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Design of a Web Portal for Assertive Diagnosis and Cognitive Evolution in Children with Special Abilities

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Abstract—A world beyond the five senses is what opens the doors to new expectations for children with special abilities, as they lack a variety of factors due to a prejudiced society with middle-aged life stereotypes. We will use the SCRUM method to make the appropriate changes in a short time this established to norms and laws both in education and health, what we develop is a web application that generates a diagnosis for cognitive evolution in children with special abilities. The number of special children who tried the software have made great strides in terms of individual performance. The studies carried out serve the teachers as health professionals who attend to the child with a report, in order to also contribute to the individual and social improvement that the children with special abilities will present through the therapies they need.

Keywords-Teachers, Studies done, Children with special abilities, Health professionals.

I. INTRODUCTION

Globally the percentage of children with special abilities is 15% in the entire population, this by thousands of factors presented at the time of gestation of the mother or during birth, this leads to a control of the child both in their education and health with therapies or treatments, so that their evolution of the child is virtuous.

The aim is to integrate children with special abilities around the social environment and to complement their evolution in order to be able to develop independently [1]. In part of Latin America and also in the Caribbean, new technological tools are being implemented to help the evolution and improvement of children with special abilities [2]. When we refer to attention deficit hyperactivity disorder, we want to include those children with disabilities such as they are: Asperger's Syndrome, Autistic Syndrome, Deep Developmental Disorder; all related to the social part and its development [3].

The methodology to use is SCRUM, that will help us for the development to the changes in short time, according to the discoveries in special education and new therapies that go revealing, we have the Sprint that are already finished activities of a specific module, between its stages of the method we have its four pillars that would be: Sprint planning, development stage, sprint review and feedback [4]. The reason for using the pattern model, view and controller is because the components of the application have a responsibility around changes in some part of the code, this could affect another part of the same application; what we try not to modify is the database that has the responsibility to store the respective information to deliver an accurate report and with it make a favorable or negative decision [5]. We have three important stages as it would be: analysis, implementation and testing for the web platform to be consistent. We are looking for tools that help lighten the construction load in their design and coding [6]. We use extreme programming to create software with good practices, applying exercises that provide us with sustainable development in the life cycle of the web platform [7]. We want to achieve an interactive and didactic web platform to the best of the user's liking [8].

As a research objective, we have the development and implementation of a web platform that helps providing an assertive report to know how the cognitive evolution is going in a child with special abilities, in a way that serves to strengthen certain criteria where the special child needs to perform better.

The research work is distributed as follows: Section I describes the introduction to the social problem that we have sought to solve and how it affects the world; Section II describes

the methodology that we will apply for the creation of the project both in the part of codes and in the design that we will implement, Section III has a focus on application development with respect to the methodology and tools proposed, section IV will see and describe the results and discussion of the project noting what are the results taken with the application test, section V will take note of the conclusions reached so that later on the work can be perfected.

II. METHODOLOGY

In this section II we will narrate the methodologies and tools to use, for the process or life cycle of the web platform being our support to follow a chain of steps already established.

A.   First stage- Procesure in the development of the web application

As the main methodology to use we have SCRUM, to adapt to changes at the appropriate time and precise time, which go hand in hand with advances in health and education applied to children with special abilities. In developing the web application, we have to go through certain stages which are detailed in the SCRUM framework, which make it easier for us to obtain a desired end product [9]. As shown in Table I, we were able to appreciate the stages of the SCRUM methodology with a brief description.

TABLE I SCRUM

Stages of SCRUM	
1.Product-Backlog	Research recently accepted or approved by law, for children with special abilities.
2.Sprint-Backlog	Meetings of the work team to review, the reports obtained recently to work it and to achieve to assemble an additional deliverable or which improves a deliverable delivered previously when the new information was not available.
3.Sprint or Deliverable (2-4 weeks)	Creation and management of deliverables to improve our web platform for each module.
4.Valuable Product	Final product implemented by the work team, with research and tools covering Sprint meetings.

