ADVANTAGES AND DISADVANTAGES OF INFORMATION-COMMUNICATION TECHNOLOGY USAGE FOR FOUR-YEAR-OLD CHILDREN, AND THE CONCEQUENCES OF ITS USAGE FOR THE CHILDRENS' DEVELOPMENT

Jurka Lepičnik-Vodopivec, Ph.D.
Associate professor
University of Maribor
Faculty of Arts
Koroška cesta 160, 2000 Maribor
Slovenia

Pija Samec
University of Maribor
Faculty of Arts
Koroška cesta 160, 2000 Maribor
Slovenia

Abstract

Information-communication technologies (ICT) are a part of our world and we use them every day. They represent an important source of information about us and others, as well as about local and world events. Besides that, ICT can also be very attractive for pre-school children, who acquaint with them very quickly. This article presents advantages and disadvantages of ICT usage for a four-year-old pre-school child and its potential consequences for the child's development. The data was collected with the help of 130 parents. They were asked to fill out a questionnaire and share their opinions about their four-year-old children's usage of ICT at home. We found out that in the case of four-year-old children the usage of ICT has its advantages and disadvantages, and that the consequences of its usage (positive and negative) would be approximately the same.

KEY WORDS: information-communication technology (ICT), pre-school child, advantages and disadvantages of the usage of information-communication technology, consequences for the child's development

1. INTRODUCTION

Information-communication technology (or ICT) is a common expression for a variety of different computer, information and communication devices (hardware), applications (software), networks (internet), and services. It is a general concept which encompasses all communication devices of the modern society and their usage. Its primary purpose is mediating information and enabling the communication process. When it comes to ICT, the internet and mobile technology, and their applications are most often considered (Pinterič and Grivec, 2007), but we have to stress that ICT does not include only computers and mobile phones, but is also present in many other types of technology, which can be encountered also by pre-school children. The broad ICT definition also includes a variety of everyday technologies, like: electronic toys, interactive whiteboards, playing consoles, various players and digital cameras … Put shortly, all types of technology that a child may encounter in its home environment and also uses them.

Because of its nature, ICT already has numerous advantages. Besides using it for pleasure and entertainment, we also use it for study and work purposes. (Punie, 2007) ICT encourages learning; it motivates the individual and at the same time gives him (or her) the capability to do certain activities. Besides that, its presence betters the learning environment and enriches the learning experience. (Markovac and Rogulja, 2009) Punie (2007) claims that ICT enables the child to process the learning content in an entertaining and interesting way, while McPake, Stephen, Plowman, Sime and Downey (2005) have proved that the usage of ICT also develops the child's competences. ICT is not only an educational tool, but also a supporting one, because it helps to develop children with special needs and behavioural problems. (Markovac and Rogulja, 2009) Besides that, it lays the foundation for long life learning and personal development, because among other things it also develops the digital competence and technical competences, which are needed for employment, education, self-development, and general activeness in the modern society.

(Punie, 2007) Plowman and Stephen (2003) claim that the usage of ICT is essential for the child, because it can help him (or her) integrate in the "e-society", meanwhile the child can use its potential, which is still little understood by adults.

For many years ICT have been judged for their potentially bad influence on the child. Often, worries about the usage of ICT are concerned with the question how early exposing of the child to the ICT influences its general development. Experts like Kirkorian, Wartella and Anderson (2009) claim that the children learn more from real-life experiences than from the ones offered by ICT, especially if the content is not suitable for the children. The debate about the technology's influence on the child's development has long ago exceeded the borders of academic circle and became public. Plowman, McPake and Stephen (2008) have found out that even the general public thinks that the usage of ICT is dangerous for the child, and that its creative potential is being more and more overlooked. But where hide the reasons for such thinking? The major argument of all studies, which stress the negative sides of ICT is that the children in early stages of development are the most susceptible and because of that also very vulnerable.

In one of their studies Plowman, McPake and Stephen (2010) divided the dangers and disadvantages of ICT usage into three major categories. The first category includes dangers and disadvantaged of ICT usage for the child's socio-cultural development. The writers found out that ICT supposedly endangers the child's social development, because children spend less time playing with their peers and are mostly isolated; ICT is supposedly to offer virtual experiences from "the second hand" and not realistic experiences from "the first hand"; besides that the marketing of ICT is in our society very intense and prays on vulnerable children, which represent the biggest part of its target group. The second category includes the dangers and disadvantages of ICT usage for the child's cognitive development. ICT is supposedly to endanger the child's intellectual development, the development of imagination (it stimulates passivity and not activity), and the development of language (lack of communication with peers). The last category includes dangers and disadvantages of ICT usage for the child's wellbeing. Children are supposedly to spent more time in enclosed spaces and not outdoors, the child's health is also endangered (sitting usage, which increases the risk of obesity), the usage of ICT supposedly leads to addiction with technology and exposure to inappropriate content., besides all that the chances of child interacting with family members are also decreased, what is supposedly to lead towards decreasing of child's emotional development.

