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Interactive Web Platform for Teaching Resources in Preschool Institutions

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Abstract

The aim of this project is easier interactions between educators and children in preschool institutions and teaching resources through ICT. The project will be carried out in two phases. After the initial formation of the base for teaching resources (the playing sheets/panels) in the 1st phase, the material will be only available for download – printing and sharing between users in base in the PDF format. In the 2nd phase, will be developed interactive approach where in a web form content, the same teaching materials would be reviewed, entered/resolved, respectively – creation of e-learning approach. After launching a web platform, users (target group) would have the option of selective, limited and time-limited access to two databases of teaching materials: a) web platform for downloading and solving traditional teaching material and b) for solving and learning on mobile devices through Android app (PEIT[1], TV, tablets and mobile phones). The platform will in the case of e-learning material, carry out an evaluation of the same, the assessment of individual sheets, at group level, themes, areas or the playing boards. In this paper we present a future project.

Keywords: ICT, education technology, interactive web platform, the base of traditional and e-playing sheets/panels

Introduction

New ICT technologies are being developed rapidly in the modern world so even the professionals find it hardly to escort all innovations in time. Slowly but surely, they are drawn into the pores of everyday life, and so today, except for the most prevalent mobile "smart" phones, we have a smart home, refrigerators, TVs, cars, bikes, etc. Education is no exception! Wealthier environments on all (NON)formal levels of education (from kindergarten to post-doctoral studies) largely mediate between the ICT, "educators", the content of education and the "students", making it more efficient, individualized and fun. At the national

[1] Smart, electronic interactive board.

level there are many and vast e-learning bases of teaching curriculums that on a daily basis "access" millions of users, online learning and check of their knowledge. Mobile and interactive devices (PEIT, tablets, smartphones…) have long since entered into the study rooms and preschool institutions. Unfortunately, Serbia in this regard seems to make only pioneering steps.

Our project titled INTERACTIVE WEB PLATFORM FOR TEACHING RESOURCES IN PRESCHOOL INSTITUTIONS, High school of professional studies for education of teachers in Subotica, aims to from one place make easier communication between teachers, children (the digital age) and educational contents, as traditional ones and also e-learning.

The project was defined with thematic units predicted from the Curriculum of pre-school institutions (1. Developing concepts of spatial relations; 2. Classification and serration of objects; 3. Developing a concept together; 4. Development of the concept of natural numbers; Developing the concept of geometrical bodies and figures; 5. Developing a concept and measuring the mass 6. Development of the concept of a volume of liquid, measuring the volume of fluid and the operation of volume conservation 7. Development of the observation and the time measurement, time relations, operations and intervals 8. Development of the concept of length and measurement of the length 9. Development of the knowledge about money as a measured value) (Hilčenko, 2017, s. 65), and are created their contents (playing sheets/panels) for the 1st stage of the project.

Created teaching materials, playing sheets /panels are designed for all age-educational groups (from youngest to oldest) children. Individual choice of teaching material (traditional or online) will be left to each individual educator. Of course, teaching materials will be distributed on several categories according to: topic, level of abstraction, level of sophistication, etc. What preceded the project, related to the verification of the validity of the created traditional teaching material, (the playing sheets/panels through a pilot project on a representative sample of children).

Web platform

The planned timeframe for the development and implementation of web platform is the end of teaching 2017/18. Year, which will add new content (all users/teachers/assistants will also be potential authors/auditors). In developing of web platforms besides technologies that are considered to be used, it is very important to choose a trusted domain and its good positioning on search engines (Popović, Hilčenko, 2011). Direction of development of this web platform is available in several directions:

💻**Open national platform:** which would relate only to the state of Serbia (Vojvodina multinational environment with minority languages: Hungarian

(14.28%), Slovak (2.79%), Croat (2.78%), Romanian (1, 50%), Rome (1.43%), Bunjevci (0.97%), Resins (0.77%), Macedonians (0.58%), Ukrainian or the former Yugoslavia – common languages.

💻**Open international platform:** which would have been made in relation to a large number of countries in the world. In this case it is necessary to select a few key languages on the site. This development of the platform is possible after the platform launch as a form of upgrades.

💻**Enclosed or semi-open platform:** that is, access to which would certain or all of the contents be charged or it would be restrictive. Such a development can produce a platform that would be separate for each (pre-school) institution.

The appearance of our future web platform, **with open national access**, is presented in scheme no. 1. Initial scientific-theoretical and practical basis as support in designing web platform will include the following components:

1. **The scientific basis** (chosen scientific field, in our case – Methodology of development of mathematical concepts for pre-school institutions); 2. **Instructional design** (development of a conceptual model of learning, graphic design); 3. **Educational Technology** (didactics, methods of work); 4. **ICT** – System tools for development of web platform (web)developers (Medić, Hilčenko, 2015).

