COMPUTERS IN PRE-SCHOOL INSTITUTIONS: STUDENTS’ ATTITUDES

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Abstract- The goal of this paper is to find out and present students’ attitudes on introducing children of pre-school age to computers. Research was performed on a random sample of students (N = 433) at Teacher Training College and Faculty of Philosophy, Rijeka. The research was performed using the interview method and implementing the questionnaire made particularly for the purpose. Interviewed students particularly emphasized various opportunities for using computers in pre-school education. They noted many benefits of using computers, but also possible drawbacks in using computers within the pre-school educational process. Most of the students believed that children should be introduced to using computers at that age. The benefits of using computers in the early age were seen in cognitive development, while the drawbacks were found in the realm of social and motoric development and health of the children.

I. INTRODUCTION

New information technology has been paving the way towards future development of the entire society and they have been enabling improvements in quality of life in various segments. Today’s information technology era challenges the entire society. Everyone is more or less aware of positive and negative influences of information technology; these influences, if not analyzed thoroughly, can turn to stereotypes in thinking. However, everyone independently determines how he or she will use computers. Yet, a pre-school child cannot rely on its own judgment. It is parents and educators who will introduce a child to the world of computers properly, aiming to help the child in becoming an educated person capable of using acquired knowledge in a useful and appropriate way and to further improve and implement this knowledge. Children are oriented towards future and there is no doubt whether a child should be offered a computer or not, which is verified in numerous studies addressing this matter. In view of above, it is important to work out how and when to do it.

II. DESCRIPTION OF PROBLEMS AND RESEARCH METHODS

This paper explores attitudes and thinking of students attending Teacher Training College and Faculty of Philosophy Rijeka on computer usage in pre-school age children and aims to exert positive influence on acquiring knowledge and development of positive attitudes towards information technology through student’s education. The research is an extension of the last year research [4], performed among educational staff in Rijeka pre-school institutions, which explored their beliefs and attitudes towards computers usage in children of pre-school age. This interview aim, among other things, to compare opinions of students attending various study courses. We believe that the results of the interview could be valuable considering several aspects.

First, these can animate persons in charge to introduce computers in pre-school institutions. Further, the interview provides a series of interesting and useful suggestions about possibilities of introducing computers in pre-school institutions. Other results gained through the interview are very important as well; they suggest further exploration since they show two substantially different opinions of the students on opportunities for introducing computers in preschool institutions, which can be attributed to the quality of recognizing the child’s psycho-physical development on one side, and familiarity with information technology, on the other.

The interview was carried out with students of Teacher Training College and Rijeka Faculty of Philosophy. We were investigating students’ opinions. The interrogation instrument was created using a questionnaire, which consisted of eleven questions, out of which five were of closed type, three of open type and three were a combination of open and closed type. A total of 209 Teacher Training College students were interviewed (Teacher Training College qualifies students for work in preschool institutions - PS - and lower grades of elementary school – LG -), which represents 63.91% of all enrolled students. We also interviewed students attending the following study courses: Psychology - PSY, Croatian Language and Literature – CL - (one major subject courses), Croatian Language and Literature - CL+ - double - major subjects course and Information Science – IS - double - major subjects course, which represents 68.50% of all enrolled students in these study groups (or 19.44% of all enrolled students) at Rijeka Faculty of Philosophy in 2001/2002.

The structure of examinees is shown in Table 1.
### III. RESULTS AND INTERPRETATION

In this part of the paper, we will present students’ attitudes on introducing computers in pre-school institutions as found out through the questionnaire.

The questionnaire provided data on a year of study and study course of the examinees (students) and it included four dedicated questions on the computer literacy of a student, having a computer at home, purpose of use and time spent working on computer. Also, the questionnaire inquired if students advocated introduction of computers in pre-school institutions, and if so, which programs they would offer to children, what are the benefits or drawbacks of using computers by children of pre-school age, how long they would allow children to spend working on computers, at which age children should start using computers, while the last question referred to students’ proposals, suggestions and opinions about using computers in pre-school age.

1) Students’ computer literacy is presented as follows:

- 4.16% of interviewed students cannot use computers,
- 62.59% of students are familiar with basics only,
- 9.47% attended a computer course,
- 30.02% received computer science education while studying and
- 1.10% did not answer the question at all.

2) The investigation shows that 72.98% of examinees own computer, while 27.02% do not.

The fact is that 96.19% of Information Science and Psychology students have a computer at home, in comparison to 65.55% of students attending other study courses.

3) Answers to the third open type question “For what purposes do you use computer?” were as follows: text processing, searching literature for study, programming, training using various programs necessary for study, making calling cards, Internet, entertainment, music, chat.

