A Journey to the Future: the Conception Paths of a Gamified Strategy for the Vocacional Education of SENAI DR-BA

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ABSTRACT

The most traditional paths of professional education have been put in check with social changes and the development of information technologies. On the one hand, technologies have transformed the form of knowledge construction of the last generations, beyond that, there is a tendency in the labor market to value people who have developed reflection skills and are more apt to make decisions. Gamification is presented as a possible educational strategy to offer solutions to the stated problem. This paper presents the research results in the context of the pre-production of a development project of a gamification strategy for technical education. For this purpose we did documentary research techniques, bibliographic research, analysis of similar; and research techniques focused on game development (using the user-centered approach), using the iteration process (design, prototyping and evaluation), having interviews as survey instruments and questionnaires and focus groups as instruments for the evaluation of the first prototypes. As a result of this research, we analyze the profile of the public to be attended, we described the system requirements and propose a conception solution that's accord to the specific needs of the technical education students of the institution in which the strategy will be used. The gamified solution was conceived as a journey to the future that students aspire to their future occupation.

Keywords: Vocational Education; Gamfication; Game Design.

Introduction

The first educational initiatives linked to digital technologies appeared with the advent of the Internet in the 1990s, but rare technological resources limited a more effective application. Besides that, from the methodological point of view, the technologies were used in educational environments from an instrumental perspective. Reinforcing and propagating the logic of reproduction and transmission of knowledge. The current scenario presents a new reality. Internet access, digital games and the popularization of smartphones have changed the way knowledge is built up over the past generations.

SENAI-DR BAHIA begins its first works using digital technology for educational in 1993 and evolves consistently generating a representative variety of productions. The institution counts, for example, with the development of EAD courses (elaboration of didactic material and digital media), audiovisual productions, assistive technologies, creation of multimedia resources, games, among others. However, all the advances presented in this area were not reflected in the way professional education was being offered in presencial education at the SENAI units.

Vocational education teachers, who generally follow a conventional classroom pattern, find it difficult to engage students in proposed activities and to prepare them for current labor market demands, after all, the industry currently values people who develops thinking skills and are able to make decisions.

Gamification strategies are a possible answer to the presented problem. Gamified practices have expanded considerably in education since the popularization of the term gamification in 2010. The persistence of the phenomenon for almost 8 years, having already passed the initial moment of novelty and faced severe criticism, suggests that such practices should remain and win space in the educational scenario. Gamification is recognized for its potential for engagement and can be an excellent resource to stimulate student leadership in the process of building knowledge and encouraging systemic thinking.

In this context, the Bahia regional department of SENAI has propose to develop a gamification strategy linked to a virtual platform that covers all of its technical education courses. This paper presents the results of the research perfomed during the pre-production phase of the Gamifica SENAI project, from which it defines the theoretical assumptions, analyzes the profile of the public to be attende, discusses educational conceptions against the requirements elicited in the development process of the system and proposes a concecption solution that's accord to the specific needs of technical institution students.

In order to achieve these results, we have drawn a methodological approach that included documentary research, bibliographic research, similar analysis and research techniques focused on game development (using a user-centered approach) using the iteration process (design, prototyping and evaluation), with interviews as survey instruments and questionnaires and focal groups as instruments for the evaluation of the first prototypes.

Theoretical-Methodological Perspectives

The project Gamifica SENAI was based on a methodological course build on documentary research, bibliographic research, similar analysis and field research.

The documentary research, in this context, had two fronts. The first one concerns in the alignment of the project with the teaching methodology of the institution, the SENAI Professional Education Methodology. Therefore, it was necessary resort to the documents that define it (SENAI-DN, 2013).

Then, we did a bibliographical research, in order to define the theoretical approach more adherent to the methodology of teaching and to the profile of the students. This bibliographic research aimed to consolidate the consistente educational references with the SENAI Professional Education Methodology, analyzing which approaches about the game and gamification best apply to this proposal.

In a consistent way with SENAI Professional Education Methodology, which is based on competency-based education, we seek references in Perrenoud; strengthening our theoretical base in the education field, we also brought Paulo Freire's (2016) reference, in the sense of seeking the creation of a gamification strategy, that respects the knowledge of students and teachers, allowing them to enter into the process of construction of knowledge in an autonomous way. Aligned with this educational perspective, we have chosen as the theoretical basis for the definition of the game, the French philosopher Jacques Henriot. Henriot (1989) who understands that the notion of play is defined in the context of culture. The bibliographic research also offered us the possibility of knowing the ways of development and / or application of other gamification strategies.

