
STUDENT ASSESSMENT OF THE ROLE OF THE NEW MEDIA AND TEXTBOOKS IN CLASS AND IN INDEPENDENT LEARNING

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Abstract

The aim of this research is to assess the frequency of learning through the new media and from textbooks at home and in class, and the frequency of learning from exercise books, and the correlation according to the type of school and to the form the students attend. The survey conducted on a sample of secondary school students attending either vocational schools or gymnasias (N=524) showed that students, regardless of the type of school and form they attend, most frequently tend to learn from their exercise books, and less frequently through the new media. The majority of students sometimes use textbooks from which to learn, both at home and at school. The findings also show that gymnasium and vocational school students who more frequently use textbooks in class also tend more often to learn from textbooks at home. Vocational school and gymnasium students, both in the first and in the fourth form, who more frequently use exercise books for learning, less frequently learn from textbooks at home. First and fourth form students who more frequently learn from exercise books less frequently learn through the new media. Students who more frequently use textbooks in class also tend to more frequently learn from textbooks at home. All the subsamples show that students learn significantly less frequently with the aid of the new media, regardless of how often they learn from textbooks and exercise books. This study shows that the new media have not yet attained sufficient presence in Croatian schools.

Introduction

Nearly all secondary school¹ students (ISCED 3: from educational year nine to twelve) have mobile phones, and PCs and SAT TV at home. In spite of these developments, students at school are given classes based on the traditional media: textbooks and teachers presenting lessons. The students follow the teacher's lesson, and note down new concepts and definitions in their exercise books or copy what the teacher has written on the board. The new media (the internet, social networks, tablets, mobile phones, etc.) are used by students mostly for non-formal and informal learning out of school. Changes in class are being introduced very slowly. It is often the case that teachers rely excessively on proven traditional teaching methods (lecturing, dictating). Hence, teacher-centred teaching and programmes tend to dominate

classes at school. Given this, it was considered interesting to study in what way students see and use the advantages of the new media to facilitate school learning.

The new media

With the rapid development of ICT, there has been some confusion about the type of ICT we are dealing with, since computers have existed for several decades. Indeed, there is a substantial difference between the functions of the computers of some 15 years ago and those we are using today. The same is true of mobile phones and other digital devices. Some digital devices assume multifarious roles, as has been indicated in the study conducted by Rideout et al. (2010). These authors show that a young person today does not perceive mobile phones as devices whose primary function is to send and receive messages and to place calls, but rather as digital devices for listening to music, taking photos, accessing the internet, etc., given that today's mobile phones are equipped with integrated cameras, internet access, video cameras, and so on. Accordingly, Tomasello et al. (2010) also point to the expansion of this field of research and the changing role of the new media. Therefore, the term "new media" is often used to emphasise the current modernity of the media which include ICT (Peters, 2009). Still, the term "new media" is difficult to define, and it is especially tough to determine what is "new" about the media in question. What was "new" yesterday has become "ancient" today. In this context, Ito et al. (2008, p. 8) provide the following broader and contextual definition of new media:

"a media ecology where more traditional media, such as books, television, and radio, are 'converging' with digital media, specifically interactive media and social communication media",

and purposefully use the term "digital" or "interactive" media because they refer to

"a constellation of changes to media technology that can't be reduced to a single technical characteristic. Current media ecologies often rely on a convergence of digital and online media with print, analog, and non-interactive media types."

The adjective "new" is used because it is defined by the situation, relations, versatility and by not being related to any specific medium. It can be said that the new media of today are multimedia, which emphasises their didactic role, or multimedia didactics (Issing, 1994). Thus, the concept of the new media these days covers a wide spectrum of media (tools) used by today's children in their everyday life, which can also be used in class.

The new media alone do not contribute to teaching efficiency, but through didactic arrangement in relation to other media, resources, material, etc., and in relation to the learning goal, content, and strategies, they can facilitate the learning process (Rodek, 2011). Thus, in certain situations, blended learning improves the learning process (Shen et al., 2009), and online forums encourage critical thinking (Szabo and Schwartz, 2010). The possibility of

setting up virtual communities as part of the teaching process is also emphasised (Mayrath et al., 2001). In terms of mobile learning (Pachler et al., 2010), the development of the new media plays an important role, especially since certain mobile devices have developed and assumed the functions of computers with access to the internet (the tablet is a form of computer). These (and many other) studies show that it is possible to integrate the new media in the teaching process. Besides, while acknowledging the needs of students, and their individual abilities, motivation and previous knowledge, the new media allow for the individualisation of learning, which means that teaching can be focused on the student and on autonomous learning. In this way, the new media may be part of cooperative learning, learning by discovery, project learning and other active learning strategies.