The answers were regrouped as follows: using computer for studying purposes, entertainment, Internet, part time job.

Thus, the interviews showed that in combination with other purposes:
- 93.30% of students use computer for studying,
- 45.50% for entertainment,
- 9.71% for part time job,
- 68.82% for Internet, while
- 1.55% do not use computer.

It is interesting that 8.08% of students did not choose any answer.

The analysis of this question revealed that computer usage prevails in almost all activities in respect to the purpose of using computers by psychology and information science students. For example, 100.00% of psychology and information science students use computers for studying, in comparison to 80.18% of students attending other study courses.

4) The next question was: “How long do you use computer a day?” The following are the results:

- 48.25% of students use a computer from 0.5 to 2 hours,
- 14.25% for 2-4 hours,
- 13.46% for 4-6 hours, while
- 12.84% of students spend more that 6 hour a day working on computer.

5) We were particularly interested in students’ opinion on introduction of computers in pre-school institutions (Table 2). In this respect, 63.51% of students support introducing computers to children of pre-school age, while 36.49% oppose.

It is surprising that only 15.38% of students attending the first year of Teacher Training College support computers usage in preschool institutions, which can be attributed to inadequate computer literacy and lack of understanding of basic pedagogic principles. We also expected larger number of information science students to advocate the idea of introducing computers. Does it mean that psychology students are better in comprehending the development of children’s psycho-physical capabilities, while the information science students are better informed on drawbacks referring to using computers by children? We tried to find the answer in the following five questions.

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6) The sixth question: "If you support introducing computers, which programs would you offer to children?" (examinees were offered five answers)
57.74% of examinees suggested educational programs,
41.34% of examinees suggested programs for drawing,
29.10% of examinees suggested games,
5.08% of examinees suggested other types of programs
(most frequently statements were: learning through play, memory games and other)
25.61% of examinees did not answer at all.

7) In answering the question “What are the benefits of using computer in early age?” slightly more than half of examinees, 54.96% of them, stated that benefits could be seen in the cognitive development of children.

In respect to the cognitive development they mentioned usage of computers for educational purposes: acquiring computer literacy, learning through play, development of creativity, development of children’s perceptual capacities, familiarizing with education material in a way interesting to children, permanent feedback in learning, learning new method of communication and development of intelligence.

Further, in respect to the development of motoric capabilities in pre-school age children, 8.31% of students mentioned the motoric development of the arm, i.e., hand and fingers during work, coordination of hand and intellectual processes and precision in using the mouse.

7.39% of students considered computer games as a source of entertainment and new ways of socializing and communication, while 8.77% students did not see any benefit of using computers in early age.

8) The following question is quite opposite to the previous one, as it refers to drawbacks of using computer in early age.

A negative impact to social development was primarily emphasized (41.57% of students) and it was formulated in the following statements: reduced social contacts between children, lack of communication and interaction between children, alienation from social environment and parents, the child becoming independent and estrangement from traditional play with other children.

Harmful health impacts as a result of using computers in early age was ranked second by 21.93% of students. Considerations were given to prolonged stay indoors, computer radiation and harmful effect to sight and spinal column (posture).

19.16% of students linked health with motoric development due to insufficient physical activity eventually resulting in growing fat, disregarding sport and other outdoor physical activities (parks, countryside, etc.).

In respect to cognitive development, 15.93% of students saw drawbacks of using computers in making children bored and passive through inappropriate games or too serious programs for children.

As to emotional development of pre-school children, 14.54% of students emphasized aggressive behavior, computer addiction, introversion, solitude and lack of relaxation.

As seen by 1.61% of students, intermediaries in the initial stage of introducing computers, either parents, educators or other grown up persons are responsible for minimal drawbacks of using computer in early age.

The comparison of students’ answers on benefits and drawbacks of using computers in early age shows that students mentioned considerably more drawbacks that benefits, which indicates the full extent of the problem. In other words, they noted drawbacks before the benefits. In that view, students, who will one day be teachers, should be directed to positive thinking, because a positive thinking person is able to provide a better education to new generations. It is interesting that students modestly mentioned the role of the intermediary in work with children of pre-school age, and it is here that the key of the problem lies when considering the proper guidance in introducing children to computers and using computers. It is parents, educators and other persons working with children who have the most important and most emphasized role in directing children toward selection of quality educational matters acquired by means of computers, who coordinate the timeframe for working on computers, fresh air, food, socializing, play; in a word, the aggregate of various daily activities that foster entire and proper development of pre-school children.