Beyond the case studies described in the literature, verified in the bibliographic research, we also performed a similar analysis, interacting directly with other gamified systems destined for educational purposes, searching for already used strategies that can be applied for the purpose of this project and seeking innovations in relation to what already exists in the market, attending with greater specificity the demands of the context of the institution; We analyzed the following systems: Classcraft, Ascend Math, Kahoot, Perguntados and Qrânio.

As a methodological perspective for development, we are using the user-centered approach. To validate our conceptions with the users of the system, we work with

an incremental prototype, taking it to the test and making the necessary modifications from the observation and analysis of the data collected through interviews, questionnaires and focus groups. We conducted a survey moment, interviewing 2 teachers and 1 student in order to anticipate key questions, before testing the prototype.

The first test was focused on validating with students the concept of the system, its basic functionalities and its narrative hook. Therefore, we chose a basic Industrial Learning Course class during the Curricular Unit Programmable Logic Controls. We had the collaboration of the class teacher to produce questions in which we test the main functionalities of the system with the students. To collect data, we observe the use of the system in the classroom, filming the entire interaction of the students and eventually consulting them. After the last use of the prototype in the classroom during the first test, we applied a questionnaire to the students.

With the answers to the questionnaire, we made two focus groups with the objective of allowing a more complete evaluation of the system by the students, in which they could develop better their points of view and be more purposeful. We also conducted a semi-structured interview with the class teacher in order to verify its perception of how students reacted to the proposal and to raise requirements that would attend the teachers.

The Context

SENAI is a private non-profit institution with units located all over Brazil's capitals, whose mission is to serve the industry through professional training (qualification, technical or improvement), technical and technological services achievement and research and development focused on innovation. Founded in 1942, it has trained 64.7 million people preparing them for the job market.

SENAI has developed the SENAI Professional Education Methodology that includes from the definition of the Professional Profile with mapping of the necessary competences to attend a given occupation, definition of the curricular design going to the guidelines for teaching practice. In this way, from the analysis of the professional profile it is possible to realize the demands of the world of work by structuring them pedagogically into competences, deployed in capacities:

- technical skills: knowledge, procedures, technologies, standards
- management capacities: social (interpersonal relations), organizational (work context) and methodological (self-development-creativity, research, autonomy)

Capacities are grouped into curricular units, which compose the curricular design of the training. The teaching practice, in turn, breaks with the traditional view of teaching focused on the reproduction of contents and the passive condition of the student proposing a praxis aligned to the teaching by competence through learning situations.

"Within this Methodology, Learning Situations is understood as a set of actions that pedagogically planned promote significant learning through the use of Challenging Learning Strategies (problem situation, case study, project and applied research) and different teaching strategies (dialogue or mediated exposure, demonstration, guided study, technical visits, among others)."

SENAI Professional Education Methodology, in this perspective, is in line with the Kuenzer (2006) perception that understands vocational education beyond a qualification focused only on work practices but mainly on the articulation between the cognitive, affective and behavioral domains where the subject mobilizes his theoretical and tacit knowledge to solve problems. In this sense, it is based on the concept of competence, defended by Perrenoud (1999), as the capacity to mobilize knowledge and skills to solve a complex situation, overcoming the focus on simple assimilation of knowledge and the execution of a given task.

The gamification strategy, presented here, was conceived in an integrated way to the Methodology in order to potentiate the development by competence and to foment an innovative pedagogical practice that privileges an education focused on the logic of the interaction with significant and fun learning experiences. In this sense, it was fundamental to understand the characteristics of the students, seeking the creation of a gamified strategy adherent to their needs, preferences and their perceptions about the best way to learn. To do so, we analyzed a survey performed in one of the SENAI Units, Cetind, in the city Lauro de Freitas, with 207 technical students in the morning, afternoon and evening shifts between June and July 2016. The research contained 27 questions grouped into 7 parts: general

data, technologies and education, distance learning courses, smartphones, virtual reality, games and awards preferences.

