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Enhancement of social skills and language of preschoolers through ICT

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Abstract
ICT is not only about using computers, but more than that. ICT is embedded in our day to day experiences. Interactive television programmes, video/DVD players and traffic lights at pedestrian crossings are a few such examples. It should be reflected in the early years' environment. It will help preschoolers to make sense of their world. Being highly motivational, inclusive and encouraging, these ICT resources often help in the development of language and social skills in preschool children. ICT is not a subject, it's a tool. There are some skills which are related to ICT equipment only. The present paper highlights the importance of ICT in early childhood education and how it helps in the development of language and social skills in preschool children. The concerned article suggests at least three reasons for using ICT in early childhood education. First, there is an effect of ICT on the people and environment that surround young children's learning. Second, new opportunities are provided by these technologies in order to strengthen many aspects of early childhood education practice. Third, the whole education sector is providing support and interest in the development and integration of ICT into education policy, curriculum, and practice. These three themes are explored in previously descriptive studies and evidences. The paper will also discuss about the current extent of research evidences to support claims about the potential of ICT which can strengthen various aspects of high-quality practice in early childhood education.

Keywords: concrete preparation; cognitive challenge; metacognition; social construction, bridging

1. Introduction

1.1 What is ICT and why does it matter in early childhood education?

Anything that provides information, helps us to communicate with each other or to have an effect on the environment using electronic or digital equipment can be stated as Information and communication technology (ICT). ICT includes computer hardware and software, digital cameras and video cameras, the Internet, telecommunication tools, programmable toys, and many other devices and resources. These resources can be used in early childhood education in the process of teaching and learning. However, various previous researches and studies have shown that the introduction and use of ICT in early childhood education should be grounded in a clear understanding of the purposes, practices, and social context of early childhood education (ECE). There are many ways in which ICT can contribute or transform the activities, roles, and relationships experienced by children and adults in early childhood education settings. There is a need for the practitioners and other adults in early childhood education settings to have guidance and opportunities in order to become capable, competent and informed about the educational role and potential of ICT, so that they can give their support in using ICT to strengthen many aspects of early childhood education practice.

1.2 Reasons of using ICT in early childhood education

a) **First, there is an effect of ICT on the people and environments that surround young children's learning.**
In one way or the other ICT already has an effect on the people and environment that surround young children's learning. ICT is becoming a globally used component of the physical and social world inhabited by young children. It is a necessary part of the private and work lives of most people; let it be parents, family members, caregivers, or early childhood educators. It has been often asserted in the studies that experiences gained in children's early childhood education should reflect and connect with their experiences in the wider world. Therefore, ICT matters in early childhood education**.** There is strong consensus across the studies that there is a need for critical examination of the role and potential of ICT for the early childhood education sector to escort future development and decision making in this area.

b) **The second reason for using ICT in early childhood education is because of the opportunities and potential that these technologies offer to the sector.**
Various opportunities are provided to support and enhance children's learning and play experiences, and strengthen practitioners' professional learning and development. Apart from this, it also provides opportunities to assist and strengthen relationships and communication between early childhood centres, parents, and other people connected to the early childhood education setting. Researches stated that technology on its own can never drive the process of ICT development in this sector (Downes & Fatouros, 1995) [15]. Rather for better results, all planning for the introduction and use of ICT by children and adults in early childhood education should be made by taking into account the purposes, practices, and social context of early childhood education (O'Hara, 2004; Sheridan &

Pramling Samuelsson, 2003) [30, 34]. Brooker (2003) [4] in his study has stated that early childhood education in UK is leading the way for developing best practice in the use of ICT to support positive and natural learning experiences for children. There are many studies with clear evidences that some of the most exciting and appropriate uses of ICT are found in early years settings because there is less pressure to meet strict targets and more opportunity to experiment with child-centred practice. (Brooker, 2003, p. 261) [4].

c) **Third is there is full support for the development and integration of ICT into education policy, curriculum, and practice across the whole education sector.**

