

TEACH-IT

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ABSTRACT

The following paper summarizes all the research conducted for a project focused on providing teaching competencies to undergraduate professors without a background in pedagogy, so that the teaching process towards students is less stressful and satisfying.

The high-fidelity prototype "TEACH-IT" will be presented, a project based on the use of a digital application with physical cards to complement the experience. Its objective is to gather several teachers to start a gaming session, where they can see various student profiles, situations with them, and reflect on a response.

To reach this prototype, theoretical research had to be conducted, methods of approach used to understand the teachers and their ailments, develop a proposal based on design principles and methodologies, and finally prototype versions from low-fidelity on paper and pencil to high-fidelity with 3D animations and printed cards.

General Terms

Education. Design.

Keywords

Design thinking, teaching, teacher, user, methodology, student, competencies, critical incident.

1. INTRODUCTION

Being a teacher is a challenging profession; the constant interaction with students requires teaching competencies to be applied consistently to solve problems or critical incidents inside or outside the classroom, based on knowledge, skills, values, attitudes, and principles.

However, the preparation to become a competent teacher is almost nonexistent. A new teacher may start teaching classes relying solely on their previous experiences as a student to conduct the class without any pedagogical education.

That's why difficulties can arise if one is not properly prepared to deal with students. Not only is each person different, but each student can also change throughout the duration of the semester or the year. This can lead to having to solve recurring problems, unique ones, and others that are very specific, causing the new teacher to feel incompetent, incapable of conducting a class, or experiencing insecurity as a professional.

1.0.1 Problem statement

"University professors often lack a pedagogical background." (Tamara P. Caballero, 2024).

Teaching is extremely important for the continuous development of society. We can't stop teaching and learning, but often, learning how to teach is overlooked.

As a result, undergraduate professors often lack education in pedagogy and need to deal with hundreds of students, each one different. They must adapt to university rules and change their mode of communication to effectively teach a subject.

This leads to a series of teacher pains such as concern about maintaining the institution's reputation, frustration due to lack of commitment, the need to adapt teaching to personal difficulties, and discouragement due to lack of interaction in the classroom.

Therefore, the main problem is: The lack of pedagogical tools for managing critical incidents affects the training of both experienced teachers and those newly integrated into the teaching field. The limited spaces for reflection with these tools make it

difficult for teachers to create an effective retrospective that addresses issues inside and outside the classroom with students.

1.0.1 Justification

Inside the classroom, there are many profiles and situations. Teachers without pedagogical education are not properly prepared to deal with everything. That's why this topic is important: to create competent teachers and make their classes enjoyable and engaging for students.

A competent teacher can motivate students, support them in their personal interests and different needs. But a teacher who doesn't know how to handle these situations may feel incompetent, incapable of conducting a class, or insecure in their profession. This can lead to situations of stress, decline, and the feeling of never being up to par as a teacher, professional, and person.

2. FRAMEWORK OF CONCEPTS

A framework of concepts serves as the foundation to substantiate the entire project, encompassing organization, processes, theoretical concepts, and design methodologies. In this section, fundamental concepts for project development and work processes are presented first, followed by a theoretical framework to justify the topic and a design framework to properly support the creation of a product.

2.0.1 Agile

“The Agile methodology uses iterations to complete project work. Instead of executing the entire project all at once, an Agile approach allows project teams to complete work in smaller sections.

These iterations, known as sprints, give teams the necessary flexibility to work on parts of a project, review successes and failures, and update their project plan accordingly. It also allows project managers, product owners, and software developers to introduce improvements and address issues as soon as possible.” (MIRO, 2024).

Agile allowed the team to maintain a smooth process throughout the research by organizing objectives and goals with sprints, enabling the achievement of all the necessary steps for project completion.

2.1 Theoretical framework

Secondary research is the starting point and an essential resource for professionals to understand the issue, which in this case began with a series of topics that needed to be explored:

- Understanding the limitations faced by design students at Universidad Iberoamericana Puebla when generating new ideas..
- How students feel when dealing with creative block and what actions they take in response.

For this reason, secondary research was divided into three parts: Creativity, Teaching Methodologies, and Gamification.

2.1.1 Creativity

“Creativity is about thinking of new things. Innovation is about doing new things. Ideas are useless unless they are used. Their value is proven through implementation.” - Theodore Levitt

Creativity constitutes a fundamental dimension of human activity. It thrives where there is dialogue between cultures, in a free, open, and diverse environment where there is equality among different social groups and between men and women. It requires respect and legal protection for the results of creative and intellectual work. Creativity lies at the very heart of culture, design, and innovation; everyone has the right to use their creative talent. More than ever, the future of Europe depends on the imagination and creativity of its citizens. Adriá, F. & Mariscal, J. (2009). *Manifiesto para la Creatividad y la Innovación en Europa*. Barcelona, España.