9) We were interested in finding out students’ opinion as to for how long one should use computer per day.
53.34% of students believe that a pre-school child should not use computer for more than two hours a day, 15.93% believes that up to one hour is quite appropriate.
A maximum limit of half an hour was chosen by 6.23% of students, and a similar percentage (6.69%) considered that time spent with a computer depended on the child’s current needs.

Even less of percentage (2.77%) would leave children for more than two hours in front of a computer, while 2.84% of students would leave a child to use computer as long as he/she wishes and 12.50% of students did not answer.

Various students’ answers should be compromised when interpreting computer usage time limits for pre-school children. It means that time limits should be considered as variable. We believe that a child should be given a free choice in using computers considering his/her needs.
Sometimes it will be ten minutes, while other times it could be longer, depending on the child’s concentration, interest, etc. Children do not have to use a computer every day. We suggest a maximum of one hour as a guidance.

10) At to the question “When should a child meet a computer?”
63.51% of examinees opted for pre-school age, 27.37% of examinees chose lower grades of elementary school, while 8.01% voted in favor of higher grades of elementary school, 1.11% did not answer.

Further analysis (Figure 1.) showed that most of those who supported introducing computers in pre-school age consider the age of five as the most appropriate for introducing computers (18.79%), 15.54% believe to be age of six, 12.48% opted for the fourth year, 8.92% claim age of up to two years as most fit, 7.78% claims the third year to be the best.

Figure 1. Analysis of question at which age children should start using computer

34.33% of students believe that the age of five and six years as the right time to introduce computers. We find it interesting that the statement made by one student was that children should be introduced to computers as soon as the basic motoric capabilities have been developed as well as the child’s ability to perceive that touching the keyboard results in (re)action on screen. Nowadays, there are multimedia software available for as young as 13 months old children.

11) Answering the last, eleventh question, 64.57% of students expressed their suggestions, proposal or opinions on using computers in early development of pre-school children. Significant deviation from that number, i.e 41.49% of students attending one and 28.00% students of double major subject courses of Croatian language and literature can be explained with their insufficient knowledge of psycho-physical capabilities of pre-school children and lack of computer literacy.

Students’ suggestions and opinions on using computers in pre-school age can be divided in five categories:

- 42.18% support using computers in pre-school institutions under certain conditions (kindergartens equipped with computers, programs and trained educators)
- 24.45% of students do not support using computers in pre-school institutions
- 21.45% support using computers in pre-school institutions since they believe that nowadays children live in a modern information technology environment
- 7.27% support using computers in pre-school institutions and suggest new method of introducing computers in pre-school institutions
- 4.65% neither support nor disapprove introducing computer in pre-school institutions

Further analysis of attitudes expressed by students who support introducing computers in pre-school institutions showed that these were the attitudes found out in worldwide researches and literature. The following can be emphasized in most answers:

- the goal of implementing computers is to familiarize the children with basic computers skills and functioning
- it is in pre-school age that children learn through play in the fastest, easiest and most natural way, and it is important that working with computers include many elements of play
- it is necessary to establish time boundaries for using computers
- the role of parents and educators is very important; they are supposed to introduce children to the world of computers and to control both children and computers

Suggestions, made mostly by psychology students, lower grades of elementary school student-teachers and pre-school educators, referring to methods and modes of work and programs used to introduce computers to pre-school and lower grades of elementary school age and pre-school education is particularly important. These are as follows:

- computers with well adapted keyboard, properly located and equipped with screen filters
- appropriate programs for various games, learning of new concepts, development of multicultural approach and attitudes and multimedia education
- making web pages for presenting pre-school institutions
- organized forms of computer education intended for educators and parents
- implementation of computers in pre-school institutions
- organizing of computer workshops for both educators and children
IV. CONCLUSION

Through the presentation of students’ attitudes on using computers in children’s preschool age, this paper provided valuable information, which were, in respect to some issues, expected, while the others surprised us. In spite of mainly positive student’s attitudes towards using computers in pre-school age, there are still prejudices on the subject. Therefore, some of them deny the worth of the early introduction of children to computers and they are in a dilemma as to whether it would be better or not to introduce pre-school children to computers or to set limits for using computers, both in kindergartens or at home.

The research showed that students emphasized various opportunities for using computers in pre-school institutions. Students noted benefits, but drawbacks, too, endangering or fostering educational work.

Therefore, our further task is the proper education of future parents and educators, which will provide solid foundations for quality choices and actions resulting in having benefits from positive aspects of using computer, so widely spread in great many fields of human activities. It is this context that our answer to dilemma "computers in pre-school age, yes or no" is yes, but moderately, with clearly set objectives and coordinately.

REFERENCES