EVALUATION OF A SYSTEM OF EXERCISES FOR DEVELOPMENT OF SELF-CONTROL BY USING MOBILE TECHNOLOGY

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Abstract

This article describes a scientific research which is subjected to the hypothesis that the development of self-control through the use of mobile technology can be integrated in the educational process, to overcome the difficulties associated with learning and development of different competences and to support personal development and minimizing of habits that impede successful implementation. The analysis focuses on the study of the didactic potential of mobile technology for the development of self-control in different situations.

The aims and objectives of the survey described in this article are directly related to:

- Improving of self-control in the working environment of persons employed in occupations with a lot of professional stress - in the work of teachers, social workers, medical workers, etc.;
- Improving the effectiveness of teaching and professional realization of students who are future psychologists;
- Enhancement of well-being and life satisfaction and achieving a healthier life;
- Providing online mobile digital resources for the development of self-control;
- Increasing the knowledge on the possibilities for the development of self-control, using innovative teaching technologies.

The end result of the conducted scientific and applied research from the fields of psychology, mobile technology and didactics is a package that contains the following elements:

- Conceptual model of self-control;
- Scenarios and exercises to develop self-control using mobile technology;
- Audiovisual and multimedia resources for mobile devices in accordance with the developed scenarios and exercises for self-control development;
- Tools to assess the development of self-control and tools to assess the progress in the development of self-control through the use of mobile technology.

The implementation of this package in the training of students - future psychologists, as well as in the work of persons employed in occupations that are filled with a lot of professional stress was organized as a pilot experiment.

The experiment included:

- Introduction of the participants with the nature and meaning of self-control to achieve the objectives in various activities, for mental well-being and health;
- Introduction of the participants with opportunities to use mobile technology to develop self-control;
- Familiarization with the content of the developed exercises;
- Conducting training for the development of self-control in students - future psychologists and persons engaged in professions that are critical and filled with professional stress;
- Assessment of the progress of the development of self-control;
- Assessment of exercises for mobile devices;
- Assessment of attitudes towards learning process aimed at developing self-control through the use of mobile technology.

Keywords: Self-control, mobile learning, mobile technologies, QR code.

1. INTRODUCTION

The development of self-control is a key to the effective development of basic competencies that are enshrined in the philosophy and strategy of European education. The development of self-control is essential for the potential development of programs aimed at improving the health and looking for alternative approaches to wellbeing. Many studies show that the future professional realization and work efficiency achievement also depend on self-control. Many professional activities take place in conditions of severe stress and tension, which also requires self-control. Behind many of the bad habits problems with self-control are detected.

One of the main directions in education and didactic technology is related to information and communication technologies, in particular mobile technologies. These technologies outdraw emerging opportunities for developing capacity for self-control in an extremely wide spatial and temporal context. Mobile devices can provide effective development of basic competencies and be integrated in learning.

By integrating the capabilities of mobile technologies and the developed software for the development of self-control prospects can be found to extend the learning process towards the development of basic competencies and needs of different user groups, overcoming the restrictions of traditional training.

The main objective of the survey is by using mobile technology to design, develop, implement and evaluate innovative exercises for self-control development.

The scientific research is subjected to the hypothesis that the development of self-control through the use of mobile technology can be integrated in the educational process, to overcome the difficulties associated with learning and development of different competences and to support personal development and minimizing of habits that impede successful implementation. The analysis focuses on the study of the didactic potential of mobile technology for the development of self-control in different situations.

The end result of the conducted scientific and applied research from the fields of psychology, mobile technology and didactics is a package that contains the following elements:

- Conceptual model of self-control;
- Scenarios and exercises to develop self-control using mobile technology;
- Audiovisual and multimedia resources for mobile devices in accordance with the developed scenarios and exercises for self-control development;
- Tools to assess the development of self-control and tools to assess the progress in the development of self-control through the use of mobile technology.

For the purposes of the study an existing mobile application for visualizing multimedia models of objects by scanning QR codes was adapted. This is a mobile application for Android operating system, which by means of the camera hardware device is able to decode QR codes. Relying upon this code, the application redirects the user to the media information associated with the respective self-control exercise. This information is in the form of text, images and/or audio-visual information. The only means used are the mobile device and a special sticker with the corresponding QR code. After scanning the QR code from the sticker a multimedia context-dependent content is displayed on the mobile device.

2. IMPLEMENTATION OF THE PACKAGE OF EXERCISES FOR DEVELOPMENT OF SELF-CONTROL - PILOT EXPERIMENT AND ANALYSIS

The end result of the scientific and applied research from the fields of psychology, mobile technology and didactics is a training package that includes a system of exercises to develop self-control using mobile technology;

This package was introduced in the training of students in psychology as well as in the work of persons employed in occupations that are critical and filled with professional stress: doctors, dentists and teachers. It was organized as a pilot experiment.