2.1.2 Teaching methodologies

Traditional Approach:

Characteristics: In the traditional approach, the teacher plays a fundamental role in directly transmitting information to the student. The classroom is characterized by the predominant presence of the teacher and their expository style in imparting knowledge.

Advantages: This approach provides a clear and familiar structure for students, allowing for covering a large amount of content in a short period of time.

Challenges: Some students may find this approach boring and uninteractive. Additionally, it may limit the development of critical thinking and creativity skills.

Project-Based Learning:

Characteristics: An approach that stands out for its practical and active nature. In it, students immerse themselves in projects and tasks that require them to apply skills and knowledge in real-life situations.

Advantages: This methodology promotes active student participation, giving them the opportunity to develop practical and transferable skills. Additionally, it fosters values such as teamwork, autonomy, and creativity.

Challenges: Its implementation requires careful planning by the teacher and may pose a greater challenge when it comes to assessment compared to more conventional approaches. Likewise, its efficiency in terms of covering content may be lower.

Collaborative Learning:

Characteristics: An approach in which students collaborate in small groups to achieve common learning objectives. This fosters mutual collaboration, communication, and support among its members effectively.

Advantages: The promotion of social and emotional skills such as teamwork and empathy. Additionally, it can increase

student motivation and engagement by providing them with a sense of belonging and community.

Challenges: Its implementation requires careful management by the teacher to ensure equity and participation of all group members. It may also present challenges in large classrooms or with students who have difficulty working in teams.

Problem-Based Learning:

Characteristics: The Problem-Based Learning approach involves students in solving complex problems that require research and analysis. Instead of simply learning concepts, it focuses on the learning process and the search for solutions.

Advantages: It strengthens critical thinking, problem-solving, and student autonomy, leading to a deeper and more enduring understanding of concepts and principles.

Challenges: It can be challenging for students who are not accustomed to this type of approach. Additionally, it requires careful planning by the teacher to ensure that the problems posed are relevant and suitable for the students' level..

2.2 Design Framework

2.2.1 Design Thinking

“Design thinking is essentially a problem-solving framework that utilizes a defined five-step process to enable the effective development of new products or services.” (MIRO, 2024).

The five steps are:

1. Empathize with the user: It means deeply understanding the pains, needs, and concerns of the person being researched.

2. Define the problem: It means detailing exactly the situation to be resolved based on all the research conducted.

3. Ideation of a proposal: It means proposing a concept that helps solve such a problem.

4. Prototype the proposal: It means creating the product in various stages of detail to verify its practicality in real life.

5. User testing: It goes hand in hand with the prototyping phase to make iterations, include what works, and discard what doesn't.

This model is the basis used for the entire development process to achieve an effective and practical product.

2.2.2 Gamification

Gamification, a term that has gained prominence in recent years, represents an intriguing convergence between the fun of games and the seriousness of various contexts, from educational to business environments. This innovative approach uses elements found in games, such as competition, challenges, and rewards, to motivate and engage people in activities that go beyond the realm of entertainment. Next, we will analyze the transformative power of gamification in a wide range of areas and its impact on modern society.

1. Motivation and Engagement:

One of the main strengths of gamification lies in its ability to effectively motivate and engage people. By incorporating playful elements such as levels, points, and achievements, a stimulating environment is created that drives active participation and persistence in achieving goals. This intrinsic motivation generated by gamification can be applied in various contexts, from the classroom to the workplace, to enhance performance and productivity.

2. Learning and Development:

In the educational realm, gamification has proven to be a powerful tool for fostering interactive and meaningful learning. By making the teaching process a more dynamic and entertaining experience, students' interest is stimulated, fostering autonomous and self-directed learning. Educational games can address a wide range of topics and skills, from mathematics and sciences to social and emotional skills, thus providing a versatile approach to the holistic development of students.

3. Behavior Change:

In the health and wellness field, gamification has been successful in promoting positive behavior changes. Through the use of techniques such as exercise challenges, tracking healthy habits, and rewarding goal achievement, applications and devices incorporating gamification have been effective in motivating people to adopt more active and healthy lifestyles. This application of gamification not only has the potential to improve individual health but also to create a positive impact on the community and society as a whole.

