Attitudes of Secondary School Teachers Regarding Electronic Readers and their Possible Usage in Mass Education

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ABSTRACT

Many countries have turned to usage of e-textbooks and other digital materials in education, and Croatian educational community is also currently doing so. In 2013, CARNet will introduce an online platform and mobile application for digital textbooks, service called eduKnjižara and it will be possible to introduce an experimental usage of e-textbooks in several Croatian schools. For this reason, and also because educators choose teaching methods in their daily work, it is necessary to understand the attitudes of teachers toward new technological devices on the market which can be used for educational purposes. The purpose of the research is to come to know about attitudes of secondary school teachers regarding e-readers and their possible usage in mass education. The study, among other things, shows respondents' familiarity with the concept of e-readers, which sources of information on e-readers do teachers use, if they possess an e-reader and their willingness to use the device in their daily teaching. Research shows the need to strengthen digital literacy for secondary school teachers regarding the use of e-readers in the classroom. It is necessary to provide professional development to educators on the benefits and applications of new devices, e-readers and tablet computers, within specific school subjects.

Key words: electronic readers, electronic books, tablet computers, professional development, attitudes of teachers

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E-textbooks and E-readers

Digital revolution in education is a growing global phenomenon. Part of these changes is the usage of electronic textbooks and other digital content in the classrooms worldwide - in the USA, Brazil, Korea, Russia, Australia and so on (Wischenbart and Kaldonek, 2011; Anscombe, 2012; Lane, 2012). E-book markets are currently growing stronger in European countries, so it is safe to assume that Europe will eventually transfer to the usage of e-textbooks and digital learning content.

According to *Textbook Standard* (NN 007/2007) and the draft proposal of the *Textbook Standard* (04/26/2011) electronic textbook is defined as one or more computer files of confined content publicly available on the Internet or in the material form; e -textbook can possess pictures, audio content, hyperlinks and can be interactive. There are two types of e-textbooks, first representing digital version of printed textbooks and the second are e-textbooks with multimedia content. The first type possesses the same page layout and content as the printed versions but also has possibility of making notes, a keyword search, and may have a form of DRM. E-textbooks which resemble to printed ones, are produced easier and faster than e-textbooks with the multimedia content and require little or no adjustment of the educational curriculum. Digital textbooks with multimedia contents have (along with the possibility of making notes, keyword search and DRM protection) video and audio content, short films and/or animations and hyperlinks. In addition, they can include interactive lessons and knowledge assessment software to help students in better understanding the main concepts. Multimedia contents offer innovation, can motivate students thus making acquisition of new knowledge easier. This kind of textbooks can have text-to-speech option which can make learning easier for people with special needs. Using e-textbooks with multimedia content requires for teachers to possess digital literacy skills. There are several advantages e-textbooks have over printed editions. For manufacturing e-textbooks, paper doesn't need to be wasted, which is environmentally friendly. For this reason, usage of heavy school bags can soon become history, thus burdening of the spine in children who are in sensitive periods of childhood development will be avoided. The advantage of e-textbooks is portability and accessibility - students will be able to read e-textbooks on PCs, laptops, tablet PCs, e-readers, smart phones and so on. Also, if the e-textbook contains outdated information, it can be updated, not reprinted hence reducing the costs. One of the reasons for global transition from print to electronic textbooks is their economic costs – lower prices. For Croatian citizens who have children, printed textbooks

are expensive. Great news for the parents of students is the fact that prices of e-textbooks will be lower than the current ones of printed editions, since there will be no costs of printing, storage and distribution. Granof (2004) considers that e-textbooks will be roughly half the cost of printed editions. **According to Wischenbart and Kaldonek's research (2011)** retail price of e-books in Italy is 20 to 30% lower than the printed editions, while in Spain, e-books are sold at a 30 to 35% lower price. In any case, it is necessary to have an elaborate strategy to ensure e-textbooks are available for students. Volume purchasing of e-textbooks by a school could provide a discount over retail sales to student's families. According to Acker (2011) the University System of Ohio launched the project *Ohio Digital Bookshelf* in 2008 in which they negotiated with the 5 leading publishers in the country and managed to achieve prices of e-textbooks that were 70% off the list price of new publications. Acting in a similar way in the near future, MSES (Ministry of Science, Education and Sports) could negotiate with publishers on procurement of e-textbooks for primary and secondary schools for a much lower price than of printed editions.

Croatian educational community is slowly moving towards the world of e-textbooks. This is indicated by one of the tasks of CARNet's[1] *Education Support Department* which is establishing online textbook service. According to the CARNet's director Zvonimir Stanić, CARNet was supposed to complete the platform for e-textbooks in March 2013, which could allow an experimental use of e-textbooks in several Croatian schools (Cvrtila, 2012). CARNet's *eduKnjižara* is an online platform and mobile application for digital textbooks (Stanić, 2012). According to Stanić (Cvrtila, 2012) everyone who has an electronic identity[2] will be able to buy needed materials from the platform *eduKnjižara*. Also, *eduKnjižara* will allow authors to sell books or offer them under the terms of Creative Commons license (Stanić, 2012). It is necessary to note that, at the time of writing this paper, there are no online bookstores in Croatia offering e-textbooks in the Croatian language. Summing up the remarks above, it is just a matter of time when the Croatian e-textbooks will appear on the market and become a part of everyday life in Croatian schools.

