



Educational standards for the subject Digital literacy in the functional primary adult education

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Abstract: *One of the key factors in adult education is the acquisition and improvement of digital competences. Therefore, the subject Digital Literacy is integral part of the program for adult education as a compulsory subject. This paper presents the educational standards for the subject Digital Literacy. Also, in this paper, the results of analysis domains and educational standards obtained by empirical research, during the process of preparation of educational standards, are presented. In the process of preparing standards, teachers of appropriate subject, andragogist and experts involved in adult education were included. Based on the analysis results, conclusions and appropriate suggestions are provided.*

Keywords: *adult education; educational standards; functional education; digital literacy*

1. UVOD / INTRODUCTION

The Institute for Education Quality and Evaluation has, during 2012 and 2013, prepared General standards of achievement for the end of a functional primary adult education (FPAE) for school subjects: Serbian language, English language, Digital Literacy, Mathematics, Physics, Chemistry, Biology, Applied Science, History, Geography, Entrepreneurship and Responsible life in a civil society. Functional primary adult education lasts for three years and is carried out in three cycles each lasting one year. In the first cycle the basics of functional literacy is acquired and in the second and third, bases of general education and professional competence. Educational standards were prepared for the first and third cycle FPAE.

One of the starting points in defining standards were the basics of computer literacy, which are necessary for each individual to improve his ability to work and to facilitate daily life. Subject Digital Literacy allows each participant elementary digital literacy, because it is the basic prerequisite for the development of society in the era of new technologies. The aim of this subject is for each participant to master the techniques of computer skills, thereby becoming more productive at work and at home. Acquired skills are here to improve his business and private life. Adult education is often described as ‘second chance’, offering adults a chance to reaccess educational systems or to re-train in new educational skills and knowledge. (Grummell, 2007)

Educational standards for the subject Digital literacy are divided into three domains:

- OPERATING SYSTEM - includes the basics of using the operating system, efficient use of software and hardware, the application of knowledge in other operating systems ie. other versions of a particular operating system.
- COMMUNICATION - encompasses the basics of using the global network and e-mail.
- CREATING DATA - includes the basics of word processing.

Standards for the third cycle define competence to use information and communication devices independently and safely in order to find, save, create, display and exchange information and communicate in the context of satisfying private, community and work needs. Independently use of IT usually involves the use of a personal computer, and in particular for the reason that an increasing part of the information is transferred to the virtual sphere of the Internet. Most of the business, public and private services are most easily implemented in this sphere and commonly accessed from a personal computer / tablet / phone. Therefore, despite the fact that the context of digital literacy is slightly wider, educational standards are designed precisely to satisfy basic use of personal computers.

In each of these domains standards are sorted on both basic and advanced levels. Basic level of standards are related to the competencies that are necessary for the participant basic computer use in simple situations. Advanced level include standards comprising the skills of using advanced software tools.

The standards also verify how the student is trained to practically apply acquired knowledge, but it is expected that the user will be able to use other forms of digital communication such as ATMs, mobile phones, cameras, electronic desks and others.

As opposed to the other subjects, participants in digital literacy classes acquire skills that they will complement and update as soon as possible, and competences acquired as part of this area students will use to find information, solve problems, communicate and develop skills to strengthen the social interactions.

2. RESEARCH

The survey was conducted in May 2012, on a sample of 455 respondents from 69 schools from all over Serbia. At the beginning of the study, within each domain, the knowledge and skills that students need to demonstrate at basic and advanced levels were first identified. Then proposal of the standards were defined that describe identified knowledge and skills. On the basis of this proposal assignments that have been tested were prepared. The goal of the testing was to check the level of standards, and quality control of tasks that have been designed for this purpose.

2.1. Testing

On the pilot testing during the data collection, there was a total of 16 tasks for the subject of Digital Literacy, which were divided into 2 clusters. Clusters of different items were made into notebooks which were solved by the participants of the third cycle functional primary education of adults. Total of 45 participants were solving both clusters and had the opportunity to solve sixteen tasks each. Table 1 shows the layout of clusters in notebooks and number of participants solving tests.

Table 1. Notebooks overview, clusters layout and the number of participants

Notebook	Cluster 1	Cluster 2	Number of participants
Notebook 1	Mathematics1	Mathematics2	28
Notebook 2	Mathematics2	Mathematics1	29
Notebook 3	Serbian language1	Serbian language2	27
Notebook 4	Serbian language2	Serbian language1	27
Notebook 5	Digital Literacy1	Digital Literacy2	24
Notebook 6	Digital Literacy2	Digital Literacy1	21
Notebook 7	Applied sciences1	Applied sciences2	23
Notebook 8	Applied sciences2	Applied sciences1	20
Notebook 9	English language1	English language2	24
Notebook 10	English language2	English language1	24
Notebook 11	Physics1	Physics2	23
Notebook 12	Physics2	Physics1	27
Notebook 13	History	Geography	26
Notebook 14	Geography	History	26
Notebook 15	Responsible life in a civil	Entrepreneurship	26
Notebook 16	Entrepreneurship	Responsible life in a civil	27
Notebook 17	Biology	Chemistry	27
Notebook 18	Chemistry	Biology	26
Total			455

Table 2 presents tasks data: the name of the field, the name of the task, standard to whom task belongs, as well as the percentage of success in solving the problem - pvalue (P) and discrimination (D). Data were analysed using the Statistical Package for Social Sciences (SPSS).