4. Collaboration and Community:

Gamification can also drive collaboration and community building both online and offline. By using group challenges, friendly competitions, and shared reward systems, teamwork is encouraged, and social relationships among members are reinforced. This is especially important in virtual environments, as gamification can contribute to establishing a sense of belonging and connection in geographically dispersed communities.

5. Innovation and Creativity:

Finally, gamification emerges as an essential driver for stimulating innovation and inventiveness. By promoting a playful and experimental approach to solving challenges and generating concepts, divergent thinking is fostered, and the creation of novel solutions is propelled. This tactic can be applied in the business world to drive internal changes and product development, as well as in the educational context to nurture creativity and critical thinking in students.

Application of Gamification in School Classrooms:

The use of gamification proves to be a powerful strategy to increase student participation and motivation. By applying elements and techniques typical of games in teaching, a more entertaining and engaging dynamic is achieved that encourages students to actively engage in their learning.

Transformation of Learning Experience:

Gamification has the potential to transform the traditional learning experience into a more interactive and engaging one. By incorporating elements such as challenges, competitions, and rewards into teaching activities, a more dynamic and collaborative classroom environment is achieved. Additionally, students experience a sense of achievement and progress as they advance through different levels or stages.

3. PRIMARY RESEARCH

Primary research serves to collect new and original data on a specific topic. With it, we obtain specific information that is not available in secondary sources, such as books or academic articles. We better understand the needs and preferences of a target audience and solve problems by making informed decisions. This leads to obtaining deeper insights for the research.

In this first part of the research, the following approaches were conducted:

1. Fly on the Wall observation method with a group of 14 students belonging to the "Digital and Traditional Illustration" interest group.
2. Focus Group with three students from different semesters of the DIA program.
3. Field research with "random" students within the area of DADA and IDIT 2.0.
4. Five interviews with professors (primary users) of the Interaction Design and Animation Bachelor's Degree at Universidad Iberoamericana Puebla. The questions were divided into three categories: Personal motivations, classes, and creativity.
5. Interview with an expert in pedagogy who graduated from educational processes at Universidad Iberoamericana Puebla and is a teacher of education at the Pontifical Catholic University of Chile.

3.1 Approaching methods

What is Fly on the Wall about?

This method is an observational technique that allows researchers to collect information by observing and listening. It is usually used to obtain information about people, environments, interactions, and objects in space. For this method to be successful, it is crucial that the researchers are not discovered in order to avoid distracting the participants.

The results were quite interesting. The first student surveyed, when asked the question "What complications and successes have you had working in this field?", mentioned an issue with a teacher. From here, approximately 70% of the students also complained about teachers and their way of giving feedback.



Figure 1. The users raised their hands to introduce themselves.



Figure 2. Recommendations of artists were written down on the whiteboard.

It was concluded that the classroom spaces are part of an ecosystem that fosters communication and learning, including the freedom that students have to pay attention or not. In this methodology, it was observed that IDIT 2.0, being a spacious place with movable tables and chairs, whiteboards, plants, primary colors, and abundant lighting, creates an atmosphere of trust where most users could be transparent and share personal things. Therefore, the role of the teacher is not limited to the transmission of knowledge; their influence on the student's development goes much further, impacting both their interest in the subject and their personal formation.

What is a Focus Group about?

This method aims to analyze and capture feedback on various topics such as products, services, and marketing campaigns of a company. Focus group meetings can last between thirty minutes and an hour and a half, where the moderator's role is to list the questions and share them with the group so that everyone can respond. These questions can range from ten to fifteen, with the main purpose being for each participant to express their ideas and opinions.

The Focus Group was selected because it would be a great opportunity for users to express themselves. As it focuses on the classroom and the importance of maintaining good communication within it, three students from the Interaction Design and Animation program of different semesters were gathered (two from the first semester and one from the eighth), facilitating communication by having shared experiences and even providing a guide to what they can expect in the future of the degree. As an additional element, they were provided with a sheet

of paper and colors to see what they would draw during the session.



Figure 3. Picture at the start of the method. Denisse, Camila y Joaquín.

Many assumptions were found, but the most important ones are: Learning experience in a class is highly influenced by the teacher's passion and group dynamics. Creating an effective learning community requires freedom and flexibility. Active participation of all students should be encouraged, valuing their different perspectives and experiences. Feedback should be regular, constructive, and specific, both from the teacher and peers.

What is Field Research about?

Field research is the collection of new data from primary sources for a specific purpose. It is a qualitative data collection method aimed at understanding, observing, and interacting with people in their natural environment.