While giving lessons, teachers are free to choose teaching methods. For that reason, it is important to understand the attitudes of teachers towards the new technological devices on the market which can be used for educational purposes. **This paper pursues** the issue of the readiness of Croatian educators for the implementation of the new ICT devices, e-readers, in education. Former Croatian scientific research did not pursue this issue, therefore the study upgrades the current research.

Electronic readers are portable devices of light weight and dimensions intended for reading electronic books and other publications. In today's time, an e-reader market in the USA is rapid growing because according to Wischenbart & Kaldonek (2011) the American public and the publishing industry have embraced e-books and devices intended, more than any other nation. According to projections by the British company called Juniper Research, global e-reader shipments will reach 67 million by 2016, up from 25 million devices in 2011 (Anscombe, 2012). In Europe, e-book markets are growing, and according to Wischenbart & Kaldonek's research (2011) France and Germany are ahead in digitally embracing trade books, although they are clearly behind the US and UK. Authors (ibid) claim that European markets are now targeted by global brands which promote globalization of e-books (especially companies such as Amazon.com, Inc., Google Inc., Apple Inc. and Kobo Inc.). In addition to purchasing and reading e-books, listed corporations also promote various devices - tablet computers and e-readers. Today's most popular electronic readers are: Amazon *Kindle*, Barnes & Noble *Nook*, Apple *iPad Mini*, *Kobo* e-reader of the company Kobo Inc., Samsung *Galaxy Tab* and Google *Nexus*. Of course, many older and newer versions of the devices exist, as well as many other less noted e-readers. Some of the more significant e-readers currently available on the Croatian market are: T-Mobile *Planet9*, Bookeen *Cybook Opus* and so on. E-reader, across wireless networks, provides the possibility of easy, quick way of borrowing or purchase of e-books from thousands of online libraries and e-book stores around the world. In Croatia, there are online bookstores that offer e-books in the Croatian language: Lamar's *Took Book*, Telecom's *Planet 9* and Vip's *E-book store*. Currently, public libraries in Croatia do not offer loaning of e-books, which is the case in many foreign countries where public libraries allow users to loan e-books with e-readers. For example, Wischenbart & Kaldonek (2011) referred in their research to the GfK survey in France (based on a panel of 1,000 Internet users) which showed that 52 percent of all e-book downloads occurred from public libraries. However, it seems that Croatian public libraries will provide the service of borrowing e-books in the near future. According to Ille's research (2012) public libraries in Zagreb need to work on lobbying for initiating efforts to address legal and technological issues of borrowing e-books on a national level, which in the future will reduce the total cost of Croatian libraries. Furthermore, many e-readers offer numerous options just like smart phones and tablet computers: Internet searching, viewing videos and photos, playing games, music features, high-definition camera for taking photos and video calls as well as the Parental Control software. In addition to benefits of e-readers such as portability, very light weight, high speed data transfer and convenient storing of thousands of e-books, device preferences are also: the ability to increase the

font of the text, easily tagging and searching by keywords, writing notes and the existence of digital bookmarks. It appears the weakness of e-reader's options is inability to copy-paste. Reason for this is because copyright protection represents high priority for publishers, so e-books today come with protective measures (*Digital Rights Management*). E-readers have been created in a way to promote e-books purchase from the companies producing the devices, thus at the same time limiting access to e-books offered by rival companies. However, today EPUB exists, open digital books standard which enables reading e-books on a variety of e-readers. In addition, converters[3] exist, programs which enable transforming of e-books into other formats and adjusting them to a particular e-reader. It can be assumed with reasonable certainty that, as it was the case with mobile phones, rapid development and strong competition will contribute to reducing the prices of e-readers and tablet computers in the near future. For example, according to Poole's research (2011) the cost of Amazon *Kindle* in 2007 was 399 \$ (2.302,23 kn) while at the time of writing this paper the cheapest e-reader is considered to be Txtr *Beagle* which according to Gilbert (2012) is priced at 10 € (75,73 kn). It is safe to assume the selection of available e-readers on the Croatian market will increase in a very short time and that the e-reader prices will be lower (they currently range from 450 kn onwards). Until then, currently the best option (although not the cheapest) for Croats is to buy a high-quality e-reader through online shopping.

According to Mijatović (2002) Croatian educational system seems to be lacking research methods created by students during the learning process. New devices, such as tablets and certain types of e-readers, can change students receptive role in education. This is also one of the reasons why this study was conducted. It should be noted that revolution in education which is carried out in the United States includes the implementation of ICT by assigning one device to every student and teacher (a device is not shared by students) whether it is a laptop, tablet or an e-reader. With e-readers in school classrooms, students could use educational software and browse websites looking for useful information. According to a study conducted by Balanskat et al. (2006) a very high 86% of teachers in Europe state that pupils are more motivated and attentive when computers and the Internet are used in class. When it comes to using the Internet in the classroom, there is a possibility of disrupting a class or students attention steering in the undesirable direction. However, this should not be the argument against above mentioned devices, since there is a possibility of introducing software[4] for teachers to effectively manage the class by controlling students devices. The document *The ICT Impact Report: A review of studies of ICT impact on schools in Europe* made by Balanskat, Blamire and Kefala (2006) implies at the usefulness of ICT implementation by providing an overview of the

