author analyses and describes provisions in ICT to provide more effective educational supports for inclusive learners. A questionnaire was administered to the teachers of differently abled learners to identify the ICT provisions available and allotted for them and their impact on the education of differently abled learners. On the basis of the analysis of the questionnaire and the review done on the available provisions of ICT for special learners, the author tries to contribute some specific policy suggestions to improve the teaching-learning status of differently abled learners and at the same time suggests some innovative digital provisions of ICT for inclusive learners.

Keywords: ICT Intervention, Inclusive education, Educational supports, Guided practice, Unguided practice, Innovative digital provisions.

Introduction

Education is the most important and strong media for human resource development. Education contributes the overall developments in social, economic, technical, scientific and other sectors of our life without compromising to the disparities of class, creed, gender and other socio economic factors. That itself is the reason for granting a major portion of our economy to the development of educational activities in quantitative and qualitative manner through various provisions and policies. Among these provisions and policies for education, inclusive education is a very important area where general and special educational considerations and conditions have to be incorporated. The concepts of multiple intelligence and emotional intelligence had given a special way to improve the status of education and life style of differently abled persons. In India, many programmes, schemes and provisions are there under the government project of *Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamic Shiksha Abhiyan (RMSA), and Rashtriya Uchchatar Shiksha Abhiyan (RUSA),* etc., to enable the differently abled learners through inclusive education. For that, provisions for ICT integration play a crucial role.

ICT Intervention

Inclusion of Information Communication Technology in teaching-learning management, administration, teaching-

learning strategies, in evaluation system, etc., are commonly known as ICT intervention. The emergence of information communication technology in educational institutions made a fast change of pace in teaching-learning process as well as in the communication strategies among teachers, learners, parents, and other stakeholders in the society. It is a proven fact that the innovative initiatives in ICT by industrialists and educationists ensure a paradigm shift from traditional monotonous way of educational transactions for special learners too to interesting and sustainably motivating learning habits. Most of the special learners today have been using smart phones, tablets and other digital game devices to play and learn since they could hold it. So it is justifiable and logical to align their learning process with their interesting digital play devices. Hence, along with the formal classroom learning, digital devices can also be supplemented with in-built provisions for guided and unguided practices, particularly among the differently abled learners. Its easiness to resource accessibility is the salient feature of ICT and has an easy access to the functionaries without considering the time and space. This vitality of ICT gives platform for special learners through synchronised learning facilities and gives opportunities to complete their learning tasks with their peers and to share it with the same category of learners all over the world. They can contact easily anywhere at any time by using the innovative assistive technologies designed especially for the differently abled learners.

In such a scenario, it will be a good attempt to assess the availability of ICT provisions both in special schools and inclusive schools. Hence, the study conducted is titled as 'ICT Interventions in Inclusive Education'.

Objectives

- To identify the ICT provisions available in schools and industries specially designed for the differently abled learners.
- To identify the ICT provisions available in the selected special and inclusive schools in Kerala.
- To suggest policy suggestions in the light of the results obtained from the investigation.

Research Questions

1. What are the innovative ICT provisions available for special learners in the field of education and industry?
2. What are the ICT provisions available in special and other inclusive schools?
3. What are the major policy suggestions for an effective implementation of ICT provisions in schools both special and inclusive?

Review of Related Literature

Starcic (2009) in his study identified that among key teacher's competencies, ICT competencies and competencies for inclusive education had been recognized as weak and he recommended that the teacher education curriculum course has to be prepared for future teachers for recognizing ICT as enabler of own professional learning and development as well as one of the main drivers for change of pedagogical practice for student centred teaching in an inclusive classroom. Also, it is suggested that e-learning environment in the inclusive classroom assists

classroom management and facilitates the individual and collaborative engagement and activities in the process of development of abilities, experiences and interests of every individual student.