Definitions indicate that the new media should also be viewed in terms of their didactic conjunction with other media, or traditional resources and material, such as textbooks and exercise books, as well as in terms of the optimal and rational replacement of traditional media and sources of knowledge. In other words, they should be perceived as part of multimedia teaching which implies the use of a variety of different media, resources and methods that complement one another. The result is that students also feel the need to use the new media in class, and indicate that there is a need to integrate these media. It is significant that the children regularly (informally) use the new media and ICT in their private lives and have well developed skills and capacities to use them. However, these facts are rarely taken into account, and the new media are not exploited in the teaching process. Of course, it must be said that it is difficult to fit the students' concept and usage of the new media into a traditional class. Using the new media in class requires a completely different way of teaching, which may be defined by the term – student-focused teaching. Therefore, in addition to using a textbook, students also express the need for their textbook to be accompanied by an interactive CD, which has been shown by Novota et al. (2012). The result of the research conducted by these authors show that 94 % of students learn from their exercise books, while Leljak-Pavleković (2001) concluded that 28.5 % of students learn maths from their exercise books.

The presented theoretical framework and the results of the empirical study show that the new media can be successfully exploited in class. On the other hand, it also shows that there are classes where learning from exercise books prevails (which means that students are obliged to listen and copy from the board), as well as learning from textbooks, with a questionable use of the new media, with which today's children are surrounded. These results are used as the theoretical framework for the conducted research.

Method

The aim of the research was to discover the frequency of learning through the new media (ICT) compared with the frequency of learning from textbooks at home, or using textbooks in class and learning from exercise books. The aim was also to see whether there is a correlation between the use of, and learning from, textbooks in class and at home, learning from exercise

books, and learning from the new media (ICT) depending on the type of school and the form the students attend.

The group samples consisted of secondary school students (N=524), including students from gymnasias and vocational schools. There were 252 male students (48.1 %) and 272 female students (51.9 %). These students included 260 first-form students (educational year nine – 49.6 %) and 264 fourth-form students (educational year twelve – 50.4 %). According to type of school, there were 277 gymnasium students (52.9 %) and 247 vocational school students (47.1 %). The research was conducted in September and October 2012 by using the paper and pencil method in five Croatian towns and cities (Zagreb, Čakovec, Velika Gorica, Našice and Zadar).

The survey questionnaire consisted of four questions concerning the frequency of use of textbooks, exercise books and other media (ICT).

1. How often do you learn from a textbook at home?
2. How often do you use a textbook in class?
3. How often do you learn from an exercise book (from what you have written down in your exercise book in class), and
4. How often do you learn from the new media (internet, computer, CD, mobile phone)?

The responses were given on a three point scale: 1 – never, 2 – occasionally, and 3 – always.

Results and discussion

A descriptive analysis shows that 3.2 % of gymnasium students never learn from textbooks at home, 55.6 % do so occasionally, and 41.2 % always do so. A total of 68.2 % stated that they occasionally use a textbook in class, 26.4 % always use one, and 5.4 % never do. In general, the majority of students learn from exercise books, i.e. 64.3 % of them always do, 33.2 % do so occasionally, and 2.5 % never do. A total of 67.9 % of students learn from the new media occasionally, 4.3 % always do so, and 27.8 % never. It is evident from these results that gymnasium students very frequently learn from textbooks, and the fewest do so through the new media, whereas they use textbooks occasionally (at home and at school). On the other hand, a total of 69.9 % of vocational school students stated that they occasionally learn from textbooks at home, 17.4 % always do so, and 13 % never. A total of 6.3 % stated that they occasionally use a textbook in class, 33.2 % always use one, and 6.5 % never. A total of 79.4 % of students always learn from exercise books, 17.4 % do this occasionally, and 3.2 % never do so. A total of 29.1 % of students never learn from the new media, 61.1 % do so occasionally, and 9.7 % always learn from the new media. It can be seen, therefore, that vocational school students very often learn from textbooks, and much less from the new media, whereas they occasionally use textbooks to learn (at home and at school).

A descriptive analysis conducted on first-form students shows that 58.8 % occasionally learn from textbooks at home, 5.8 % never do so, and 35.4 % always do. A total of 45 % stated that they always use a textbook in class, 52.3 % use one occasionally, and 2.7 % never do. A total of 69.6 % of students always learn from exercise books, while 26.9 % do so occasionally, and 3.5 % never do. A total of 30.4 % of students say that they never learn through the new media, while 64.2 % do this occasionally, and 5.4 % always learn through the new media. It is evident from these results that first-form students, regardless of whether they attend gymnasias or vocational schools, very frequently learn from exercise books, and quite rarely from the new media, while they occasionally use textbooks to learn at home and in class. A total of 65.5 % of fourth-form students declared that they occasionally learn from textbooks at home, 9.8 % never do this, and 24.6 % always do so. A total of 76.5 % of students use the textbook in class occasionally, 9.1 % of them never do so, and 14 % always do. It can be concluded that 73.1 % of students always learn from exercise books, 24.6 % do this occasionally, and 2.3 % never do. A total of 26.5 % of students never learn through the new media, while 65.2 % do this occasionally, and 8.3 % always learn through the new media. The results also show that fourth-form students, regardless of the type of school, very frequently learn from exercise books, while they rarely learn through the new media, and occasionally learn from textbooks at home and in class. These and the previous results (concerning vocational schools and gymnasias) are, to a certain extent, consistent with the results of Novota et al. (2012), where most students were shown to learn from exercise books. The fact that they learn from exercise books means that they probably spend most of their time in class copying from the board, and that they do not participate in active learning methods.

