Re-shaping Education: Role of Internet Resources in Increasing the Efficiency of the Educational Process

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Abstract

Today's lifestyle puts an increasing accent on internet resources. In order to increase its efficiency, the educational process should also include internet resources. This work presents different internet resources (online courses and tutorials, social media, online games) and analyses their efficiency in training students.

Keywords: internet resources, social media, high school education, de-schooling, gamification

1. Introduction – Why do it?

21st century is characterized by the large number of new high-end technologies available for private use. Among them, the most popular are ICT-related gadgets such as smartphones, Tablets, laptops and computers. This new technological trend affects everybody, from grown-ups to children and is most noticeable in adolescents.

Because the increasing role technology plays in their life, adolescents (and in particular Romanian adolescents) are rather "digital natives". Thus, the on-line plays a rather important role in their lives and they become prone to multitasking, fast achievements, acquiring new information they are interested in with great speed.

The huge amounts of information they are subjected to transformed the young pupils into shallow, cynical, skeptical, narcissistic, over confident, impatient and difficult persons. (Popescul and Georgescu, 2015) In other words, the average pupil in Romania is not willing to acquire more information than needed for his immediate usage.

On the other hand, the classical education system in Romania is shaped for pupils that are eager to learn new concepts, to handle complex (and rather abstract) information, with no immediate practical usage. The ideal Romanian pupil is interested in abstract mathematics rather than in

applied mathematics, is interested in memorizing a lot of abstract information rather than in learning how to use it in the day-to-day life. Moreover, the ideal Romanian pupil does not have special educational needs (generated by health problems, by being engaged in extra-curricular activities like sports and music, by socio-cultural differences in the case of children that started school in another country, etc).

But in reality there is a general consensus that classical education does not meet the needs of pupils, whether this opinion is expressed as "internet (Facebook, games, new technologies) is damaging to the scholar performances" or "why learn all this stuff when it is handy on internet, already synthetized by someone else and ready to be used".

By analyzing how pupils use social media (mostly Facebook, but also YouTube, Twitter, and dedicated forums) we concluded that its main functions for teenagers are:

- To provide social interaction with friends, regardless of the physical distance or intensity of relationship
- To help gathering information about people, things or institutions and to keep it up to date whenever the searcher is interested in it
- To provide a pass-time whenever pupils get bored of idle
- To provide a medium for self-expression and self-promotion
- To contribute to one's self-education
- To provide an adolescent with means to escape reality by reinventing himself in a virtual world where he has control over his assets and qualities

This study refers mainly to high school pupils. Most of them participate to an Erasmus+ project, *De-schooling in school: Re-shaping school practices to bring motivation, grit and choice in disadvantaged youth learning*, which has as objectives to create a non-curricular program for disadvantaged youth and to illustrate the possibility of re-shaping scholar practices to improve the quality of learning, in order to achieve better scholar performances for pupils.

2. What to do?

It is agreed (Craciun and Bunoiu, 2015) that social media has revolutionized the dissemination of scientific information within our society. Moreover, new, engaging training environments supporting the use of social media, web 2.0 application and open educational resources in teaching and learning should be able to lead to a positive attitude concerning the integration of social media in education (Grosseck and Holotescu, 2008).

Open educational resources (courses, tutorials, applications, etc.) are widely available, whether they are created by trained professionals or passionate amateurs. As noted above, almost everything "is handy on internet, already synthetized by someone else and ready to be used" – and, moreover, in (much) more than one version. The counter argument to this reality refers to the quality of various learning materials and environments provided openly on the internet. According to the guide to OER (Butcher, Kanwar and Uvalic-Trumbic, 2011), the ultimate responsibility in assuring the quality of OER used in learning environments resides with the educators which are responsible for delivering education, in the same manner as recommending a textbook or using someone else's lesson plan.

In addition to the arguments mentioned above, Facebook provides a ready space where any conflict that could arise between pupils and their colleagues or their teachers can be worked through in a relatively closed and controlled manner (Selwyn, 2009).

So, what to do in order to increase the educational efficiency?

- Let students acquire information according to their own needs, rhythm and standards, recommending appropriate online resources
- Transmit information to students using the communication channels they are more comforTable with

- Develop a "safe-spot", both on-spot and on-line, where pupils can express themselves freely
- Re-shape classic practices in school in order to help pupils acquire life skills and competencies necessary for the 21st century, using as much as possible new ICT resources.

The next section contains a case study illustrating the concepts presented to this point.