From the data analysis, were created two student profiles composed by the combination means of the most frequent answers of the questionnaire questions. As described below:

Profile 01

Male, between 18 and 25 years old, single, with high school completed. Does not work at the moment and has access to the computer at home. Likes games and eventually plays using mainly his smartphone and the console. Play for fun, especially sports games and strategy games..

He is dissatisfied with the format of the classes, believes that technology can help learn and moderately believes that games can support learning, occasionally being inserted into the classroom as well as simulations, videos and animations. He never took a distance course, he thinks it can work, but he believes that in face-to-face course, learning is greater. He has a smartphone, uses it to do searches on the internet and would like to access educational content through it. He knows what Virtual Reality is and it should be used in the classroom. Prefers a job offer as a performance award.

Profile 02

Male, between 25 and 35 years old, married, with a technical course completed. Employee for 40 hours, with access to the computer at work. He does not like games and never plays them. He is satisfied with the format of the classes and believes that technologies such as simulation, animations and videos can collaborate for learning. He does not believe in the educational potential of games. He never took a distance course, he thinks it would not be useful and believes that in the presential course the learning is greater. It has a smartphone, uses it for internet searches and would like to access educational content through it. Do not know what virtual reality is. He prefers a full scholarship in courses as a performance awards.

The creation of these profiles potentiates the understanding of the target audience functioning, allowing the mechanics, scoring system and recognition to be

designed to meet their needs. Consequently, the gamification strategy is more likely to promote engagement and objectives achievement.

Theoretical Bases of Gamification Proposal

In this work, we adopted as a theoretical framework for our understanding of the game, the work of Henriot (1989), dialoguing with works of digital game researchers that Bonenfant's (2010) classifies as adoptants of a contemporary approach about games.

In Henriot's (1989) perspective, the game does not constitute as an object of concrete existence and despite the existence of words in different cultures that can be translated as game, no one can attest that different peoples have named the same object with these words. The game is, therefore, for Henriot (1989), the thinking about the game, it is constituted from the experience of a player, within a given socio-cultural context.

When analyzing the use of the term game (jeux) in his language, Henriot (1989) identifies three main meanings. Although the terms jeux have a different comprehensiveness from the way other cultures name phenomena that are usually translated for French with that term, Henriot's (1989) findings are significant for a cross-cultural perspective of the game. The first meaning of the term is related to the game material. This meaning of the term jeux in French is also present both in the Portuguese term jogo and in the term game in English when we use the term board game, for example, to refer to the material used to play.

The second meaning refers to the structure of the game, its system of rules, as when, for example, we say that it is not possible to make a certain movement in the chess game. The third meaning of the term jeux refers to the playful attitude adopted by the player, in English that meaning is best covered by the term play. Henriot notes that more than distinct meanings these three uses of the word denotes complementary meanings fundamental to understanding the play activity. It is in this sense that he affirms that the game happens in the relation of game and play, of the structure or game material signified by a way of using it. A chessboard is not a game if it is used as a door weight; on the other hand, an object that was not intended as a game can be interpreted as such and so it will be a game.

In the context of the game contemporary approach, the french researcher Sébastien Genvo argues that a video game is designed within certain conventions that try to convince the user that "this is a game" and invite him to play. Taking the terminology of rhetoric, Genvo (2014) calls ludic Ethos, this set of attributes with the function of persuading the player that a given object is a game. If the user is convinced that a given object is a game and accepting the invitation to play it is necessary that this object and / or system of rules is playable. The playability is the characteristic of a given material and its system of rules that allows the player to make the exercise of the possible, given certain contingencies (Genvo, 2014).

Henriot's notion of game (Henriot, 1989) and the importance of the ludic ethos and playability in game design for Genvo (2014) are fundamental to the conception of our gamification strategy. Gamification for us is as the process of making more playful and structured like a game an object initially not understood as a game. In this sense we align more with the perspective of Werbach (2014) that proposes the definition of gamification as "the process of making activities more *game-like*."

In our case, the proposal is to develop a strategy, based on a virtual platform that makes the educational process in technical education more similar to a game experience. Therefore, it is fundamental that the students associate the teaching-learning process supported in the platform to playful practices. And more than that, the environment must offer the player the means to express himself, to do the exercise of the possible within a set of rules that create contingencies.