Methodology

A questionnaire in Google form was prepared and administered to the teachers of differently abled learners to identify the ICT provisions available and allotted for their schools to meet the educational needs of the differently abled learners. The questionnaire included 10 questions to elicit answers in the form of descriptive answers, yes or no responses on general data regarding the school, and check-list to gather data regarding the ICT facilities available in schools both special and inclusive. Among them, the five check lists were focusing on assistive technologies for children with physical impairment, sensory impairment, cognitive impairment, assessment techniques for special learners and assistive techniques for parents of special learners. The key technologies included in the questionnaire were taken from website with the link https://www.european-agency.org/agency-projects/ict4i. Though the Google form had been sent to more than 300 email ids of schools, the responses received were only 24. On the basis of the analysis of the data collected through the questionnaire and the review done on the available provisions of ICT for special learners, the researcher tried to contribute some specific policy suggestions to improve the teaching-learning status of differently abled learners and at the same time suggests some innovative digital provisions of ICT for inclusive learners.

Analysis and Discussion of Results

The data received through Google form has been treated for simple statistical analysis of percentage and figured in graphs to make it for easy interpretation.

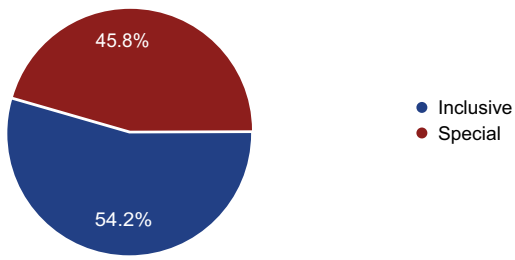

Fig. 1: Classification of types of schools

Among the total schools responded, 54.2 per cent were inclusive schools and 45.8 per cent were special schools.

Hundred (100%) percentage of schools have computer facility in sufficient numbers.

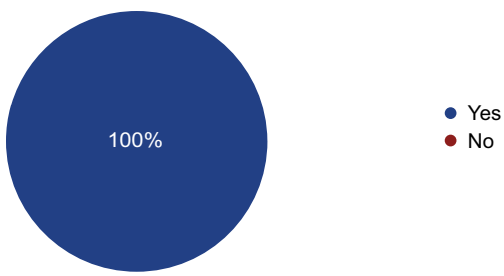

Fig. 2: Availability of computers

Table 1

ICT facilities for Physically Impaired Learners

S. No.	ICT Facility	%
1.	Adaptive hardware	17.4
2.	Keyboards	91.3
3.	Voice recognition software	39.1
4.	Portable word processor	8.7
5.	Online dictionary	73.9
6.	Closed circuit television	43.5
7.	Handheld scanner	73.9

In most of the schools, keyboard (91.3%), hand held scanner (73.9%) and online dictionary (73.9%) are only used in a wide manner as assistive technologies for physically impaired learners.

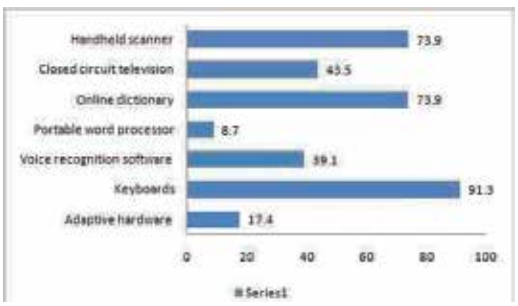

Fig. 3: ICT facilities for physically impaired learners

Table 2

ICT Facilities for Students with Sensory Impairments

S. No.	ICT Facility	%
1.	Text telephone	0
2.	Webster's speaking dictionary	20
3.	Printed graphic organiser	5
4.	Text correction software	70
5.	Voice recognition software	65
6.	Concept webbing applications	5
7.	Adapted tape player	45
8.	Large print and talking calculator	50
9.	Braille writers	50
10.	Screen reading software	55
11.	Text enlarging software	70

But in the case of assistive technologies for sensory impaired learners text enlarging and text correcting software are used by 70 per cent of the schools. 50 per cent or more schools are using voice recognition software, large print and talking calculator, Braille writers, and screen reading software. The availability of text telephone, printed graphic organiser and concept webbing applications are almost nil.

