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Defining a game-based learning proposal to work with teachers' professional wellbeing: the Teaching to Be video game

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Abstract

This chapter investigates the intersection of professional wellbeing among teaching staff and the potential of educational video games as a tool for improvement as part of the European Project "Teaching to Be". A novel design model is proposed, rooted in interactive digital storytelling principles. The model is applied in the development of *Teaching to Be: A Path to Wellbeing*, a video game crafted specifically to enhance the professional wellbeing of educators. The study critically assesses the model's strengths and weaknesses, offering insights into its applicability in educational game design. By examining the impact of *Teaching to Be: A Path to Wellbeing*, this research contributes to the growing discourse on the role of interactive digital storytelling in fostering positive outcomes for teaching professionals. The nuanced evaluation provides a foundation for refining future iterations of the model and offers practical considerations for those venturing into the realm of educational game design for teacher wellbeing.

1 Introduction

Considering the arrival of COVID-19 and the current global crises, teaching confronts complex and challenging horizons for the educational community (Dabrowski, 2020). Dealing with these external factors generates professional and personal issues for teachers in the daily routine that erode their wellbeing. From a broad perspective, positive teacher wellbeing is addressed as a state of engagement, accomplishment, and satisfaction in the workplace (Acton & Glas-

gow, 2015; Turner & Theilking, 2019). Nowadays, teachers need to deal with frustration and uncertainty in the planning and development of the teaching. These constraints generate discomfort in educators while could reduce their self-esteem and perceived self-efficacy (Yada et al., 2019; Tschannen-Moran & Hoy, 1998; 2007).

Teacher wellbeing is related to factors linked to emotions generated in academic contexts both inside and outside the classroom. Some emotional factors that condition the teacher's wellbeing are power relationships stablished in the school, the interactions with colleagues, students, and families, among others (Liebowitz & Porter, 2019). However, this fact is not always easy; to achieve desirable states of teacher wellbeing teachers must learn strategies that allow them to manage the challenges of their daily practice as teachers and the processes involved in developing wellbeing. To do so, being a teacher provides plenty of opportunities to grow in the long term which contribute to be motivated and engaged with their job, searching for innovation, and to recognise the strengths and limitations of their teaching practice (García-Lázaro et al., 2022a; Korthagen, 2014). Additionally, social interactions are closely related to self-improvement and professional development initiatives (Glackin, 2019). To find this "happy" face of the profession, it is necessary to learn how to develop as teachers in the educational community and what resources are involved in this process.

The teacher professional development opportunities contribute to reducing teachers' levels of stress and increase or maintain a positive state in the workplace when teachers self-evaluate their practices, recognise their strengths and limitations, and share their concerns with others (Sancar et al., 2021). However, it is still needed to close the gap between theoretical proposals in this line and the practice of teachers in their lives. In this sense technologies, due to their characteristics, can serve as useful tools to improve teachers' wellbeing through simulations, video game-based learning, and reflective processes (Gundel et al., 2019). Facing fictitious educational dilemmas and unpredictable situations and acquiring personal strategies to confront stressful events allow teachers to learn how to react, how to socialise, and how to set limits in a more pleasant and self-managed way.

Due to the previous premises, this chapter presents the conception and design of a virtual environment (video game-based learning) as a part of a European Project (ref.: 626155-EPP-1-2020-2-LT-EPPKA3-PI-POLICY) focused on teacher wellbeing. Our proposal strives to offer a narrative line to strengthen the teacher wellbeing while they are immersed in a fictional school simulation.

2 Theoretical framework

The role of professional development opportunities in caring for the professional wellbeing of teachers

Teacher professional wellbeing is a subjective construct that depends on the experiences and perceptions of teachers. Feeling comfortable, valued, and inspired in the workplace seems to be a difficult task, especially in contexts where teachers deal with bureaucracy, pressure and plenty of external demands (Saloviita & Pakarinen, 2021). Derived from COVID-19 and current international conflicts, the society looks at educators as professionals who set the future principles, abilities, and knowledge for our century (Pressley, 2021). Being aware of the importance of their work could make teachers feel responsible for the development of future citizens and question their contribution worldwide. Thus, if professional performance is watched, perceived self-efficacy and self-esteem are also affected and the professional wellbeing could be in danger (Bondarchuk, 2018; Harding et al., 2018). Teachers need for resources and strategies to feel capable of affording these difficulties and other professional issues such as bullying, multiculturality (linguistical, ethnical, religious…), special education needs, planning and teaching coordination with others.