After presenting the progress and receiving feedback from the teachers and panelists, it was recommended not to limit the project to the Interaction Design and Animation program. For this reason, the DADA (Department of Art, Design, and Architecture) became the new source of data collection.

The process began with an exploration of the Universidad Iberoamericana Puebla, posing three fundamental questions about the interaction between the teacher and the student, with the aim of obtaining a detailed understanding from the perspective of the students, who act as secondary users.

It is clear that the difference between biomedical students and other careers further from design is that they have difficulties in creating community and breaking the ice between teacher and student. Nevertheless, many coincidences were found when asking them about the techniques that teachers use to break the ice and create community, such as: sharing personal experiences, asking students about their interests, and forming teams in the first days of classes.

Something that seemed extremely interesting was when asking the students if they were willing to answer some questions about the interaction between teachers and students, most of them responded "now they will listen to us" while clenching their fist as a sign of dissatisfaction or protest. Without a doubt, this field research clarified that students and teachers need a tool to help them understand each other better.

3.2 User interview

Interviews can be used to gather data for research or a project. They allow obtaining first-hand information from the people being studied. Thanks to the "Fly on the Wall" methodology presented earlier, it was understood that there are two types of users: Primary (teachers) and Secondary (students).

After addressing the frustrations and difficulties expressed by the students, a set of questions was designed for both parties involved, which pose more elaborate questions with the purpose of obtaining detailed answers and practical solutions.

First, interviews were conducted with the primary user (teachers), where Professor Agustín Fest, by opening up and sharing his frustrations within the classroom, made it clear that the key to being a good teacher is adapting to the contexts, backgrounds, and needs of his students. Therefore, it is important to let students see that teachers can also have problems every day, which implies that we must be more empathetic and understanding. Finally, he shared that the methodology that has served him the most is not giving homework; he prefers his students to focus all their attention in the classroom before thinking about what they will take home.

Likewise, Professor Juan Meza proposes a quite innovative and different perspective on education. Collaboration in achieving goals is of vital importance in educational environments related to art. Young people have diverse perspectives and approaches that lead to different problems that need to be addressed in a specific way. Something that motivates and helps students is interacting with others to achieve their goals. Creating a close relationship with their teachers seems to boost their creativity and motivations inside and outside the classroom.

Finally, as a primary user, the interview with Professor Juan Rodríguez reveals his pedagogical approach focused on the visual aspect to teach programming, highlighting the importance of connecting with students from early stages through visual tools. Rodríguez emphasizes the individuality of each person in learning, recognizing the influence of various factors such as mood and environment.

4. PROBLEM DEFINITION

With all the gathered information, it's necessary to create frameworks to understand the problem situation and formulate a definition that allows for the correct solution with the appropriate product. For this purpose, several stages are involved, including categorizing information, creating maps to understand the user's journey and emotions, and also crafting fictional personas that help focus the project on their pains and scenarios. Finally, insights are derived from this process.

4.1 Insights

Insights are insightful discoveries that allow for a better understanding of a problem or situation. They are non-obvious ideas obtained by analyzing and interpreting data from various sources such as surveys, interviews, focus groups, etc.

In this case, the Insights were as follows:

1. Catharsis process in teaching: Teaching is a highly emotional job where teachers may undergo a catharsis process when facing problems and complaints. This suggests that emotions play a crucial role in the teacher's classroom experience and can influence their approach to addressing critical incidents.

2. Bias in teacher evaluations: Teacher evaluations can be biased and may not fully reflect the work done by teachers. This suggests the need to review evaluation criteria and ensure they address all areas of teaching performance fairly and comprehensively.

3. Gamification tools: The scarcity of gamification tools for university professors highlights an opportunity to expand and diversify teacher training strategies. This limitation hinders the adaptation of educational methods to the needs of students.

5. IDEATION

To carry out this proposal, primary research was one of the fundamental parts because without interviews with primary users (university professors) and secondary users (university students), the project's issues could not have been addressed in time. These issues initially revolved around creative blockage and lack of communication between students and professors.

For this reason, it was concluded that the best way to solve the differences between these two user groups would be the creation of a board game that encourages professors to empathize more with their students. This game is designed to be played only among university faculty, as they are the backbone of a class and what keeps a student attentive or not. It is believed that if a product can be developed to promote interaction by solving student problems presented in the form of cards, professors can share their experiences and encourage reflection on what they are doing right or wrong.



Figure 4. Conceptual screen.