The experiment included:

- Introduction of the participants with the nature and meaning of self-control to achieve the objectives in various activities, for mental well-being and health;
- Introduction of the participants with opportunities to use mobile technology to develop self-control;
- Familiarization with the content of the developed exercises;
- Conducting training for the development of self-control in students - future psychologists and persons engaged in professions that are critical and filled with professional stress;
- Assessment of the progress of the development of self-control;
- Assessment of exercises for mobile devices;
- Assessment of attitudes towards learning process aimed at developing self-control through the use of mobile technology.

To investigate the effectiveness of training there were developed two questionnaires to assess the exercises for mobile devices and the progress in mastering self-control through the use of mobile technology: "Questionnaire to assess the attitude towards the use of mobile technologies to develop self-control" and "Questionnaire for evaluation of training to develop self-control. "

2.1. Profile of participants in the experiment

The choice of the target group is associated with the following conditions:

- To be persons who work in conditions of increased stress and who are involved in various critical situations;
- To be persons who are actively engaged in learning necessary for their professional development and improvement.

The experiment was conducted with three groups of participants: psychology students, doctors and dentists, educators. The total number of participants is 92, from which psychology students are 62, doctors and dentists - 11 and educators - 19. From the total number of participants 35 are men and 57 are women.

The number of participants in the age group to 30 years is 63, in the group from 31 to 50 years - 23 and over 50 - 6.

2.2. Analysis of the results from the "Questionnaire to assess the attitude towards the use of mobile technologies to develop self-control"

At the end of the experiment, participants were asked to complete a "Questionnaire to assess the attitude towards the use of mobile technologies to develop self-control", including 8 questions gated with only one

possible answer. Answers to questions are measured at four- stage scale of Likert (1 - "No", 2 - "rather no", 3 -"Rather yes" 4 - "Yes").

The first two questions of the questionnaire aimed to establish the mind-set and attitudes of the participants to use mobile devices during the training program for the development of self-control.

To the question "Is it difficult for you to work with your mobile device during the training program for the development of self-control?" 99% of respondents gave a negative response: 87% of the responding were "No", 12% - "Rather no". This indicates that mobile devices are suitable training tool because they do not require preparation of the participants to work with them.

On the second question "Do you support the use of mobile devices in the learning process aimed at self-control developing?" 99% gave a positive answer. The distribution of answers by groups of participants is given in Table 1.

Table 1. Do you support the use of mobile devices in the learning process aimed at self – control developing? - breakdown by groups of participants

	Do you support the use of mobile devices in the learning process aimed at self – control developing?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	61	98%	1	2%	-	-	-	-
Doctors and dentists	9	82%	2	18%	-	-	-	-
Educators	16	84%	2	11%	1	5%	-	-

It is noteworthy the high percentage of support among participants (only one participant gave the answer "Rather not"). This is indicative that the participants are open to using new technologies.

The third question from the questionnaire seeks to establish the attitude of the participants towards the developed mobile application. To the question "Do you agree that the use of mobile application is easy to work with?" 100% of respondents gave a positive response: 96% - a resounding "Yes" and 4% - "rather yes". This is a strong evidence for the adequacy of used application in respect of:

- The age of the participants;
- The simplicity of the interface;
- The intuitiveness and ease of use.

The following two questions check the attitude of the participants to the technology used in the training program for the development of self-control.

To the question "Do you consider that the technology increases your interest in the training program for the development of self-control?" 96% of all respondents gave a positive answer. The distribution of answers by groups of participants is shown in Table 2.

Table 2. Do you think that the technology increases your interest in the training program for the development of self –control? - breakdown by groups of participants

	Do you think that the technology increases your interest in the training program for the development of self –control?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	56	90%	3	5%	3	5%	-	-
Doctors and dentists	9	82%	2	18%	-	-	-	-
Educators	16	84%	2	11%	1	5%	-	-

In all three groups of participants the most frequent answer to this question is "Yes". Psychology students returned the highest percentage of positive responses - 56 of 62 respondents chose "Yes". The majority of doctors and dentists also expressed the opinion that this technology has increased their interest in the training program for self-control development. 82% of respondents gave the answer "Yes", 18% - "Rather yes". This shows that the participants are fairly unanimous in their positive response to this question.

Similar results were received for educators - 84% gave the answer "Yes", 11% - "Rather yes" and 5% answered "Rather no."

To the question "Do you believe that this technology helped you to better understand and perform exercises for self-control development?" 99% of all respondents gave a positive answer.

In all three groups of participants the most frequent answer to this question is "Yes". Here again psychology students returned the highest percentage of positive responses - 57 of 62 respondents chose "Yes". Results received from doctors and dentists are as follows: 82% of respondents gave the answer "Yes", 18% - "Rather yes". This shows that participants are fully convinced that the technology has helped them better understand the exercises for self-control development. 84% of surveyed educators gave the answer "Yes" and 16% - "Rather yes".

The next two questions are designed to assess the participants' attitude to the developed multimedia resources in the exercises for self-control development.