Nowadays development of ICT policy and integration of ICT in curriculum and practice across the whole education sector have been given a major priority all over the country. ICT and "e-learning" have emerged as important concepts in all the sectors of education. Most of the studies revealed that policy and curriculum support for the development of ICT in the early childhood education sector have lagged behind in comparison to the support given in school sector (O'Hara, 2004; Sheridan & Pramling Samuelsson, 2003; Stephen & Plowman, 2003) [30, 34]. ICT strategies have been recently developed to be used in early childhood education by some of the countries like Scotland (Learning and Teaching Scotland, 2003b) [37]. Information and guidance about ICT in early childhood have been provided by various researchers, academicians, and practitioners in the published books, articles, and guidelines. The aim of these literatures was to support practitioners in early childhood education in order to make well-informed decisions and choices about ICT (Downes, Arthur, & Beecher, 2001; O'Hara, 2004; Siraj-Blatchford & Siraj-Blatchford, 2003) [16, 30, 5].

There are some advantages of delayed attention towards ICT in early childhood education. The growth and development of ICT in the school sector has sometimes led to the desire of getting more technology and technological infrastructure into the schools, without sufficient attention given to the pedagogical purposes for introducing the technology. Sometimes the schools neglect the supporting conditions and resources that might enable the technologies to contribute towards better teaching and learning experiences. Heavy investments have been made by most of the countries in ICT for use by teachers and students but the purposes of these investments have not always been clear. While many researches stated that children learn and teachers teach more effectively with the help of ICT. Research has also exposed many examples in which the teaching practice, or student's learning experiences has not yet improved or transformed to the extent as expected and the objectives framed could not be met (Peck, Cuban, & Kirkpatrick, 2002) [31]. The evidence provided by the researches cleared that simply providing ICT equipment to schools or teachers will not necessarily make any change. In fact the way in which this equipment and other resources are used makes a change in the entire structure and teaching learning experience.

Useful guidance and conditions of using ICT in the early childhood education sector can be taken from some of the school-sector ICT literature. Some of them can be research into effective teacher professional development with respect to ICT, and the conditions that facilitate innovation in the use and integration of ICT in teaching and learning (e.g. Harris & Kington, 2002) [20]. To recognise the differences between the two sectors and to recognise where there are limits for translating school-based research findings to early childhood education contexts is of utmost important before planning to set up ICT in early childhood education.

2. What roles can ICT play in ECE?

There are different ways of using ICT in early childhood education. With the help of these ways ICT can contribute to, or transform, the activities, roles, and relationships experienced by children and adults in early childhood education settings.

Table 1: Possible role for ICT in early childhood education

	Roles for ICT	Examples
1. Imaginative play	The video recorder can be used to record all kinds of imaginative play, such as dressing up and puppetry.	Teachers can use this video recorder to play back what was previously recorded. It will provide the children an audience and appreciation for their creativity. Overhead projector can be used for showing pictures which can make a backdrop scene for drama, a show or a puppet theatre.
2. Musical development	The Minidisk or voice recorder/player is a very flexible learning resource which can be used to listen quietly to music. Children might enjoy moving and dancing to the music. Such software can help children to listen, imitate and experiment with sounds and movement.	Teachers in preschools can use tape recorders with karaoke devices which encourage children in singing simple songs from their memory. It can also facilitate role play sessions.
3. Construction	Children's imaginative constructions can be recorded in digital cameras.	Imaginative works of preschoolers can be recorded by the teachers through digital cameras. These recordings can be further used when they need to be disassembled. In fact kid's friendly digital cameras can be used by the children themselves for collecting patterns from objects in the world around them and adding the printouts to their 2D or 3D creations.
4. Drawing and painting	Overhead projectors are useful in discovering and creating pattern and shape. Teachers and practitioners can help children in exploring colour,	Teachers can use an overhead projector as a tool to recreate the children's pictures on a larger scale, so that they can be displayed for their friends and