conclusions of 17 surveys conducted at the national, European and international level. Some of the most important conclusions are: an overwhelming majority of European teachers (90%) use ICT in order to prepare their lesson, ICT impacts positively on educational performance in primary schools (particular in learning native language and science), students assume greater responsibility for their own learning when they use ICT, working more independently and effectively. Devices such as e-readers and tablet PCs offer the possibility to create a dynamic environment in which students are innovators and creators of new content, rather than passive consumers. According to Bezić (2000) one of the most effective ways of learning is students working independently on the processing of generalized generational experience. E-readers are primarily suited for reading publications unlike tablets which represent mobile personal computers. On the other hand, huge advantage of some e-readers is the possession of E Ink technology while tablets have only LCD displays. Because of e-reader's E Ink displays, reading from the device resembles reading on paper. For E Ink technology is also believed not to create eye strain while viewing the screen, thus avoiding the possible emergence of computer vision syndrome. Black-and-white e-readers are ideal for reading e-books which are digital versions of printed editions because of lower prices and the existence of E Ink. Possible usage of black-and-white e-readers in the classroom will require less additional professional development for teachers. Also, the usage of e-textbooks which are electronic versions of printed ones, require no changes in the methods of teaching. On the other hand, tablets and e-readers in color which have the ability to search the Internet are suitable for the usage of e-textbooks with the multimedia content. Usage of these devices in schools require adjustment of the school curriculum and professional development for teachers. Only in this way, numerous opportunities of the devices could be fully utilized and investments justified.

Professional development for teachers is a necessity because according to Brooks-Young (2007) when teachers begin to use technology as a tool for instruction, they explore ways to automate traditional lessons and are not requiring students to approach subject matter in a different way, rather they are asked to use technology to do the same things, just a little faster. In general, barriers to successful implementation of ICT in education are teachers' poor ICT competences and lack of confidence in using new technologies as is the absence of ICT dimension in schools' strategies (Balanskat et al., 2006). The current state in Croatia is positive - professional development of teachers for appropriate use of ICTs in education is recognized. This is indicated by the proposal of the *Croatian* Education and Teacher Training Agency (CETTA) introduced in the *Strategy for In-Service Training of Teaching and Non-Teaching Staff (2009-2013)* according to which it is necessary to introduce man-

datory training in the field of ICT for educational staff. To establish high-quality professional development in Croatia, it is necessary to solve existing problems - the *Strategy* emphasizes the necessity to control the quality of the offered professional training by employing only certified professionals. The *Strategy* also notes the need for devising a new system of monitoring, evaluation and self-evaluation of all Croatian educational staff so the effects of training on the quality of the educational process could be monitored. Also, educational training is conducted by CARNet, in cooperation with the MSES and CETTA. Model of education called *ICTedu* is implemented within schools and consists of 3 modules giving information about the concept of digital competence, digital educational materials, Web collaboration, features of interactive whiteboard, online knowledge assessment tools and so on. According to Stanić (2012) in the training program are currently involved 1304 primary and secondary schools (97% of Croatian schools) and *ICTedu* has trained 45,284 participants (88% of teachers). Likewise, it is necessary to design an education programs for future educational professionals, now students at colleges across Croatia so the current level of knowledge about ICT could be raised and thereby future educational training needs reduced.

It is important to mention that the strongest argument against the implementation of e-readers and tablets into schools is of ecological nature. It seems that e-readers are more environmentally friendly solution versus usage of paper in publishing, but only if recycling is conducted. Official website of the Croatian *Ministry of Environment and Nature Protection* (MENP) provide citizens informations about how to resolve the waste problem of electrical and electronic equipment (EE) which is a legally regulated possibility and environmentally friendly solution5. If they are not currently doing so, Croatian schools should dispose electronic waste in a similar way.

Successful application of digital technology in the classroom requires developing a clear strategy within schools and at the state level. The key feature of this strategy is leadership. Revolution needs leaders who have a vision, it is necessary first to train educational leaders who will then inspire teachers (Lane, 2012). Motivated teachers will use ICT more extensively, thus strongly motivating students and having positive affects on their achievements. Due to the usage of e-textbooks in Croatian schools it will be necessary to change the existing Law on textbooks and other regulations and to create a Croatian *Strategy of education, science and technology* that will clearly stipulate changes in the educational system. Also, *National Curriculum* has to be created, involving legal and budgetary planning (currently a *National Curriculum Framework* exists) so the transformation of primary and secondary education could be conducted.

What devices will MSES choose for the usage in Croatian schools, primarily depends on the *National Curriculum* that will soon be created, the types of devices which CARNet's *eduKnjižara* will support, and on the pricing of those devices[6]. According to the document *Europe 2020 Flagship Initiative: Innovation Union*, member states of European Union need to continue investing in education and ICT, despite the current period of fiscal constraints, which should not only be protected from budget cuts, but should be stepped up. That the importance of this is recognized is indicated in the *Program of the Government of Republic of Croatia for the mandate 2011 – 2015* according to which key measures that the government intends to implement are improvement of teachers' financial and social status, school equipment and working conditions. Also, as a member state soon to become, Croatia is keeping the pace with the changes thus the transition to new devices, e-readers of tablets, within the Croatian classrooms is likely to be expected in the near future.