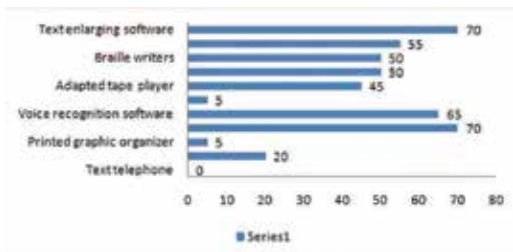

Fig. 4: ICT facilities for students with sensory impairments

Table 3

ICT Facilities for Students with Cognitive Impairments

S. No.	ICT Facility	%
1.	Voice recorder	73.5
2.	Car memo pad	0

3.	Digital stop watch	52.5
4.	Wrist watch	65.2
5.	Bulletin board	65.2
6.	Home filing system	0
7.	Post it note	0
8.	Reminder on fridge	0
9.	Pill reminding system	0
10.	Voice mail	26.1
11.	Calculator	69
12.	Camera	69

In the case of assistive technologies for learners with cognitive impairments, simple and common devices like voice recorder (73.5%), calculator (69%), camera (69%), digital stop watch (52.5%), wrist watch and bulletin board (62.5%) are used by majority of the schools. But reminding devices which need more alertness and attention by teachers like home filing system, pill reminding system and post it note are not at all available (0%) in any of the schools.

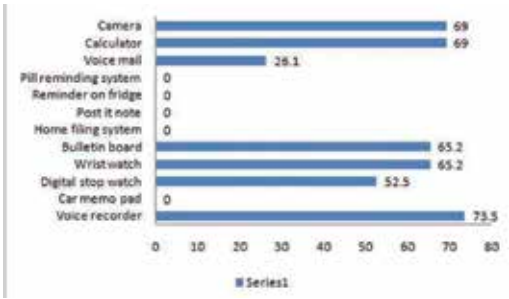

Fig. 5: ICT Facilities for students with cognitive impairments

Table 4

ICT Facilities for Special Learners with Specific Learning Impairments

S. No.	ICT Facilities	%
1.	Abbreviation expanders	0
2.	Alternative keyboards	15
3.	Audio books and publications	15
4.	Free-form database software	0
5.	Graphic organisers and outlining	0
6.	Information/data managers	15
7.	Optical character recognition	0
8.	Personal FM listening systems	15
9.	Proof reading software	0
10.	Speech recognition software	35
11.	Talking calculators	15
12.	Spell checker	10
13.	Word-prediction programs	65
14.	Electronic math work sheets	10

Assistive technologies for students with learning difficulties or disabilities are hardly available in both inclusive and special schools. Only word prediction programs are available in majority of the schools (65%). Speech recognition software is used by 35 per cent of schools, others are very less or hardly used.

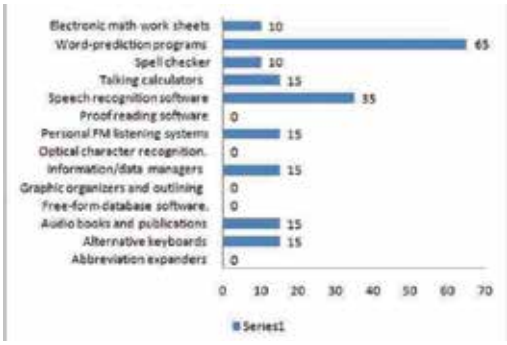

Fig. 6: ICT facilities for assistive techniques for special learners

Table 5

ICT Facilities for Assessment of Special Learners

S. No.	ICT Facilities	%
1.	Abbreviation expander	0
2.	Alternative keyboards	15
3.	Audio books and publications	23
4.	Electronic math work sheets	0
5.	Free-form database software.	0
6.	Graphic organisers and outlining	0
7.	Information/data managers	7.7
8.	Optical character recognition	7.7
9.	Speech synthesizer	30
10.	Concept webbing	23

In the case of assistive technology for assessment, the highest percentage of availability of devices is shown as 30 per cent and 23% for speech synthesiser and concept webbing, respectively. Other devices are available very rarely or nil in almost all schools.

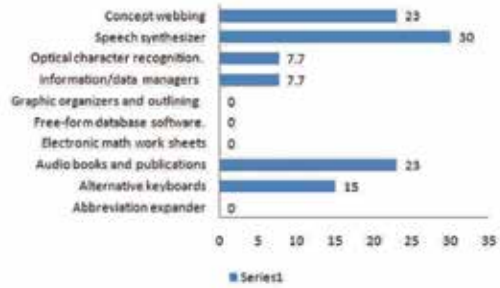

Fig 7. ICT facilities for assessment of special learners

Table 6

ICT Facilities for Assistive technology for Parents of Special Learners

S. No.	ICT Facilities	%
1.	Interface devices	0
2.	Joysticks	5
3.	Keyboard modifications	20
4.	Keyboard additions	15
5.	Pointing and typing	45
6.	Switches with spell checker	50
7.	Scanners optical character recognition	25
8.	Trackballs	0
9.	Touch screens	85

In the case of assistive technology for parents of special learners the highest percentage of availability of devices is shown as touch screens in 85 per cent of the schools. Switches with spell checkers are available in 50 per cent schools and the rest of the facilities are rarely available in most of the schools. Track balls and interface devices are not available in any of the schools.