	shape, form and space by placing and moving objects in different positions. An overhead projector can provide a tool to recreate the children's pictures on a larger scale and display for their friends and parents to admire. Scanners can be used to import pictures into a paint programme for children to use as a backdrop, or to scan objects or collage materials and make patterns. There are many software programmes that can be used to paint and draw.	parents to admire. Scanners can be used in early childhood setting by the teachers in order to import pictures into a paint programme for children to use as a backdrop. It can also be used to scan objects or collage materials and make patterns. Many software programmes are available in the internet that can be used to paint and draw.
5. Communication, Language and Literacy	Computer play can encourage speech and the development of fluency of the children to a greater extent in comparison to those who are not exposed to computers and technology. High levels of spoken communication and co-operation are found in those children who interact with the computers on a daily basis.	Language development and early literacy can be enhanced and promoted through conversations and interactions with caring adults, storytelling, drawing and painting and pretend play.
6. Encouraging conversation	Pretend play activities encourage children to express and communicate their ideas, thoughts and feelings. We provide them opportunities to share, solve problems, and talk about daily events by letting them reflect their real worlds.	Teachers can help children to learn how technology is used to price items, scan barcodes, swipe bank cards and print receipts by taking them to a local supermarket, health clinic, bakery or coffee shop. After getting back in their learning environment these everyday situations can be discussed with the children.
7. Developing reading skills	Teachers can help children learn in a meaningful way by using computers in the childcare setting.	Software programmes which create a virtual environment encourage children to 'read' the screens and help them discuss with their peers about what is happening. When teachers use tape recorder in the setting, children get independent access to listening, as well as sharing comments and actions with an adult or friend as the story or rhyme is being read.
8. Developing social skills	ICT tools facilitate children to work and learn in a group. By working in a group children learn about sharing, turn taking, co-operating and collaborating.	When children join in an activity with their peers that they all very much want to be a part of, they learn the things very easily. The benefits of group learning can be therefore expanded beyond the immediate learning environment with the use of ICT.
9. Understanding of the world	ICT resources play an important role in 'developing crucial knowledge, skills and understanding in young children. It enables them to make sense of their own immediate environment they live in as well as environments of others.	Digital cameras, voice / video recorders and webcams can be used by the teachers in early childhood setting. It provides opportunities for the children to investigate and learn about the living things, objects and materials, some of which might not be accessible otherwise, for example with a webcam placed in a wildlife area
10. Preparation for the future	Technology prepares children for the future and makes them ready for a formal school setting. Nowadays computers are used almost everywhere and by making students exposed to the technologies from the beginning years will help them to be usual with the technologies and they will not face difficulties in understanding them in the future.	When the young children are involved in the activities through ICT, they learn and understand the ways of using technologies. It boosts their confidence and skills in using such technology throughout their school and working lives ahead.

As most of the researches take ICT into account only in terms of computer use, there are key issues arising from these studies about ICT and young children. The questions emerge out of these issues like why use ICT with young children? What are the perceived disadvantages of young children's use of ICT? What are the advantages of young children's use of ICT?

Recent studies are viewing children's ICT use from a socio–cultural perspective. Some of the researches stated ICT is embedded in a wider context of interactions with the total environment. Children use ICT during the interactions with their total environment and other people, including their peers, and adults. The questions that arise from these studies are: what are the appropriate and meaningful uses of technology with children? And how can ICT tools are used to enhance children's learning and development by the teachers in ECE settings?

3. Areas of concern about children's computer use

Parents, teachers, and practitioners raise questions regarding the relationship of ICT with the cognitive, emotional, social, and developmental needs of young children due to the increasing pervasiveness of ICT (Stephen & Plowman, 2003, p. 4). But all the questions and debates have centred on young children's use of computers and computer games. Studies claims that computer use leads to anti-social behaviour, including isolation or aggressive behaviour in young children. Some of the studies also demonstrates that computer use can make children expose to unsuitable contents, like containing material of a sexual or violent nature, inappropriate gender, cultural, or social stereotypes and it may displace other necessary learning and play activities.

Most of the researchers argued that computer use in early childhood education should be encouraged in terms of "the

essentials of a healthy childhood". ECE practitioners and teachers are required to be aware of the limitations within which computers can be used in ECE settings. They need to safeguard children's health and development particularly regarding the use of desktop computers. They should concern about the time for spontaneous, creative play; a curriculum rich in music and the arts; reading books aloud; storytelling and poetry; rhythm and movement; cooking, building things, and other handcrafts; and gardening and other hands-on experiences of nature and the physical world (Cordes & Miller, 2000, p. 98) [10]. Many researchers in early childhood education have criticised or rejected the Fool's Gold position. Some authors have characterised this position as representing a "death of childhood" thesis, and they ideologically reject the role for ICT in early childhood education. It is founded on a belief that it encourages children to be passive recipients, that it is isolating, and that children cannot learn from these kinds of experiences. (Buckingham, 2000, cited in Stephen & Plowman, 2003; Luke, 1999; Whitebread, 2003).