Methodology

The purpose of the research is to come to know about attitudes of secondary school teachers regarding e-readers and their possible usage in mass education. A probabilistic, stratified random sample was used in the study. Sampling frame consists from teachers working at all high schools in the city of Zagreb which include: gymnasiums, vocational schools and art schools (as private secondary schools and special education schools which are not included in the research). There are 34 vocational schools, 20 high schools and 8 art schools in the city of Zagreb. The study included a total of 8 high schools: 4 vocational schools, 3 high schools and one art school. The scientific method used was a field survey that consisted of 20 questions which were designed for research purposes. The survey consisted of 5 demographic variables, while others related to the research goals. Some of the research questions were: whether the teachers are aware of the existence of e-readers, what is their practical experience with the devices, attitudes about the device usage in their workplace and so on. In each of the 8 high schools, 20 teachers were selected by simple random sampling based on the table of random numbers. The hypothesis, considered in the study was - a statistically significant difference exists between younger teachers (23-45 years old) and elderly (46-70 years) due to the familiarity with the concept of e-readers. In June 2012, 160 surveys were distributed of which a survey completed 106 teachers. Women constitute 68.3% and men 31.7% of the total number of surveyed teachers.

Table 1.   The age of respondents

Tablica 1. Dob ispitanika

23 - 35	*25*	*24,0%*
36 - 45	*20*	*19,2%*
46 - 55	*26*	*25,0%*
56 - 65	*32*	*30,8%*
više od 65	*1*	*1,0%*
ukupno	*104*	*100,0%*

The study included mostly teachers between 56 and 65 years of age, 30,8% of them, then 25% of teachers between 46 and 55 years and 24% of teachers between 23 and 35 years of age. The age category from 36 to 45 years includes 19.2% of professors.

Table 2.   Years of service

Tablica 2. Godine radnog staža

	broj	
0 - 5	*16*	*15,4%*
6 - 10	*13*	*12,5%*
11 - 20	*19*	*18,3%*
21 - 30	*33*	*31,7%*
više od 31	*23*	*22,1%*
ukupno	*104*	*100,0%*

Most of the teachers (31.7%) have between 21 and 30 years of service. There is 22.1% of teachers who have more than 31 years of service and only 15.4% of them who have up to 5 years of service. The smallest percentage of teachers (12.5%) have from 6 to 10 years of service.

The largest number of teachers (18.86%) who filled out a questionnaire are employed in the School for Road Traffic and the lowest number (7.54%) work in the Tituš Brezovački Gymnasium.

The Most Significant Results of the Study

Results show a small difference (2.9%) between the mainly good awareness (N=40, p=37.7%) and poor awareness (N=43, p=40.6%) of teachers with the concept.

Table 4.   Respondents' familiarity with the concept of e-readers

Tablica 4.   Upoznatost ispitanika s pojmom elektroničkih čitača

izrazito dobro	4	3,8%
uglavnom dobro	40	37,7%
uglavnom slabo	43	40,6%
nisam uopće upoznat/a s pojmom elektroničkih čitača	19	17,9%
ukupno	106	100,0%

High percentage of teachers who are not at all familiar with the concept of e-readers (N=19, p=17.9%) is visible as well as the low percentage of secondary school teachers who are very familiar with the concept (N=4, p=3.8%).

Table 5.   Respondents' familiarity with the concept of e-readers regarding their age

Tablica 5.   Upoznatost ispitanika s pojmom elektroničkih čitača s obzirom na njihovu dob

			uznatost s e-čitačima				
			izrazito dobro	uglavnom dobro	uglavnom slabo	nisam uopće upoznat/a s pojmom elektroničkih čitača	ukupno
životna dob	23 - 45	N	3	20	18	4	45
		% unutar životna dob	6,7%	44,4%	40,0%	8,9%	100,0%
		% unutar upoznatost s e-čitačima	75,0%	51,3%	41,9%	22,2%	43,3%
	46 - 70	N	1	19	25	14	59
		% unutar životna dob	1,7%	32,2%	42,4%	23,7%	100,0%
		% unutar upoznatost s e-čitačima	25,0%	48,7%	58,1%	77,8%	56,7%
ukupno		N	4	39	43	18	104
		% unutar životna dob	3,8%	37,5%	41,3%	17,3%	100,0%
		% unutar upoznatost s e-čitačima	100,0%	100,0%	100,0%	100,0%	100,0%

For the study purposes, the participants were grouped in two age groups, from 23 to 45 years and from 46 to 70 years of age. Author wanted to test the assumption by which there is a statistically significant difference between younger teachers (23-45 years old) and elderly (46-70 years) due to the familiarity with the concept of e-readers. Using Crosstabulation as statistical method, a table was created from which it can be seen that the younger teachers are more familiar with the concept of e-readers than the elderly professors. So, there are differences in familiarity with the concept of e-readers between the two age groups. Is this difference statistically significant? For this purpose, a Chi-square test was used.

Table 6.   Chi-square test - respondents' familiarity with the concept of e-readers regarding their age

Tablica 6.   Chi-square test - upoznatost ispitanika s pojmom elektroničkih čitača s obzirom na njihovu dob

			Asymp. Sig.
Pearson Chi-Square	5,944	3	,114
Likelihood Ratio	6,210	3	,102
Linear-by-Linear Association	5,553	1	,018
N of Valid Cases	104		

The table shows that the probability (P), which is 0,114 is higher than the level of significance (p=0.05) thus the hypothesis is rejected. Therefore, there is no statistically significant difference between younger teachers (23-45 years old) and elderly teachers (46-70 years of age) due to the familiarity with the concept of e-readers.

