

Proposal of a Web-based Collaborative System to Support Student's Homework

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ABSTRACT

The authors propose a web-based system to support students' homework, and letting their parents have access to it. From the teacher's point of view, the authors believe that one of the major advantages of their system is time saving. Like other systems available, this system gathers statistical data concerning different groups of students selected by the teacher. From these data on, the teacher can easily see where students are having problems and decide what to do next. From the student's point of view, the authors elected as main advantages of this system the prompt feedback about the exercises correctness, added to the training with different exercises sets about the same subject, besides the utilization of video, color, sound, etc., that positively reinforce child's senses. Their previous results show that students prefer to solve exercises in digital form, rather than exercises in paper form, also showing a more positive attitude towards the former. Also, the authors have seen that the use of computers has enabled the development of tactile sensitivity and motor coordination in children with special education needs.

Keywords: Education, Homework, Students, Web-based Collaborative System

1. INTRODUCTION AND AIMS

We all agree that school is the basis of our society. Like it or not, the success of a country, region or economy is directly and deeply linked to the success of the School. Additionally, it is well established that Internet, and its corresponding technologies, can be used to create local, regional, national and global information and knowledge networks. The number of scientific works debating the potential, advantages and disadvantages and risks of using the Internet in the teaching and learning processes is huge; see for example, van der Merwe and Jansen (2015);

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Choleva et al. (2013); Pires and Moreira (2012); Tadeusiewicz (2008); Keil (2008); Castilla et al. (2016); Kelly et al. (2016); Al-Emran et al. (2016); Hong et al. (2016), to name only a few.

Internet can help in education by making it very accessible in that students can have access to a lot of information and learning materials. Internet also helps in making it more cost effective to learn, saving time for the students, and making education and learning to be more time efficient. Students and teachers from around the world can be at an online classroom sharing the same study materials, collaborating on projects, etc., even though locations and time zones may vary. It is well known that the sharing of different realities, experiences, experiments, and strategies from the teachers' side can lead to students' better academic results, and hence be better prepared for the challenges imposed by our ever demanding society. Internet may strongly contribute to the growth of this sharing and the raising of a truly network of schools.

However, we must not forget the infrastructure/equipment component, i.e., the reality we are emerged in. The Portuguese computational park is very diverse, both scholar, personal, desktop and laptop computers, ranging from low-processing capabilities (e.g., computers running under a Pentium I microprocessor and lower) and low-memory (both main—RAM—memory and secondary—hard-drive—memory) to high-processing capabilities and highmemory. Additionally, in some rural areas the Internet connections are limited to 2Mbps (Megabits per second), but in urban areas Internet may reach 100Mbsc. This is a consequence of the several different programmes implemented during the last decades; see, for example, Santos and Reis (2001); Reis et al. (2002); Reis and Santos (2003), and the governmental sites <http://www.unic.pt/> and <http://www.fccn.pt/>.

Besides these difficulties, it was also elsewhere reported the need for specific teachers training and web contents (e.g., Pratt (2008); Reis et al. (2008)); in the Portuguese case the teachers also reported the lack of time to meet the program (curriculum) recommended by the Portuguese Ministry of Education.

Having this in mind, in the next sections we present a web-system to support student's homework, named PLATINA – standing for “*PLataforma de Apoio ao Trabalho Individual do Aluno*” (Platform to Support the Student's Individual Work). With this system we also want to contribute to an increase in the resources available on the web, particularly for primary teaching of mathematics and Portuguese language. More specifically, we believe that this collaborative system may contribute to:

1. Freely extend the existent offer, particularly those in Portuguese language and Mathematics;
2. Promote the use of IT by teachers, students and parents;
3. Contribute to the use of IT in more informal contexts (informal learning contexts);
4. Promote teacher-student-parent communication;
5. Stimulate collaborative work through the web (by sharing contents, activities and strategies);
6. Contribute to the creation of a web-based portal/platform that presents the programmatic contents in a playful form.

The web-system presented here has a component or module that can be used for the creation and sharing of digital exercises and games (also known as learning objects). Teachers may create their own exercises with the help of this module, based on the existing templates and exercises, simply by using actions of the type “drag-and-drop”, and then recommend them as homework for their students.

The next sections are devoted to the presentation of some of the concepts and materials that will be need to better understand the system and the decisions we have made. Section 2 is devoted to the presentation of some of the related work. The advantages of learning through the use of

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