The proposal has the potential to evolve to the extent that it could be useful not only for the Universidad Iberoamericana Puebla but also for all national universities that are concerned with maintaining good communication with their teachers. Therefore, they might implement tools that could be useful for them.

6. Prototyping (Low & Medium)

"A prototype serves as a tangible representation of a design concept, allowing designers to bring their ideas to life and test

them practically during the research and design phase." (MIRO, 2024).

The prototype is the final phase of the project. It begins with a low-fidelity prototype, which can be created on paper with pencil to discover issues and successes of the proposal. Then, it progresses to the medium-fidelity prototype, where many changes are iterated upon, and overall prototyping quality is improved. Finally, it culminates with the high-fidelity prototype, where the project only requires minor changes before it can be released as a final product.

6.1 Low-fidelity prototype

The low-fidelity prototyping phase involved three versions of the same prototype. Being entirely in pencil and paper allowed the team to make many iterations and tests to reach an initial idea of the product.

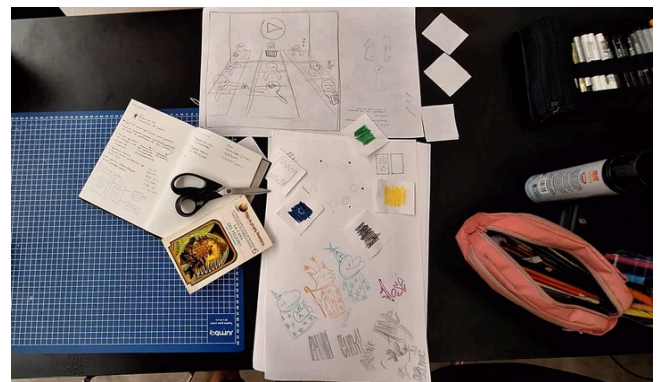


Figure 5. Sketches of first prototype.

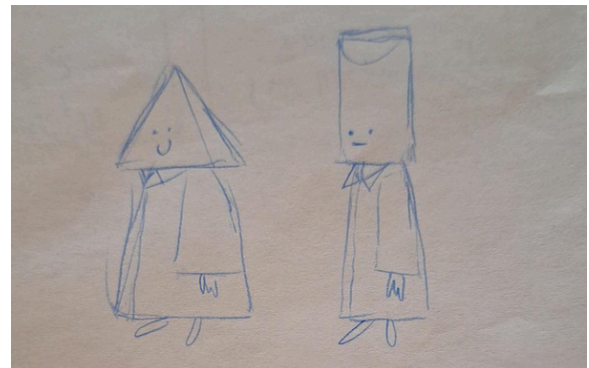


Figure 6. Sketch of students.

It was learned that a game based on the competencies created by the university could be developed to promote a more reflective environment filled with feedback for primary users (university professors).

Additionally, more low-fidelity prototypes were needed to find new design opportunities, so two additional low-fidelity prototypes were created.

For the second low-fidelity prototype, the focus was on the freedom that teachers would have to address student issues

within the classroom. For this reason, it was based on a game called "Betrayal at the House of the Hill," which involves advancing through random map pieces in a haunted mansion while various modifiers come into play, altering the game for better or worse. The purpose of this prototype was to ensure that teachers did not lose students while debating whether their response was correct or not.

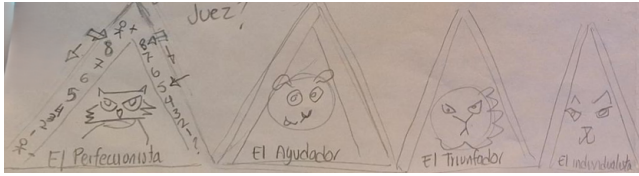


Figure 7. Player identification cards.

The testing of this prototype helped decide on mechanics such as the necessity of debates for the project, as well as the handling of individual students for better control during the game and to accommodate students in their seats.

Finally, in the low-fidelity prototypes, the third iteration aimed to explore the creation of a character named "Franky" based on the user's good or bad decisions regarding their students, so that at the end of the game, a type of teacher would have been created based on the results.

Tests were conducted with Professor Agustín Fest, who provided certain comments and recommendations such as: Nobody knows what the correct answers are. The teacher no longer answers questions; they solve problems. Simplify the number of students. The game should clearly define the students.



Figura 8. Low-fidelity prototype user tests.

Absolutely, this stage of trial and error was full of new opportunities. Moving from a topic of creative blockage to a project focused on teaching competencies to teachers, these low-fidelity tests were crucial for defining the path of the proposal and its future as a project that helps future and current educators.

