



Linking Player Types to User Experience: Considerations for the Design of a Platform for the Education on Sensitive Topics

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Gamification has been widely applied in educational contexts to enhance students' motivation and engagement. Its effectiveness has been shown to vary based on individual user preferences, such as age, gender, and player type. This study investigates the relationship between player types and user experience in StandByMe, a gamified educational platform designed to raise awareness about gender-based violence. A total of 61 high school students used the platform for about 35 minutes and completed a user experience questionnaire and the Hexad scale for player types. Results indicate that Free spirits reported higher motivation and overall user experience, while Achievers exhibited lower engagement, possibly due to a lack of clearly structured challenges. Socializers and Disruptors showed no significant relation with user experience. Additionally, demographic factors such as age and gender were related to participants' fun levels and perception of challenge. These findings highlight how users' player type predicts the user experience of a gameful system and should be considered during the design phase. Future research should explore adaptive gamification approaches and specific design modifications to enhance user experience across all player types, both within the StandByMe platform and, more broadly, in gameful systems for the education of sensitive topics.

CCS Concepts: • **Human-centered computing** → **HCI design and evaluation methods**.

Additional Key Words and Phrases: Gamification, User Experience, Player Type, Hexad, Sensitive Topics

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1 Introduction

Gamification is defined as *the use of game elements in non-gameful contexts* to motivate and promote desired behaviors [23, 38]. In the field of education, gamification has been widely used to increase students' motivation and engagement with school subjects [93]. While gamification has great potential, simply incorporating game elements into traditional activities has proven insufficient

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to guarantee effective outcomes for every user [48, 85]. Even when the design deviates from the classic PBL triad (points, badges, and leaderboards), interpersonal, demographic, and cultural factors impact the effectiveness and user experience (UX) of gameful systems [33, 46–48, 92]. For instance, Oyibo et al. [61] examined the appreciation of game elements in individualistic and collectivist cultures, finding that competitive elements are more positively evaluated in individualistic cultures. Similarly, Toda et al. [84] showed that Brazilian participants deemed cooperation, narrative, and storytelling more important than US users. These studies suggest that, while further research is needed, cultural values shape how users perceive gamification.

Demographic factors such as age and gender also influence the effects that different game elements have on users [46, 47]. Koivisto & Hamari [47], for example, found that women preferred social features in gamified apps for physical activity, while Itoko et al. [41] observed that younger users favored competition more than older ones in crowdsourcing tasks. Furthermore, Birk et al. [10] found that users' experience and motivation vary with age, prioritizing enjoyment over performance as they grow older. These findings suggest that demographic traits shape gamification preferences alongside cultural and individual differences. Research also suggests that interaction dynamics and problem-solving approaches in games differ by gender [54]. Consistently, Zahedi et al. [92] found that users displayed apathy or negative reactions to gamification, highlighting the importance of carefully selecting game elements and considering player-type theories in learning environments.

Player types are another key factor influencing users' experience and motivators in gamified systems [8, 46, 55]. Player types categorize users based on their engagement styles and motivations. Exploring users' preferences based on their player type can help designers tailor gameful experiences to improve the UX and the outcomes associated with gameful systems. Bartle's taxonomy, for example, categorizes individuals as Achievers, Explorers, Killers, or Socializers based on gaming preferences [8]. In the context of Bartle's taxonomy, competitive game elements were found to be particularly appreciated by Killers [3, 30], while elements such as badges were particularly appreciated by Achievers [27]. The Hexad model [56] divides player types into Achievers, Socializers, Free spirits, Disruptors, Players, and Philanthropists. Researchers investigating the Hexad typology found distinct preferences among player types regarding game design elements. Achievers tend to favor challenges and levels, while Free spirits prefer elements of customization and unlockable content. Players are more attracted to leaderboards, while Socializers are more engaged by competition and social networking features [46]. While many authors tried to link users' player type to their preference for game elements, the relationship between player type and users' experience remains rather unexplored.