A Journey to the Future: the Gamification Strategy

In order to develop our strategy, we needed to consider the profile of the students we wanted to achieve, the SENAI Professional Education Methodology and the game design and gamification we adopted. First, we specify the objectives of the strategy and then define the behaviors that it should stimulate in order to achieve the proposed objectives. We also considered the types of SENAI Professional Education Methodology capabilities.

Goals	Increase performance	Innovate teaching methodology	Increase student engagement	Increase the chances of getting a job
Behavior	Create and maintain study habits	Improve the skills required for your job		
Capabilities	Organizacional	Methodological	Social	Technical

Figure 1. Goals, Behaviors and Capabilities

Analyzing the two characters that we created from the research of the students profile, we realized that what approximated them was the search for a better professional future. The goals definition in terms of user experience was based in the conjunction of the perception that we had of the students from the definition of characters that represent them with behaviors that we want to stimulate to achieve the educational objectives of the strategy. In this way, it was defined that the experience should provide the constant search for a personal improvement focused on professional future.

Then we seek the most conducive kind of games to the creation of this experience. The game genre is a fundamental attribute in the construction of a ludic ethos and to create a strategy that approaches an already known genre would make our gamified environment more easily recognizable as an object that you could play. Digital Role Playing Games (RPG) are known for their experience focused on the constant upgrading of a playable character. The RPG genre was therefore quite adequate to our proposal. As the gamification strategy is aimed at about 10,000 students simultaneously and among the skills to be developed for all occupations are social capabilities, it would be even more appropriate to refer to Massively Multiplayer Online Role Playing Games (MMORPG)

Besides the game genre, another important attribute in the composition of a ludic ethos is the narrative genre. Some narrative genres such as high fantasy and science fiction are commonly associated with digital game contexts. With this perspective, we transform the aspiration to build a better professional future in a journey to a better future. Therefore, we adopted the narrative genre of science fiction, with the hypothesis that students of courses directed to industry would be interested in universes focused on technology.

At this point we come to the High Concept of the gamified strategy:

> High concept: Gamified strategy focused on presential teaching of the SENAI technical course, it seeks to engage students through a fun experience with elements of an MMORPG, strengthening their sense of community, providing them with a mapping of their performance and enabling them to improve the necessary abilities for their future occupation from tasks, quizes, challenges and games. (SENAI-ITED, 2017)

With this concept in view, we continue to develop the proposal of structuring the virtual environment of gamification from the metaphor of a journey to a better future. On this trip, the students are inside a ship, their class, and travel together to the future that they build. As a class, students are part of the same crew that achieves the best results with collaboration. Individually, they can make choices related to driving strategies for their future. The teachers present themselves as flight controllers, in a metaphor for the mediation of the learning process.

In order to build the experience described in abstract terms, we have developed the mechanics of the gamification strategy. "Game mechanics are the verbs of a game. They are the basic processes that drive the action foward and generate player engagement. "(Werbach & Hunter, 2015, position 284 from 536). The table below shows core mechanics groups related with learning capabilities and narrative aspects:

Core Mechanics	Individual strategies	Collective strategies	Duel	Challenge	Play games
Capabilities	Methodological, organizational and social	Social skills	Technical	Technical	Methodological and organizational
Narrative aspects	Control panel that unlocks talents to assist in a journey to a better future	Ship control panel	Friendly disputes between two travelers for training	Individual or collective recognition missions. In that they disarm bombs, unraveling puzzles and unlocking portals of acceleration for a better future.	Training the brain for the functions necessary for good performance

Figure 2. Core Mechanics, Capabilities, Narrative aspects

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The Beginning of Iteration Cycles

We began the first phase of testing with a probing step which we conducted semi-structured interviews with one egress student and two teachers. This stage was fundamental to initiate a process of approximation with the universe of the subjects studied.

The first survey interview was conducted with a student graduating from the course of Oil and Gas. This student was chosen for having participated in a team that did in his Integrator Project, a game as didactic resource for technical education. It was someone, therefore, who thought of playfulness as a solution to improve the experience of his course. Throughout the survey with the student, we identified that some teachers already used gamified approaches with good results in the student's perception; we identified the gamified systems with which the researched subject and his group had contact during the course and some gambling strategies without using the digital resources with which the class interacted

