THE PRESENCE OF INFORMATION-COMMUNICATION TECHNOLOGY IN THE FOUR-YEAR-OLD CHILDREN'S HOME ENVIRONMENT

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ABSTRACT

Nowadays, technology represents an important part of our lives. It is present almost everywhere: in education, civil services, business area, and at home. ICT offers a chance for searching, choosing and using relevant data, what is recognized as a key competence. Even the lives of our youngest members are intertwined with it. This article describes the presence of information-communication technology (ICT) and its influence on the four-year-old children's home environment. The article is based on a research which studied the children's access to ICT, his or hers ICT usage, the ICT's influence on the development of the child's competences, and the relationship between the child and ICT. The article therefore introduces the main findings of this study in the form of concluding thoughts. These findings were made on a basis of the parent's opinions. Representing their child's views, the parents filled out a detailed questionnaire (sample of 130 parents) that allowed us to determine the children's attitudes towards ICT at home, and consequently ICT's influence on the child's early development. We also tested if there are differences according to the child's gender and parent's level of education. We found out that children come into contact with ICT at home and that its usage, to some degree, influences the development of the child's competences. The article also presents parent's opinions and suggestions for further studying.

KEY WORDS: information-communication technology (ICT), pre-school child, home environment, competences, early development

INTRODUCTION
We live in an era of information society, where creating, possessing, and managing of information are prevailing activities. Inevitably, the concepts of information, communication and technology merged into one, creating a completely new concept of information-communication technologies (ICT). The fact that only adults come into contact with this kind of technology is completely wrong. Even the youngest members

of our society daily encounter different types of ICT. We have to emphasize that ICT is not represented only by computers, the internet and mobile technology, but also with other, more children-friendly forms of technologies. For the purpose of our study, we decided to use a broader definition of ICT, for its components are included in a variety of everyday technologies that even children can use. (Nikolopoulu, Gialamas, and Batstouta, 2010) The broader definition of ICT also includes electronic toys, interactive boards, gaming consoles, media players, digital cameras, etc. We can say that ICT represents every type of technology that enhances the process of discovering, exploring, analysing, documenting, sharing, and presenting information. (Markovac and Rogulja, 2009) These products acquaint the child with the concept of interactivity, which is the main and most important feature of ICT. (Nikolopoulu, Gialamas, and Batstouta, 2010) Home environment is probably the only place where children regularly come into contact with ICT, so studying the effects of ICT usage on children in their home environment is as important as studying the same influences of ICT on children in kindergarten. The effects of ICT on the children's development cannot be disregarded, and only a proper and positive relationship can prevent possible negative effects and prepares the child for a life in a world lead by ICT.

The main purpose of our study was to find out how many various types of ICT the child's family owns, the child's access to ICT at home, the manner and frequency of the child's usage of ICT, what influences the increased child's usage of ICT, the possible effects that ICT might have on the child's development, the child's attitude towards ICT, and if the parents' are suitably informed about the proper usage and effects of ICT. These aspects were further investigated, for we were interested if there exist differences according to the child's gender and parents' level of education.

METHODS AND PROCEDURES

For the purposes of our study we used a descriptive method and a causal-non-experimental method of empirical, pedagogical research. The survey was carried out on an occasional sample of 130 parents (83.8% women and 16.2% men) who have four-year-old children that visit kindergartens all over Slovenia. 53.1% of parents have secondary education, while 46.9% of parents finished high/higher schooling or even more. 46.9% of parents have girls, 43.8% of parents have boys. Parents filled out a questionnaire which allowed us to determine the child's general access to ICT, its usage and their relationship towards it. The survey was carried out in May and April 2011. The survey was anonymous.

The gathered data was processed with the help of a statistical programme SPSS (Statistical Package for Social Sciences). All questions were analysed with the method of descriptive statistics. We determined absolute (f) frequencies and percentage (f %) frequencies, the dependent relations between the variables were tested with a Chi-square test, and the data gathered with grading scales was analysed with Mann-Whitney U-test.

RESULTS

1. The Presence of ICT in the Children's Home Environment

Almost every family can nowadays afford various types of ICT. Some ICT is intended especially for children, while other is meant for adults, but the children can still access it and use it. We focused on the most frequent types of ICT, because every family probably cannot afford to buy every available ICT product on the market.