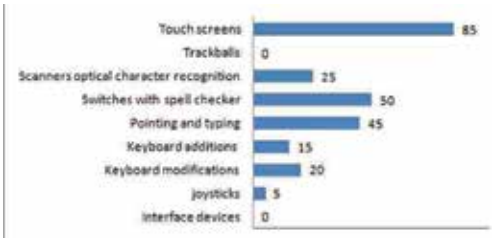

Fig. 8: ICT facilities for assisting parents of special learners

Findings

In the light of the above analysis, the major findings are as follows.

- ICT and its contribution in the field of inclusive education has not yet reached up to the mark.
- Merely the very common and simple provisions of ICT are available even in special schools till now. The innovative adaptive technologies mentioned in the questionnaire are still being out of reach in majority of the schools.
- The Personal FM listening system is also not used in most of the schools.
- Most of the facilities included in the questionnaire were softwares which can be installed with the existing computers. But it is revealed that teachers are not aware of it. Hence, they replied 'no'. It is a clear evidence of their ignorance regarding the ICT facilities available in industry.

Policy Suggestions for Improvement

- It is very essential to understand the potentials of assistive technologies in inclusive classrooms and their accommodation with students of special needs. Hence intensive training programmes have to be arranged for teachers of special learners. RIEs may take initiatives for this through policy suggestions.
- Along with teachers, parents of special learners have to be trained to accommodate with the innovative ICT provisions in their day-to-day life as the living and learning styles of most of the special students cannot be segregated from the mainstream learners. In some areas of academic platform, they are superior to normal learners too.
- Availability of ICT is equally important to usability and the user skills. Initiatives have to be taken from government and NGOs to give proper practice to deal with provisions and proper use.
- Digital devices for special children can be reduced with improved access to computers and internet in the context of school work which could enhance digital literacy and e-participation of students in a society as the new generation is more technology savvy.
- Focus on techno pedagogy has to be given by inviting expert teachers of special learners to develop technology supporting contents since there are a lot of opportunities in virtual learning and in OERs. For this, projects have to be designed with proper guidelines and funding on the basis of types of specialties with the learners. When more attention is paid with policy support to develop e-contents, inclusive education can be imparted more effectively than ever.

Conclusion

We are living in a technology driven era. From kids to grandparents, all are technology savvy and keeping mobile phones abreast with lots of adaptive technologies in them. It proves that no formal education is needed for technological interventions. But still formal education lacks in its capability to integrate technology with pedagogic transactions. Hence, indeed, we are in need of incorporation of ICT in our schools. But we have a group of learners seeking some special considerations. We have conducted several studies using online platform among special learners. The practice of the researcher's team with special learners using gamification in a Moodle platform was a prime one in this field. Children were efficient in using computers with adaptive techniques. But we, providers, are not so particular to deal them with innovative assistive technologies. Hence, it is high time to connect them with new ICT interventions preferably mentioned in this study to save them from the earlier marginalisation.

References

Istenic Starcic, A. 2009. Educational technology syllabus. In: UP PEF higher education 1st cycle study program *Classroom Teacher.* (pp.12–15). University of Primorska. Faculty of Education Koper.

Singh, Y.P. 2016. 'Problems and Prospects of Inclusive Education in India' Conference: 3rd Global Summit on Education GSE 2015, At Kuala Lumpur, Malaysia Conference Paper. March 2015

http://www.itd.cnr.it/download/AATE-2009.pdf

http://inova.snv.jussieu.fr/evenements/colloques/colloques/article.php?c=70&l=en&a=361

https://www.european-agency.org/agency-projects/ict4i

https://www.giz.de/fachexpertise/downloads/giz2016-ict-based-inclusive-education.pdf