The survey with the student allowed us to ratify the paths already established for development and, let us think about new requirements. Some requirements were closely linked to the traditional logic of teaching: the demand for content (videos and handouts) and for questionnaires, for example, or the expectation that the activities would be evaluated in terms of grades. We chose not to have content repositories on the platform, although teachers and students can share videos and images in a timeline. We have decided that the platform will be a place where the student always actively positions himself in relation to learning. The questionnaires, in a way, were already contemplated, adopted contextually in the narrative and with elements of play in two types of mechanics: quizzes and battles. Given the requirements that have emerged since this phase of development we also seek to create scores and rewards that recognize the students' effort and not just their performance. The creation of a narrative in which the students were represented was a requirement at that time and was reinforced in other stages of the research. The proposed narrative of a journey to a better future apparently served part of this desire, but there are expectations that the narrative will dialogue directly with the course of each student. Viable ways of meeting this requirement are being studied.

The survey with the teacher brought relevant information to development. We interviewed two teachers, the first one, with more than fifteen years of institution and little familiarity with the digital environment and gamification; The second teacher with greater familiarity with the digital medium, but without contact with gamification practices. This second teacher would be the one who would teach the classes which we would test the prototype for the first time. At this point, we realize that vicarious pride (McGonigal, 2011) is the fundamental motivator of the teacher. Teachers have shown that they feel rewarded in their profession by seeing the personal and professional development of their students and alumni. We reinforce, therefore, the idea that we needed the system to recognize the teacher's effort to guide the student towards a better future by assigning him a role in this narrative. We then defined that teachers would be represented as flight controllers in student travel, in a metaphor for the mediation process.

We found in these interviews fundamental information so that we could advance the interface of the system with which the teacher would contact, some of the requirements found in this survey would be fundamental even for the application of the system in the first tests. Among these were the need for quizes and battles to contain images that are fundamental to the issues of some Curricular Units and this was the case of the discipline that we would test the first prototype. Not having images in the questions would significantly limit the use of the platform in the first test in the classroom, so that we prioritize the implementation of this requirement.

We used the system for the first time in a class of Programmable Logic Controllers in an Industrial Basic Learning Course with 18 students. At this point, the main interest of the research was to validate the main mechanics of the system, besides the general line of the narrative. We then asked the teacher to create questions for the mechanics available at the time and we registered them ourselves in the system, since the interface for the teacher was not yet ready at this point in development. We promoted two tests of the platform with the students during class time, with the material completely prepared by the teacher. In the first test we worked with questions related to the fundamental concepts of the discipline adapted to the formats of the mechanics of the platform. We observed each of the mechanics in practice, the enthusiasm was evident, although the system still presented flaws.

During the test, students explored the platform, used the timeline to talk, interacted outside the platform talking and collaborating to resolve issues and play. In the second meeting, battles, already with images, were used for more complex issues involving technical capabilities related to programmable logic controlers. Even during battles, which is the mechanics of strategy with a more competitive character, the students remained collaborating and discussing the issues. The teacher also registered a mission to the students create a PLC. The students did not do it, they also did not notice the talents and badges they won. The notification and feedback system, which was not yet ready, therefore became a priority for the next test.

After the test in the classroom we applied a questionnaire with the students. The questionnaire was structured in 5 parts. The first part, with 6 questions, was dedicated to understanding the data of the searched subjects. These data were useful to us to verify if this group had profile similar to the general student population of the institution and to understand its access to the technology and its contact with games.
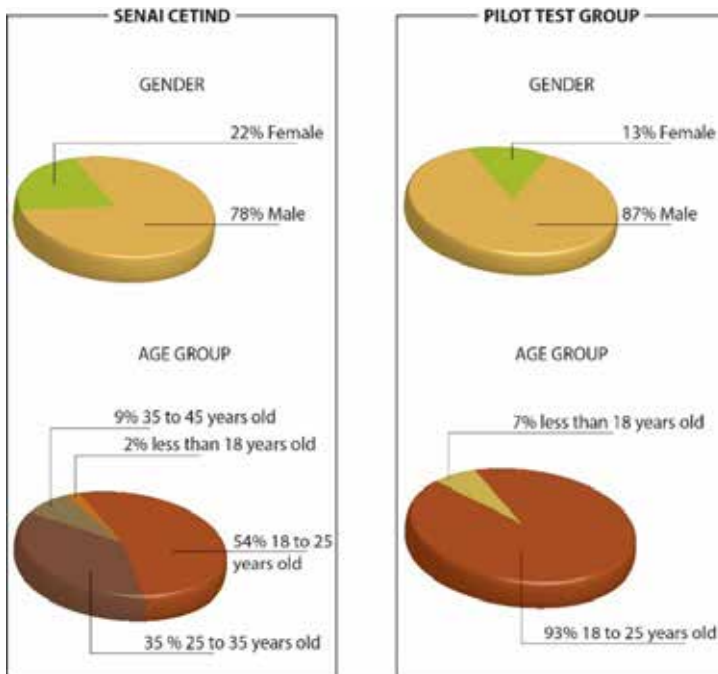