Regarding the safeguard of the children's health, social outlook and cognitive behaviour, most authors recommend that children's use of computers should occur in relatively short spells, usually no more than 10 to 20 minutes for 3-year-olds, extending to no more than 40 minutes by the age of 8. However, newer, "child-sized" technologies, and alternative interface technologies such as touch-screens, modified keyboards, and hand-held computers must also be evaluated carefully by the ECE practitioners.

It has been revealed from the studies that all computer games do not contain violence. In fact some of them argue that the children will be provided with learning benefits which include the development of reasoning and problem solving abilities when they get exposed to immersive, interactive environment of computer games. Apart from this, computer games helps in enhancing skills in making inferences, and dealing with multiple sets and layers of information. Studies also showed that young children love to play computer games with their friends than on their own (Linderoth *et al*., 2002), or that children prefer to use computers when there is an adult available to support and scaffold their computer interactions. However, the need of the hour is practitioners and teachers should be well trained and skilled in the appropriate uses of ICT with young children (Siraj-Blatchford & Whitebread, 2003, p.6) [5].

4. What is developmentally appropriate use of ICT with young children?

Most of the literature which provides guiding principles on ICT in ECE settings emphasizing developmental appropriateness are: the DATEC (developmentally appropriate technology in early childhood) project in the UK (Siraj-Blatchford & Siraj-Blatchford, 2002; Siraj-Blatchford & Whitebread, 2003) [5]; and the American National Association for the Education of Young Children's position statement on the use of technology with children aged 3 to 8.

There are various theories which define the term "developmental appropriateness" in a number of different ways. According to Luke, children's development depends on a step-wise series of "stages" (Luke, 1999; Downes *et al*. (2001) [15]. Some researchers suggest that the term developmentally appropriate practice take Vygotskian perspective into consideration so as to encourage teachers to plan experiences that provides challenge to the children within their "zone of proximal development". ZPD is the area of difference in the performance between what a learner can do without any assistance and what they could do with the assistance of a more knowledgeable or capable other.

Theoretical understandings about children's development are changing over time by the educationists and psychologists (Clements, 2002; Luke, 1999) [9]. For example, Luke states that cognitive, behavioural, and emotional development of children cannot continue to be assumed to fit into traditional developmental stages. Today, children's early literacy and play experiences are shaped and enhanced by electronic media and technology (Luke, 1999, p. 97).

DATEC's eight general principles about what constitutes developmental appropriate use of ICT provide a useful general framework for practitioners. These principles are listed below.

The DATEC project offers eight general principles for determining the appropriateness of ICT applications to be used in the ECE settings:

1. The teacher should ensure an educational purpose before using ICT in the class.
2. The teacher should encourage collaboration among children.
3. The teacher should integrate ICT with other aspects of the curriculum. For example, if children are required to understand ICT then they need to see it used in a meaningful context, and for real purpose.
4. The child should be kept under control; the ICT application should not control the child's interaction through programmed learning or any other behaviourist device.
5. The teachers should choose applications that are transparent and intuitive. The "drag and drop" facility on a computer screen is a good example.
6. Teacher should avoid applications that contain violence or stereotyping.
7. Teacher should be aware of health and safety issues of children while using ICT.
8. Teacher should encourage the educational involvement of parents.

5. Using ICT to support language development

There are many ways through which speaking, listening, reading and writing of children could be enhanced by ICT.

