A Web-based Booklet for School–Family Communication

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Abstract — **Our purpose was to develop an innovative communication solution to improve and facilitate the interaction and the information exchange between the school and the family of students at the secondary level, mediated by an electronic booklet. We used the Design Science Research scientific methodology to guide our work. We diagnosed the need of a new solution for the traditional scholar booklet, defined the requirements for an electronic tool, developed a prototype and tested it with potential users. The electronic solution for the traditional booklet was justified and the prototype developed showed have potential to improve and facilitate the interaction and information exchange between the school and the family of the students. A new method and tool to improve and facilitate the interaction and information exchange between the school and the family has been made available.**

Keywords - Communication; School-Family Collaboration; Electronic Booklet; Web Applications.

I. INTRODUCTION

The electronic evolution we experience in the present times has led to significant changes, not only on a global level but also locally, and even individually.

Indeed, technological revolution induced several changes in different levels of our society, including the cultural level, education [1] and communication methods, guiding a new way of seeing inside this information society [17, 18], where the communication overcomes time and space barriers, creating a virtual world and influencing the way we think and the way we act.

A world that is changing, striding towards a knowledge-based society, demands a new approach in the education field. This is why the school needs to make full use of new technological resources, creating not only the necessary conditions for the development of an education turned to and making use of technologies, but also new communication methods between the school and the family [7].

This is the perspective we assume when we talk about the Electronic Booklet (EB), developed in the course of our investigation project, as an answer to this technological evolution and to the necessary enhancement of the collaboration process between the school and the family, in order to guarantee the improvement of the teaching and learning process and educational success.

In the following sections we will address the communication process established between the family and the school, explain the methodology behind this research, justify the need for an Electronic Booklet, and present the prototype of the Electronic Booklet, the prototype impact evaluation, our conclusions and prospective research projects.

II. COMMUNICATION PROCESS BETWEEN THE FAMILY AND THE SCHOOL

In the present times, schools resort to new Information Technologies (IT) without exploring their full potential. Schools only stand to gain from using IT, not only pedagogically and in terms of school management but also from the communication established between the school and the family of the student.

The truth is there is still a significant gap between understanding the need to use and effectively implementing information technologies with the purpose of promoting the communication between the school and the family. The contact between the school and the family should not be reduced to an occasional and casual relationship with limited impact in the educational process, but that has been the rule in many schools [3, 11]. Finding new communication methods is extremely important [13].

Presently, teachers and class directors use the booklet to communicate in certain situations. The underlying principle of the student booklet is the improvement of the collaboration process between the school, the student and his family. According to this inclusive perspective and enabling school autonomy, the booklet is a tool that promotes:

❖ Access to information concerning the teachers, the Class Director and the Class Representative, academic calendar and school activities, as well as the services offered by the school to the student and the Guardian;

❖ Access to useful information concerning the student, giving way to more concrete and assertive actions from the Class Director and the school in serious situations, such as in case of illness or severe lack of discipline episodes;

❖ An improved knowledge of the school concerning the student, namely in terms of extracurricular activities;

❖ The communication between the teachers and the Class Director in several situations, including:

    ✓ Alerting teachers for situations involving the health of the student;

    ✓ Answering requests made by class teachers;

    ✓ Being informed of the activities promoted by or developed in school;

    ✓ Being aware of praiseworthy attitudes or, on the contrary, unfavourable attitudes on the part of the student.

    ❖ Notification and justification of student absences.

The widespread use of the paper-based booklet [5] was greatly valued by the educational community in the first years of its implementation. This is not, however, the most straightforward method of communication with the family, to the extent that it involves the student and limits the communication content. The exchange between parents and teachers is confined to a few lines written in a paper-based booklet.

With the course of time, this communication tool became increasingly insufficient as a communication instrument, particularly in the following domains:

    ❖ In school, there is a certain disinterest when it comes to the filling of the booklet. Generally speaking, the completion of the student booklet has been gradually abandoned;

    ❖ The family seems to reduce the booklet to a mere instrument for the justification of absences and to share information concerning the health of the student.

These facts call for the evolution of the paper-based booklet, for its transformation into more dynamic and more attractive tool both for the school and the family. According to Baptista [3] it is necessary to build collaboration networks between the intervenient parties, and this can be achieved with the Electronic Booklet.

III. INESTIGATION METHODOLOGY

We used the Design Science Research methodology, which promotes the development of knowledge that can be used by professionals in their fields of action to solve problems [2].

Manson [12] mentions that the process of using knowledge to plan and create an artefact, when careful, systematic and rigorously analysed to achieve its goal, can be considered an investigation project, this form of investigation is called the Design Science Research.