A helpful process to reinforce teacher wellbeing, especially in their workplace, is the generation of professional development opportunities. Professional development opportunities are experiences to share concerns and to learn from others how-to-live in uncertainty with constant changes (Darling-Hammond et al. 2017; Huber, 2011). Professional development includes school initiative and external proposals (i.e., from the government, from the educational community) that the teachers access to identify ways to succeed and grow personally and professionally, for instance, training courses or shared reflections (Evans, 2018; Marcelo, 2009). However, these opportunities sometimes present a lack of relationship with the daily practice of teachers; teachers can feel they cannot connect what they live in the schools with the content of the courses and experiences where they are enrolled. This mismatch blocks the reflection and interpretation of problems generating anxiety and stress that makes harder to keep their wellbeing protected (Atikinson & Hornby, 2015).

Regarding how beneficial professional development opportunities for teachers' wellbeing is, an interesting proposal could be being involved in a fictional scenario that allows them to manage their resources and knowledge to reach a specific point to, finally, contribute to their professional wellbeing.

Technologies as opportunities for teachers' professional wellbeing

Game-based learning is a proposal where the teacher navigates and explores social interactions and manages fictitious difficulties which are related with what they

find daily in their workplace (Font & Argüello, 2019; Hrastinski, 2021). Considering this modality of professional development, technologies can be useful for this purpose allowing teachers to self-manage the process whenever they desire. In fact, technology simulations are a recommended resource in the teacher training (Giessen, 2015). New technologies, and specifically video games, are broadly studied in the educational field as a crucial agent in the teaching-learning process (Reyes-de-Cózar, Ramírez-Moreno & Barroso-Tristán, 2022), and they start to be a new agent through serious game modality. The European Commission (2021) has recently planned for the next seven years a strategy plan to support teachers in the digital education which can also enhances their capacity to address inclusive and versatile digital environments. This proposal presents challenges and extra resources for their teaching and planning in collaboration with other educational agents such as mastering specific tools and devices, co-teaching in digital environments and developing an onsite monitoring process of their students' achievement (Caena & Redecker, 2019; García-Lázaro et al., 2022b).

However, technologies can also present significant levels of stress and high-demanding skills for teachers which jeopardises their wellbeing in terms of teaching-control (Fernández-Batanero, 2021). Getting used to using technologies involves being exposed to rapid changes and constant adaptation that present some struggles in the daily life of a school (Englund et al., 2016). Through the process of living in this uncertainty and continue reaching the educational standards, serious games and video-game based learning can be opportunities for teachers to manage and improve their capacity to deal with their teaching while they also improve their digital competence (Foster & Shah, 2020).

Some studies (Bado, 2019; Haart et al., 2020) have addressed the use of technologies in the teachers' performance when teaching any content; however, how teachers learn to develop and protect their wellbeing through game-based learning still presents a lack of scientific support. Trying to explore and address this issue, the Erasmus+ project "Teaching to Be" deepens the analysis of game-based learning to help teachers to improve their wellbeing by creating a videogame theoretically framed by teachers' wellbeing construct.

3 The proposal

Research protocol

This chapter aims to present the conception and design of an educational videogame framed by game-based learning principles to improve the professional wellbeing of the teachers in service who participate in the international project "Teaching to Be". For this purpose, we developed a review of the existing literature related to models which work on videogame narratives and fictional scenarios,

focusing on three aspects. First, we needed to identify the most significant models already implemented to create game-based environments, paying special attention to the ludic components, such as immersion, engagement, and narrative, among others. Second, we identified the elements that concern the educational perspective, pointing out the models whose focus was on the pedagogical component of the game. Finally, we analysed the most relevant design principles to create an effective educational videogame, incorporating guidelines to improve the user experience and lead to effective learning. Thus, the product generated as part of the European-funded project can serve as an educational resource for teachers in service out of the project. We finally got different models according to the already mentioned aspects and they are presented below.

