INDIVIDUALIZED TEACHING PROCESS FOR PUPILS WITH MODERATE MENTAL DISABILITY

Vojtěch Gybas, Libor Klubal, Kateřina Kostolányová
University of Ostrava, Pedagogical Faculty, Ostrava
vojtech.gybas@gmail.com, libor.klubal@osu.cz,
katerina.kostolanyova@osu.cz

Abstract: An individualized teaching process for pupils with moderate mental disabilities with the help of using mobile touch devices may be one of the forms of teaching to achieve better development of these students during the teaching process. Didactics of ICT for special primary schools, where pupils with moderate mental retardation are educated within the Czech Republic, is not precisely and clearly defined. Still, General educational program for elementary school contains a special educational area of Information and Communication technology, in which the work and content area is focused on work with the classic desktop, and it is not always acceptable in the case of students with moderate mental disabilities.

Touch screen technologies can be a very useful tool, and in many ways they even exceed, compensate and replace freely available printed educational material that is rather outdated.

The first results obtained from the case studies suggest that this form of teaching may be also beneficial for pupils with moderate mental disabilities.

Keywords: Individualized teaching, mobile touch technology, iPads, moderate mental disability, special education needs.

INTRODUCTION

The concept of "information technology has become widely known, well-established and comprehensible." (Opatřilová, Vítková 2013). No matter whether we talk about a star among ICT – a desktop computer – or about a newcomer – a mobile touch screen device which is looking for its position among the final users – teachers, pupils, parents – it tries to clarify, consolidate its position, explain. We shall come to a conclusion that within the Czech school system there exists no well-defined didactics of ICT work in conjunction with mentally disabled pupils – light level (practical primary school) or medium level (special primary school). Krahulová (2010) states that as mobile phones have

become an integral part of almost every household, same ICT becomes a necessity of a modern family. Studying internet resources we can find a few methodological recommendations processed by some special primary schools within the scope of European projects; we can also find the information in the Framework Education Programme for Special Primary Schools but they apply only to content of the taught educational sphere of Information and Communication Technology. The European Agency for Special Needs and Inclusive Education published in 2013 the so called Report on Information and Communication Technologies for Inclusion (ICT for inclusion) „Developments and Opportunities for European Countries", which says that within the present information society and knowledge society the pupils with a handicap and special educational needs become one of the groups which faces the most obstacles concerning access and use of ICT.

ICT didactics at a special primary school should comply with certain principles and norms by virtue of which use of such ICT becomes effective within the teaching process. These principles and norms should comply with teaching strategies or, more precisely with fulfilment of key competencies of the Framework Education Programme for Special Primary Schools.

ICT viewed by the Framework Education Programme for Special Primary Schools in the Czech Republic - special pedagogical literature, for example Valenta, Müller (2009) describes didactics of persons with a mental handicap as the one which tries to answer two basic questions which are fundamental for every teacher, i.e. what to teach and how to teach.

1. WHAT TO TEACH AND HOW TO TEACH

Educational sphere of Information and Communication Technology upon Framework Educational Programme for special primary schools includes in accordance with valid wording from the year 2008 basics of work with PC and selected programme equipment, mainly a text editor, special teaching and educational programmes. Within this sphere, work with a web browser and with a mail client can be considered as above standard teaching material. (RVP ZŠS, 2008). Educational sphere focuses on creation and development of key competencies by leading the pupil to:

- cognition of ICT possibilities, acquiring of basic knowledge and abilities while working with a computer;

- acquiring of basic abilities within the sphere of information literacy;

- development of thinking, perception and concentration of one´s attention;

- development and improvement of fine motor skills;

- integration of more senses for development of aesthetic perception;

- use of necessary information;

- communication via ICT;
- awareness of inappropriate content while using the Internet.

Müler, Valenta (2003) state that it is important to facilitate learning to such a level which becomes effective and helpful for the pupils at the special primary school.

