The Game as a Way to Train the Mind Games of Reasoning

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Abstract. This work aims to contribute in a simple and positive way with everybody directly and indirectly is involved in an educational process by, offering notions about the importance of playing accompanied by methodological concepts, advantages and features for the teaching and the implementation of games with educational content; besides the interest of keeping them for their formative process as powerful elements in intellectual, ethical and physical education.

Keywords: Games · Reason · Destructuration · Gamification
Mobile App

1 Introduction

"Gamification has been defined as the "process of using game thinking and mechanics to engage audiences and solve problems" [1].

WHY TO PLAY?

- Relaxes
- Not generates fear to the unknown
- Improving attention
- Developing skills and abilities
- It promotes the motivation
- Improving intellectual faculties
- It has not time limit.

For the process teaching learning we need:

Motivation, Attention, Ability to reason, Effort in a relaxed environmental and THIS IT IS FOUND IN THE GAMES!

The use of mechanical gaming environments and not playful applications in order to improve motivation, concentration and effort is called "Gamification".

This was the reason for using the games in the initial courses in our University.

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2 Objectives

- **To use the game for the teaching-learning process.**
- **To create a set of activities of reasoning on the University's platform.**
- **To create a mobile phone app. about reasoning games.**

To achieve the objectives, we started answering the following questions:

How do we relate the attentional processes with neuroplasticity?

For this, we develop games of reasoning, which can be solved at any time; it is a game, the students can play many times per day, if they are excited. As the time moves, the neurons solve the activities more quickly, they are acquiring more speed. These games destructuring the mind.

This proposal is based on several initial assumptions:

- All the people have minimum logical-analytical skills
- It is not true that some people may be unfit for science
- The student who is finishing high school, and is starting university or a higher course, represents malleable raw material in which the prejudices he brings can be changed
- The teacher is who has the ability to teach, to handle the necessary tools to achieve the objectives.

Why do we say destructuring?

Because all the exercises are mixed: calculations, reading and comprehension, exercises where just need to read, to write, and the four fundamental operations.

They are very simple exercises and this is the good news, because all the exercises of reasoning that we usually find in books or magazines are very difficult, ordinary people are not able to solve them, because they are for geniuses, and why the geniuses want to learn to reason?

The games and the reasoning activities are increasing their difficulty, but experience shows that, they progress fast.

3 Methodology

In the world of educational applications there are two clearly differentiated approaches, more serious applications where the objective is to learn a subject (either a language or any other type of knowledge), or more playful applications, where the only goal is fun through of general questions.

Let's look at the two highest exponents of both types of applications:

(a) **Duolingo**

It is a multiplatform language learning application (Web/Mobile/) in which the unique objective is to learn the language in question although with a less traditional approach. It uses test type questions, allocutions and images to not become boring. In addition the application is Gamificated (use of experience, lives, etc.) for a more pleasant and addictive game experience.

(b) **Triviados**

It's a multi-platform (Web/Mobile/Tablet) quiz based on the Trivial of life, where test questions on various topics are an excuse to play in multiplayer mode with your friends.

Pleasant appearance, multiplayer and ease of use and access are the strengths of this entertainment application.

This project is placed in an intermediate degree of these two points of view, mixing the intentionality of the user to learn with the fun and the emotion that provides the multiplayer mode.

These tools are applied in the initial courses, for all engineering specialties.

The pilot application was developed as follows:

- Simple problematic situations
- Multiple choice
- Texts lagoon
- Calculations
- Riddles
- Quiz

The games are in the educational virtual campus's platform, which was adapted for this purpose, in which the following considerations that are normally present in the gamification were taken into account.

These problematic situations, consist of reasoning activities.

The students who play, develops the following skills:

- Mental quickness.
- Abilities in the use of tools.

It is divided by categories and it is possible to compete for time, right questions and with other participants in the web.

The basis of the game is:

– Mechanics: Joining the game levels or badges.
– Aesthetics: The use of rewarding images to the player's view.
– Connection player-game: both are looking for a compromise between the player and the game.
– Motivation: The psychological predisposition of the person to participate in the game is certainly a trigger. And as time goes by, people learn from repetition, the challenges have to gradually increase to keep up with their growing skills.
– Promote learning: the gamification incorporates psychology techniques to encourage learning through play. Techniques such as assigning points and corrective feedback.
– Troubleshooting: It can be understood as the ultimate goal of the player, that is, reach the goal, solve the problem, cancel your enemy in combat, overcome obstacles, etc.,

It is an efficient training tool because it incorporates gaming elements challenges, fantasy, motivation, easy measuring (level, ranking, score), as well as satisfaction by the achievement of goal.

As a result of the experience and enthusiasm of students that is reflected in the increase of participants in the platform it was decided to develop an application for mobile phones in a joint project among teachers who use these tools and the Department of Engineering in Information Systems where teachers and students participate. Thus, we are integrating the whole educational community in a project that is meant to continue playing and enjoying continuous learning.