All these dangers and disadvantages of ICT usage are mostly connected with the amount of ICT usage, its content and the degree of parent control. Today, children can through ICT more easily access various contents than ever before. Adults do not have control over this access, because the media environment has changed so drastically that a complete control over the child's usage of ICT is today practically impossible. (Roberts, Foehr, Rideout, and Brodie, 1999).

2. METHODS

We used a descriptive method and a causal – non-experimental method of empirical pedagogical research. The study was implemented on a sample of 130 parents (83, 8 % women and 16, 2 % men, 53, 1 % of them with a high school education and 49, 9 % of a higher education (or more), 46, 9 % of them has girls and 43,8 % has boys) with four-year-old pre-school children who attend kindergartens all over Slovenia. By answering the questionnaire the parents have shown us their child's general access to ICT, its usage and the relationship the child has towards ICT at home. With the help of literature we first composed an exemplar questionnaire which was tested after a rational evaluation. Then we eliminated all possible errors and imperfections. and tested the questionnaire in February 2011. The final questionnaires were given to parents in April 2011. The survey was anonymous. Gathered data was computer analysed with a statistical programme SPSS (Statistical Package for the Social Sciences). We used a method of descriptive statistics for all questions. We determined the absolute (f) and percentage (f %) frequencies and tabularised the gathered data. The depended relations between these variables were tested with a χ^2-test. The data gathered with evaluation scales was analysed with Mann-Whitney U-test.

3. RESULTS

For the purposes of our study we asked the parents what consequences a constant and long-term usage of ICT would have on their four-year-old child.

We were interested if such usage of ICT would in general have more negative or more positive consequences, or if these were approximately the same. Table 1 shows that more than one half (51, 5 %) of parents thinks that a long-term and constant usage of ICT would have approximately the same consequences (positive and negative) on their child. A little over one third (32, 3 %) of parents believe that such usage of ICT would have more negative than positive consequences, while the least parents (16, 2%) believe that a long-term and constant usage of ICT would have more positive than negative consequences for the child.

According to the χ^2-test in Table 2 we can see that there do not exist any statistically typical differences in child's gender and parents' degree of education in the opinion about the sort of consequences which would a long-term and constant usage of ICT have on the child. This means that we can retain the null hypothesis. But there exist a tendency ($p = 0,067$) that more parents with a higher degree of education (or more) (52, 4%) believe that such usage of ICT would have more positive than negative consequences for the child. It is also more or less the same with the answer that a long-term and constant usage of ICT would have more negative than positive consequences (59, 5%). The parents with a high degree of education (or less) (62, 7%) mostly believe that the consequences would be the same.

4. DISCUSSION

Parents believe that the most common negative consequences of ICT usage are: contact with aggressive or unsuitable content, endangerment of the physical health (deterioration of sight, stiffness, spinal injuries because of constant sitting position, obesity …), associability, and loss of constant with reality or even addiction. Besides that they also emphasise the positive consequences which are: gaining new knowledge and skills, knowing the ICT what will benefit the child in its future schooling and employment. Those parents, who think that the usage of ICT is more harmful than beneficial for their child, argue their opinions by claiming that a four-year-old child is too young to use the ICT. They are also afraid that the usage of ICT increases the chances of serious problems in the child's mental development, that the child will become aggressive, that it will lack social interaction (isolation from society) and that its communicational skills will be worsened. Only a few parents believe that the usage of ICT has positive effects on a four-year-old. They say than knowing and using the ICT is vital for being active in the society and being capable of working. Some parents even stated that the usage of ICT (mostly internet and its applications) offers them a lost of material suitable for their child (songs, fairytales, games, various lessons …), what saves them money (material does not need to be bought) and time (access from home). All parents agree that it is important to choose ICT fro such a young child, to control the manner and time of usage and explain the concept of ICT, so that in the future the child can be able to rationally use it on its own.

Roberts, Foehr, Rideout and Brodie (1999) have come to the same conclusion. In their study they have found out, that children on average use ICT between one and three hours per day. This usage often goes on without the parents' approval, because children have unlimited access to their own, personal media. At the age of four the child is already in the potential danger, if the usage of ICT is not correctly regulated. Because of that parents have to provide the control and consistently execute it. There is a need for balance between all children's activities, there have to be timelines, there has to be an equal distribution between child's play indoors and outdoors, and between individual and group play. The question how often and how much the child uses ICT has always arouse great differences in experts' opinions. Some of them believe that the usage of ICT harms the child, while others see only positive effects in its usage. We asked the parents how often their children use ICT at home. They stated that children every day use the television, while all other ICT-devices use very rarely or even never. Of course the majority of children several times a week use ICT-toys, which are designed especially for them.