Table 1: Types of ICT Owned by the Children's Families

Type of ICT	Family owns		Family does not own		Total	
	f	f %	f	f %	f	f %
TV	129	99.2%	1	0.8%	130	100.0%
Computer	123	94.6%	7	5.4%	130	100.0%
Printer	104	80.0%	26	20.0%	130	100.0%
CD or DVD player	122	93.8%	8	6.2%	130	100.0%
MP3 player or iPod	62	74.7%	68	25.3%	130	100.0%
Mobile phone	128	98.5%	2	1.5%	130	100.0%
Digital video-camera	55	42.3%	75	57.3%	130	100.0%
Digital camera	120	92.3%	10	7.7%	130	100.0%
Gaming consoles	32	24.6%	98	75.4%	130	100.0%
Portable gaming consoles	42	32.3%	88	67.7%	130	100.0%
Programmable toys	102	78.5%	28	21.5%	130	100.0%
Simulating toys	105	80.8%	25	19.2%	130	100.0%

As we anticipated, families most frequently own television sets (99.2%), mobile phones (98.5%), computers (94.6%), CD or DVD players (93.8%), and digital cameras (92.3%). We were also pleasantly surprised that a lot of families own ICT intended for children, like simulating toys (80.8%) and programmable toys (78.5%). Less owned types of ICT are gaming consoles (75.4%) and portable gaming consoles (67.7%). We have to emphasise that the results of the Mann-Whitney U-test have shown a tendency that families with girls tend to own more ICT products than families with boys. Nevertheless, we can say that the majority of four-year-old children live in a technology-rich environment, but this might also be due to the fact that ICT has become a part of our everyday lives, and by that indispensable.

2. The Children's Access to and Usage of ICT at Home

Plowman, McPake and Stephen (2008) have conceptualised home as a technological environment which provides access to ICT, and as a social environment where family supports learning with ICT. The children's access to ICT at home can be restricted or non-restricted. The children usually freely use ICT which is intended especially for them (toys), but are forbidden to use other ICT. Reasons for not allowing the children to use ICT are various, but most frequent are: the children could access functions that necessary for the operation of the ICT device, ICT could harms the children, and that the usage of ICT is supposedly too complicated for them. Children do not use ICT with the same intentions as we do. They see it as a source of entertainment. Roberts, Foehr, Rideout, and Brodie (1999) found out that children, in general, use ICT up to three hours daily. And have to emphasize this information is 13 years old, so the usage has by now probably severely increased. Parents should control the children's access to ICT and the manner of its usage, if they do not wish the children to suffer from any negative effects of ICT usage.

The results of the study showed that children in more than one half of all cases have access to television sets (52.3%), programmable toys (63.8%) and simulating toys (66.9%). The Mann-Whitney U- test also showed a tendency for girls having more restricted access to ICT than boys. This is probably due to the parents opinions that boys are more grown up and can use ICT earlier than girls.

It seems that children are independently using ICT which they can access alone and do not need adult supervision, for its usage is simple. Children independently use television sets (50.0%), simulating toys (72.3%) and programmable toys (65.4%). They need help with using ICT like computers, CD and DVD

players and mobile phones. Children rarely use other, more expensive ICT products: printers, digital cameras and gaming consoles. Interestingly, our study also showed that girls tend to use ICT more independently than boys. This is not in accordance with other studies (McPake, Stephen, Plowman, Sime, and Downey, 2005) which have shown that boys use ICT more independently than girls. Here, we would suggest further investigation to find out the reasons for this fact. In the cases when children need help with using ICT, help is most often offered by their close family members (parents 50.8% and brothers or sisters 27.7%).

Lastly, we were also interested what influences the children's increased desire to use ICT more frequently. Parents believe that the children are most probably under the influence of other family members (59.2%). Our results correspond with the results of McPake and other authors (2005) who also claim that the child's desire for using ICT is influenced by the family habitus (family values and expectations), which influences the relationship between the usage of traditional toys and ICT.

3. The Development of the Children's Competences with the Help of ICT

ICT enhances the development of various competences, especially technological (operation of ICT devices), cultural (knowing and using ICT for the purposes of communication, work, expression and entertainment), learning (literacy and numeracy, communication and music skills, meta-learning), and digital (digital literacy) competences. Among these, the most important is probably the digital competence, for it is, by the belief of European Commission, a key competence needed for personal development, active citizenship, social inclusion and employment. (Punie, 2007)

For the purposes of our study we decided to use more general types of competences. These are: motoric skills, learning competences, language competences, (self)-expression skills, social skills and cultural competences.

