

Promoting Teachers' Wellbeing Through a Serious Game: Quantitative and Qualitative Evidence from the Teaching to Be Project [†]

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Abstract

Teachers' mental health is increasingly acknowledged as essential for effective teaching and positive educational outcomes, yet interventions specifically designed to support it remain limited. This paper presents the Online Well-being Course (OWC), a serious game developed to enhance teachers' mental health through gamified experiential and reflective activities. A mixed-methods design combined quantitative evidence from a pre-post intervention involving 151 Italian teachers with qualitative data on the experiences of 189 Italian teachers. The intervention produced improvements in social-emotional competence and self-efficacy, together with reduced perceived stress. Qualitative findings further revealed positive changes in relationship skills, emotional competence, decision-making, social awareness, self-care strategies, and school climate. Findings support the potential of serious games to strengthen teachers' psychological resources and inform innovative approaches to teacher professional development.

Keywords: Teaching to Be; teacher well-being; mental health; social and emotional competence; self-efficacy; perceived stress; gamification; serious games

1. Introduction

Teacher mental health is increasingly recognized as a fundamental resource for effective teaching and for promoting positive academic and socio-emotional outcomes among students, although historically it has received considerably less attention than student well-being [1]. In educational contexts, it has been conceptualized as a positive emotional state resulting from the balance between teachers' personal needs and the psychosocial characteristics of their work environment [2]. It reflects teachers' ability to manage the emotional, relational, and instructional demands of teaching while maintaining professional efficacy and psychological well-being. This adaptive functioning is supported by protective resources such as resilience, emotional regulation, and self-efficacy, which facilitate coping with occupational stress and the development of supportive relationships with students and colleagues [3].



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The importance of promoting teachers' mental health is underscored by the increasingly complex nature of the teaching profession. In addition to delivering instruction, teachers are expected to manage classroom behaviour, respond to students' diverse academic and socio-emotional needs, collaborate with colleagues and families, and meet growing administrative and organizational demands [4]. Prolonged exposure to high occupational demands, particularly when adequate personal and organizational resources are lacking, may compromise teachers' mental health and contribute to anxiety, depression, psychosomatic symptoms, and burnout, characterized by emotional fatigue, depersonalization, and reduced personal accomplishment [5]. Accordingly, investing in teachers' mental health extends beyond supporting individual well-being and constitutes a key strategy for strengthening the effectiveness and sustainability of education systems.

2. Serious Games and Gamification for Teachers' Well-Being

Serious games have emerged as an innovative approach that harnesses game-based features to engage users in purposeful experiences extending beyond entertainment. They are intentionally designed to promote knowledge acquisition, professional competence, and behavioural change through interactive and experiential activities [6]. By integrating gamification elements such as narratives, challenges, rewards, feedback, and progress monitoring, they enhance motivation, engagement, and active learning. Realistic simulations further encourage users to experiment with decisions, learn from mistakes, and reflect on the consequences of their actions in psychologically safe environments, fostering critical thinking, problem-solving, decision-making, emotional regulation, and the application of acquired skills to professional practice [7]. Serious games have been successfully implemented in organisational training to strengthen leadership, teamwork, communication, and decision-making, as well as in healthcare education to improve clinical reasoning and procedural competence [8]. They have also been increasingly adopted to support healthcare professionals' mental health and reduce stress [9].

In educational settings, serious games have been predominantly developed to support students' learning and academic outcomes [10]. Their application to teachers and teacher professional development has received comparatively less attention, with existing game-based approaches largely focusing on professional learning and pedagogical competencies rather than on teachers' mental health and psychological well-being [11–13]. This gap is particularly relevant given the growing recognition of the need for targeted and innovative interventions to support teachers' well-being [14,15]. Empirical evidence on game-based interventions specifically addressing teachers' mental health therefore remains limited. Addressing this gap also requires moving beyond evidence of intervention effectiveness alone to consider how teachers experience these interventions and perceive their relevance to their personal and professional well-being. Bringing together these complementary perspectives can provide a more comprehensive understanding of the potential of game-based approaches to support teachers' mental health.