3. Case study – How to do?

In this section we will refer to the pupils following the *Ioan Slavici* High School. They are average Romanian pupils, in the sense formerly discussed; hence they have the needs and problems of the average Romanian pupil. In their case, one aspect of multitasking involves the need to hold their smartphones (whether they use it or not) while following classes. Since trying to forbid phones in the classroom had no effect, the smart solution was to integrate them in the educational process.

A common task is "Access the application market on your phone, find a free educational application, install it and do a review. The review should contain both a written part, in which the application is described (with prerequisites, installation, running, pros and cons) and a practical part, in which you have to show to the teacher how you use the application". This project was proposed at ICT classes and contributed to the development of critical thinking and to practicing learning through discovery.

For math classes, pupils were required to install a certain math (free) application, to test it in order to discover its performances and to use it as a correcting tool for their exercises (Figure 1).

For physics classes, pupils were required to find online details on a certain subject (e.g. heat engines) and present them. Additional points were awarded for presenting a movie on the subject and for using educational applications in order to solve problems related to the subject (e.g., efficiency of heat engines, fuel consumption, etc.).
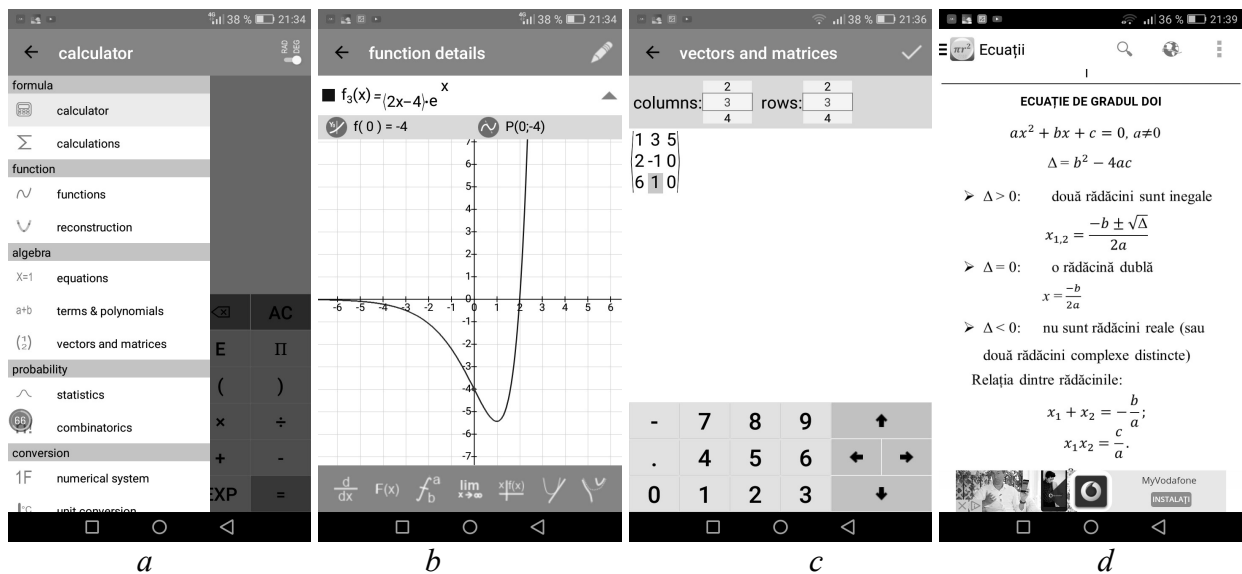

Figure 1. Various math applications for Android (a,b,c – Mathematics, d – Formulae Free)

Since all the pupils had Facebook accounts, we opted for Facebook closed groups for each grade. The groups are used to post relevant information related to school (e.g., dates for semester test papers, scholar holidays, etc.) and files containing handouts for the subjects studied, worksheets, timeTables, etc. As both pupils and teachers were members of these closed groups, a pupil which was absent to the classes could solve a worksheet and send the results (as a picture of the real workbook) to the teacher.

While at first pupils encountered some problems, such as the need of "cleaning" their Facebook account (displaying information which could be seen by the teachers), the need of "cleaning" their writing style (using proper spelling, using more words than emoticons), the need to set up an email account and to remember the password (which, surprisingly, turned out to be a problem), the overall result was positive: not only the pupils learned elements of "netiquette", but their spelling improved and on the long term the information they acquired was more structured. Moreover, this method addressed to the special educational needs of some pupils (engaged in extra-curricular activities like sports, or not being able to follow the real-life classes because of health problems).