Table 7.　　Sources of information on electronic readers

Tablica 7.　Izvori informiranja o elektroničkim čitačima

tv program	*6*	*5,7%*
tisak	*9*	*8,6%*
internetske stranice	*25*	*23,8%*
razgovori unutar obitelji i/ili s prijateljima	*15*	*14,3%*
televizijski program, tisak	*2*	*1,9%*
televizijski program, tisak i internetske stranice	*17*	*16,2%*
televizijski program, tisak, internetske stranice, razgovori unutar obitelji i/ili s prijateljima	*7*	*6,7%*
televizijski program, tisak, razgovori unutar obitelji i/ili s prijateljima	*5*	*4,8%*
televizijski program, internetske stranice, razgovori unutar obitelji i/ili s prijateljima	*1*	*1,0%*
televizijski program, razgovori unutar obitelji, s prijateljima	*3*	*2,9%*
tisak i internetske stranice	*2*	*1,9%*
tisak, internetske stranice i razgovori unutar obitelji, s prijateljima	*1*	*1,0%*
tisak, razgovori unutar obitelji i/ili s prijateljima	*2*	*1,9%*
internetske stranice, razgovori unutar obitelji i/ili s prijateljima	*3*	*2,9%*
do ovoga trenutka niste bili upoznati s pojmom elektroničkih čitača	*1*	*1,0%*
ostalo	*6*	*5,7%*
ukupno	*105*	*100,0%*

Of the total number of respondents (N=105), the majority of secondary school teachers (N=25, p=23.8%) is using websites as the most common source of information on e-readers. The next most common source is a combination of television programs, newspapers and Internet sites used by 16.2% (N=17) teachers. Conversations within the family and/or friends is used by 14.3% of teachers (N=15). To be informed about the e-readers, 8.6% of teachers (N=9) use exclusively newspapers, while for this purpose 5.7% (N=6) teachers use television program.

Table 8.　　Respondents' personal usage of an e-reader

Tablica 8.　Osobno korištenje elektroničkim čitačem od strane ispitanika

da	*20*	*18,9%*
ne	*86*	*81,1%*
ukupno	*106*	*100,0%*

Graphical display shows that from the total number of respondents (N=106), 81.1% of teachers (N=86) did not use e-reader personally, while 18.9% of teachers (N=20) used the electronic reader.

Table 9.   Respondents' opinion on the personal usage of an e-reader

Tablica 9. Mišljenje o osobno korištenom elektroničkom čitaču

izrazito sam zadovoljan	*3*	*2,8%*
uglavnom sam zadovoljan	*14*	*13,2%*
uglavnom nisam zadovoljan	*3*	*2,8%*
nisam se osobno koristio/la e-čitačem	*86*	*81,1%*
ukupno	*106*	*100,0%*

From the total number of surveyed teachers (N=106), 13.2% of teachers (N=14) is generally satisfied with the e-reader they used personally. The percentage of teachers (N=3, p=2.8%) who are very satisfied with an e-reader and which are generally not satisfied with the device they used personally, is the same. Percentage of teachers who did not use an e-reader is very high, 81.1% (N=86).

Table 10.   Possession of an e-reader

Tablica 10. Posjedovanje elektroničkog čitača

posjedujem	*6*	*5,7%*
ne posjedujem	*100*	*94,3%*
ukupno	*106*	*100,0%*

From the 106 teachers of secondary schools only 5.7% (N=6) posseses an electronic reader, while e-reader does not have a 94.3% (N=100) of teachers.

Table 11.   Reading books in an electronic format

Tablica 11. Čitanje knjiga u elekroničkom obliku

da	*17*	*17,0%*
ne	*83*	*83,0%*
ukupno	*100*	*100,0%*

Of the total number of respondents (N=100), 83% of teachers (N=83) do not read books in the electronic form, while 17% of professors is reading e-books (N=17).

Table 12. Do you think e-books (read in e-readers) might or might not success-
fully replace paper books during teaching?

*Tablica 12. Mislite li da bi elektroničke knjige (čitane na elektroničkim čitačima)
mogle ili ne bi mogle tijekom izvođenja nastave uspješno zamijeniti kn-
jige u papirnatom obliku?*

e-knjige bi mogle uspješno zamijeniti tiskane knjige	*30*	*28,8%*
e-knjige ne bi mogle uspješno zamijeniti tiskane knjige	*38*	*36,5%*
nemam određeno mišljenje o tome	*36*	*34,6%*
ukupno	*104*	*100,0%*

From a total of 104 teachers of secondary schools, 36.5% (N=38) teachers believe
that electronic books could not successfully replace paper books while teaching.
On the other hand, 28.8% of teachers consider it is possible that e-books success-
fully replace printed ones during class. An opinion about this issue does not have
34.6% of teachers (N=36).

Table 13. If tomorrow usage of e-readers would be possible at your workplace
would you agree with their application?

*Tablica 13. Kada bi sutra bilo moguće koristiti elektroničke čitače na Vašem rad-
nom mjestu, biste li bili suglasni s njihovom primjenom?*

da, svakako	*17*	*16,0%*
vjerojatno da	*48*	*45,3%*
vjerojatno ne	*20*	*18,9%*
ne, nikako	*1*	*,9%*
tablet računala se već koriste na mome radnom mjestu	*1*	*,9%*
nemam određeno mišljenje o tome	*19*	*17,9%*
ukupno	*106*	*100,0%*

The chart shows the highest percentage of teachers 45.3% (N=48) who think they
would probably agree with the usage of e-readers at their workplace, if that could

be hypothetically possible tomorrow. Likewise, 16% of teachers (N=17) would certainly agree to do so. On the other hand, 18.9% of teachers (N=20) think they would probably not agree with the usage of e-readers at their workplace, while one professor would not agree at all (p=0.9%). Opinion about the usage of e-readers in the workplace does not have 17.9% of teachers (N=19).