Table 2. Results of the research

Domain	Task	Standard	P	D
Communication	DP101	O3.DP.1.2.1. Finds information based on keywords.	0,33	0,58
	DP102	O3.DP.1.2.2. Access to the Internet web pages based on address.	0,58	0,42
	DP103	O3.DP.1.2.3. Access to own e-mail account, reads and sends a message, opens the associated document.	0,60	0,37
	DP104	O3.DP.2.2.2. Attach document to an e-mail.	0,20	0,27
Creating data	DP106	O3.DP.1.3.1. Selects the language for the text, moving the text and simply regulates (cut, copy, paste).	0,18	0,16
	DP107	O3.DP.1.3.2. Sets the size, color and shape and use tool for text alignment.	0,42	0,20
	DP108	O3.DP.2.3.4. Inserts the picture in the document and adjusts the image position and size.	0,27	0,34
Operating system	DP201	O3.DP.1.1.1. Know how to turn on a computer, log into the system, log off, restart the computer and turn it off safely.	0,64	0,21
	DP202	O3.DP.1.1.2. Uses tools to display and close the window and resizes windows.	0,69	0,15
	DP203	O3.DP.1.1.3. Exchange data between the computer and external memory (flash) and transmits data to optical media to the computer.	0,93	0,17

	DP204	O3.DP.1.1.4. Starts the application; opens, creates and preserves folders and documents in the default location.	0,62	0,21
	DP205	O3.DP.1.1.5. Print the document.	0,87	0,32
	DP105	O3.DP.2.1.1. Performs basic settings work environment.	0,78	0,51
	DP206	O3.DP.2.1.2. Downloads data from the computer to the optical media and exchange data between the computer and external devices (eg. camera, mobile phone).	0,87	0,20
	DP207	O3.DP.1.1.1. Know how to turn on a computer, log into the system, log off, restart the computer and turn it off safely.	0,82	0,24
	DP208	O3.DP.1.1.2. Uses tools to display and close the window and resizes windows.	0,44	0,52

2.2. Results and observations

In the field of communication, participants were most successful in the task DP103, where they should determine the exact sequence of actions that are performed when sending e-mail. Although the task solved 60% of participants, there are grounds to believe that the participants would be even more successful if they were put in realistic situation. The task DP104 was solved by lowest number of participants. In this multiple-choice task and participants were choosing a keyword that describes the document assignment to the electronic message. Answers that were offered were *document* (31.1% of students chose this answer), *attach* (20%), *send* (37.8%) and *forward* (6.7%).

In the area of Creating data participants were the most successful in the task DP107, where it was expected of them to link the tool icon to align the text with his description. Although they were the most successful at this task, less than 50% of participants knew how to format text. A task in which participants were least successful, is the task in which it was necessary to choose the right combination of commands to move text. Though the task had only three offered answers, most participants chose the answer copy + paste, 64,4% of them, from which the conclusion derives that the participants did not differ from moving or copying certain content in MS Word. For them those terms are seen equally.

Domain Operating systems contained half of the total number of tasks that were tested. The most successful solved task is DP203 and is also the most successfully solved task in testing. In this task it is expected of participants to connect illustrated parts of a computer and a CD with their names. Such high achievement indicates that the participants clearly differ computer components such as a keyboard, casing, monitor, mouse, speakers and printer. It is also interesting to analyze the task DP201A that had three questions, a double answer every. Each question solved more than 80% of participants but all three together exactly solved 64% of participants. This is the task for testing knowledge of the procedure logging into the system, turning power off and reboot the computer. The most complex task for the participants was the DP208, solved by only 44% of them, where they were expected to determine the exact sequence of actions to be carried out in order to exchange data between the computer and camera.

If we analyze the frequency of answers on the test, the percentage of the participants who answered each task was greater than 95%. The lowest discrimination has the task DP202, in where participants linked symbolically display of a button for the window manipulation and

its function that button performs. A task that had the highest discrimination was the task DP101 (Figure 1).

By writing the numbers 1, 2, 3 and 4 in the squares determine the exact sequence actions you will be doing in order to find the desired information on the Internet.

You will press the Search button or Enter.

In the search field, you will enter the desired word.

You will select and click one of the links obtained.

Launch an internet browser.

Figure 1. Task DP101

2.3. Educational Standards

The final standards for the subject of digital literacy for the third cycle FPAAE, revised based on the results of this research were created in parallel with the educational standards for Digital Literacy for the first cycle FPAAE. The importance of the development of digital competences in adults is of immeasurable importance, and for that reason this subject is in all three cycles of compulsory education. The final list of educational standards in the subject Digital Literacy was created based on the expert opinions of experts who are engaged in adult education and on the basis of the empirical research, which is implemented during the process of preparing the standards.

3. CONCLUSIONS

The role of educational standards is to improve the teaching process. On one side, teachers highlight the key outcomes and competencies that learners should realize, and also to define more precisely what is needed to achieve progress. In this way it helps teachers when they evaluate. On the other hand, students are helped to distinguish the important from the less important, so that they can focus their efforts on learning what is necessary in order to move to the next level of the educational process.

Using educational standards in the planning of the teaching process the teacher forms teaching blocks oriented towards specific life activities and actions: download photos from your phone to a computer and send them via email, locate and download the administrative form from local government, filling it and printing and so on. Improving the knowledge and skills that reach the educational standards is achieved by planning the teaching blocks,

which are oriented towards the interests, and previous knowledge and experience of participants. An important aspect of information literacy is that of independent learning. (Williams, 2006)

Digital literacy is a basic life skill, and it is essential that every individual has these skills in order to take part on an equal footing (basis) in all aspects of private and social life. Possession of these competencies allows each citizen to significantly improve his life.

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