Recognised models for creating videogames

A review of the literature has led to the selection of four models that substantiate the development of the proposed framework for our game-based learning tool. Hunicke et al. (2004) present the MDA framework, an approach aimed at comprehending the gap between game design and development. This model is structured around three components: mechanics, dynamics, and aesthetics. Mechanics delineate the game's elements, establishing the rules, at the level of data representation and algorithms. Dynamics are the run-time behaviour of these mechanics influencing player inputs and outputs during gameplay. Aesthetics describe the emotional responses triggered in the player during their interaction with the game, essentially the enjoyment experience. The GameFlow model, proposed by Sweetser and Wyeth (2005), comprises eight elements: concentration, challenge, player skills, control, clear objectives, feedback, immersion, and social interaction. Each element is accompanied by a set of criteria to foster game enjoyment. Games must require concentration requiring players to focus on the game (concentration). Also, the games must offer sufficient challenge and adjusted to the player's skill level (challenge) and must promote the development of the player's skills (player skills). In addition, players should feel a sense of control over their in-game actions (control) and should receive timely and relevant feedback (feedback). In addition, games must present clear objectives to players at appropriate times (clear objectives) and create opportunities for social interaction (social interaction). Finally, players should experience deep and effortless involvement during the play (immersion).

O'Brien & Toms (2018) present the User Engagement Scale (UES), which is structured around six factors, deployed in several items. On the one hand, the usability perceived by the player and the felt involvement. Also, as in previous models, the aesthetics of the game to measure the attractiveness of the game and the visual pleasure. Focus attention, novelty and endurability are used to assess whether the experience is fun, immersive and maintains curiosity and interest in

the game. With these six factors, this scale aims to measure the level of engagement that the user has experienced during the game.

The Narrative Centred Informant Design framework, developed by Naul & Liu (2019), proposes the four features that a game must contain to create effective game narratives. On the one hand, distributed narrative, emphasizing the ability to divide narratives into smaller units and distributed across various game scenarios. Intrinsic integration involves embbeding endogenous, or intrinsically integrated fantasies within the game, establishing connections between mechanics and pedagogical content. On the other hand, the framework highlights the importance of empathetic characters, allowing players to enjoy building relationships with the characters. Finally, adaptive storytelling, like responsive narratives that empower players to influence the progression of the game's story, enhancing their engagement.

Model for adding educational layer

Through the review of models focused on the educational component, two of them were taken as a reference.

RETAIN model (Gunter et al., 2007) is a rubric for educational games, developed to help assess the extent to which academic content is endogenously immersed and integrated into the fantasy and story context of the game, and promotes knowledge transfer. It consists of 6 items. Relevance refers to the degree to which the game activity reminds the player of the importance of specific activities and functions of their real life. Embedding pertains to the degree of integration between the academic content andthe fantasy/story. Transfer refers to the game's ability to transfer educational content. Adaptation, meanwhile, refers to a process in which learners interpret events based on what they already know. Immersion can be measured ranging from basic interaction and reaction to complete engagement, involving intellectual investment within the game's context, particularly in a learning situation. Finally, naturalization, is closely tied to the idea of automaticity or spontaneous knowledge. A learner incorporates learned information into their habits and routines, consistently applying it without requiring substantial mental resources. Naturalized content results in a reduced cognitive load compared to newly acquired knowledge, enabling students to allocate their cognitive effort to higher order thinking skills.

The GEB (Gaming educational balance model), proposed by Martínez et al. (2022), is structured in three levels: game, education, and general. The game dimension is based on the MDA model, explained above, extended with the user experience component. Education is based on two aspects: the educational strategies and the motivational design of the game. Finally, in the general layer, it is based on "learning & fun" and "can/must learn", point out the importance of ensuring learning.

Design principles and guidelines

Finally, the principles and guidelines used to build the framework are also based on the literature review: engage the player with narrative, provide immediate feedback, integrate learning objectives with game mechanics, create authentic and realistic scenarios, create situations to learn how to manage conflict, incentive game activities, not punish the failure and include in-game rewards.