4 Project Overview

The project consists of the development of two applications:

(a) "*Brainify*", *a game for the Android platform*: The goal of the game is to allow the users to answer general knowledge questions and compete with their friends while doing so. Each question gives the user experience which can be accumulated allowing him/her to unlock new, more complex questions.
(b) "*Questions Manager*", *a Web application:* It is a web application with two objectives; it allows the loading of questions for each game level and provides questions to the Brainify application.
(c) The system will be developed in 7 stages, the first two, will be purely for testing and the last one the final candidate of the application.

Stage	Description
1	A complete prototype of the Brainify application will be made. The prototype will not be functional. The prototype will seek to illustrate the content of the application, the different buttons, design and configuration. The objective of this stage is to validate the aesthetics of the Brainfy application
2	The following modules of the Question Manager application will be developed: • User authentication • Level management • Questions and answers management • REST service of questions per level The following Brainify application modules will be developed: • Solitary mode • Current level question rounds • Question experience The objective of this was to validate the functioning of the round of questions
3	The following modules of the Question Manager application will be developed: User management The following Brainify application modules well be developed: Solitary mode Previous level question rounds Level upgrade

(*continued*)

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Stage	Description
	The objective of this stage was to finalize the operation of the round of questions in the Solitaire mode
4	The following modules of the Question Manager application will be developed: • Add players by Facebook or Google The following Brainify application modules will be developed: • Integrate social networks as a method of accessing the game. The objective of this step is to manage several users within the Brainify application
5	The following modules of the Question Manager application will be developed: • Relationship between players The following Brainify application modules will be developed: • It will allow you to view and list social networking friends within the game to invite them to the game or rounds of questions The aim of this stage is to manage the link between the user and his acquaintances in social networks
6	The following modules of the Question Manager application will be developed: • Competitive mode The following Brainify application modules will be developed: • Competitive modality It will allow you to invite other users to participate in a round of questions It will evaluate the possible combinations of questions and answers for both players It will calculate the experience obtained by the new modality The aim of this stage is to test the correct functioning of the competitive modality of the game
7	The development stage is completed. All stages are linked and the first final version is built. Seeks to validate the correct operation of the application

The App. starts with a first stage that is the development of skills such as: mental agility, logical thinking development, mental openness and lateral thinking.

The second part of the game is for students who have reached a certain basic level, now they will be able to select the subjects they want to reinforce, such as mathematics, physics, chemistry, etc.

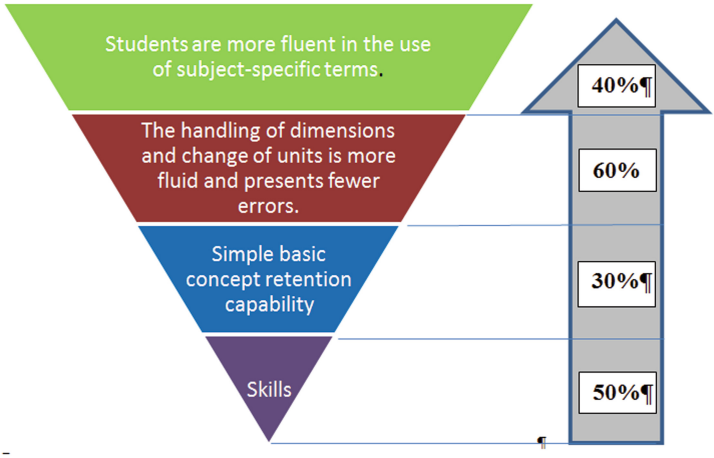
This section of the App will be based on conceptual questions and reaffirmation of pre-acquired knowledge, playing we are constantly remembering what we have learned. The application of these activities is being carried out in the present elective cycle with the first year students of the Engineering degree.

This type of skills has already been evaluated on the platform with the students who are taking the introductory course to our university and the respective results were presented at IMCL 2016 [9].

Students who are currently in their first year of the Engineering degree have already had the possibility to use the reasoning games during the entrance course and are actively participating in higher level reasoning games, where challenges are made on the subjects learned.

– Students are more fluent in the use of subject-specific terms.
– Simple basic concept retention capability.

– The handling of dimensions and change of units is more fluid and presents fewer errors.
– The relationship between theoretical concepts and everyday life can be asociate them more clearly.



It can be clearly seen as brain training not only increases the speed of response, which does not only imply velocity but also reading comprehension, mental ordering, strategic thinking, detection data, incognita and necessary tools for resolution of problems.

New times require new strategies and the recent discoveries, given to us by cognitive neuroscience reveal that education today requires a profound restructuring, that does not prevent him to stay out of phase with the recent technological avalanche. Though we assume that education is not restricted to the school environment, school and teachers have to prepare future citizens for a changing world.

To do this, we have to eradicate teaching focused on the transmission of a series of abstract and decontextualized concepts that have no practical application. Our students have to learn to learn, facilitating, procurement of a series of useful skills that allow them to solve problems encountered in our daily life**: learning for life**. And for this primarily socioemotional intelligence is required.

Learning is optimized when the student is an active protagonist of that process, that is, you learn by acting and this is facilitated when it is a pleasant activity and occurs in a positive emotional climate.

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