Figure 3. Gender and Age Group

We found that in the first class we tested the platform, there was a higher percentage of female students in relation to the total unit. Also in this group were not represented groups with age groups above 25 years. Although we tested the system in a group whose age group was the most present in the institution, at this point, we defined that, later tests, should be performed in classes with a more diverse population. It was also defined that, afterwards, we would test the system in night classes, since these groups concentrate the older and professional age groups already inserted in the job market.
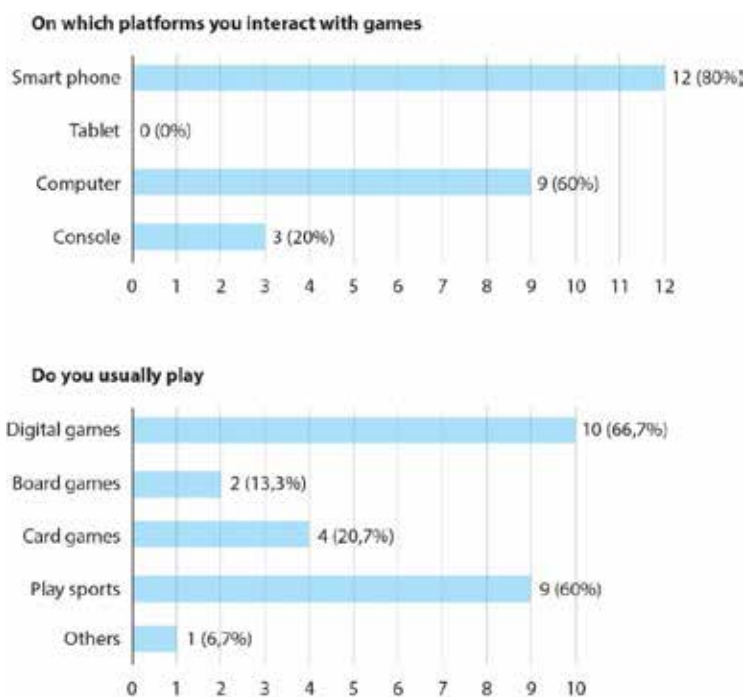
On which platforms you interact with games

Platform	Value
Smart phone	12 (80%)
Tablet	0 (0%)
Computer	9 (60%)
Console	3 (20%)

Do you usually play

Option	Value
Digital games	10 (66,7%)
Board games	2 (13,3%)
Card games	4 (20,7%)
Play sports	9 (60%)
Others	1 (6,7%)

Figure 4. Games and plataforms

We noticed that digital games are the most popular among students in the class, and the platform where they played most is the smartphone, followed by the computer; both platforms for which we prepare the platform. With these data, the need to maintain and reinforce the development approach that prioritizes the adaptation of the platform to various screen sizes and performance capacities, considering the diversity of mobile devices available on the market today, is evident.

The second part of the questionnaire, with 7 questions, was dedicated to identifying their familiarity with gamification and their perception of the relationship between gamification and learning and their interest in the possibility of to gamify other disciplines. We verified that they believed in the strategy of gamification to potentiate in their learning and that they believed that the test itself had already made a difference in this process. In this second question, seven of the 15 students who answered the questionnaire were positioned in a neutral way, which was expected from the punctual character of the intervention in the group for research purposes.