Based on the six models described above, the elements that best fit the purpose of the video game to improve the wellbeing of teachers were extracted, in addition to incorporating the guidelines and design principles described above. The result is the framework presented in Figure 1.
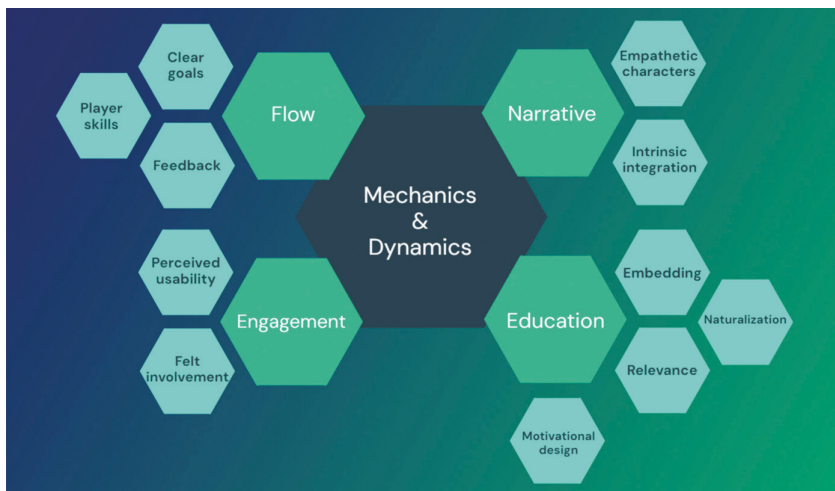
Figure 1: Proposed game-based learning framework to improve teachers' professional wellbeing.

Results: Developing the video game Teaching to Be: A Path to Wellbeing

The result of the research and design of our framework for the development of game-based teachers' training resulted in the creation of a video game called *Teaching to Be: A Path to Wellbeing*. *Teaching to Be* can be defined as a first-person point-and-click adventure game for web browsers. The game is structured in 12 episodes of approximately 15-20 minutes in length. Each episode follows learning objectives set by the Online Wellbeing Course content design team. In this way, we ensure that with each episode, the player not only progresses through the story, but also learns something new about their professional wellbeing.

In the following, we will describe the design strategies followed to comply with the principles and guidelines established by the existing framework:

1. *Engage the player with narrative.* One of the first decisions we made was to contextualise the teachers' learning with a character-based narrative. Several options for the storyline were considered, from more fantastical proposals to more everyday situations. In the end, we decided to ground the plot in the adventure of an anonymous teacher starting a new life in a different city and school. Inspired by the mythical structure of the hero's journey, we established a route of twelve episodes in which it becomes clear how the protagonist starts a round trip, taking with them a valuable learning experience. We will develop this part in more detail in section 4. On the other hand, we had to establish from a very early stage of development what the point of view of the story would be. This is one of the most important decisions when designing a video game, as the camera perspective conditions to a large extent the degree of immersion and identification of the player in the game world and with the protagonist. In the end, after submitting the game to several tests, we decided to devise a first-person view, where everything we see on screen simulates the perspective of the player-protagonist. In this way, in addition to achieving greater immersion, we allow both male and female teachers to identify with an anonymous and invisible hero. Thus, we make the player the protagonist.