A real challenge was to introduce gamification in classes. First reactions went from "but, teacher, you've said that we're not allowed to play games during classes" to "who has ever heard of playing games in a math class in high school". The problem to be solved was to address the lack of interest of the pupils in memorizing something simple – the most common used powers of real numbers. In order to address this problem, we used the Kahoot! platform[15]. This platform, which is free to use, allowed us to create an online quiz, under the following restrictions:

The quiz contains multiple choice questions

Each question has at least 2 and at most possible 4 answers, out of which at least 1 should be indicated as correct answer and a fixed amount of time to solve it (it can be set up to 2 minutes)

In order to play, both the teacher and the pupils should use internet (teacher logs in his account and pupils introduce the code provided by the teacher in order to access the game)

When playing, the questions are displayed on the screen and pupils are asked to press the correct button. From game to game, there is the option to shuffle the order of questions and the order of answers and also options to award the fastest answer and sequences of correct answers. Also, game creators can view a game report containing the game statistics.
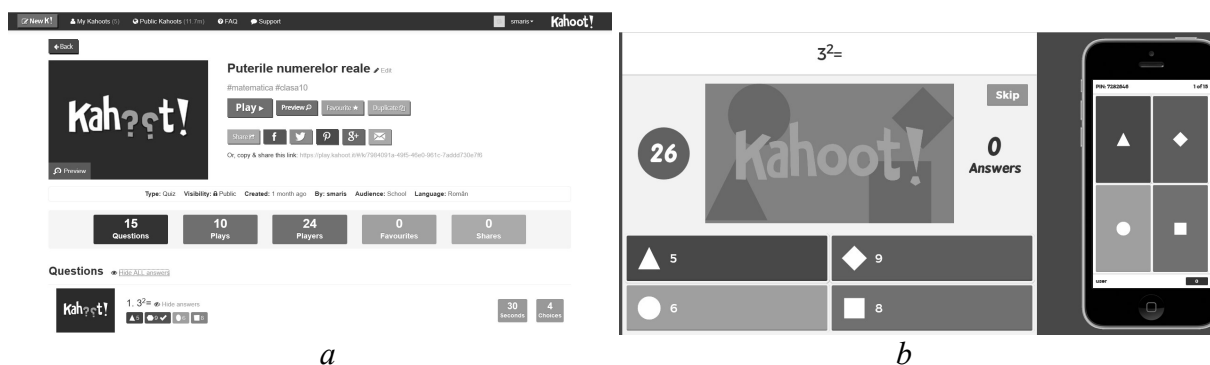

a *b*

Figure 2. Kahoot! sample quiz (a – creating the quiz, b – playing the quiz)

It turned out that the "game" of "Powers of real numbers" only needed to be played (with the shuffling options) 4 times in order to achieve the desired results (memorizing the most common powers of real numbers). The results are depicted in Table 1. One should note that the average number of points increased, which indicates that the gamers gave correct answers and their reaction time increased.

Thus, it was proved that, even in high school, gamification (and internet games) can increase the efficiency of learning.

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[15] Kahoot! Webpage (2016) Retrieved from https://getkahoot.com/support/faq/#who-and-what-is-behind-kahoot.

Ioan Slavici High School is lead partner in an Erasmus+ project (De-schooling in school: Re-shaping school practices to bring motivation, grit and choice in disadvantaged youth learning) whose implementation period is from 01.09.2015 to 31.08.2017. During the implementation of the project, 5 types of activities (called Modules) are to be held: uniqueness of the identity (Module 1), self-expression (Module 2), world of work (Module 3), life skills (Module 4), and problem solving (Module 5).

Table 1. Results in the Kahoot! game

Game number	Total correct answers	Average number of points	Correct answers for the best result
1	62,22%	8503,00	12 / 15
2	56,52%	5738,67	12 / 15
3	77,78%	10535,78	13 / 15
4	86,67%	12033,75	14 / 15