To simplify recognition of the significant features – firstly, we highlight the features and important content, we emphasize them until fixed sufficiently. The mobile touch screen device has become a suitable tool. Once it is set or made accessible, it enables zooming and highlighting of the device workplace within which the subject matter is displayed. It is useful to give mentally handicapped pupils more time during the teaching process than the common time limit. That is why it is very important to focus on individual approach. To simplify encoding of information to a child – generally, a principle of cognition multiplicity becomes valid during teaching of mentally handicapped persons – the more analyzers and feedbacks used to make the specific information accessible for a pupil, the easier and more permanently the pupil remembers it. To enable lining-up of terms into logical structures – no term exists on its own but it is a part of a certain system. The child gets acquainted with the term "round" in the sense education, during his first reading, during the first writing etc. If we want to fulfil key competencies positively in compliance with Framework Education Programme for Special Primary Schools, i.e. if we want to meet „what to teach" and „how to teach", then we can use the most up-to-date ICT no matter what type of disabled pupils we work with. Majority of the most modern ICT can be effectively adapted to a certain disability type.

2. ICT AND DISABILITIES

Pančocha, Vrubel et al. (2014) state that ICT term can be described as general term which includes all the categories as for example an interactive board. In the education sphere the targeted use of information technologies and e-learning can make the teaching process more effective, „suitable technologies can be found helpful in compensating for handicaps within pupils and students with special educational needs (Pančocha, Vrubel et al., 2014). The National Council of Teacher of English (NCTE, 2016) states that it is very important for the teachers to decide at the beginning what ICT they will use before they purchase it for their pupils with special educational needs.

As regards the use of ICT to match the pupils with special educational needs, foreign resources (comparison of ICT for Children With Special Needs, online, 2016; ICT Training for Teachers, online, 2016; BECTA, online 2016; Zikl et al., 2011; Opatřilová, Vítková, 2012; Bartoňová, Vítková, 2013) agreed identically on the following pros.

Table 1.

From the pupil´s point of view:

communication (text to speech conversion, speech to text conversion);	suitable for students with heavy and multiple disorders;
adapting of school activities;	ICT can compensate many defects;
tool to develop social sphere abilities;	pupils with learning disorders can communicate easier;
high motivation for pupils;	increased confidence in ICT motivates the students to use the Internet at home, not just for doing the homework, but it can be used in the pupils´ free time as well;
it makes the pupils feel successful;	having fun while educating;
it makes the subject matter of the majority accessible;	development of spatial visualization skills;
it brings interactivity with possibility of fixation, revising and feedback,	computer literacy;
it enables the pupils to work at their own pace on tasks which suit their specific needs;	diagnostics.
computers can improve independency;	along with the students without visual impairments, students with visual impairments use Internet as an access to needed information;

Table 2.

From the teacher´s point of view:

getting ready for the teaching process;	increasing one´s ICT professional development;
teaching process;	sharing of electronic teaching materials;
storing of results;	maximum development of his pupils.

3. ICT AND PUPILS WITH MENTAL DISORDERS

Although the Framework Education Programme for the Special Primary Schools does not state using of mobile touch screen devices in the teaching process at the special primary school, we, have decided to incorporate such technologies into the teaching process. Foreign study TABLET COMPUTERS AND LEARNERS WITH SPECIAL EDUCATIONAL NEEDS from the year 2014 states clearly In this section evidence of the benefits of using tablets for SEN students and some related challenges are summarized. Reference is made, where available, to existing papers and reports. In other instances, interesting findings from articles, blog entries etc. are highlighted (in this case, also the month of the publication is referenced in the text). (Special Education Needs Network, 2014). This study was carried out in selected European countries (Austria, Belgium, Flanders, Denmark, Estonia, Italy, Portugal, Turkey) at selected special schools and it describes that two particular benefits of tablets for students with special needs are emerging: they motivate to learn (as of course do other technologies) and they enable more personalized learning, as it is easier to individualize instruction and track progress and to erase, change, customize content to suit individual students' needs. (Special Education Needs Network, 2014).

But not just this study. Flewit, Kucirkova and Messer at their case study state that writing on the iPad requires less grapho-motor control and facilitates visual and sensory learning. Vygotsky's notion of gesture being "writing in the air" is pertinent here as we consider the iPad to be a new cultural tool that offers a different kind of engagement space for literacy. (Flewit, Kucirkova, Messer, in Australian Journal of Language and Literacy, 2014).