Table 14. Do you think e-readers should be or shouldn't be given to students for their usage in class?

Tablica 14. Mislite li da bi trebalo ili ne bi trebalo dati elektroničke čitače učenicima na korištenje u sklopu nastave?

trebalo bi	*40*	*38,1%*
ne bi trebalo	*31*	*29,5%*
nemam određeno mišljenje o tome	*34*	*32,4%*
ukupno	*105*	*100,0%*

Graphical display shows that the highest percentage of teachers, 38.1% (N=40) believe that e-readers should be given to students for usage during class. With this disagrees 29.5% of teachers (N=31). Definite opinion about giving students e-readers for usage in school education does not have 32.4% of teachers (N=34).

Table 15. Acquisition of e-readers for students for their class usage

Tablica 15. Nabava e-čitača učenicima za korištenje u sklopu nastave

Ministarstvo znanosti, obrazovanja i sporta	*41*	*40,6%*
roditelji učenika	*12*	*11,9%*
Ministarstvo znanosti, obrazovanja i sporta s roditeljima učenika kroz zajedničku financijsku participaciju	*21*	*20,8%*
nemam određeno mišljenje o tome	*27*	*26,7%*
ukupno	*101*	*100,0%*

Chart indicates that most teachers (N=41, p=40.6%) believe that the Croatian Ministry of Science, Education and Sports (MSES) should acquire e-readers for students usage in school education (if hypothetically e-readers would be used in

schools). High percentage of teachers 26.7% (N=27) does not have an opinion on this issue. It is interesting that 20.8% of teachers (N=21) think that e-readers for students should be acquired by MSES and students' parents through financial participation. On the other hand, 11.9% of teachers (N=12) believe that only students' parents should be responsible for purchasing an e-reader for their child.

Table 16.   In your opinion, e-readers should or shouldn't become a part of students' academic standard equipment?

Tablica 16.Po Vašem mišljenju bi li elektronički čitači trebali ili ne bi trebali postati dio učeničke standardne školske opreme?

da, elektronički čitači bi trebali postati dio učeničke standardne školske opreme	32	30,5%
ne, elektronički čitači ne bi trebali postati dio učeničke standardne školske opreme	22	21,0%
nemam određeno mišljenje o tome	51	48,6%
ukupno	105	100,0%

Graphical display indicates that most teachers are restrained in this matter, even 48.6% (N=51). Chart also shows a high percentage of teachers (N=32, p=30.5%) who believe that e-readers should become a part of students' standard school equipment. Percentage of teachers who disagree is lower (N=22, p=21%).

Discussion

The research results indicate optimistic conclusions, since the vast majority of high school teachers (81%) are familiar with the concept of an electronic reader, although they (81.1%) haven't personally used one. Reason for this is probably low selection of devices available and relatively high prices of e-readers. On the other hand, due to the rapid development and great competition, it is safe to assume an increase in the physical and financial accessability of devices available on the Croatian market. For that reason an increase in the number of users can be expected as is the possibility of e-readers usage in Croatian schools, which is the issue this paper intends to clarify. The advantage of the research is reflected in the representative sample which enables generalization of results. On the other hand, disadvantage of the research could be found in the survey method used - there is a possibility teachers did not express their own opinions, but the views in line with social values and

the researcher is not able to verify the truthfulness of responses. According to research results, even though younger teachers are more familiar with the concept of an e-reader, there is no statistically significant difference between younger teachers (23-45 years old) and elderly (46-70 years) due to the familiarity with the concept. Furthermore, the results indicate that the majority of teachers (23.8%) are using the Internet as the most common source of information about e-readers, and that only a small number of teachers owns an e-reader (5.7%). Research results also show that a large number of teachers (83%) does not read e-books, therefore it is not surprising that most teachers (36.5%) believe that e-books could not successfully replace paper editions in education and that almost the same number of teachers (34.6%) did not have an opinion on this issue. According to the *Digital Textbook Playbook* (2012) teachers are critical to the success of any significant change in education so they should be involved in the planning of digital learning to help identify the tools and content, training and support. Also, for the greater usage of ICTs teachers should be motivated by strong school-level leadership which according to Greaves et al. (2012) is essential to the success of a technology initiative. The main research result is positive – majority of teachers (61.3%) believe they would probably agree with the usage of e-readers at their workplace, if that could be hypothetically possible tomorrow, which implies to a high level of teachers' readiness to adapt to the changes occurring in their workplace. It is evident that teachers recognize students' interest in the usage of technology in education because most teachers (38.1%) think e-readers should be given to students for usage during class. It is essential that ICTs are used in classrooms in a way to effectively transform contents of school subjects so students can manipulate informations themselves thus becoming more engaged and motivated to learn. Furthermore, most teachers (40.6%) believe that the Croatian Ministry of Science, Education and Sports should acquire e-readers for students usage in school education, if hypothetically e-readers would be used in schools. According to the Digital Textbook Playbook (2011) benefits of a school-provided device model are: more control over device security settings, uniform devices guarantee compatibility with content and programs, all students have the same device which limits disagreement and envy, volume purchasing by a school could provide discounts and there is no burden on low-income families. On the other hand, if e-readers should be acquired by students' parents, according to the guide (ibid) *Bring your own device* model requires: setting capability standards for any device that students bring to school, secure a variety of devices (which is more difficult for schools to do), engage parents in seminars and training so they would know which devices to buy, dealing with less control over how students use the device (programs students can install). Finally, research shows most teachers (even

48.6%) are restrained in the matter of whether e-readers should become a part of students' standard school equipment while 30.5% of teachers agrees with this issue. Teachers are required to use ICT competently so they are able to successfully and efficiently pass the knowledge to future generations in the 21st century education. A large number of teachers' responses provided in the research shows they do not have an opinion about various matters which indicates a need to increase their overall knowledge about the usage of e-readers for educational purposes. Future research may want to examine Croatian teacher's attitudes towards tablet computers and the quality of teachers' professional development related to the usage of ICTs. It can be concluded that for achieving successful digital learning environment, implementing of new technologies in Croatian classrooms must be preceded by teachers' professional development about the usage of new technologies, within individual subjects.