According to Robertson (2006), mental and social development of children can be enhanced by using five components in daily interaction with them. First one is concrete preparation. Here, the parents are required to consolidate existing knowledge of the world and bring it in front of the children, ready for use. The parents should take the responsibility of providing opportunities to the children in order to interact with the outer world to know different things, to observe the phenomena around them and facilitate them to create their own understanding. But there are complexities involved in using concrete materials in the classroom. The difficulties can be in choosing the wrong types of materials, structuring the environment in ways that do not support learning from concrete materials, failing to connect concrete representations to abstract representations. Well, linking concrete to pictorial representation is also of utmost necessity. According to Early Childhood consultant

Sylvia Ford, concrete preparation helps in forming a strong foundation of understanding. Kaminski, Sloutsky, and Heckler (2009) stated that sometimes realistic concrete materials convey superficial information that interferes with learning due to its shape, size, colour etc. For example, the shape or colour of the apples can distract a child while counting. It may result in distraction from the proposed objectives of learning. Therefore, the concrete representation (apple) is irrelevant and distracts learners from the information that educators tries to share (number). Some researchers also suggested that the properties of physical manipulative are often irrelevant to the target concept, and therefore they are said to be distracting (Sarama, Clements; 2009) [9]. Apart from this, learners become more dependent on the external environment at the expense of constructing meaningful knowledge for themselves. When physical manipulative are used in structured environment, it becomes more effective in learning. Depending on both the goals of the lessons and the cognitive and behavioural strengths and weaknesses of the students, educators need to strike a delicate balance by weighing the costs and benefits of structure versus freedom of the children. Computers are cost effective when it comes to take students to some places to know different things. Computers can also be used in this context.

Second component is cognitive challenge. It is to give challenging activities to the children and then helping them to meet these challenges in such a way that the children will learn them from experience and will be able to use these experiences in the long term while solving similar problems by their own. Teachers can use computers in this process. For example, teachers can give a task to the preschoolers of arranging the petals of flowers in an appropriate way. It engages the students in the task and students find it more interesting to complete the task.

Third one is social construction. It enables the child to interact with the people around them without facing difficulties. They absorb the culture of society around them in such a way that they will be able to know the work and action of the human beings in social settings. It helps them to understand how the human beings as social beings grow up together by watching, listening, observing the activities and following each other, trying out different things, looking for the effects on others and so learning from each other to survive in the society together. It comes in children from the regular interaction with peers. It encourages children to express their ideas and soon become open about their views in front of others. Teachers can use computers in showing moral stories and small documentary films. It helps the students to learn social, moral, spiritual and personal values prevailing in the society. It enhance group activities which will assess children's abilities in distinguishing, sharing and explaining what he/she is doing, say that he/she agrees or disagrees with others and change their minds and adopt different ideas.

Fourth component is Meta cognition. It directly or indirectly comes from the theories of both Vygotsky and Piaget. It is provided in the theories that cognitive development occurs only if children develop self-awareness. If they are consciously aware of their own thinking, think of them as learners and all the activities they do in their lives. This self-awareness in children helps to enhance self-esteem and self confidence in them. It helps them learn to capture their thoughts as they occur. Children will come to know that they have their own ideas and they begin to reflect on their own thinking. This is the prime responsibility of the educators to let this happen. After every activity teachers can ask them to explain the task they were doing. After getting answers from them teachers can ask them why they were doing this and how this is going to help them. These type of question answer sessions leads to meta cognitive speculation. It encourages the children to realise that they can also think of reasons. It also helps the children to understand the intensions of others. They can understand what the adults want to hear and know what they think which indicates that adults do not hold all the answers. Computers can be used to develop self-awareness among the children in such a way that it encourages meta cognitive skills in them.

Bridging is the fifth and the last component. It means linking. It helps children to link one experience or learning with another. This can also be known as transfer of learning. It is an ability to apply knowledge learned in one context to the similar other context. For example, the moral values those are learned by children by watching panchatantra tales in computer apply these values in their homes and environment. This activity can again bridge to vocabulary development and the understanding that we can use the written word for labelling.

6. Conclusion

Above first four components will help the students to learn by discovery. It helps children in understanding, remembering the things and the last component i.e. bridging help them in applying their learning to other situations. Therefore, bridging not only helps in activating and building background knowledge, but also used in facilitating predictions and in creating interests and connections. Daily activities and interaction of children with adults and peers through ICT is the key event which further develops an individual into his/her fullest potential. So, finally it can be concluded that ICT plays a pivotal role in helping children to develop to their level best because they learn by ICT and they explore or find anything that they want. Rather than just depending on the teacher to tell them all the things, they get new knowledge by using ICT. When they become advance than their friends, they easily excel in their education. Through technology they develop both interpersonal and intrapersonal skills.

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