6.2 Medium-fidelity prototype

With the low-fidelity prototypes, many things were learned, such as removing the "Franky" mechanic and making the base a digital platform with analog cards as support.

It was decided that the best way to present student issues to teachers would be through physical cards. This is because it facilitates reading and allows the card to be passed to all

participating teachers. These issues were inspired by the work of the Spanish educator Carles Monereo on "Teacher Training and Critical Incidents," which are unexpected situations that occur with students in university classrooms. These situations range from dissatisfaction with a poor grade to students who disrupt class order with their behavior.



Figure 9. Problematic cards with logo at the reverse.

Each of the cards presents a personalized issue for each student within the board, with titles such as: The Antisocial, The Justifier, The Socialite, The Procrastinator, The Hard Worker, The Sleeper, The Joker, The Prodigy, The Leader, The Philanthropist, The Self-taught, The Rebel, The Influenciable, The Perfectionist, and finally, The Brainiac.

In this part of the game, the students will be placed in their respective seats. The arrangement of the students within the game is based on how we perceive these types of students when we take classes. Additionally, within this screen, the teachers will have an instruction in the upper right corner, indicating that they can click on the students to learn more about them and that when they are ready, they can press the start button, activating a five-minute timer. This time is provided for everyone to read the issue card, the current teacher to propose a solution, and for all teachers to decide which positive aspects to vote for.

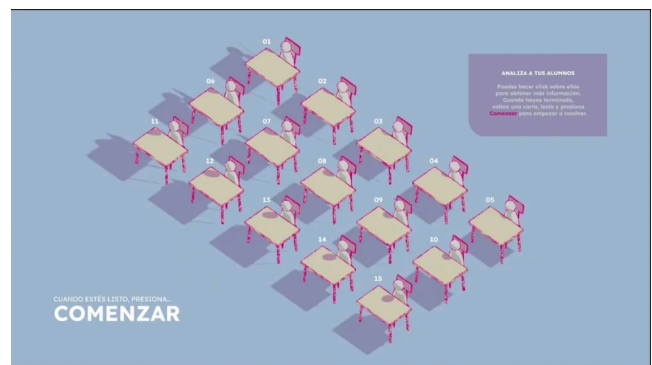


Figure 10. Medium-fidelity classroom.

Finally, the teachers can open the points meter from their phones, which we have adapted to the competencies of the

Jesuit teacher profile. They will have to distribute three points depending on what they think of each teacher's response.

- Underneath each meter, there is a question mark. When pressed, it reveals the meaning of each title:
- Professional Competence: Deep mastery of their subject and updated on the latest research and educational trends.
- Commitment to the Ignatian educational mission: Comprehensive formation of students in academic, human, spiritual, and social aspects.
- Personal Accompaniment: Support and guidance to students in their learning and personal growth process.
- Dialogue Skills: Open and respectful communication with students, listening to their concerns and needs.
- Consistency between life and discourse: A model of life consistent with the values transmitted in the classroom.
- Faith and Christian commitment: A committed Christian with faith and the Church, capable of transmitting these values to students in a respectful and dialogical manner.

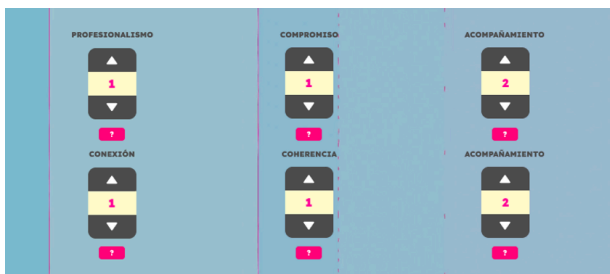


Figure 11. Point measurer

This is how the idea of creating TEACH-IT, the teacher training project for university professors, came about.

7. TEACH-IT

Teach-It is a simulation tool designed for the professional development of teachers. It focuses on resolving critical incidents through the exchange of experiences among teachers, providing a practical and collaborative learning environment.

The project is aimed at teachers who face challenges in their teaching practice and want to find new ways to address critical incidents in the classroom. In other words, those professionals who encounter situations that can destabilize their educational practice and who are seeking innovative tools to promote a collaborative and reflective learning environment. The goal is to provide them with a platform that allows them to share experiences, reflect on their pedagogical practices, and develop effective strategies to address current challenges in education.



Figure 12. Starting screen

7.1.1 Planning

When and where to use the tool?