Aims of This Study

The present study adopted a mixed-methods approach, in which quantitative and qualitative evidence was brought together to provide complementary perspectives on the Online Well-being Course (OWC). (The OWC was technically developed and implemented on the dedicated Gamelearn platform (<https://services.gamelearn.io/>, accessed on 16 September 2026) by a team of developers in collaboration with the University of Loyola Andalucía (Seville, Spain), which coordinated the technical development of the game.) It is a theory-driven serious game developed within the European project "Teaching to Be" to

promote teachers' mental health through game-based experiential activities, self-reflection, and application to professional practice.

The mixed-methods approach was grounded in an established methodological framework [16], according to which quantitative and qualitative evidence can be combined to provide complementary perspectives and a more comprehensive understanding of complex phenomena. Consistent with recent mixed-methods research on teacher mental health and well-being [13,17], quantitative data were used to assess intervention effectiveness [18], while qualitative data were used to explore teachers' experiences and perceived changes following participation in the OWC [19]. Accordingly, the study had two aims: first, to describe the theoretical foundations, development process, and key features of the OWC; and second, to provide a comprehensive evaluation of the intervention by combining quantitative evidence on effectiveness with qualitative evidence on teachers' experiences and perceived changes.

3. The Online Well-Being Course

3.1. The Development of the OWC

The development of the OWC followed a participatory action research (PAR) approach, integrating evidence from the literature on teacher mental health and gamification with teachers' active involvement throughout the design process. The intervention was developed in two phases. First, a comprehensive review of the scientific literature was conducted to identify the individual and contextual risk and protective factors associated with teachers' mental health. Second, the intervention was refined through a PAR approach involving groups of in-service teachers in a series of focus groups exploring their perceptions of occupational stress, workplace challenges, and coping strategies [20]. Teachers identified several sources of occupational stress, including excessive workload, limited organizational support, demanding relationships with families, job instability, and increasing administrative responsibilities. They also highlighted the importance of strengthening coping strategies, emotional regulation, social support, and self-care. These insights guided the development of the game scenarios, reflective activities, and psychological content, ensuring that the intervention addressed the authentic challenges teachers encounter in their everyday professional practice.

3.2. Design and Features of the OWC

The OWC integrated several gamification features intended to foster motivation, engagement, self-reflection, and active learning. These included an immersive narrative, progressive levels, decision-making tasks, interactions with virtual characters and objects, immediate feedback, rewards, points, and progress indicators. Participants also collected virtual objects that could be strategically used to solve specific challenges and unlock subsequent stages of the game, encouraging active exploration and problem-solving. The OWC comprised 12 sequential levels, each targeting a specific dimension of teachers' mental health and professional development. Objectives included understanding teacher well-being, developing adaptive coping and stress management strategies, strengthening emotional regulation, empathy, communication, leadership, and problem-solving skills. Participants progressed through increasingly complex challenges based on authentic school situations. A detailed description of the objectives addressed in each level is provided elsewhere [19]. The OWC combined interactive activities, educational videos, immediate feedback, rewards, and progress indicators within an immersive narrative. Participants assumed the role of a newly appointed teacher, explored school settings, interacted with students, colleagues, and the principal, and addressed realistic situations reflecting everyday teaching practice (see Figure 1).