Complementary to the project activities, a Facebook Messenger (Chat) Group Conversation was created. Since everybody had a Facebook account and used Facebook Messenger (more or less on their smartphones) to communicate, the creation of the group was natural and involved a minimum of resources. First, the chat group had the function to announce news about the upcoming project activities. Later, it was converted into a school-level news environment. In time, this Messenger group became a controlled environment in which pupils and teachers can communicate in an informal manner. However, as every community, there are rules to be followed: one pupil should not bully or exclude from the group other pupils or teachers; one pupil is free to leave the group, but if needed, a teacher can add him back; licentious language should be avoided.
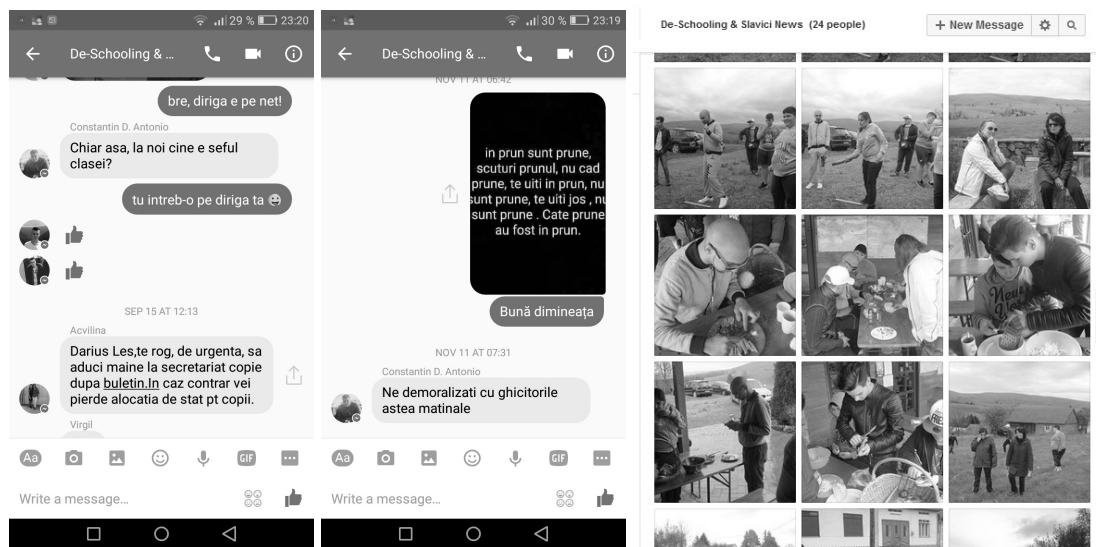

Figure 3. Sample group conversations and sample shared pictures

The effects of the Messenger Group became more and more visible in time: the cohesion of the real-life group increased, pupils expressed themselves more or less unrestricted and learned to communicate better. Of course, problems arise whenever pupils mistake the real-life classes to the on-line group conversation, but they are solved punctually and relatively fast.

4. Conclusions

As an overall conclusion, the new ICT resources and ICT-related gadgets are simultaneously a threat and a help for the education. In the hands of an average Romanian teenager, shallow and only interested in immediate gain, ICT could be disastrous – leading to various degrees of addiction

and mental problems which arise from escapism. With the aid of a mature person, with didactical training, ICT resources and the corresponding gadgets could improve the efficiency of educational process, through making school more attractive, and enhancing the communication between the main actors of the educational process.

While the paradigms of education still hold, the means and methods of educating young people should change following the technological possibilities, in order to make the educational process more attractive for young people, increasing its efficiency and, ultimately, ensuring a successful life for the 21th century adolescents.

Acknowledgements

References
Butcher, N., Kanwar, A. and Uvalic-Trumbic, S. (Eds) *A Basic Guide to Open Educational Resources (OER), Commonwealth of Learning,* Vancouver, British Columbia, Canada and UNESCO Section for Higher Education, Paris, France, 2011

Craciun, D., Bunoiu, M. (2015). Training Teachers for the Knowledge Society: *Social Media in Science Education, BRAIN-Broad Research in Artificial Intelligence and Neuroscience,* Volume 6, Issues 3-4, December 2015, pp. 82-88

De-schooling in School: *Re-shaping school practices to bring motivation, grit and choice in disadvantaged youth learning,* Project code: 2015 -1-RO01-KA201-015049, Lead partner Ioan Slavici High School, implemented from 01.09.2015 to 31.08.2017

Grosseck, G., Holotescu, C. (2008). *Can we use Twitter for educational activities? The 4the International Scientific Conference eLearning and Software for Education*, Bucharest, April 17-18, 2008.

Popescul, D., Georgescu, M. (2015). Generation Y Students in Social Media: *What do We Know About Them? BRAIN-Broad Research in Artificial Intelligence and Neuroscience,* Volume 6, Issues 3-4, December 2015, pp. 74-81

Selwyn, N*., Faceworking: exploring students' education-related use of Facebook, Learning, Media and Technology,* Vol. 34, No. 2, June 2009, pp. 157-174
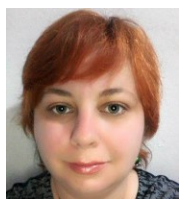
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