The Design Science Research, is based on the development of a body of knowledge, focused on the implementation, management and application of artefacts [16, 9, 14, 10]. An artefact, according to Simon [11], is all that is not natural, but built by men. The Design Science Research principles have

their roots in the engineering of artificial things, and the Information Systems (IS) are an example or artificial systems. When implemented properly, IS make an organization more efficient.

The Design Science Research investigation methodology seeks technological solutions to serious problems [4, 6], and that includes the communication between the family and the school.

The utility, quality and efficiency of the Design Science Research must be rigorously demonstrated with precise methods in order to evaluate the obtained result [8]. Regarding the Electronic Booklet, we intend to evaluate its functionality, perfection, consistency, precision, performance, reliability, usability and adaptation to the school.

The main purpose of our study was to specify and develop a prototype of an Electronic Booklet that could be adapted to the context of Portuguese secondary schools.

Our analysis model was defined according to two fundamental concepts: the prototyping of the product and the use of the EB as a tool for schools and educational communities. We tried to develop an application that would enhance the communication and the openness of the schools to educational communities, and that is why the development of a prototype makes sense, as a way of visualizing the final application

We started by diagnosing the effective needs of the schools in terms of communication established with the guardians and considering our current reality. We also defined a list of fundamental requirements for the appli-cation under development.

With that in mind, we selected a school in Vila Nova de Famalicão municipality, which allowed us to design a methodological scenery of a case study and, subsequently, put it practice. We diagnosed the selected school, as to its use of electronic tools and as to existing communicational dynamics.

We began our study by explaining its main goals:

To understand if the EB as a platform allows for a synchronous communication between the school and the family;

To understand if the EB accepts multiple synchronous and asynchronous tasks undertaken by several educational actors.

Our data collection was carried out through the administration of a survey in the school, during the month of December 2012. To develop the items of our survey (briefly explained in annex) we conducted a bibliographic review in the field of school-family communication, and we consulted the existing instruments. Additionally, we asked a number of experts from the education field what they thought about the questions included in our survey in terms of objectivity.

After obtaining the necessary permissions, we con-tacted the teachers, the Class Directors, the students and the Guardians, and we invited them to participate in our study.

The validation and analysis of the collected data was based on the same initial sample of students, teachers, Class Directors

and Guardians, which we intended to be representative of the educational actors of a school.

The final sample of the present study included 10 teachers of the 2nd and 3rd cycle; 10 students from the 2nd and 3rd cycle; 10 Class Directors of the 2nd and 3rd cycle and 10 guardians.

As to the teachers that participated in our study, 5 were 2nd cycle teachers and the remaining 5 were 3rd cycle teachers. Their ages ranged between 30 and 55 years old, evidencing maturity. These teachers had, on average, 15 to 25 years of teaching experience in the school. The Class Directors who participated in our study, had, on average an experience of over 20 years in this role, denoting an in depth knowledge of the school.

The age of the surveyed students ranged between 13 and 15 years old.

The age of the guardians ranged between 35 and 50 years old.

After the administration of the surveys and the respective analysis, we held an informal meeting with the survey respondents, where we addressed some of the issues pertaining to the school-family communication

The items to be included in the development of the communication application prototype were debated with the participants. We understood the importance of including features dealing with student absence management, final and intermediate grade management, message management through SMS (Short Message Service) and e-mail, as well as an events item that would enable the integration of multiple interactions such as behaviour, study visits, educational monitoring needs and therapies. The videoconference was one of the items that was highlighted by the elements of the school board, and obtained a general consensus.

After fully analysing the collected survey data, hold-ing the informal meeting with the educational community elements and directly observing the traditional booklet (paper-based) we were able to reach a number of conclusions, suggestions and features to bear in mind when selecting the fundamental requirements for the development of the prototype.

Finally, with a working EB prototype, we proceeded to its testing with the same sample.

IV. JUSTIFYING THE NEED FOR AN ELECTRONIC BOOKLET

After collecting the survey data, we ran a statistical analysis in order to understand the opinion of the elements that participated in this study.

All respondents recognized that the parents have some difficulty in being present in the school during the reception hours, defined by the Class Director, and meeting days. To 72,3% of the participants, the student booklet is an important tool for the communication between the family and the school. According to 68,6%, it is important to create a method that intensifies and facilitates the communication between the school and the family, while 76,5% mention that the EB can be an important work tool for the Class Director and a valuable

resource for every teacher in their communication with the guardians. To 80,1%, the EB can be used by School Directors in their contact with teachers and guardians.

The collected data allowed us to understand that the Electronic Booklet can be an important communicational tool between the school and the family, particularly because of the speed it lends to contacts, contributing to the improvement of the teaching-learning process of the students and helping solve several problems that may occur. It allows for a broader participation of guardians, avoiding the stipulation of contact days and hours, an extremely rigid solution that is difficult for parents to comply with, and ensuring a higher degree of privacy in these exchanges.