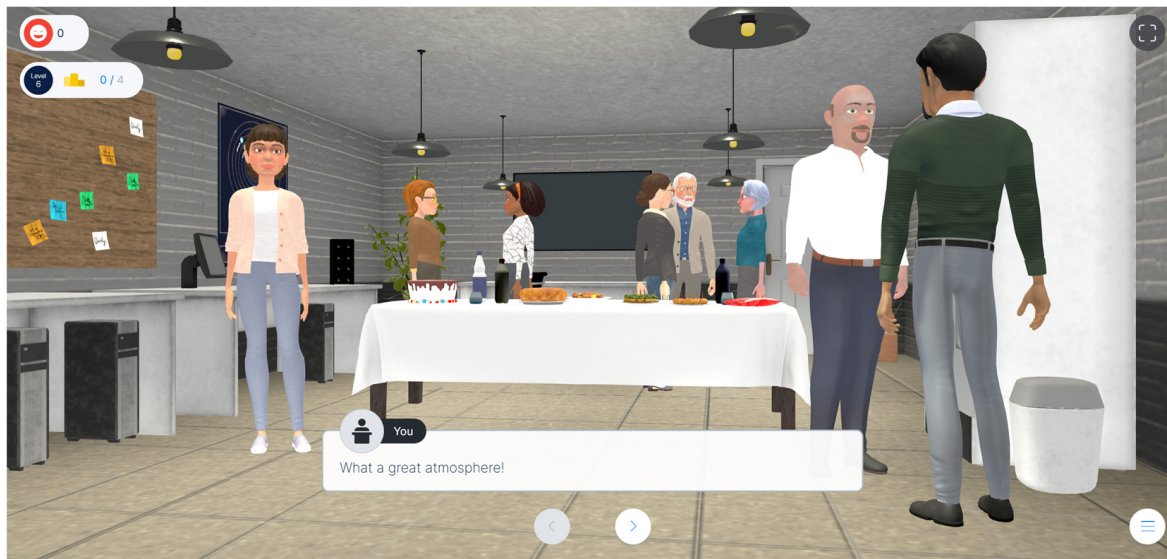


Figure 1. Example of a virtual environment of the OWC.

Gameplay involved dialogues with virtual characters, exploration of the environment, interaction with virtual objects, and decision-making activities that encouraged teachers to analyse problems, evaluate alternative actions, and reflect on the consequences of their choices. The interface displayed participants' progress, objectives, rewards, and levels, supporting engagement throughout the intervention. To facilitate the application of the OWC in professional practice, the course was complemented by a handbook that included practical exercises for each level, which teachers completed individually and discussed with colleagues to promote shared reflection and peer support.

4. Quantitative Evaluation of the OWC

4.1. Participants and Study Design

The effectiveness of the OWC was evaluated through a pre-post study [18]. The Italian Teaching to Be sample initially comprised 276 teachers from schools that were randomly assigned to either the intervention or waiting-list control condition. During the intervention period, teachers in the waiting-list control condition continued their usual professional activities and received no specific well-being training; they were granted access to the OWC only after completion of the post-test.

Following attrition and data cleaning, the final quantitative sample included 151 in-service teachers (138 females; Mage = 45.5 years, SD = 8.8) with complete and matched pre- and post-test data: 72 teachers in the experimental group, who received immediate access to the OWC, and 79 in the waiting-list control group, who accessed the intervention after the post-test.

Teachers completed the assessment at the beginning of the school year, before the implementation of the OWC, and again at the end of the school year following completion of the intervention.

4.2. Measures and Data Analysis

The effectiveness of the OWC was assessed using three validated self-report measures administered online. Perceived stress was assessed with the 10-item Italian version of the Perceived Stress Scale (PSS) [21], yielding an overall perceived stress score on a 5-point response scale (0–4; $\alpha = 0.82$ at pre-test and 0.84 at post-test). Social-emotional competence was assessed with the 25-item Italian-validated Social and Emotional Competence of Teachers Rating Scale (SECTRS) [22], comprising four dimensions (Teacher–Student

Relationships, Emotion Regulation, Social Awareness, and Interpersonal Relationships) rated on a 6-point scale (1–6; subscales $\alpha = 0.74$ – 0.81 at pre-test and 0.73 – 0.80 at post-test). Self-efficacy was assessed with the 24-item Italian-validated Norwegian Teacher Self-Efficacy Scale (NTSES) [23], comprising six four-item dimensions and rated on a 7-point scale (1–7; total-scale $\alpha = 0.94$ at pre-test and 0.96 at post-test; subscales $\alpha = 0.85$ – 0.95). Parallel multiple mediation analyses were also performed to determine whether changes in teachers' social-emotional competence and self-efficacy explained the association between participation in the OWC and reductions in perceived stress.