Teach-It, as a training tool, intends to be introduced during moments conducive to teacher interaction. These spaces can range from monthly meetings during a school term, pedagogy courses for teachers, or even a casual gathering among colleagues at a university. In this regard, the next step for Teach-It is to serve as a mediator in these sessions, facilitating and proposing important aspects:

Resolution of critical incidents: It will provide teachers with a platform to address challenging situations in their teaching practice. This will allow participants to share their experiences and reflect on possible solutions, enriching dialogue and collective learning.

Exchange of experiences: Encouraging discussion and exchange of experiences among teachers from different fields, ages, and levels of experience will foster a collaborative learning environment. Teach-It will provide relevant and challenging student profiles to generate meaningful discussions and promote critical reflection on their particular practices.

Practical learning environment: Simulating situations that empathize with the teaching job, along with reinforcement questions as a guide, will offer participants the opportunity to put problem-solving strategies and techniques into practice in a controlled environment. This will allow them to experiment with different approaches and assess their effectiveness in a safe context.

Promotion of reflection: The combination of problem scenarios with student profiles aims to help deepen the complexity of solutions, reflecting on their own pedagogical practices, identifying areas for improvement, and developing skills to address future challenges more effectively.

7.1.2 User

What type of teachers can use Teach-It?

The project is aimed at teachers who face challenges in their teaching practice and wish to find new ways to address critical incidents in the classroom. In other words, it targets professionals who encounter situations that may destabilize their educational practice and seek innovative tools to promote a collaborative and reflective learning environment. The objective is to provide them with a platform that allows them to share

experiences, reflect on their pedagogical practices, and develop effective strategies to tackle current challenges in education.

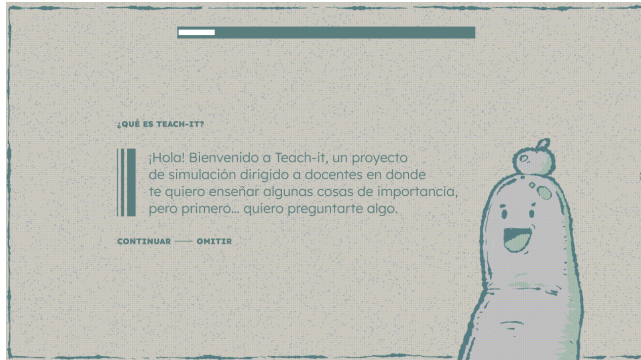


Figure 13. Tutorial screen

7.1.3 Design

Why was this style used?

The high-fidelity design is minimalist and almost monochromatic to facilitate navigation. Likewise, it is considered that this project, being aimed at university professors, should have more serious colors that do not distract users. However, intense colors like hot pink have been used to highlight buttons within the prototype.



Figure 14. Color palette

Why was this character design used?

Professor's design: Figaro's design, being a finger, represents how teachers shape their students. Initially, a hand was considered, but it was decided that a finger would be more suitable due to the fine motor skills it represents. Additionally, the apple on his head is one of the most characteristic symbols of teachers.



Figure 15. Professor Design

Student design: The heads of the students were designed based on geometric shapes, from rectangles to stars, combined with simple and chubby bodies. This decision was based on the analogy with clay figures, symbolizing the modeling process experienced throughout university careers where teachers sculpt

and guide towards the academic and professional development of students.

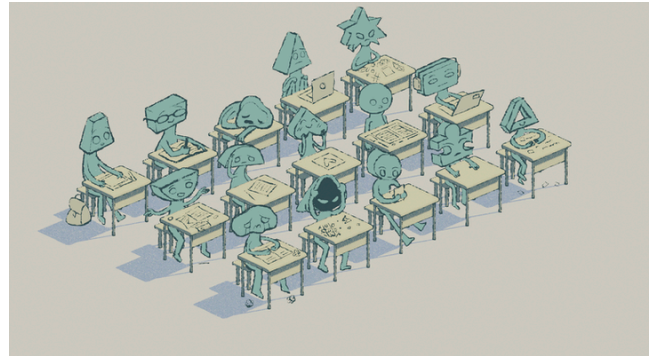


Figure 16. Classroom

For a more detailed design of the student profiles, it was considered to create a Persona Design for each one. This is aimed at defining how they are related to the critical incident to be resolved, and at the same time, establishing empathy bonds to humanize the solution proposed by the teacher.

In this regard, the three persona designs contemplated for this prototype are presented (The Prodigy, The Troublemaker, The Apathetic). They are categorized by difficulty according to the color of their star: Green; Easy, Yellow; Intermediate, Red; Difficult. Difficulty is measured based on the severity of the incident and the stance the profile takes within its context.