Generally speaking, all the involved parties seemed favourable to the implementation of a computer-based centralizing communication tool in school. This type of tool was considered pertinent and important for the dissemination of information. As to guardians, they believe the tool will give them a clearer idea of the educational history of their student, given that the scarce contacts the Class Director do not always provide sufficient information to have a clear idea of their evolution.

Teachers, Class Directors and elements of the School Board agree that the tool can enhance the communication between all members of the educational community.

Besides the traditional features of the student booklet, the EB can effectively promote the participation of every element that belongs to the school community. The elements in our sample viewed the Electronic Booklet as an important tool and suggested their implementation not only in the contact between guardians and Class Directors, but also between other class teachers, students and School Board.

V. ELECTRONIC BOOKLET PROTOTYPE

The Electronic Booklet is the natural evolution of the paper-based booklet and was developed in a graphic environment, translated in an object oriented language.

The structural goal behind the development of the EB is to provide a platform that enables a synchronous communication between the Class Director and the family.

This Electronic Booklet allows for a synchronous and asynchronous execution of multiple tasks by several educational actors, embracing the role performed by the traditional booklet (paper-based) and adding new features:

- ❖ It facilitates and accelerates the communication between the school and the family;

- ❖ It provides access to preformatted documents of communication between the school and the family;

- ❖ It includes an integrated warning system for teachers and guardians, concerning absences and other events;

- ❖ It provides access to all the activities involving the class and the student, including tests, assignments, study visits, amongst others;

❖ It allows the addition of extracurricular activities by the guardian to the timetable of the student;

❖ It provides access to new synchronous communication methods, including a chat room, a forum and video conference;

❖ Access to virtual services offered by the school (library, reprographics, resources centre and stationary);

❖ Access to educational plans (recovery, follow up and development)

❖ In professional courses and ETC's (Education and Training Courses), it allows access to schedules and, in case of internships, to the Websites of the companies.

All these services ensure the confidentiality between the different elements involved, to the extent that these have a differentiated access to the platform, where the login and a password are required.

One of the drawbacks of the electronic booklet concerns the skills of the parents, since many of them experience some difficulty when using new technologies. However, a training course provided by the school can, simultaneously, bring both parties closer together and, with the support of the children, help overcome the issue.

Electronic Booklet Architecture

The EB Architecture is divided in two types of specifications: 1) Functional specifications and 2) Technical specifications.

1) Functional specifications

With our Electronic Booklet the entire educational community can access the platform and its different management features, according to their responsibilities and interest (Figure 1).
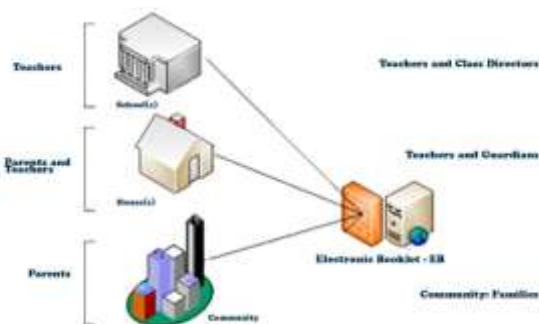

Figure 1. Electronic Booklet Architecture.

The supervisor of the Electronic Booklet can manage the platform and the planning of school activities: school year opening and closing, activity dates within the pedagogical process, class data, school years, student data, teacher data, etc. The teacher and class director features involve the class management and the communication of the teaching-learning process of the students to their guardians. The features provided to the guardian have a communicational nature, and

include: absence notifications and justifications, messages and other information-based features, including final and intermediate grades, activities, events, etc.

Technical specifications

Our Electronic Booklet is a modular software, developed in a Web environment, using Microsoft Visual Studio 2008 tools, on the Microsoft .Net Framework platform, 3.5 Version, and the SQL Server 2008 Database. The SQL Server 2008 Database Management System is very robust in terms of functionality, security and data integrity and has a high level of integration with Microsoft Visual Studio 2008 (Figure 2).
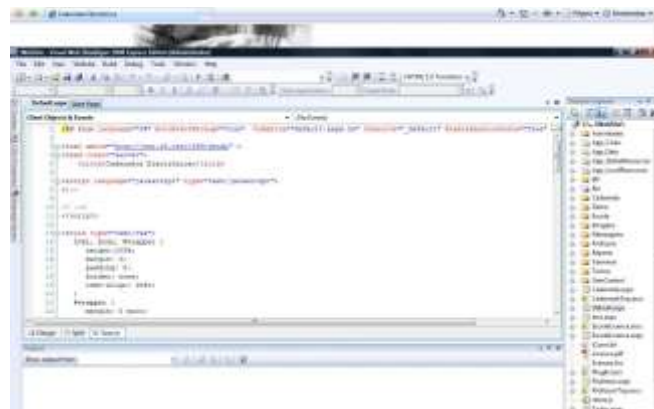

Figure 2. Desktop of the Microsoft Visual Studio 2008 tool.