Conclusion

The digital revolution in education is a growing global phenomenon because implementation of ICT in schools has a positive impact on financial savings, academic achievement for students and improved efficiencies for the educational system as a whole. Many countries have begun to use digital content in education, especially e-textbooks, therefore Croatian educational community is moving in this direction. During 2013, CARNet will finish *eduKnjižara* service, an online platform and mobile application for digital textbooks and an experimental usage of e-textbooks will be conducted in several Croatian schools. For this reason, it is necessary to understand the attitudes of teachers towards the new technological devices on the market that can be used for educational purposes. The purpose of the research was to determine the attitudes of secondary school teachers on e-readers and their possible usage in mass education. The study used a probabilistic, stratified random sample and included 8 high schools in Zagreb. The main result indicates that most teachers (61.3%) would probably agree with the usage of e-readers at their workplace, if that could be hypothetically possible tomorrow. Furthermore, the vast majority of high school teachers (81%) are familiar with the concept of e-readers, although they haven't personally used one (81.1%). Most teachers (38.1%) think that e-readers should be given to students for usage during class. Also, the majority of teachers (40.6%) believe that the Croatian *Ministry of Science, Education and Sports* should acquire e-readers for students usage in school education, if hypothetically e-readers would be used in schools. In conclusion, the results indicate the need to strengthen teachers' digital literacy relating to the use of e-readers in education.

REFERENCES

Acker, S. R. (2011) Digital Textbooks, *The No Shelf Required Guide to E-book Purchasing*, Polanka, S., ed., *Library Technology Reports*, Vol. 47, No. 8, 41-51, http://search.ebscohost.com/, URL pregledan 6.10.2012.

Agencija za odgoj i obrazovanje (2009) *Strategija stručnog usavršavanja odgojno-obrazovnih radnika (2009–2013)*, http://www.azoo.hr/images/razno/Strategija_SU.pdf, URL pregledan 13.12.2012.

Anscombe, N. (2012) E-reader revolution?, *Engineering & Technology*, Vol. 7 Issue 2, 68-71, http://search.ebscohost.com/, URL pregledan 18.11.2012.

Balanskat, A., Blamire R., Kefala S. (2006) *The ICT Impact Report: A review of studies of ICT impact on schools in Europe*, The Insight portal of European Schoolnet, http://insight.eun.org/ww/en/pub/insight/misc/specialreports/impact_study.htm, URL pregledan 2.12.2012.

Bezić, K. (2000) Tehnologija obrazovanja i školovanje učitelja, Rosić, V. ed., *Nastavnik i suvremena obrazovna tehnologija*, Gospić, 8. i 9. lipnja 2000, Rijeka: Filozofski fakultet u Rijeci, 19-26

Brooks-Young, S. (2007) Digital-Age Literacy for Teachers: Applying Technology Standards to Everyday Practice, Eugene, Oregon: ISTE, izvadak pristupljen preko ISTE Store, http://www.iste.org/store/product?ID=272, URL pregledan 20.11.2012.

Cvrtila, M. (2012) E-udžbenici dogodine stižu u Hrvatsku!, Slobodna Dalmacija.hr, http://www.slobodnadalmacija.hr/Hrvatska/tabid/66/articleType/ArticleView/articleId/188170/Default.aspx, URL pregledan 6.12.2012.

European Commission (2010) *Europe 2020 Flagship Initiative: Innovation Union*,http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf, URL pregledan 15.12.2012.

Gilbert, J. (2012) Txtr Beagle: The Cheapest E-Reader On The Planet?, *The Huffington Post*, http://www.huffingtonpost.com/2012/10/10/txtr-beagle-cheapest-ereader-ever_n_1954296.html, URL pregledan 22.11.2012.

Granof, Michael H. (2004) A New Model for Textbook Pricing, *Chronicle of Higher Education*, Vol. 51, No. 14, B16-B18, http://search.ebscohost.com/, URL pregledan 28.09.2012.

Greaves, Thomas W. et al., (2012) *Revolutionizing Education through Technology: The Project RED Roadmap for Transformation*, Eugene, Oregon & Washington, Dc: ISTE, http://www.iste.org/store/product?ID=2442, URL pregledan 5.12.2012.

Ille, J. (2012) E-knjiga u Gradskoj knjižnici Ljubljane, *Hrvatsko Knjižničarsko Društvo*, **br. 56,** http://www.hkdrustvo.hr/hkdnovosti/clanak/572**, URL pregledan 9.12.2012.**

Lane, Jenny M. (2012) Developing The Vision: Preparing Teachers To Deliver A Digital World-Class Education System, *Australian Journal of Teacher Education*, Volume 37, Issue 4, 58-74, http://ro.ecu.edu.au/ajte/, URL pregledan 4.12.2012.