Table 2: The Development of the Children's Competences by Using ICT

Competences (skills)	ICT most develops		ICT fairly develops		ICT least develops (does not develop)		I do not know		total	
	f	f %	f	f %	f	f %	f	f %	f	f %
Motoric skills	26	20.1%	70	53.8%	28	21.5%	6	4.6%	130	100.0%
Learning competences	32	24.5%	76	58.5%	11	8.5%	11	8.5%	130	100.0%
Language competences	30	23.1%	64	49.2%	30	23.1%	6	4.6%	130	100.0%
(Self)-expression skills	16	12.3%	70	53.8%	34	26.2%	10	7.7%	130	100.0%
Social skills	15	11.5%	55	42.3%	48	36.9%	12	9.2%	130	100.0%
Cultural competences	22	16.9%	67	51.5%	19	14.6%	22	16.9%	130	100.0%

By looking at the results we can see that parents are quite unite in their opinions. They believe that ICT fairly develops motoric skills (53.8%), learning competences (58.5%), language competences (49.2%), (self)-expression skills (53.8%), social skills (42.3%), and cultural competences (51.5%). In detail, we can also see that parents believe that using ICT most develops children's learning competences (24.5%) what was also proven by Plowman, McPake and Stephen (2008) who also believe that learning with ICT is a natural process that happens automatically and subconsciously. On the other hand, parents think that ICT least develops children's social skills (36.9%) what is, in our opinion, originating from their system of cultural beliefs that arise from general public opinion. (Plowman, McPake and Stephen, 2008). People still believe that young children should not use technology, because it is harmful and has negative effects.

Although, they are aware of ICT's advantages they still say that it distracts the children from interacting with family members, peers and other members of society. The results of the Mann-Whitney U-test also showed that parents with a higher education believe that ICT helps develop children's competences more than do believe parents with lower levels of education.

Besides the ICT's influence on the development of the children's competences, we were also interested what consequences would the usage of ICT have on them. Parents think that the consequences would be approximately the same (51.5%). Negative effects are: contact with violent content, endangering physical health, unsociability, and even addiction. Positive consequences are: gaining new knowledge and skills, and knowing to use ICT. Nonetheless, parents agree that ICT has to be chosen properly, that they have to control the manner and time of usage, explain the purpose of ICT so that the children will learn how to properly use it in the future. We must add that parents are very convinced that they have enough information about the proper usage of ICT (80.8%).

4. The Children's Relationships Towards ICT at Home

Stephen, McPake, Plowman, and Berch-Heyman (2008) have, in their study, found out that children at this age already develop a permanent interest to certain types of play, what is reflected in the usage of popular technology. Boys and girls prefer electronic toys designed especially for them (girls like talking dolls, electronic books, while boys prefer videogames and model racing cars). But the fact is that children do not perceive ICT as we do, but see it as a form of entertainment.

Table 3: The Children's Relationships Towards ICT at Home

Relationship	f	f %
ICT exceedingly interests the child and he/she uses it too much	12	9.2%
ICT interests the child and he/she likes to use it	114	87.7%
ICT does not interest the child and he/she does not use it	4	3.1%
Total	130	100.0%

The table shows that the majority of parents (87.7%) believe that their children are interested in ICT and like to use it. They denote their relationship as good and approve of it, until is limited and regulated. The results of the Mann-Whitney U-test have also shown that girls tend to have a more positive attitude towards ICT than boys. Here, we have to note that the children's attitudes towards ICT are hard to determine, for the children are still too young to state their opinions and feelings about ICT. Nevertheless, we are glad that most children have a positive and healthy relationship towards ICT.

CONCLUSION

We found out that a lot of children live in a technology-rich environment, where they regularly encounter ICT, get to know it and learn how to use it. Children most easily access electronic toys, television sets and CD or DVD players.Here, we have to warn parents not to use these devices as forms of "electronic nannies", but as a means of entertainment and learning tools. If children need help with using more complicated ICT devices, help is most often offered by parents and brothers or sisters. Help is important, because children need adult's guidance in order to learn how to correctly use ICT and regulate its effects. We were surprised by the fact that ICT is more frequently used by girls than by boys, what is not in accordance with the results of other similar studies which have proven just the opposite. Children's desire to frequently use ICT is under the influence of other family members. Parents believe that ICT fairly develops children's competences, while its effects are approximately the same – negative and positive ones. Parents also think that they are

well informed about the children's usage of ICT and that they do not need further information on this subject. The survey shows that children have a healthy relationship towards ICT. They show interest in it and like to use it. They see ICT as a toy and a source of entertainment. Although, they are only four years old, they are refined users of ICT, who know what they like, assess their own achievements, and know how to engage in activities connected with ICT. We can conclude that children to some extent know the concept of ICT, its usage and role in the society. They do not use ICT too much; because their parents do not want them to, for they believe that the time for this is not yet right.

We believe that it would be interesting to further investigate this topic, especially when it comes to the phenomena of digital divide. Nikolopoulu, Gialamas and Batstouta (2010) say that children's home experiences with ICT will probably influence their interaction with ICT at school, but in ways which will be very hard to recognize. We would recommend parents to stay in close contact with pre-school teachers and other professionals in order to teach the child how to correctly use ICT, recognize its advantages and disadvantages, and how, with its help, become an active and competent member of today's e-society.

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