4.3. Main Findings

All quantitative analyses were performed using IBM SPSS Statistics, version 29. Preliminary analyses showed no significant pre-test differences between the groups in perceived stress or socio-emotional competence; however, the control group reported significantly higher self-efficacy than the OWC group ($p = 0.028$) [18].

The quantitative findings indicated that the OWC was effective in enhancing teachers' mental health. Repeated-measures GLM analyses identified a significant Time $\times$ Group interaction, Wilks' $\lambda = 0.927$, $F(3, 146) = 3.184$, $p = 0.011$, $\eta^2 = 0.073$. Compared with the waiting-list control group, teachers who completed the OWC showed higher levels of socio-emotional competence, $F(1, 148) = 5.029$, $p = 0.026$, $\eta^2 = 0.033$, and self-efficacy, $F(1, 148) = 6.318$, $p = 0.013$, $\eta^2 = 0.041$, together with lower perceived stress, $F(1, 148) = 7.187$, $p = 0.008$, $\eta^2 = 0.046$. Descriptively, perceived stress decreased in the OWC group ($M = 17.94$ to 14.82) while remaining stable in controls ($M = 16.84$ to 16.92); socio-emotional competence increased from $M = 116.49$ to 120.26 in the OWC group and slightly decreased from $M = 119.73$ to 118.72 in controls; self-efficacy increased from $M = 100.31$ to 106.90 in the OWC group while remaining substantially stable in controls ($M = 105.56$ to 105.20). Full descriptive statistics, including standard deviations, are reported in the original quantitative study [18]. Years of teaching experience did not significantly moderate these effects.

To examine the processes underlying these outcomes, parallel multiple mediation analyses were performed. Participation in the OWC was associated with significant increases in socio-emotional competence ($b = 3.84$, $p = 0.026$, 95% CI [0.46, 7.23]) and self-efficacy ($b = 6.77$, $p = 0.013$, 95% CI [1.45, 12.09]). However, only self-efficacy significantly predicted lower perceived stress ($b = -0.11$, $p = 0.002$, 95% CI [−0.18, −0.04]), whereas socio-emotional competence did not show a significant mediating effect ($b = -0.06$, $p = 0.301$, 95% CI [−0.16, 0.05]). Consistently, the indirect effect of the intervention on perceived stress was significant (indirect effect = -0.97 , 95% CI [−2.09, −0.19]), indicating that improvements in self-efficacy were the main pathway through which the OWC reduced teachers' perceived stress.

5. Qualitative Evaluation of the OWC

5.1. Participants and Study Design

The qualitative component involved in-service teachers from the same broader Teaching to Be project population who had completed the OWC intervention. Unlike the quantitative analyses, which required complete and matched pre- and post-test data, participation in the qualitative component was based on completion of the OWC and attendance at the post-intervention focus groups [19]. A total of 189 teachers (89.9% female; Mage = 47.7 years, SD = 9.8) from ten schools in Northern Italy participated. After completing the five-month OWC intervention described in Section 3.2, teachers participated in focus group discussions to explore their experiences with the program and the perceived changes in their personal and professional well-being.

5.2. Measures and Data Analysis

Qualitative data were collected through ten semi-structured focus groups, one in each participating school, involving approximately 18–20 teachers per group. Each session lasted between 45 and 60 min and was conducted by experienced researchers. Discussions were audio-recorded and centred on one broad open-ended question: “What changes have you observed in yourself and others after participating in the course?” A broad open-ended question was intentionally used to encourage participants to freely elaborate on their experiences and perceived changes without constraining their responses to predetermined dimensions, while allowing the facilitators to probe and deepen relevant issues emerging during the group discussion [19].

Focus group recordings were transcribed verbatim and analysed using thematic analysis [24]. Two researchers independently coded meaningful units of text and organized the initial codes into themes and subthemes through an iterative process of comparison and refinement. Discrepancies were discussed until agreement was reached, and a third researcher reviewed the final thematic structure to enhance credibility and consistency.