The use of gamefication can enhance learning

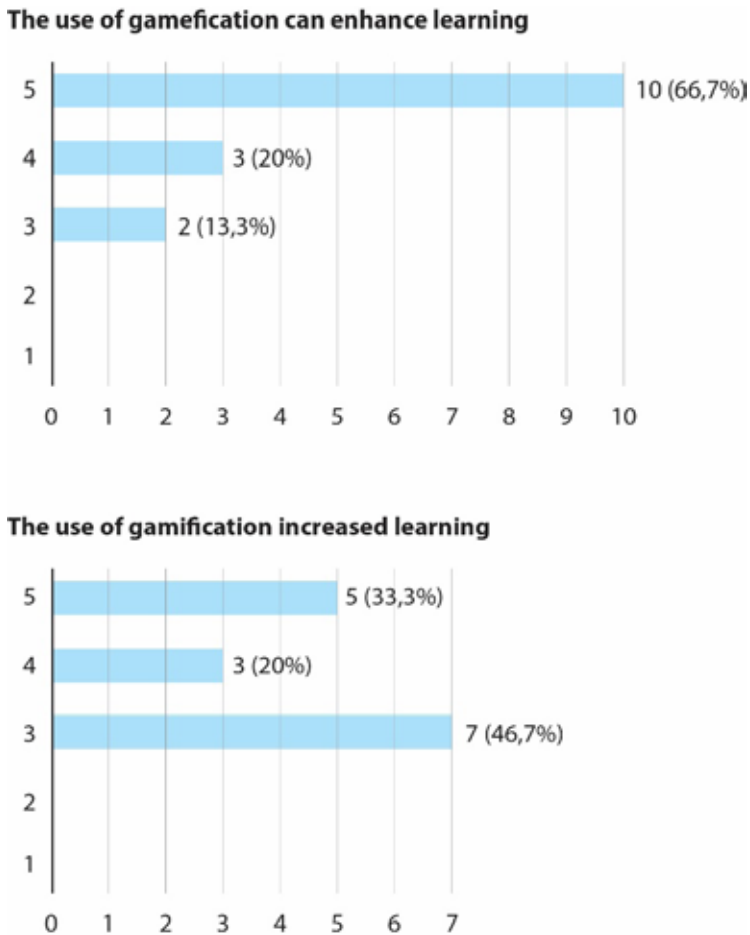**The use of gamification increased learning**

Figure 5. Gamification and Learning

The third part of the questionnaire, with 20 questions, was based on the Game-Flow framework (Sweetser & Wyeth, 2005), which adapts to the flow theory of the psychologist Mihaly Csíkszentmihályi for the heuristic evaluation of games. We use Gameflow to create statements that students could agree or disagree on the likert scale about their concentration, challenge, immersion, their perception of ability, control, goal perception, feedback perception, and immersion. Social aspects were observed during the interaction with the platform.We had also as a reference a similar use of this framework to evaluate a serious game (Ribeiro, Cayres, Silva & Moraes, 2015). Below the results of some questions of this part of the questionnaire:
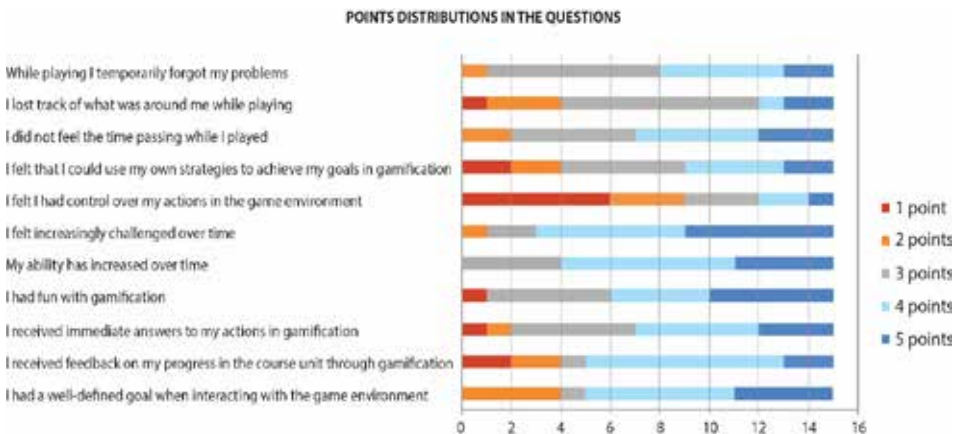

Figure 6. Gameflow questions

Although the system had a provisional interface and its mechanics were still not fully adjusted and implemented, the strategy was able to engage the students to the point where they felt immersed in the activity. We were able to note the degree of immersion of the students also through observation. This degree of immersion was presented as a first indication that the functionalities of the system and the fictional context were able to establish effective communication with the student.