Mijatović, A. (2002) *Obrazovna revolucija i promjene hrvatskog školstva : prinos koncepciji i strategiji promjena školstva Republike Hrvatske*, Zagreb: Hrvatski zemljopis

Poole, K. (2011) Emedia: A View From the End User's Perspective, *EContent*, Vol. 34 Issue 6, 10-12, http://search.ebscohost.com/, URL pregledan 21.11.2012.

Povjerenstvo za izradu smjernica za strategiju odgoja, obrazovanja, znanosti i tehnologije (2012) *Smjernice za strategiju odgoja, obrazovanja, znanosti i tehnologije*, Zagreb: MZOS, http://public.mzos.hr/Default.aspx?art=11662, URL pregledan 28.11.2012.

Sanjković, V., Trstenjak, B. (2011) Korištenje računala u edukaciji i upravljanje učionicama opremljenim računalima na primjeru programskog paketa NetOp School, *Zbornik radova Međimurskog veleučilišta u Čakovcu*, Vol.2, No.1, http://hrcak.srce.hr/71333, URL pregledan 23.11.2012.

Stanić, Z. (2012) *CARNet: Hrvatska akademska i istaživačka mreža*, http://prezi.com/izjoa7prg9bt/carnet-opca-prezentacija/, URL pregledan 14.12.2012.

Udžbenički standard (2007) Narodne novine 007, http://narodne-novine.nn.hr/clanci/sluzbeni/296732.html, URL pregledan 9.12.2012.

United States Department of Education (2012) *Digital Textbook Playbook*, http://transition.fcc.gov/files/Digital_Textbook_Playbook.pdf, URL pregledan 3.11.2012.

Vlada Republike Hrvatske (2011) *Program Vlade Republike Hrvatske za mandat 2011. – 2015.*, http://www.vlada.hr/hr/preuzimanja, URL pregledan 4.12.2012.

Wischenbart, R., Kaldonek, S. (2011) *The Global eBook Market: Current Conditions & Future Projections*, O'Reilly Media, https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/144931659XMarket.pdf, URL pregledan 29.12.2012.

ENDNOTES

[1]   CARNet (Croatian Academic and Research Network) is an institution whose mission is the development of advanced information and communication infrastructure for the academic and research community and stimulating ICT implementation. CARNet's activities can be divided in 3 basic areas: Internet service provision, encouragement of information society development and education for the new era. See more at: CARNet, http://www.carnet.hr/encyclopedic_summary, URL viewed 28.04.2013.

[2]   See more at: Stanić, Z. (2012) *CARNet: Hrvatska akademska i istaživačka mreža*, http://prezi.com/izjo-a7prg9bt/carnet-opca-prezentacija/, URL viewed 14.12.2012.

[3]   For example, one of the prominent tools for converting content is *Calibre*, free software in the public domain used in over 200 countries. It helps individuals and libraries in e-book management. Read more at: http://calibre-ebook.com/about#history, URL viewed 28.12.2012.

[4]   An example of this is Sanjković & Trstenjak's research (2011) who presented a software solution *NetOp School* which allows teachers interactive and high-quality teaching in the 21st century classroom.

[5]   *According to the MENP, citizens can order a free removal of all types of electrical and electronic waste in total weight greater than 30 kg (referring to the total sum of weights of all devices and submitted equipment) from the authorized collector who is required to remove it within 30 days. More at:* MZOP, http://www.mzoip.hr/default.aspx?id=8564, URL pregledan 18.05.2013.

[6]   At the time of writing this article, according to the author's estimation, prices of tablet computers range from 800.00 to 4.500.00 HRK and prices of e-readers range from 450.00 HRK onwards.

Stavovi profesora srednjih škola o elektroničkim čitačima i njihovoj mogućoj masovnoj uporabi u obrazovanju

Marta Vlainić

SAŽETAK

Brojne zemlje okrenule su se uporabi e-udžbenika i drugih digitalnih sadržaja u obrazovanju, a to također trenutno čini i hrvatska obrazovna zajednica. Tijekom 2013.-e godine, CARNet će predstaviti online platformu i mobilnu aplikaciju za digitalne udžbenike, uslugu naziva *eduKnjižara* te će biti moguće eksperimentalno uvesti uporabu e-udžbenika u nekoliko hrvatskih škola. Iz tog razloga, a i razloga što obrazovni djelatnici odabiru metode poučavanja u svakodnevnom radu, nužno je razumjeti stavove profesora prema novim tehnološkim uređajima na tržištu koji se mogu koristiti u obrazovne svrhe. Cilj istraživanja ovoga rada je saznati stavove profesora srednjih škola o e-čitačima i njihovoj mogućoj masovnoj uporabi u obrazovanju. Istraživanje, između ostalog, donosi saznanja o upoznatosti profesora s pojmom e-čitača, načinu njihovog informiranja o uređajima, posjeduju li e-čitač te kakva je njihova spremnost za korištenje uređaja u svakodnevnom izvođenju nastave. Istraživanje ukazuje na potrebu jačanja digitalne pismenosti kod srednjoškolskih profesora koja se odnosi na uporabu e-čitača u nastavi. Nužno je obrazovnim djelatnicima pružiti stručno usavršavanje o prednostima i načinima uporabe novih uređaja, e-čitača i tablet računala, u okviru pojedinih školskih predmeta.

Ključne riječi: elektronički čitači, elektronički udžbenici, tablet računala, stručno usavršavanje, stavovi profesora