By working with the SCRUM methodology, teamwork is managed that fulfills the role of delivering Sprints or better known with the name of deliverables. The Sprint are already finished activities which are presented and you can plan the changes to be made both in the product or service, we have its four pillars that would be: Sprint planning, development stage, sprint review and feedback [10]. As shown in Fig. 1, we were able to appreciate the framework of the SCRUM methodology and each of its phases.
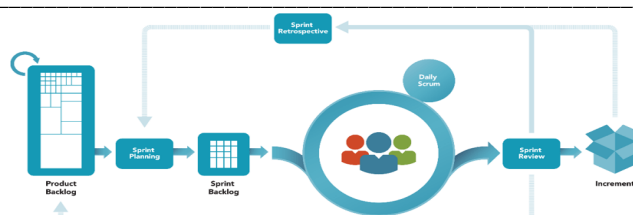

Fig. 1: SCRUM methodology and the form of the stages how they are developed.

El patrón de arquitectura Modelo, Vista y Controlador se basa en lograr obtener una respuesta en el tiempo esperado o almacenar la información de una manera correcta sin temor a que se presente problemas en la capa de la vista con el modelo de dato. Utilizar el patrón modelo, vista y controlador se debe a que los componentes de la aplicación tienen una responsabilidad en torno a cambios en alguna parte del código, esto podría afectar otra parte de la misma aplicación; lo que tratamos de no modificar se encuentra en la base de datos quien tiene la responsabilidad de almacenar la información respectiva para entregar un reporte exacto y con ella tomar una decisión favorable o negativa [11].

Added to this is extreme programming, one of the latest development methodologies that seeks to increase productivity when developing any software [12]. The approach used by the extreme methodology focuses on the work of the work team, providing a good environment for the development team, thus increasing productivity [13].

B.   Second stage- Tools for building the web application

Tools that we will use for the development process in the software are:

The web programming language PHP, as it is a hypertext language with many utilities, functions and libraries running next to the server for free. In such a way that it contributes to the creation of web pages through the connection with HTML, database and server [14]. PHP is a language for web pages or web portals for its large amount of tools, which is based on the server side to ensure independence and privileges, whose accesses with the relationship to network or database, among other tasks with reference in the code. As shown in Fig. 2 we are shown the working approach that is developed with the PHP language.
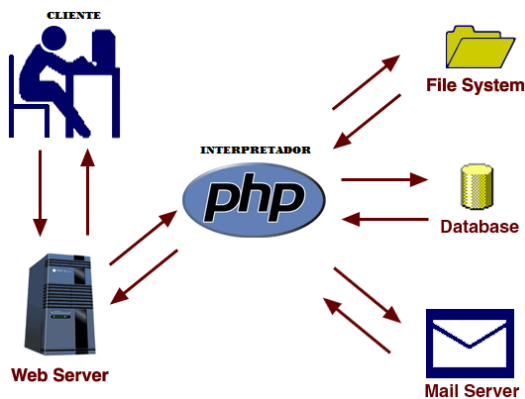
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Fig. 2: Working diagram around the PHP language.

The MySQL database manager, which stores and generates the reports that are necessary in the decision making for the organization. MySQL includes tools, functions and support for data security; it also works on both Linux and Windows platforms. MySQL is an easy-to-use, fast and reliable cross-platform web-based database manager that stores information in tables related by rows and columns.

Complementing for the design and animations inside the web platform, we will include the Java Script language because it works very well with the PHP language and reinforce the characteristics that we offer in the development.

III. CASE STUDY

In this section III we will focus on the development of the web application, emphasizing each stage of the progress that has been made. Based on two points explained in the methodology that are paramount that are procedure in the development and tools for building the web application.