In the current study, we investigate the relationship between users' player types (Hexad; [56]) and their UX in the use of the StandByMe platform [34, 35, 59, 72], a gamified web app for educating high school students on Gender-Based Violence (GBV). GBV is intended as “*any type of harm that is perpetrated against a person or group of people because of their factual or perceived sex, gender, sexual orientation and/or gender identity*” [26]. The StandByMe platform is designed to raise awareness of GBV and promote positive bystander behavior. Although the platform's design supports various player types, our study aimed to examine how this factor influences specific aspects of user experience. Our objectives were twofold: (1) to deepen the understanding of the relationship between player types and UX, contributing to research on the Hexad model and the tailoring of educational gamification; and (2) to explore how different player types engage with a gamified platform addressing GBV, enhancing our knowledge of designing gameful systems for sensitive topics. In particular, we explored the dimensions of (1) perceived learning, given the educational nature of the gamified platform; (2) fun, as it has been demonstrated to promote students' learning [83]; (3) motivation and (4) engagement, as gameful systems are designed to

enhance users' motivation and engagement with the activity they are performing [48, 93]; (5) perceived challenge, since Flow Theory [18] suggests that balancing users' skills with task difficulty enhances focus and motivation. A total of 69 high school students participated in the study, using the StandByMe platform and completing questionnaires related to their player type and user experience. Specifically, we had the following research questions (RQs):

***RQ1:** To what extent does participants' player type affect their overall UX during the use of the StandByMe platform?*

***RQ2:** To what extent does participants' player type affect their involvement (i.e., motivation, engagement, and fun) during the use of the StandByMe platform?*

***RQ3:** To what extent does participants' player type affect their cognitive experience, such as their perceived challenge and learning outcomes, when interacting with the StandByMe platform?*

The paper is structured as follows: in [section 2](#) we present the related works; in [section 3](#) we present the StandByMe platform, the study design, and its results; in [section 5](#) we discuss the results in relation to the StandByMe platform's design and the broader literature; and in [section 7](#) we conclude our paper with some considerations on how to improve the design of the StandByMe platform to cater the needs of the player type that resulted less engaged with the platform.

2 Related Work

Our work contributes to the literature in two ways. First, we expand the literature on the personalization of gamification, particularly the research on the Hexad model. Second, we contribute to the literature on gamification for the education of sensitive topics, where gamification has been rarely used. Therefore, the related work section will be divided as follows. In [subsection 2.1](#) we present the literature on the tailoring of gamification, with a focus on the use of the Hexad model for the customization of gameful systems. Then, in [subsection 2.2](#) we broaden the scope to examine gamified and other digital solutions for the education of sensitive topics, providing a broader perspective on the context in which the StandByMe gamified platform was developed. Specifically, the application context influenced our design choices [9] that possibly influenced users' experience of the StandByMe platform.

2.1 The Role of Player Types in Gamification: The Hexad Model

Player types are central to tailoring gamified experiences, as they provide valuable insights into users' motivations and preferences. The Hexad model is a widely adopted framework for classifying users' engagement styles in gameful systems. It consists of six player types: Achiever, Player, Socializer, Free Spirit, Philanthropist, and Disruptor [87]. The model is based on the Self-Determination Theory [21], and each player type is associated with different motivations and interactions with game elements, making it a useful tool for tailoring gamification strategies to enhance user experience and learning outcomes. The Hexad model categorizes players into six distinct types, based on their predominant motivators: (1) *Philanthropists* are motivated by helping others, contributing to the bigger system, and sharing knowledge; (2) *Socializers* are motivated by social interactions, cooperation and social activities; (3) *Free spirits* are motivated by autonomy and exploration, they prefer experiences that foster creativity and self-expression; (4) *Achievers* are motivated by feelings mastery and competence, they enjoy challenges and skill development; (5) *Players* are motivated by extrinsic rewards (i.e., rewards that do not derive from the pleasure of performing a specific activity) such as points and badges; (6) *Disruptors* are motivated by change and innovation, testing and challenging the system to improve or redesign it.