Control-related indexes were satisfactory for this point of development, but we intend to expand it when we have the platform running optimally.

Although we created a system of progression in levels based on the effort and the performance of the students, we had not yet created a system of progression of the difficulty of the presented missions. The teacher, however, has prepared more

challenging questions in a progressive way. What evidenced the importance of the process authorship of the teacher in their pedagogical practice for the perception of the platform by the students.

As for the skills of the students, we verified that the system is intuitive and allows for constant improvement. Nonetheless, as we raise challenge levels and add more resources we will need to be mindful of keeping the system easy to use, perhaps by presenting resources progressively over the course of the semester.

Parallel to these data, we verified during the observation in the classroom and confirmed in the focus groups that, part of the students did not notice some functionalities of the system, which we attribute to the incompleteness of the feedback system. Not by chance this is the lowest index.

The absence of a complete system of notifications and feedbacks has also impacted student's perception of goals, so we intend to improve these indexes in future versions.

The number of students who maintains their sustained attention during interaction with the system is greater than those who believe that the system has elements that attract their attention. This is an interesting result for the point of development that we performed this first test, because we had not ready yet all the resources available to get the attention of a student familiar with digital technologies and especially with the games, but at the same time, even without all these resources the main mechanics were able to keep the attention of the students.

The fourth part of the questionnaire, with 10 questions, sought to validate the specific paths of design and narrative. We validated the idea of constructing a narrative about a journey into the future and validated choices related to the interface.

The fifth and final part of the questionnaire with 7 open questions was intended to open space for students to evaluate the system more freely, make criticisms, suggestions and propose functionalities. In the open questions the good acceptance of the platform was reinforced and new requirements were elicited. The students demanded at this point of development, mainly that: the system was faster; that there was some kind of chat, beyond the timeline through which they can communicate; that the games were more diversified; that there was a greater variety of types of enigmas.

Finally, we conducted two focal groups with the class in order to allow students to express themselves more freely so we could collect more complex data. At this point, we could discuss more deeply narrative and interface aspects, identifying which paths for them would be most interesting. We probed the receptivity to the idea that the interface of the system was represented as the panel of the ship where the trip is made for the future, with an excellent response. The students were enthusiastic and also suggested that the character who would guide their course was a hologram sent from the future, instead of the assistant robot we had used as a placeholder. We also probe their interests for specific awards that would motivate them. It was confirmed the interest for scholarships in courses of qualification in the own institution, "differentiated technical visits" in companies that aspire to work, but what seemed to them more motivating was an internship in the own institution. This last possibility raised the question of a possible exarcebated competition among the colleagues, which made us reflect on the possibility of reinforcing the collaborative activities, reinforcing the idea that what is being proposed is a collective journey and that all are in the same nave towards a better future.

Conclusion

Throughout this work we present the research about the pre-production of the strategy of gamification of professional education of the SENAI DR-BA. This strategy constitutes a unique initiative for the vocational training of a regional department of the institution, with a target of reaching about 10,000 students a year. From a methodological approach that went through similar analysis, probing and interviews with teachers and students, tests, questionnaires and focal groups with students, we arrived at a concept for platform, a list of requirements and the validation of the main mechanics, of the narrative and interface paths, in addition to anticipating possible problems and thinking of solutions to solve them.

Because of its broad scope, it is possible to identify in the project a tension between the need for the strategy to be generic enough so that it can attend the various courses of the institution and the student's demand that the initiative connect directly with its course. The theme of the trip to the future, in a way, connects with all the target public, who is in the institution seeking a better future related to its position in the labor market. In any case, we will make the effort to develop

narrative and visual aspects that are customized according to the course in which each student is enrolled.

We seek to meet most of the requirements we elicited at this stage of the research in the conception of Gamifica SENAI. Part of the requirements, however, raised questions about the very nature of the project. We have found that students and teachers often set their requirements from references in content teaching practices that can reduce the strategy to an instrumental perspective. We need, therefore, to maintain alignment with the institution's teaching methodology, to reinforce the approach based on the creation of learning situations.

At the time of writing, we are already in the production phase and a second phase of testing has already started. The focus of this second moment of evaluation are the ways that teachers take ownership of the gamification strategy. The analysis of the data collected in the next stages of development are presented as possibilities for future publications.

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