5.3. Main Findings

Thematic analysis generated six overarching themes reflecting teachers’ perceived outcomes following participation in the OWC [19]: (1) relationship skills, (2) emotional competence, (3) decision-making, (4) social awareness, (5) self-care strategies, and (6) school climate.

Relationship skills included improvements in communication, collaboration with colleagues, and confidence in assuming leadership roles. As one participant stated, “The game encouraged me to practice active listening and choose my words carefully.” Emotional competence was reflected in greater emotional awareness, improved emotion regulation, and more adaptive strategies for coping with stress and preventing burnout. One teacher reported, “The game made me more attuned to my own feelings and reactions.” Decision-making was characterised by greater critical reflection and increased consideration of the consequences of professional choices, as illustrated by the statement, “The game helped me to think critically and consider the potential impact of my decisions.” Social awareness emerged through greater empathy towards colleagues and students, appreciation of others’ strengths, and more caring attitudes. As one participant noted, “I have noticed that I have developed more attention toward the feelings of my colleagues.” Self-care strategies included increased self-compassion, greater attention to mental health, and healthier work–life balance. One teacher stated, “Now I feel I have learned the importance of self-care.” Finally, participants perceived positive changes in school climate, particularly stronger collegial cohesion, mutual support, and school belonging, as reflected in the statement, “I no longer feel isolated but rather an integral part of our school community.”

6. Discussion

This study presented the development of the OWC and examined its effectiveness using a mixed-methods design. Overall, the findings indicate that the OWC represents a promising gamified intervention for supporting teachers’ mental health. By integrating evidence of intervention-related changes with teachers’ accounts of their experiences, the findings provide complementary perspectives on both the outcomes of the OWC and how these changes were perceived in professional practice.

The quantitative findings showed that teachers who completed the OWC reported higher levels of socio-emotional competence and self-efficacy, together with lower perceived stress than those in the waiting-list control group. These results are consistent with previous research indicating that interventions aimed at promoting teachers’ mental health

can strengthen psychological resources while mitigating occupational stress [25–27]. In particular, the improvement in socio-emotional competence supports evidence that teachers' capacity to recognize and regulate emotions and manage interpersonal demands represents an important resource for both professional functioning and well-being [25,28]. Furthermore, the mediation analyses identified self-efficacy as the principal mechanism through which participation in the OWC contributed to reducing perceived stress, emphasizing the protective role of teachers' confidence in managing professional challenges [27,29,30]. The OWC may therefore contribute not only to reducing perceived stress but also to strengthening personal resources that support teachers in managing everyday professional challenges [18].

The qualitative findings complemented the quantitative results by illustrating how teachers perceived changes across different areas of their personal and professional experience. Participants described improvements in relationship skills, including more effective communication, stronger collaboration with colleagues, and greater confidence in leadership roles. These findings are consistent with research emphasizing the importance of positive professional relationships, collegial support, and social resources for teachers' well-being [31,32]. Teachers also reported enhanced emotional competence, including greater emotional awareness and regulation, more adaptive decision-making, and increased empathy towards colleagues and students. This is consistent with evidence identifying socio-emotional competencies as important resources for managing the emotional and relational demands of teaching [18,25]. Greater attention to self-care and a more positive school climate further emerged as relevant perceived outcomes, supporting previous evidence that self-care practices and supportive school environments are associated with teachers' psychological well-being, professional functioning, and organizational commitment [33–36].

The quantitative and qualitative components provide complementary, rather than directly confirmatory, perspectives on the OWC. While the quantitative findings documented intervention-related changes in specific psychological outcomes, including socio-emotional competence, self-efficacy, and perceived stress, the qualitative findings captured how teachers who completed the OWC perceived changes across broader areas of their personal and professional experience, including emotional competence, relationship skills, decision-making, social awareness, self-care, and school climate. The qualitative findings cannot be interpreted as a direct confirmation or explanation of the quantitative outcomes. Rather, taken together, these complementary sources of evidence provide a broader understanding of the potential contribution of the OWC, suggesting its relevance to both individual psychological outcomes and relational and professional dimensions of teachers' experience.