Several studies have explored the relationship between player types and their preferences for specific gamification elements, as well as their impact on learning and performance. One major area of research examines how player types influence learning outcomes and user performance in gamified educational environments. Sipone et al. [81] investigated the relationship between Hexad player types and the use of ClassCraft, a gamification platform for education, in teaching sustainable mobility concepts. Their study found that player profiles influenced various aspects, including final scores, number of activities completed, connections made, player levels achieved, satisfaction levels, and learning outcomes. Similarly, Lopez et al. [53] explored the effects of Hexad player types on performance in gamified applications, highlighting correlations between player types, perceptions of game elements, and overall performance. Abdollahzade et al. [1] further contributed by studying the relationship between player types and learning styles in gamification, showing significant connections that enhance educational effectiveness.

Other studies have focused on the preferences of different player types for gamification elements and their role in user engagement. Krath et al. [50] empirically identified correlations between Hexad player types and preferred game elements, demonstrating how specific player profiles align with certain mechanics. Similarly, Santos et al. [77] examined the influence of player types on preferences for gamification designs, revealing that different player orientations affect their sense of accomplishment and engagement in gameful systems. Hassan et al. [40] extended this research by analyzing gamification preferences in the Moodle educational platform, focusing on dimensions such as achievement, immersion, and social orientation.

Further studies have explored the validation and implementation of gamification mechanics within educational and behavioral contexts. Gil et al. [31] presented a preliminary study on validating gamification mechanics and player types in an e-learning environment, assessing their effectiveness and implementation. Their findings showed that students' actions and mechanics generally corresponded well with their inferred player types, except for Explorers, who exhibited more varied behaviors. Chan et al. [14] examined how different player types are associated with interest in the social features of an exercise game, aiming to enhance player experience and engagement.

Although these results suggest that player traits can help personalize gamified experiences, new evidence shows that player preferences may change over time. Hallifax et al. [37] found that Hexad-based player type distributions differed significantly from results observed in other studies conducted within specific gamification contexts. This suggests that player preferences are not universally applicable but instead vary across different environments and applications. Furthermore, Dumas et al. [25] argue that player traits can evolve over time, aligning with research on the dynamic nature of user interactions within both games and gameful systems. This temporal variability implies that a rigid application of Hexad-based personalization may not always be optimal, reinforcing the need for adaptive gamification strategies that consider contextual and temporal shifts in player behavior.

In our study, we build on these studies by exploring the relationship between Hexad player types and user experience factors in StandByMe, a gamified web application designed to educate high school students about GBV. While previous studies have examined the impact of player types on learning, engagement, and performance, our work extends this research by focusing on motivation, engagement, challenge, fun, and perceived learning in the context of sensitive topic education [37].

2.2 Gamification for the Education on Sensitive Topics

Research in Human–Computer Interaction (HCI) has increasingly focused on how technology can be leveraged to support education on sensitive topics such as GBV, mental health, online abuse, and discrimination. These interventions span a broad spectrum – from using social media platforms like TikTok to combat abortion stigma and misinformation [4], to employing co-design, digital

storytelling, and artificial intelligence (AI) to foster human rights education [52] and challenge gender stereotypes [75]. A growing body of research emphasizes emotionally safe, participatory approaches that promote empathy, critical reflection, and ethical engagement – particularly among young people [15, 16]. In a literature review, Rodriguez et al. [71] identified several technologies that can be used to raise awareness of and prevent violence against women and children. AI, for example, can be used to detect harmful content online [11, 65, 67, 69]. Internet of Things (IoT) and mobile applications can be used to provide real-time assistance. These technologies include wearables, emergency apps, self-defense tools, and GPS-based alert systems. For instance, smart bands can be integrated with emergency buttons and GPS alert systems [44]. Furthermore, wearables can detect stress via sensors and trigger alerts using cloud processing [45].