The application of the Spearman's Rho correlation test on vocational school students shows that there is a weak but statistically significant positive correlation between the frequency of learning from textbooks at home and the frequency of using textbooks in class ($\rho = .311$; $p = .000$), which indicates that students who more frequently use a textbook in class also tend to more often learn from textbooks at home. There is also a weak but statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from exercise books ($\rho = -.204$; $p = .001$), which indicates that students who more frequently learn from exercise books more rarely learn from textbooks at home. There is no statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from other media ($\rho = -.071$; $p = .263$), and there is no correlation between the frequency of using textbooks in class and the frequency of learning from other media ($\rho = .066$; $p = .300$). This shows that most students sometimes learn from other media, regardless of how often they learn from textbooks at home and use them in class. Furthermore, it appears that there is no correlation between the frequency of using textbooks in class and the frequency of learning from exercise books ($\rho = -.094$; $p = .139$), and no correlation between the frequency of learning from exercise books and the frequency of learning from other media ($\rho = .119$; $p = .062$). This shows that the majority of students still learn from exercise books, regardless of how often they use a textbook in class and how often they learn from other media (Table 1).

Table 7: Correlation between the frequency of learning through the new media (ICT), textbooks and exercise books of vocational school students

Scales		1	2	3
1	Frequency of learning from a textbook at home	-		
2	Frequency of use of textbooks in class	.311**	-	
3	Frequency of learning from notes in exercise books	-.204**	-.094	-
4	Frequency of learning from the new media	-.071	.066	.119

**p< .05; *p< .01

The application of Spearman's Rho correlation test on gymnasium students shows that there is a slight but statistically significant positive correlation between the frequency of learning from textbooks at home and the frequency of using textbooks in class ($\rho = .149$; $p = .013$), which indicates that students who more frequently use a textbook in class also tend to learn more often from textbooks at home. There is also a weak but statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from notes in exercise books ($\rho = -.285$; $p = .000$), which indicates that students who more frequently learn from exercise books more rarely learn from textbooks at home. On the other hand, there is no statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from other media ($\rho = -.027$; $p = .657$), and there is no correlation between the frequency of using textbooks in class and the frequency of learning from other media ($\rho = .105$; $p = .081$). In other words, most students sometimes learn from other media, regardless of how often they learn from textbooks at home and use them in class. There is also no correlation between the frequency of using textbooks in class and the frequency of learning from exercise books ($\rho = -.016$; $p = .797$), and no correlation between the frequency of learning from exercise books and the frequency of learning from other media ($\rho = .011$; $p = .850$). This shows that the majority of students still learn from exercise books, regardless of how often they use a textbook in class and how often they learn from other media (Table 2). It must be emphasized that gymnasium and vocational school students who more frequently use textbooks in class also use them more frequently at home, while they use the new media significantly less frequently. Consistently with this, it may be assumed that the use of textbooks and of the new media may depend upon how frequently the teacher uses a textbook, and how often he/she uses the new media. In other words, it may be assumed that students would use the new media much more if teaching in class was conducted with these media.

Table 2: Correlation between the frequency of learning through the new media (ICT), textbooks and exercise books of gymnasium students

Scales		1	2	3
1	Frequency of learning from a textbook at home	-		
2	Frequency of use of textbooks in class	.149**	-	
3	Frequency of learning from notes in exercise books	-.285**	.016	-
4	Frequency of learning from the new media	-.027	.105	.011

**p< .05; *p< .01

The application of Spearman's Rho test on first-form students shows that there is a weak but statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from exercise books ($\rho = -.278$; $p = .000$). In other words, students who more frequently learn from exercise books tend to learn less frequently from textbooks at home. There is also a weak but statistically significant correlation between the frequency of learning from exercise books and the frequency of learning from other media ($\rho = .170$; $p = .006$), which indicates that students who more frequently learn from exercise books also learn more often from other media. There is no statistically significant correlation between the frequency of learning from textbooks at home and the frequency of using textbooks in class ($\rho = .090$; $p = .148$), and there is no correlation between the frequency of using textbooks in class and the frequency of learning from exercise books ($\rho = .010$; $p = .876$). In other words, the majority of students sometimes use a textbook in class, regardless of how often they learn from it at home and how often they learn from their exercise books. There is no correlation between the frequency of learning from textbooks at home and the frequency of learning from other media ($\rho = .016$; $p = .797$), and there is no correlation between the frequency of using textbooks in class and the frequency of learning from other media ($\rho = .119$; $p = .055$). This means that the majority of students occasionally learn from other media, regardless of how often they learn from textbooks at home and how frequently they use them in class (Table 3).