Findings that parents whit a higher degree of education have a more detailed opinion about the usage of ICT and its consequences than the parents whit a high education are expected, because the parents with a higher education (or more) probably more often use ICT-devices, especially for their work purposes (computer, internet, printer …), and are because of that more aware of its potential consequences for their four-year-old child.

5. CONCLUSIONS

We have found out that the majority of parents believe that positive and negative consequences of ICT usage would be approximately the same. Fewer parents believe that the child would suffer more damage than benefits, while the least parents believe that the usage of ICT would benefit the child more than harm it.

Parents are afraid of negative consequences such as: inappropriate content, danger for physical health, associability or even addiction, while the positive effects are: gaining new knowledge and skills, usability of ICT at future schooling and employment and a general activity of the child as an individual in the digital society. Results have also shown that there are no differences in the opinions about the consequences of ICT usage accordingly to the child's gender and parents' degree of education. We are pleased with the finding that the majority of parents believe that ICT, such as other things, has good and bad sides, but we dos wish that the general public opinion would be more positively oriented towards the usage of ICT, because only such way of thinking will lead to a regular and correct usage of ICT in all pre-school children who will with its help develop their competences and knowledge, which will be needed for the future.

TABLES

Table 1: Numbers (f) and structural percentages (f %) of parents' answers on the question: "What consequences would a constant and a long-term usage of ICT have on your child?"

Consequences	**f**	**f %**
More positive than negative consequences	21	16,2
More negative than positive consequences	42	32,3
Positive and negative consequences would be approximately the same	67	51,5
Total	130	100,0

Table 2: Childs' gender and the degree of parent's education in connection with their opinions about the consequences of child's long-term and constant usage of ICT

Consequences		**Child's gender**		**Parents' degree of education**		**Total**
		female	**male**	**high or less**	**higher or more**	
More positive than negative	f	10	11	10	11	21
	f %	47,6	52,4	47,6	52,4	100,0
More negative than positive	f	24	18	17	25	42
	f %	57,1	42,9	40,5	59,5	100,0
Consequences would be approximately the same	f	39	28	42	25	67
	f %	58,2	41,8	62,7	37,3	100,0
Total	f	73	57	69	61	130
	f %	56,2	43,8	53,1	46,9	100,0
χ^2 - test		$\chi^2 = 0,753$ g = 2 p = 0,686		$\chi^2 = 5,413$ g = 2 p = 0,067		

REFERENCES

Kirkorian, H. L., Wartella, E. A., nad Anderson, D. R. (2008). Media and young children's learning. *Future of Children, 18,* 39-61. Retrieved 5. 11. 2010, from ERIC database.

Markovac, V. and Rogulja, N. (2009). Key ICT competences of kindergarten teachers. In *8th special focus symposium on ICESKS: Information, Communication and Economic Sciences in the knowledge society* (p. 72-77). Zadar: Faculty of Education , University of Zagreb in ENCSI database.

McPake, J., Stephen, C., Plowman, L., Sime, D., and Downey, S. (2005). *Already at a disadvantage? ICT in the home and children's preparation for primary school*. Retrieved 30. 10. 2010, from the website University of Stirling: http://www.ioe.stir.ac.uk/research/projects/interplay/docs/already_at_a_disadvantage.pdf.

Pinterič, U. and Grivec, M. (2007). *Informacijsko komunikacijske tehnologije v sodobni družbi: multidisciplinarni pogledi*. Nova Gorica: Faculty for Social Sciences.

Plowman, L. and Stephen, C. (2003) A »benign addition«? Research on ICT and pre.school children. Retrieved 21. 11. 2010, from the website University of Stirling: https://dspace.stir.ac.uk/bitstream/1893/459/1/Plowman%20JCAL.pdf.

Plowman, L., McPake, J., and Stephen, C. (2008). Just picking it up? Young children learning with technology at home. *Cambridge Journal of Education, 38,* 303-319. Retrieved 29. 10. 2010 from ERIC database.

Plowman, L., McPake, J., and Stephen, C. (2010) The technologisation of childhood? Young children and tecnology in the home. *Children and Society, 24*. Retrieved 30. 10. 2010, from http://onlinelibrary.wiley.com/doi/10.1111/j.1099-0860.2008.00180.x/full.

Punie, Y. (23. 5. 2007). Learning spaces: an ICT-enabled model of future learning in the knowledge-based society. *European Journal of Education, 42*. Retrieved 30. 10. 2010, from http://onlinelibrary.wiley.com/doi/10.1111/j.1465-3435.2007.00302.x/full.

Roberts, D. F., Foehr, U. G., Rideout, V. J., and Brodie, M. (1999) *Kids and Media @ the New Millenium*. Retrieved 6. 1 . 2011, from http://www.kff.org/entmedia/upload/Kids-Media-The-New-Millennium-Report.pdf.