Within this landscape, games have emerged as particularly promising tools for addressing sensitive issues [20]. Unlike direct instruction, games can offer emotionally safe, simulated environments in which players engage with complex topics through narrative exploration, role-play, and decision-making. Serious games have tackled themes including GBV, mental health, and online safety [7, 66]. Notable examples include *Orbit* [79], which facilitates discussions around child sexual abuse (CSA) prevention, and *Green Acres High* [13], a role-playing simulation focused on dating violence and peer dynamics. Mulligan et al. also analyzed *NoStranger* [57], a mobile game that explores trust and consent in digital relationships through a decision-based format. These techniques help create emotionally charged yet controlled experiences that foster empathy and ethical reasoning without real-world risks. Nonetheless, while effective, serious games can be resource-intensive to produce and may be challenging to integrate into rigid or traditional educational environments.

In parallel, gamification has gained traction as a flexible and lightweight strategy to engage users with sensitive educational content. Defined as the use of game elements (such as points, badges, or narrative progressions) in non-game contexts, gamification offers a modular and adaptable alternative to serious games [38]. It is particularly suited for integration into school curricula and informal education programs [2, 60]. Research by Koo and Woo [12] introduced a gamified platform to promote gender equality and prevent GBV among high school students, though evaluation results are not yet available. Similarly, the *StandByMe* platform utilized a gamified approach to address gender stereotypes and GBV in adolescent populations [59, 72]. The platform was tested in both individual and cooperative versions, revealing that while cooperative play increased motivation, individual play facilitated more focused learning outcomes [34, 35]. Another example is *Cesagram*, a digital platform developed to raise awareness about online grooming and CSA among preteens. Schiavo et al. highlight how the design process for *Cesagram* involved a multidisciplinary team of educators, psychologists, and interaction designers, ensuring that emotional safety, inclusivity, and age-appropriate content were maintained throughout [78].

Theoretically, these interventions draw from multiple frameworks, including Self-Determination Theory [76] and gameful design principles [22]. These perspectives inform the design of digital systems that seek not only to educate but also to empower users through autonomy, competence, and relatedness – dimensions crucial when dealing with topics like GBV, CSA, or online harassment. In particular, structural gamification could be successfully applied to the education of sensitive topics. *Structural* gamification refers to the application of game elements "around" the educational material, rather than "within" it [29]. This approach boosts motivation while keeping the content respectful, helping learners engage with sensitive topics safely. It contrasts with *content* gamification, which involves modifying the instructional content itself to be more game-like. Structural gamification can be particularly valuable in contexts involving sensitive or emotionally charged topics, where it is essential to preserve the integrity and tone of the original material. By fostering motivation without introducing playful or potentially inappropriate alterations to content, educators can promote engagement with the tools while maintaining respect for the subject matter.

Despite promising outcomes, the literature on gamification for sensitive topics remains sparse compared to other educational applications. While gamification has been widely used in education, from primary schools to universities [89, 91], particularly in STEM fields [73, 93], its adaptation to emotionally charged topics requires further exploration. This gap motivates our investigation into the relationship between player types and user experience within a gamified platform addressing GBV. By linking design strategies to empirical evidence on user engagement and emotional response, this work contributes to a growing effort in HCI to create inclusive, reflective, and effective digital experiences for educating on sensitive social issues [74, 78].

3 Our Study

The goal of the study was to explore the relationship between participants' player types and their UX related to the use of StandByMe. Section 3.1.1 describes the principles behind the design of StandByMe, as they contribute to explaining the relationship between participants' player types and their experience while using the gamified platform.

3.1 The StandByMe Platform

StandByMe aims to raise awareness about GBV among young people. This digital platform employs gamification to engage students and educators in understanding and addressing GBV. The platform offers interactive activities designed to: (1) Raise awareness about GBV and deconstruct gender stereotypes; (2) Provide a safe space for sharing experiences and promoting perspective-taking; (3) Encourage young individuals to take action and understand the communal responsibility in combating GBV. See also Figure 1. The development of the platform was informed by an interdisciplinary approach, integrating theories of social psychology, education, and gamification.