A key strength of the OWC concerns its development process. Previous research has noted that, although teacher well-being programmes are generally developed or adapted for teachers, educators themselves are rarely directly involved in their conceptualisation or development [14]. In contrast, the OWC was developed through a PAR approach that actively involved teachers in identifying relevant needs and informing the design of scenarios, activities, and content. Participatory approaches have been highlighted as particularly valuable for developing interventions that are responsive to teachers' actual professional experiences and needs [37].

A further strength lies in the game-based format adopted to deliver the intervention. Game-based approaches offer innovative and engaging environments that can support active participation, experiential learning, motivation, feedback, and opportunities to explore and apply knowledge in meaningful contexts [38–41]. These characteristics may be particularly relevant in professional development contexts, where sustained engagement and opportunities for reflection and application to real-world situations are important. In

light of the growing need for accessible, engaging, and evidence-informed approaches to supporting teachers' mental health and professional well-being [42–46], the OWC represents a promising approach for translating psychological content into an interactive professional development experience.

Several limitations should also be considered when interpreting the findings. Methodologically, although the mixed-methods design provided complementary quantitative and qualitative evidence, the absence of a longer-term follow-up prevents conclusions about the maintenance of the observed changes over time. Regarding sampling, attrition and the requirement for complete matched pre- and post-test data substantially reduced the quantitative sample from the initial project sample, potentially introducing attrition bias. In addition, the qualitative component included only intervention participants who were willing to participate in the focus groups, which may have introduced self-selection bias.

Measurement limitations should also be acknowledged, as the quantitative outcomes relied on self-report measures and may therefore be affected by response and social desirability biases, while the qualitative findings reflect participants' subjective accounts of perceived change and cannot establish intervention effects independently. Contextually, the study was conducted with Italian in-service teachers, and the qualitative sample was drawn from schools in Northern Italy. Consequently, the findings may not generalize to teachers working in other geographical, cultural, or educational contexts.

Future research should therefore include larger and more diverse samples, incorporate longer-term follow-up assessments and, where possible, complement self-report measures with additional sources of evidence. Further studies should also examine the conditions that facilitate the implementation and scalability of the OWC across different educational settings and teacher populations. Moreover, the rich qualitative data collected from teachers provide a valuable basis for the further refinement and development of the OWC, helping to ensure that subsequent versions remain responsive to teachers' needs, preferences, and everyday professional experiences, as well as feasible for integration into school-based professional development.

7. Conclusions

Overall, this study provides preliminary evidence that serious games may represent a promising and evidence-informed approach for supporting teachers' mental health. Quantitative findings indicated improvements in socio-emotional competence and self-efficacy and reductions in perceived stress, with self-efficacy emerging as a key mechanism underlying stress reduction. Complementary qualitative evidence highlighted teachers' perceived changes in relationship skills, emotional competence, decision-making, social awareness, self-care strategies, and school climate, broadening the understanding of the potential contribution of the OWC to teachers' personal and professional experience.

These findings have relevant implications for teacher professional development. They suggest that serious games may complement traditional training approaches by providing an interactive and experiential environment in which teachers can strengthen psychological and socio-emotional resources while reflecting on challenges encountered in their professional practice. The broader perceived changes concerning relationships, self-care, and school climate also highlight the importance of addressing teacher mental health not solely as an individual concern, but as an integral component of school-based professional development and organizational well-being.

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Formal analysis, Methodology, Writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement: Informed consent was obtained from all participating teachers. Participation was voluntary, and confidentiality and anonymity were ensured throughout data collection, analysis, and reporting.

Data Availability Statement: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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Abbreviations

The following abbreviations are used in this manuscript:

OWC	Online Well-being Course
PAR	Participatory Action Research
PSS	Perceived Stress Scale
SECTRS	Social and Emotional Competence of Teachers Rating Scale
NTSES	Norwegian Teacher Self-Efficacy Scale
GLM	General Linear Models

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