2. *Provide immediate feedback.* Early on in development, we established that every player action should be accompanied by specific feedback. There are four types of feedback in interactive environments: positive, negative, neutral, and contextual. In the case of *Teaching to Be: A Path to Wellbeing,* we chose to give preference to the positive ones. Whenever the feedback is negative (in the case of an incorrect answer to a test question to check the player's learning), we always choose to accompany it with reinforcement messages and an adequate explanation of the cause of the mistake, as can be seen in Figure 2.
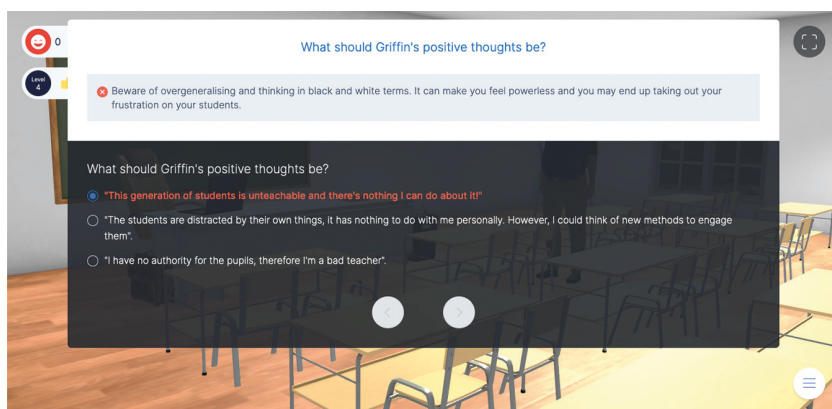

Figure 2: Example of negative feedback accompanied by positive reinforcement.

3. *Integrate learning objectives with game mechanics.* Game mechanics are the basic principle of any game, digital or not. Mechanics are composed of the performative actions and the rules that condition and determine the initial state and changes in the game world. For *Teaching to Be: A Path to Wellbeing*, we established, on the one hand, the actions of picking up, examining, and interacting with game objects around the environment, and, on the other, of talking to other characters and choosing dialogue options. With these two-core mechanics, the player can progress through the learning and the story. From these mechanics, the learning and narrative dynamics that shape the game experience are derived. For example, by choosing between various dialogue options, the player can both respond to the needs of the story and test their knowledge of certain content, with the same action serving different purposes, depending on the moment.

4. *Create authentic and realistic scenarios.* As outlined in point 1, the proposed narrative places the player in the role of a teacher who has just moved to Welbury, a quiet and cosy seaside town, presumably to start teaching at a new school. The reason, however, goes beyond that. Marie, the school coordinator, proposes that you lead, with the help of head teacher Ulysses, a group of unmotivated teachers on an adventure to achieve a greater sense of professional wellbeing. The plot is full of situations familiar to any experienced teacher: overwork, distracted students, lack of motivation, absenteeism, dealing with students' parents... Everything is designed so that, through everyday situations played by the game's cast of characters, the player learns strategies to improve wellbeing and puts them into practice.

5. *Create situations to learn how to manage conflict.* In line with the previous section, a learning and game loop was designed that could be replicated in each of the episodes regardless of its content. This loop (Figure 3), composed of six stages, ensures the correct assimilation of contents while they are put into practice with real situations inserted into the plot of the game. Thus, the narrative of *Teaching to Be: A Path to Wellbeing* is based on the concept of conflict typical of dramatic storytelling (Lavandier, 2005): the idea that the best way to generate engagement is by opposing the character's desires to a series of attainable obstacles, generating conflict that must be resolved. For example, in one episode, the player must help a teacher learn new classroom management techniques, first by learning on their own, and then by resolving the teacher's doubts in the middle of a lesson. Other conflicts include finding out why a student misses class so often, having to work it out with his father, or discovering the source of a classmate's insecurity in front of his students.
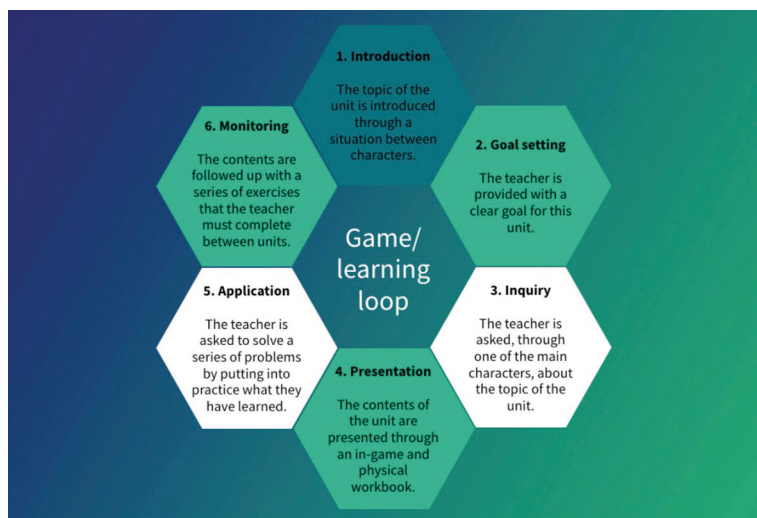
Figure 3: Game and learning loop proposal.