3.1.1 Core Design Principles. The design of StandByMe was based on a set of *design principles* derived from the literature and discussion with experts in the field.

- (1) **Align Gamification with Educational Objectives:** Gamification elements were carefully selected using the Octalysis framework [17] to balance intrinsic and extrinsic motivation while maintaining the seriousness of sensitive topics. We aimed to ensure that game elements supported learning goals rather than just adding extrinsic rewards [5, 70, 93], and provide feedback that emphasizes understanding rather than right/wrong judgments.
- (2) **Keep Gamification Simple and Intuitive:** Simplicity in design was prioritized to minimize cognitive load, avoiding complex game mechanics that might detract from learning [18, 19, 36, 42].
- (3) **Leverage Narrative and Storytelling for Engagement:** Narrative and storytelling were strategically integrated to enhance engagement and reinforce educational messages, creating structured yet flexible digital learning paths [63, 64].
- (4) **Balance Moderated and Unmoderated Activities:** A balance between moderated and unmoderated activities was maintained to ensure both safety and autonomy, with professional oversight for the most sensitive topics.
- (5) **Facilitate Classroom Integration:** Educators were actively involved in the design process to facilitate the integration of these tools into classrooms, ensuring they complement existing teaching methods and foster collaborative discussions [6, 28].
- (6) **Avoid Victim Blaming in Sensitive Topics:** To prevent victim blaming, the content was carefully framed to emphasize the responsibility of perpetrators while fostering empathy and empowerment [88, 90]. Psychological safety was also prioritized by incorporating trigger warnings, flexible engagement options, and expert-reviewed content.

3.1.2 *The Gamification Design.* As mentioned in section 3.1.1, the gamification layer was designed to be simple and intuitive, ensuring that game elements enhance rather than distract from the educational activities. It was integrated with the learning experience, leveraging narrative and storytelling to reinforce key messages while maintaining a flexible and engaging environment. The game elements included a *points* system that rewarded activity completion and *badges* earned for accomplishing specific missions (Figure 1). These *missions* encouraged students to explore the platform further and retry activities to improve the correctness of their answers. The content was structured into *episodes*, each featuring two to three activities and a piece of a story, motivating students to progress and discover how the narrative unfolds. Within each episode, students were free to complete activities in any order, allowing them to shape their narrative.