To both questions "Were the instructions in the developed exercises for mobile devices clear enough?" and "Do you believe that the overall design of the developed multimedia resources (colour schemes, images, sound) helped you to better perform exercises for self-control development?" 100% gave a positive response.

The last question "Would you recommend the training program for self-control development by using mobile technologies to your friends?" 100% responded positively, which strongly confirms the positive attitude of the participants from all groups to the training program.

2.3. Analysis of the results from the "Questionnaire for assessment of the training for development of self-control"

At the end of the experiment, participants were asked to complete a "Questionnaire for assessment of the training for development of self-control" with eleven closed-ended questions with only one possible answer. The answers follow a 4-point Likert scale (1 - "No"; 2- "Rather no"; 3- "Rather yes"; 4 - "Yes").

The distribution of answers within each group of participants is shown in Tables 3-13.

Table 3. Distribution of responses to the Question 1 in each surveyed group of participants

	Do you think the training was effective in meeting its goals?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	60	97%	2	3%	-	-	-	-
Doctors and dentists	11	100%	0	0%	-	-	-	-
Educators	16	84%	2	11%	1	5%	-	-

Table 4. Distribution of responses to the Question 2 in each surveyed group of participants

	Do you think that the training has strengthened your sensitivity to self-control?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	55	89%	7	11%	-	-	-	-
Doctors and dentists	8	73%	3	27%	-	-	-	-
Educators	15	79%	3	16%	1	5%	-	-

Table 5. Distribution of responses to the Question 3 in each surveyed group of participants

	Do you think that the training has helped you to differentiate controlled from impulsive behaviors?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	56	90%	6	10%	-	-	-	-
Doctors and dentists	8	73%	3	27%	-	-	-	-
Educators	17	89%	2	11%	-	-	-	-

Table 6. Distribution of responses to the Question 4 in each surveyed group of participants

	Does the training help you to identify the specific strategies that you need to improve?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	53	85%	6	10%	3	5%	-	-
Doctors and dentists	7	64%	4	36%	-	-	-	-
Educators	15	79%	1	5%	3	16%	-	-

Table 7. Distribution of responses to the Question 5 in each surveyed group of participants

	Do you improve your self-control?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	59	95%	3	5%	-	-	-	-
Doctors and dentists	10	91%	1	9%	-	-	-	-
Educators	16	84%	3	16%	-	-	-	-

Table 8. Distribution of responses to the Question 6 in each surveyed group of participants

	Were the meetings during the training useful to improve your self-control?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	61	98%	1	2%	-	-	-	-
Doctors and dentists	10	91%	1	9%	-	-	-	-
Educators	18	95%	1	5%	-	-	-	-

Table 9. Distribution of responses to the Question 7 in each surveyed group of participants

	Were the meetings during the training informative for understanding the self-control and the possibilities for its improvement?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	60	97%	2	3%	-	-	-	-
Doctors and dentists	10	91%	1	9%	-	-	-	-
Educators	18	95%	1	5%	-	-	-	-

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Table 10. Distribution of responses to the Question 8 in each surveyed group of participants

	Do you think that discussions and exercises in the group were useful?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	61	98%	1	2%	-	-	-	-
Doctors and dentists	10	91%	1	9%	-	-	-	-
Educators	17	89%	2	11%	-	-	-	-

Table 11. Distribution of responses to the Question 9 in each surveyed group of participants

	Was the training helpful to apply what you learned in your everyday life?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	59	95%	3	5%	-	-	-	-
Doctors and dentists	9	82%	2	18%	-	-	-	-
Educators	16	84%	3	16%	-	-	-	-

Table 12. Distribution of responses to the Question 10 in each surveyed group of participants

	Were your experiences in the training positive?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	61	98%	1	2%	-	-	-	-
Doctors and dentists	9	82%	2	18%	-	-	-	-
Educators	18	95%	1	5%	-	-	-	-

Table 13. Distribution of responses to the Question 11 in each surveyed group of participants

	Would you recommend the training to your friends?							
	Yes		*Rather yes*		*Rather no*		*No*	
	Number	%	Number	%	Number	%	Number	%
Psychology students	60	97%	2	3%	-	-	-	-
Doctors and dentists	10	91%	1	9%	-	-	-	-
Educators	18	95%	1	5%	-	-	-	-

3. CONCLUSIONS

Mobile devices and the developed mobile application are easy to use by participants from all surveyed groups and their usage in the training program for self-control development does not cause any tension.

The majority of participants consider that the use of mobile technology has increased their interest in the training and helped them better understand and perform exercises for self-control.

A very high percentage of participants (99%) fully support the use of this technology in the training. The most confident in their positive attitude are psychology students, and the most reserved - educators.

The results from the "Questionnaire for assessment of the training for development of self-control" showed that the training is perceived positively by all participants, which is essential for achieving maximum efficiency. The results from the training showed positive changes in the level of self-control development. Participants respond that they have achieved a deeper understanding on self-control and that the mastered strategies in the training have helped them to better regulate their own behavior.

The investigation the durability of positive effects of the training in the context of a longer time period remains open for further research.

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