6. *Incentive game activities*. Game-based learning often focuses too much on learning and neglects the fundamental playfulness of the experience. The mechanics therefore need to do more than just answer quiz questions; they have to facilitate a playful immersion through small games, challenges, and incentives that test the player's skills. In the case of *Teaching to Be: A Path to Wellbeing*, its point-and-click adventure nature, in the vein of genre classics such as *The Secret of Monkey Island*, requires the inclusion of small challenges that often do not have a learning base behind them, but exist purely for the sake of challenging the player. As an example, in the final episode, the player accidentally gets locked in the school storeroom while looking for drinks for the farewell party. There is no didactic motive behind this decision; just a challenge of logic and observation characteristic of the genre in which *Teaching to Be: A Path to Wellbeing* is embedded (Figure 4). Like this example, the game occasionally offers small puzzles involving other characters, such as finding a teacher's lost book or discovering Marie's whereabouts.

Figure 4: Scene from episode 12 of *Teaching to Be: A Path to Wellbeing*.

7. *Not punish the failure*. In line with section 2, *Teaching to Be: A Path to Wellbeing* should ultimately be a rewarding experience that promotes personal and professional wellbeing. We knew from the outset that we could not demand unnecessary effort and skill sets from players that are typical of conventional video games. *Teaching to Be: A Path to Wellbeing* could not risk the wellbeing of its players to promote this very thing. Therefore, among other design decisions, we always opted for positive feedback and for not considering "good" and "bad" choices. There are no bad choices in *Teaching to Be: A Path to Wellbeing*, but different formulas for achieving the same goals, and discovering oneself in the process.

8. *Include in-game rewards*. Finally, in line with sections 2 and 7, an internal scoring system was designed based on a few previously collected dimensions of wellbeing that have been developed in other chapters: 1) job engagement, 2) teacher job satisfaction, 3) teacher self-efficacy, 4) job crafting, and 5) organisational support. These five dimensions were to be addressed and incentivised through the game, and so we decided to establish four categories in which the player could score points: 1) productivity, 2) teamwork, 3) relationship, and 4) inner space. Each category contains, at the same time, two skills that the player can increase by solving mini-games, making decisions and, especially, solving questionnaires (Figure 5). These, known as "gaming skills", are the following: management and engagement (category: productivity), leadership and problem solving (category: teamwork), empathy and network (category: relationship), and self-esteem and self-accomplishment (category: inner space) . At the end of each episode, the player can preview the status of their "wellbeing profile", looking at the skills they excel in or prioritise the most, and compare it with

other players' profiles. The aim, as mentioned in the previous section, is not to compare players in terms of better/worse, but to offer each player a tailored experience, reflecting those dimensions of wellbeing to which they attach most importance or in which they naturally excel.
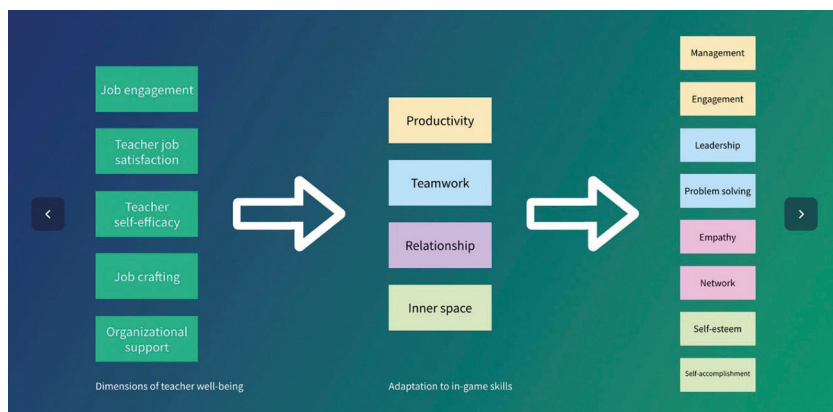

Figure 5: Translation of the dimensions of teacher wellbeing into game skills.