Table 3: Correlation between the frequency of learning through the new media (ICT), textbooks and exercise books of first-form students

Scales		1	2	3
1	Frequency of learning from a textbook at home	-		
2	Frequency of use of textbooks in class	.090	-	
3	Frequency of learning from notes in exercise books	-.278**	.010	-
4	Frequency of learning from the new media	.016	.119	.170**

** $p < .05$; * $p < .01$

The application of Spearman's Rho correlation test on fourth-form students shows that there is a weak but statistically significant correlation between the frequency of learning from textbooks at home and the frequency of using textbooks in class ($\rho = .259$; $p = .000$). This indicates that students who more frequently use textbooks in class more frequently learn from textbooks at home. There is also a weak but statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from exercise books ($\rho = -.281$; $p = .000$), which indicates that students who more frequently learn from exercise books tend to more rarely learn from textbooks at home. There is no statistically significant correlation between the frequency of learning from textbooks at home and the frequency of learning from other media ($\rho = -.108$; $p = .079$), and there is no correlation between the frequency of using textbooks in class and the frequency of learning from other media ($\rho = .105$; $p = .088$). This means that the greatest part of students sometimes learn from other media, regardless of how often they learn from textbooks at home and use them in class. There is also no correlation between the frequency of learning from exercise books and

learning from other media ($\rho = -.048$; $p = .442$), and there is no correlation between the frequency of using textbooks in class and the frequency of learning from exercise books ($\rho = -.022$; $p = .721$). In other words, the majority of students still learn from exercise books, regardless of how often they use a textbook in class and how often they learn from other media (Tables 4). The data that show that all the students (first/fourth forms, gymnasium/vocational school) who more frequently learn from exercise books more rarely learn from textbooks has also been confirmed by recent research (Novota et al., 2012), and indicate that the exercise book is the students' primary source of knowledge. It can also be seen from the overall sample that students learn from the new media significantly less, regardless of how often they use textbooks, which can be explained by the fact that a great number of teachers do not recognise and use the new media in class.

Table 4: Correlation between the frequency of learning through the new media (ICT), textbooks and exercise books of fourth-form students

Scales		1	2	3
1	Frequency of learning from a textbook at home	-		
2	Frequency of use of textbooks in class	.259**	-	
3	Frequency of learning from notes in exercise books	-.281**	-.022	-
4	Frequency of learning from the new media	-.108	.105	-.048

** $p < .05$; * $p < .01$

Conclusion

It can be seen that ICT and the new media in general are neither beneficial nor detrimental in themselves when used in the teaching process, but their didactical function in class facilitates learning. Therefore, ICT and the new media in general should be perceived in synergy with traditional sources of knowledge, such as textbooks, exercise books, the real world, etc., or as elements of multimedia teaching. Based on this research and on this sample, it may be concluded that gymnasium and vocational school students, both those in the first form and fourth forms, tend very often to learn from exercise books, and very little from the new media, while they sometimes learn from textbooks (at home and at school). With regard to gymnasias and vocational schools, and in the first and fourth forms, it may be said that students who more frequently learn from exercise books generally more rarely learn from textbooks at home, and that most students sometimes learn from other media, regardless of how often they learn from textbooks at home and how often they use textbooks in class. Gymnasium and vocational school students more frequently use textbooks in class, and also more frequently learn from textbooks at home. The majority of students still learn from exercise books, regardless of how often they use a textbook in class and how often they learn from other media. First and fourth-form students who more frequently learn from exercise books more rarely learn from textbooks at home, and sometimes learn from other media, regardless of how often they learn from textbooks at home and how often they use them in class. In general, students are recommended to use the new media for learning, but classes continue to be mostly teacher-focused, and traditional teaching methods (dictation) still prevail. This is confirmed by the fact that students very frequently learn from exercise books, as well as from

textbooks. This also indicates that students tend to more frequently use a source of knowledge outside the classroom if they use it in class. Why this is so may be an incentive for further research, but also an incentive for conducting classes with the help of the new media and ICT in general.

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¹ Compulsory education in Croatia lasts eight years, and secondary schools (ISCED 3) last either three or four years. Gymnasias and vocational schools (for example, schools of economics or technical schools) last four years (educational years 9 to 12).