Figure 17. Difficulty levels

This design served as a basis to foster our understanding and achieve humanization of the specific contexts of each student. Likewise, they played an important role in the relationship they would have with teaching competencies and the generation of questions through attributes.

Similarly, the students were created in 3D for the profiles within the project. There are 15 of them listed as: The stranger, the genius, the sleeper, the asocial, the problematic, the talker, the shy, the boyfriend, the perfectionist, the apathetic, the sad one, the rejected, the lazy, the special and the cheater. Each one of these has an age, semester, career and unique traits that generate a problem for the teachers to solve.

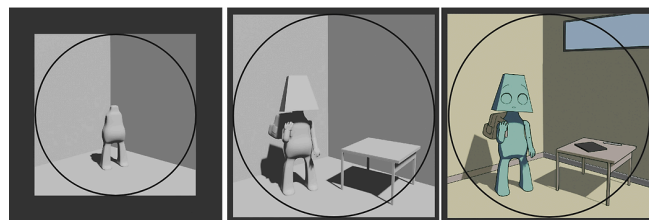


Figure 18. Design process - made in Blender 3D

7.1.4 Tools used

The entire prototype was integrated into the Figma tool due to its compatibility in the workflow, allowing real-time collaboration, ease of use, and information retrieval, as well as its compatibility with various devices and the versatility of tools it offers.

Additionally, the integration of Blender 3D into this high-fidelity prototype adds an additional layer of depth to the teachers' experience. By visually representing the profiles of students in three dimensions, educators are provided with a more vivid representation of the attitudes, postures, and personalities of their students.



Figure 19. Student profile The Genius

Finally, the design complement was reinforced with the Adobe Illustrator tool, which helped us design the problem cards in a minimalist and rounded style.

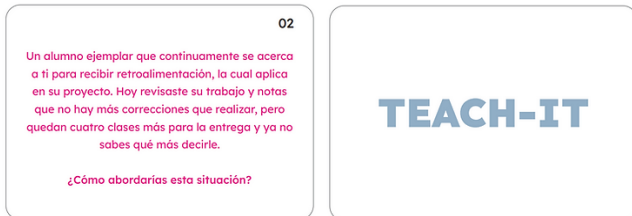


Figure 20. Problematic card 02 The Genius

7.1.4 User test

To conclude the project, a meeting was held with several university professors. They were informed about the testing process and asked a few questions beforehand to understand the professors and their status before the test. Following this, the gaming session began.

An interesting comment during the session was: "For these situations, we have to intervene, not because we are the most qualified individuals, but because situationally we are the person responsible for the group." "Isolating oneself is their safe place, thus avoiding complex bonds, thus avoiding many problems, but it also generates others."

This confirms that the game is encouraging discussion to reach a solution to a problem. With each user having a completely different experience, resolutions that truly benefit both the professor and the student can be reached.



Figure 21. High fidelity prototype test.

8. CONCLUSION

In conclusion, pedagogical tools for addressing critical incidents are of paramount importance in the professional development of both novice and experienced educators. Knowing how to address issues that may arise in the classroom is vital for students and for fostering a healthy learning environment both inside and outside the classroom. It is deemed necessary to address such concerns through shared dialogue as a means to potentially anticipate future occurrences.

9. ACKNOWLEDGEMENT

This concludes the project, 5 months of work where our supervisors Manuel Siordia, Arturo García, and Roberto Razo provided constant feedback, a project where many professors and students came together to participate in methodologies, interviews, and user testing, giving their precious time. We thank all involved for their patience, understanding, and dedication to the project.

10. APPENDIX

Figure 1.

<https://drive.google.com/file/d/1Z4EQ3QxuB-WaoB1sLVuhYKbkPjZC0ICX/view?usp=sharing>

Figure 2.

https://drive.google.com/file/d/1NTOObdJ5r8noK0Qi9QT7aUGC_Gt6zlv/view?usp=drive_link

Figure 3.

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Figure 4.

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Figure 5.

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Figure 6.

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Figure 7.

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Figure 8.

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Figure 9.

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Figure 10.

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Figure 11.

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Figure 12.

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Figure 13.

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Figure 14.

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Figure 15.

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Figure 16.

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Figure 17.

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Figure 18.

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Figure 19.

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Figure 20.

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Figure 21.

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12. LINKS

Blog: <https://equipochroma.wixsite.com/my-site-1>