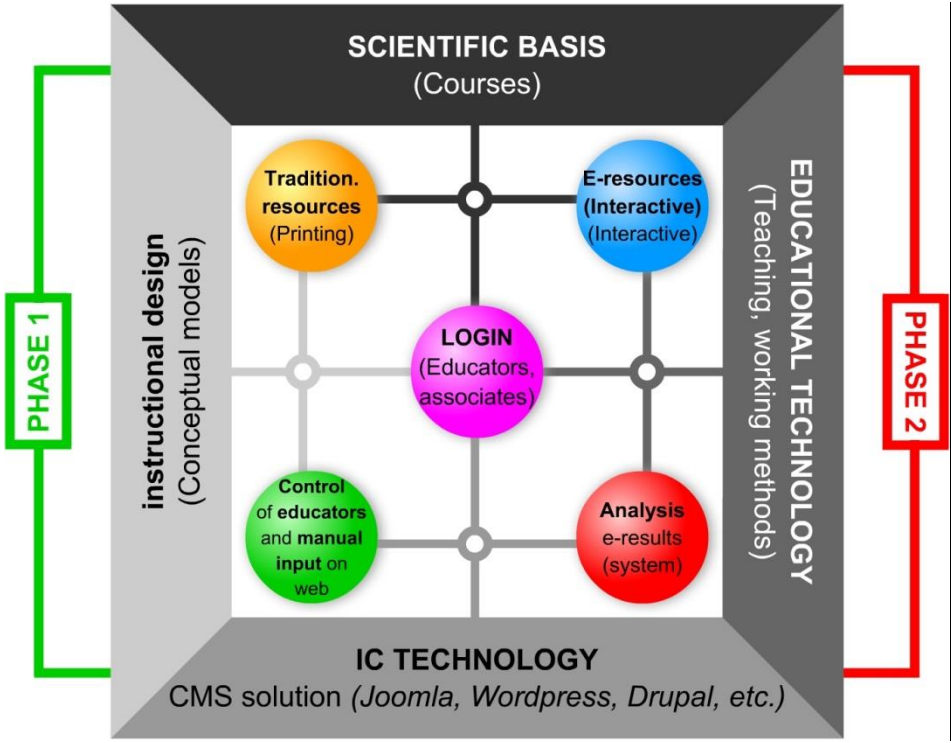
In **the 1st PHASE**, of the development of web platform, to users will only be available traditional teaching materials from which it is at this moment created 60 playing sheets (with a total of **263** tasks) and 12 playing panels (with **38** tasks) in PDF format. (NON)registered users will be provided with various forms of access, so children will not be possible to download the material, while for the example only teachers will have access to the "key" or tasks solutions. Each teacher will have the obligation of registering on the site and access to the selection of teaching materials that will after downloading and printing, share with the children to solve – by manually filling in (written form: supplementing it, crossing out, dyeing, linking, re-drawing-transfer, serration, classification, labelling, solving...).

Analyses of traditional materials (sheets/panels) would include:

💻 educators personal control, through the analysis of the entered "results" (in the sheets/panels) and the comparison with the "key" on the platform, and then;

💻 manual input of the test results on the web platform, to provide a statistical picture of testing knowledge.

In **2nd PHASE** will be developed a fully interactive approach where, in a web form content, the same teaching materials, would be reviewed, entered/resolved respectively – creation of e-learning approach. E-resources by default will be analysed in the input. E-resources will be simple Flash/html5 animations that will be accessed through a simple android application.