4. MOBILE TOUCH SCREEN DEVICE

4.1 Implementation

Once implementing of iPad mobile touch screen devices, the pupils learnt how to work on one common device; however, very soon we have managed upon the intuitive environment of the tablet same as upon the positive feedback from the pupils to implement device at the ratio 1:1, i.e. 1 iPad = 1 pupil. The following partial goals were stated at the beginning of the whole research:

- as for the device, to verify feedbacks of the pupils;

- to map applications suitable for individual pupils upon their capabilities and to test them at the lessons;

- to fill in the missing portfolio of the teaching materials by creation of our own worksheets for individual pupils;

- to set this iPad as a personal teaching aid of each individual pupil; i.e. to teach the pupils systematically how to use some of its functions as for

example downloading of the worksheet from email, sending of the work to the teacher´s email address to be checked and stored after words etc.;

- to test interconnection of the existing paper form worksheets and textbooks with applications as a teaching feature which will support prolonging of the pupils´ attention;

- to use some of the creative applications for executing of the pupils´ electronic outputs which could replace the teaching materials.

4.2 Participated observing

Pupils feedback - on the intervention of the device into the teaching process was positive only. There was no need to use any special applications as for the first contact, no pupil had any problem with touch or control gestures while working with this device. On the contrary, as time passed by, the teacher had to limit the time spent by the pupils on the device due to certain psychological dependence caused by over-use of the device. Niemann states that Tablets can offer so many things which other devices just cannot do. Since they are small and lightweight, they can be used anywhere. (Renn 2016).

Application - many applications were tested nevertheless, not all of them suited specifics of individual pupils. Gradually, a portfolio of the most suitable applications was created within each single pupil and such a portfolio is available to each pupil in his own iPad. This portfolio is continuously filled upon one´s needs same as upon focus of the work and content of the subject matter. Still, we monitor and test interesting teaching applications along with our pupils. As added by Techknowledge (2016) use these apps to track progress across everything from language learning through to nutritional goals.

Worksheets - in the course of implementaion of mobile touch screen devices we created a portfolio of our own worksheets, mainly in Move&Match, Bitsboard and Book Creator applications. These electronic worksheets are suitable for younger pupils of primary schools or special primary schools, throughout the subjects, and have been offered to further users to be downloaded and used successfully.

Personal aid - implementation of this device in ratio 1:1 proved good as every pupil has his own signed iPad in his classroom, he works with it every day and he bears the responsibility for it. The pupils created new work habits and they learnt how to take care of their school aid. All pupils managed basic service of iPad as for gestures, work with applications and, furthermore, we succeeded in development of skills in the sphere of sending of executed worksheets to the email address of the teacher in order to be stored. As for two pupils, the iPad proved to be an aid which by its built-in functions – assessment – compensates directly for their partial deficits.

Interconnection of standard aids with applications - during the monitoring period, interconnection of existing worksheets and textbooks with relevant teaching

applications proved itself the most suitable form of school work within the sphere of trivia (reading, writing, calculating). This alternation of activities led to higher effectiveness of the teaching process due to significantly prolonged concentration of the pupils. As for the sphere of the remaining subjects focused on the bases of the knowledge of natural and social science – the subjects which lack the adequate teaching materials – there was interconnected via the adequate applications the subject matter with the intersubject connections followed by the group work outputs. At the same time, these outputs have served as a feedback for the teachers. As for the education subjects, – P.E., Art etc. - an iPad with suitably focused applications was used to make the lesson much more entertaining.

Creative applications and working with them - by systematic acquiring of some creative applications, mainly of Book Creator, the subject matter was interconnected within the intersubject connections. Own teaching electronic materials were created. The given curriculum was always taught carefully and in an interesting way, the pupils cooperated on output of the common work, they enjoyed the work even when it was demanding on time and they had to overcome some of their personal obstacles as for example feeling ashamed of recording the texts. Final works were always offered to be downloaded on the class web page or as teaching material. The pupils themselves have these outputs at their iPads in electronic form and they can get back to them at any time.

ANALYSIS OF RESEARCH DATA

In view of possibility to compare the teaching before and after intervention of iPad into education, we may say that this device influenced all participated persons including the teachers. All process focused on intervention of iPad tablet into the teaching process was highly dynamic since the very beginning; from use of individual applications within the teaching subjects up to the creation of bigger and more sophisticated outputs. Lack of adequate printed teaching materials corresponding to the teaching content of the Framework Education Programme for the Special Primary Schools led the educators to continuous testing of applications in an effort to introduce the subject matter included in curriculum documents closer and go through it carefully with the help of iPad tablet applications. With the help of so called creative applications the teachers started to make their own simple worksheets for the pupils followed by the pupils being motivated to create their own materials. The teacher naturally got engaged in creation of the electronic outputs and his position and a role within the classroom shifted. Spontaneously, there was a new friendly and creative environment which is the best described by Kyriaca (1991) as teaching in entrepreneurial spirit. Such business atmposphere has led to creation of many successful works we all are proud of. A great benefit for the teacher´s work is, in practice, the possibility to adjust the content of the same application to individual pupils; to adjust difficulty or choice of tasks to their individual specifications. The further benefit is the possibility for faster pupils to

work on iPad as an extra work or on the contrary, as a bonus for their well-done work. Teaching with iPads motivated the teachers as well in the way they could work on their own skills and shift the possibilities of their pupils further on. Subject matter was interconnected within unexpected intersubject connections, we utilized the power of brainstorming and critical thinking during our teaching process as for example in the form of mind maps.