4 Discussion: Strengths and limitations

The video game *Teaching to Be: A Path to Wellbeing* shows that innovative training approaches to work with teachers' wellbeing present future challenges and improvements.

In terms or opportunities and strengths, the videogame is still being implemented, thus, the relationship between its findings, teachers' management of the videogame and the implementation's results are being explored. Therefore, our proposal only presents the conception and design of the videogame. As Guillén-Gámez et al. (2021) pointed out, the digital competence of teachers intervenes in the capacity of building personal and successful approaches to their teaching. Conditioning their job, technologies can not only be significant tools for the teaching-learning process, but also could help teachers to improve their emotional response to stressful situations that take place in their school and classes. When we created the videogame, we expected to help teachers to promote positive emotions in the workplace since it seems to be a significant predictor of wellbeing (Dreer, 2021). Some of the emotions closely related to a positive professional wellbeing are commitment, feeling as contributors to a common purpose, feeling part of the teamwork, and feeling valued. In addition, some research consistently shows a positive relationship between teachers' wellbeing and students' wellbeing (Harding et al., 2018; Braun et al., 2020), so employing tools to improve it may be a desirable solution to

address problems such as lack of engagement or burnout in the classrooms (Reyes-de-Cózar et al., 2023)

Working from the videogame's perspective, when offering missions and challenges to the teachers, different competencies are involved apart from digital competence, such as adaptability, autonomy, initiative, or self-regulation which help the educators to analyse their social responsibility and the kind of involvement they show in real situations like those offered by the videogame. Since the stress and external demands cannot be removed from the workplace (Bermejo-Toro et al., 2016), teachers must deal with uncomfortable events and learn how to live with a loss of control in specific situations. By simulating dialogues and missions to be covered by the players, teachers need to ask themselves about the possibilities to react and answer the external demands, which is closely related to those demands they also address in their daily routine.

In terms of limitations, the players involved in this proposal were in many cases teachers who are not used to playing video games, and they needed to show a minimum of digital competence to be able to enjoy the experience. Among the requirements of the project where this videogame is framed, there is the need for access to a desktop computer or laptop and a stable Internet connection, as the game is played entirely through a browser, as well as a minimum knowledge of certain video game conventions, such as solving puzzles or scoring points. The logic behind a point-and-click adventure game demands a minimum interactive language literacy; it requires learning the meaning of certain actions in the game world and understanding the feedback received by the programme.

Moreover, the proposal needs dedicated technical support and advice after the implementation of the game. In this sense, it is advisable to offer a first training session, if possible, in person, to make sure that all players understand the programme and know how to interact with it. It is therefore important to keep the complexity of the game mechanics as low as possible, as well as to provide the game with narrative elements that accompany, guide, and motivate the user to understand the internal structure or main purpose, especially in the first sessions. Understanding the previous strengths, weakness, and requirements to be immersed in the videogame, the proposal still offers a tool which is original and poorly covered by the current research about teachers' professional wellbeing linked to play serious games.

5 Conclusions

Teacher wellbeing is a complex but affordable construct from a technological perspective. As it is urgent to take care of teachers' professional wellbeing in their daily routine, *Teaching to Be: A Path to Wellbeing* presents the origin and design of a videogame based on teacher's wellbeing principles that help to face possible

challenging situations that educators will find in real schools. We use the already presented theoretical perspectives to design a game-based narrative which catches the teachers' curiosity and helps them to recognise and deal with stress and misunderstandings in social relationships. The kind of challenges and missions proposed through the videogame aims to generate some self-awareness about one's wellbeing, and some analytical skills to manage how to react to emotional inputs. This was possible thanks to the careful design of the game-based environment following accurate models. It was also possible due to the realistic situations proposed during the timeline of the videogame. This closeness to the reality's issues that teachers experience would make teachers participants see the usefulness of participating in the project by improving their professional wellbeing. Thus, the game-based proposal helps teachers to acquire strategies to care about their wellbeing.

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