As to the web development, the use of .Net technologies (ASP.NET with Framework 3.5) allows the programming in several languages (C#, VB.NET, Javascript) and the integration with .NET AJAX dynamic communication. The AJAX resource collection allowed us to create better interface solutions, for user data input and information display. The Electronic Booklet platform is hosted in a FuturSoft[1] domain, and the client just needs to authenticate himself to have access. If the school has a Web server, the booklet platform can be transferred there and the user/authentication management system can be supervised by someone appointed by the school.

VI. ASSESSING THE IMPACT OF THE EB PROTOTYPE

Implemented by Order no. 38/sere/88, from September 15, the student booklet [5], emerged as a paper-based tool developed to enhance the communication between teachers and guardians. With this tool, guardians can ask and send information concerning requests and complains about the behaviour of the student, his school performance and absence justifications [11]. Similarly, the teacher can register information pertaining to the school performance and individual behaviour of the student.

The student is responsible for the communication of new information in this document to his guardian or teacher. The existence of an intermediary in this communication process decreases its necessary celerity.

Despite the existence of this tool, we recognize that the participation and the involvement of the guardians is irregular and changeable [11].

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[1] http://www.futursoft.pt

By means of direct observation, informal conversations and answers provided by the respondents we concluded that the traditional booklet does not meet the requirements of a speedy communication, which justifies the development of an alternative communication method, such as the EB.

The elements of our sample viewed the EB as a necessary tool and suggested that its use should not be limited to the contact between Guardians and Class Directors, but extended to the remaining teachers of the class, to the students and to the school board. These are interesting proposals, worthy of an in depth analysis and investigation, to be carried out in a following study. This critical assessment uncovered an interesting potential and a possible evolution of the project in similar upcoming studies. This assessment was fundamental to disseminate and promote the benefits that a tool of this nature can bring to any school community.

The development of our prototype was conditioned, from the first moment, by the time available for its testing and implementation. Additional features still need to be explored, such as the linking process to social networks and the programming language to be adopted in the development of the final prototype.

These facts, however, do not compromise the results obtained in this study, given the obvious interest expressed towards the necessity and advantages of an EB system in the communication between the school and the family. All the elements that participated in this study manifested their interest in having the EB implemented, as well as the desire to use it. As to the features, the ones that were presented were perceived as being interesting and important, but their final implementation is crucial for us to understand their effective utility and in order to develop additional features that might be of interest. On the other hand, it is important that the school board defines rules involving the use of the EB and enforces its adoption in replacement of the traditional booklet. All of this will be taken into consideration in the following stage, which will involve the development of the final prototype.

VII. Conclusions

The collaboration between the school and the family, manifested through partnerships, is a fundamental step for the improvement of the teaching-learning process, and contributes to the much desired educational success. Consequently, overcoming the obstacles that separate the school and the family is advisable. These obstacles are, to a great extent, connected with the organizational structure of the school, overly bureaucratic and ritualized. One of the main problems encountered is a weak relational dynamic established amongst the multiple agents involved.

The effective involvement of parents and/or guardian is crucial to make the students feel encouraged and to make them see that their learning process is an object of interest. A good level of communication with the schools ensures the guardians an easier access to information concerning the progress of the students, lesson plans and grades assigned, allowing them to develop timely strategies to enhance the performance of the students.

Sometimes parents become detached from school life, and it is important to promote their active participation by making the information available to them.

It is therefore necessary to create bridges between the school and the family in order to improve the communication and to speed up the process of mutual collaboration.

It is within this perspective that the EB assumes, in a ground-breaking manner, a facilitating role in the communication between the school and the family, cementing the development of partnerships. With this tool, we intend to promote the proximity between the two parties, enhancing the communication and the dissemination of information throughout the existing communication channels. The EB emerges as a communication platform that promotes a closer collaboration between the school and the family.

Despite the methodological nature of the case study herein developed, we can say that, considering the type of school (a 2nd and 3rd cycle school) that served as a base for this study, the collected data can be useful in other contexts and backgrounds.

As prospective research and implementation suggestions we propose studying the impact that a tool of this nature can have when extended to every element of the educational community. This will necessarily involve the resizing of the electronic booklet prototype in order to expand the communication. This will be our purpose in a future research project, based on a wider and more representative sample.

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