CONCLUSION

As for this mobile touch screen device, conclusions of this class project are clearly positive. IPad has become a real multifunction aid and it has significant emotional impact on the pupils. Nevertheless, exploiting of its potential is closely linked to the teacher´s personality, his creativity, willingness to learn new things, trying and integrating new features and methods into his work so that he could move the knowledge closer to his pupils and help them to exploit such assist technologies to their advantage. Detailed results of the case studies shall be developed in one of the practical part of the thesis.

REFERENCES

AQUILONIS. *ICT for children with special needs*. [online] at: http://www.aquilonis.hr/SNEP/index.html

Bartoňová, M., Vítková, M. 2013: *Vzdělávání se zaměřením na inkluzivní didaktiku a vyučování žáků se speciálními vzdělávacími potřebami ve škole hlavního vzdělávacího proudu*. Brno: PdF MU, 2013. ISBN 978-80-210-6678-6

BECTA. *Teaching*. [online] at: http://webarchive.nationalarchives. gov.uk/20110125093552/ http://schools.becta.org.uk/

EUROPEAN AGENCY FOR SPECIAL NEEDS AND INCLUSIVE EDUCATION. *Informační a komunikační technologie pro inkluzi*. Odense, Dánsko. 2013. ISBN 978-87-7110-468-4

Flewitt, Kucirkova & Messer. 2014: *New directions for early literacy in a digital age: The iPad. Journal of Early Childhood Literacy* published online 20 May 2014 DOI: 10.1177/1468798414533560

Flewitt, Kucirkova & Messer. 2014: *Touching the virtual, touching the real: iPads and enabling literacy for students experiencing disability*. Australian Journal of Language and Literacy, Vol. 37, No. 2, 2014, ISBN 978-80-7320-137-1

Krahulová, J. 2010: *Negativní a pozitivní působení informačních a komunikačních techologií na mládež.* 1st edition. Brno: PdF MU, 2010. Head of thesis: doc. Ing. Jiří Strach, CSc.

Kyriacou, CH. 2004: Klícové dovednosti učitele. 2. vyd. Praha: Portál, 2004, 155s. ISBN 80-7178-965-8.

Müller, O., Valenta M. 2003: *Psychopedie*. 1st edition. Praha: Parta, 2003.

Nagyová, I. 2013: *Podstatné aspekty didaktiky jako vědního oboru*. Ostrava: The University of Ostrava. 2013. ISBN 978-80-7464-378-1

NCTE. National council of Teahers of English. Available online at: http://www.ncte.ie/documents/advicesheets/

Opatřilová, D., Vítková, M. 2012: *Faktory úspěchu ve vztahu k inkluzivnímu vzdělávání u žáků se speciálními vzdělávacími potřebami*. Brno: PdF MU, 2012. ISBN 978-80-210-5996-2

Pančocha, K., Vrubel, M. 2014: *Inkluzivní vzdělávání v přehledových studiích*. Brno: PdF MU, 2014. ISBN 978-80-210-7541-2

Renotiérová, M. a Ludíková, L. 2006: *Speciální pedagogika. 4. vyd.* Olomouc: Univerzita Palackého v Olomouci, 2006. ISBN 80-244-1475-9.

SENnet. *Special needs and ICT in manistream schools: trends and innovative approaches.* [online] at: http://sennet.eun.org/c/document_library/ get_file?uuid=746a358e-6fb9-46fe-a4c3-da48f9d3aad1&groupId=32059

UNESCO. *ICTs in education for people with special needs.* [online] at: http://ru.iite.unesco.org/img/upload/SPECIAL_NEEDS_1.qxd.pdf

Zikl, P. a kolektiv. 2011: *Vyuzití ICT u detí se speciálními potrebami.* 1. vyd. Praha: Grada, 2011. ISBN 978-80-247-3852-9.