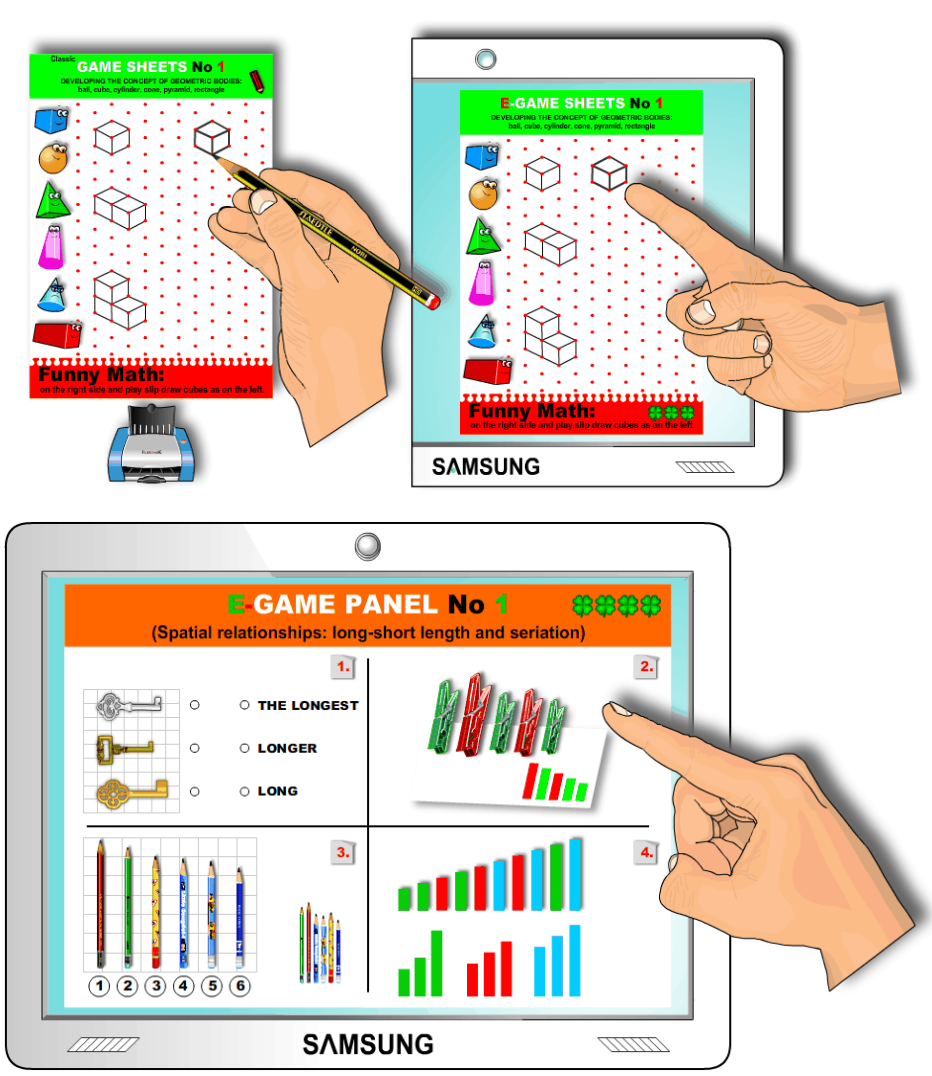
Scheme 1. Organizational chart of the development and operation of web platform

The platform will feature delineation that is able to upload (associates, prominent educators, instructional designers…) or to make a proposal for a new teaching resources. These and similar questions are directly related to the dynamics of the transition of teaching materials so there is no need to lose sight of the inflow of resources – new teaching resources, which would be renewed annually.

Each of the teachers/future user, will have its editorial panel, which in addition to taking over the playing panels, he would receive the analysis of results such as analysis of resolved playing sheets/panels, an average rating on group level, the thematic areas but also the indicators of the most frequent errors and so on. Important point refers to the number of possible attempts to resolve it or a time limit (on which will be able to influence). Also, if the teacher reports that his educational group has 30 children, it means that one sheet could take or initiate 30 times. In case of playing panels, that number would have been much different.

In addition to these items, it is important that the interface of the site and movement through his map is easy and intuitive, also that interface of the play-

ing sheets/panels for end-users, be maximally simplified (understandable) or that the design is “good for an eye”.



Figures 1 and 2: examples of playing sheets/panels, created as Flash animations

Creating of such a web platform includes multiple programming languages. Most preferably is a CMS solution (Joomla, Word Press, Drupal, etc.), and for efficiency could be resorted to building of a complete platform from the very beginning, which would orientate themselves all the benefits of new technolo-

gies and programming languages such as PHP, Javascript/Jquery (and various libraries), with the obligatory reliance on stable database that would manage such a complex web platform (MySQL database like MongoDB, MarieDB or similar optimal solutions).

To design, whose target group are children, could exploit the full potential of HTML5 and CSS3 formats and programming languages. Of course, as in our examples, playing sheets/panels can be created as Flash animations (Fig. 1 and 2).

Web platform must always contain a responsive approach and to be watchable on all devices (PEIT, TV, tablets and mobile phones). Such an approach could be used with presentations to larger groups of children, in organizing quizzes, contests etc. as well as in seminars for teachers and to other forms of e-educational work.

Conclusion

Realization of the web platform (with both types of teaching materials) to work in preschool institutions (Subotica/Vojvodina) brought a new paradigm – a dimension of work and contributed to a more efficient and stimulating processing and check of educational content.

However, we think that e-playing – sheets/panels, with the way of design and method of resolving worked motivating on the work of the children of the digital age which would encourage its logical-functional potentials (Hilčenko, 2008). Certainly, we should not ignore the role of traditional teaching aids, which leaves room for comparison with e-material through comparing the percentage of downloads or online solving but also percentages in the performance of their solution, etc.), which may be the subject of an upcoming research.

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