A.   Procedure in the development of the web application-Analysis and requirements

We need to identify the requirements or requirements of the web platform to implement, which will run on the system to solve the problems detected in the previous analysis. As shown in Table II we have the system requirements.

TABLA II REQUIREMENTS

Functional System Requirements	
Manage child report	Allow the child's data characteristics to be entered.
Manage child qualification	Allow children to qualify with certain characteristics.
Report of the child around the platform	Evaluate the platform depending on the management the child performs.
Print or send report to child's specialists	Send the study report made by the application to the corresponding professionals.

B.   Tool for construction of the web application-Implementation of the software

We have the implementation of the web platform with the tools specified above that are based on:

a) Interfaces

As shown in Fig. 3 the main screen of the web platform with PHP and JavaScript.

Fig. 3: Main interface screen of the web platform.

Within the forms of the web platform includes the creation of modules with PHP and JavaScrip language to meet the requirements established in the analysis.

b) Database

As shown in Fig. 4 we have a view of the database that we will use for the web platform, created the design with the MySQL database manager.
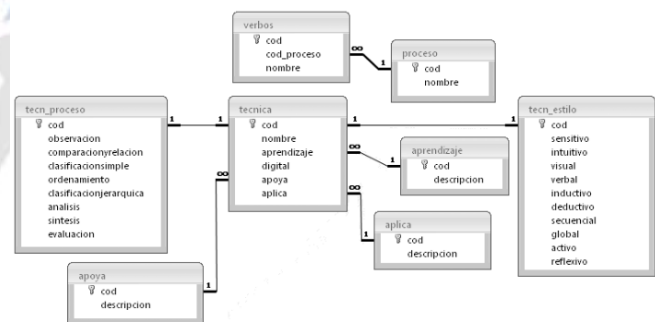

Fig. 4: Database of the web platform.

Creation of the necessary tables and relationships to store all the data that the web platform receives and fence to process, including its primary and foreign keys.

c) Software Testing and Tests

The first demo or version of the web platform, which is tested in a group of children to see, how is the reaction around the platform can add new things or remove some things that do not please children with special abilities.

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IV. RESULTS AND DISCUSSION

A. About the case study

As shown in Table III we have among the consequences of the study carried out by a group of children in the CEBE the vineyards in the comas district.

TABLA III RESULT

Results of the study
A better diagnosis was made to improve the evolution of the child with special abilities.
It was improved in the student environment, with a report of the things that the child should improve or learn.
A better control of the child's health was achieved.

It was possible to obtain a better control in the cognitive evolution of the children with special abilities, having the necessary reports to know or to strengthen certain criteria to take in improvement of their performance. Children with special abilities have a great ability to manipulate electronic devices, if it catches their attention with it we have, an index that if that device voted a report of how the child develops, would be very helpful [15].

B. About the methodology

As shown in Table IV they will show us the advantages and disadvantages obtained in the SCRUM methodology at the moment of applying it in the development of the web platform..

TABLA IV ADVANTAGES AND DISADVANTAJES

Advantages	Greater benefit for the created modules since we can make unexpected changes, interact in the best way with the work team, make a desired final product.
Disadvantages	Financial mismanagement in the project, unexpected project closures in some presented module.

The SCRUM methodology is about rapid and abrupt changes that occur in a software, but the best solution in a very short time to achieve that the final product is or meets the desired objective [16].

V. CONCLUSION

The objectives stated at the beginning of the research were achieved, carrying out the requirements and norms stipulated for the creation of the web platform; collaborating for the cognitive evolution of children with special abilities for their progress in social and individual development, as well as a significant improvement in their senses so that they can learn to develop themselves.

It was innovated using tools to please children with special abilities, thus achieving an improvement for themselves in their evolution. The method to use is the most convenient because of the abrupt changes that occur in a short time. This contributes to the improvement of many investigations concerning children with special abilities.

It was possible to develop different investigations around children with special abilities serving this software to complement many investigations as far as cognitive development of special children is concerned.

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For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

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