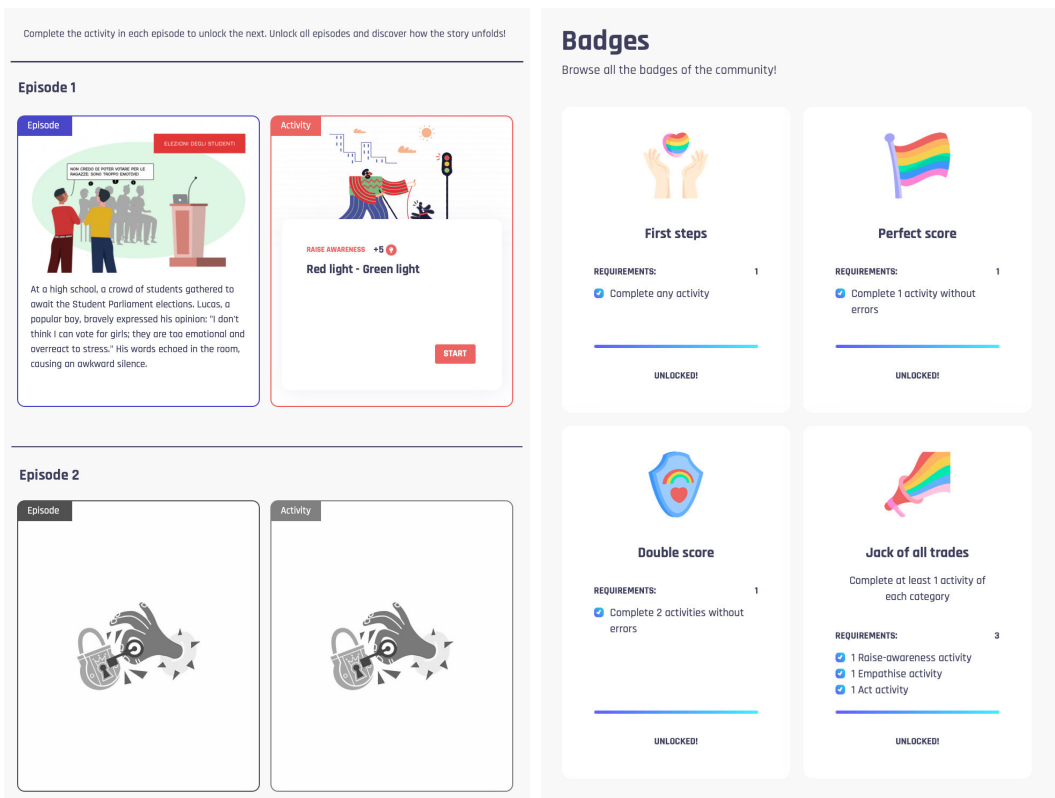


Fig. 1. Examples of episodes with activities (left) and badges (right) of StandByMe.

3.2 Methods

3.2.1 *Participants.* A total of 69 students (age range 16-18, $M = 17.190$, $SD = 0.670$; 44 self-identified as female, 25 as male) participated in the study. Participants were recruited from two public high schools located in medium-sized cities in Italy (Padova and Cremona). All participants shared a similar cultural and educational background. The study was conducted in schools' computer rooms. Due to missing data, the final sample of participants consists of 61 students (age range 16-18, $M =$

17,000, SD = 0.654; 39 self-identified as female, 22 as male¹). Due to the subject's sensitive nature, all participants were provided with the contact information for local centers specializing in addressing GBV, in case they needed help. The study was approved by the ethics committee of the University of Trento (Italy), and all participants (and their parents in case of underage students) signed an informed consent form before they participated in the study.

Before running the analysis, we run the Chi-squared test to assess any differences in the distribution of gaming habits within the sample. We found no difference for digital (Chi-squared = 45.653, p-value = 0.915) and non-digital (Chi-squared = 24.482, p-value = 1.000) games.

3.2.2 Material. Participants were administered two questionnaires. For player types, we used the Italian translation of the Hexad scale [87]. The questionnaire contains 24 Likert-like items (1 = "strongly disagree", 7 = "strongly agree"). The Hexad Scale is used to categorize user preferences, motivations, or personality traits that influence how individuals interact with gamified systems. Compared to other player-type frameworks, the Hexad model showed an advantage in explaining interpersonal differences [37], leading us to choose this model over other available frameworks (e.g., Bartle's taxonomy [8]; BrainHex [58]).

For the UX, we used the MEEGA360 scale [32]. The MEEGA360 scale – derived from the MEEGA+ scale [68] – is a questionnaire designed to evaluate playful and gameful educational tools, focusing on usability, UX, and perceived learning. We preferred this tool over other UX questionnaires due to its holistic nature and the subdivision of the items into different dimensions, each highlighting a different dimension of the UX of playful educational technologies. The tool presents a demographic section (age, gender, gaming habits), followed by a 5-point Likert-like scale (1 = "Disagree", 5 = "Agree") on usability, UX, and perceived learning. In the Likert-like section of the tool, the MEEGA360 assesses – among the other dimensions – participants' *motivation, engagement, fun, challenge, and perceived learning*. See [68] for the computation of the *overall score*. In the study, an Italian translation of the tool was used.

3.2.3 Procedure. After providing their consent to participate in the study, all students completed the demographic section of the MEEGA360 scale and then filled out the Hexad scale. Participants used the StandByMe platform for about 35 minutes. Afterwards, participants completed the remaining sections of the MEEGA360, related to their experience with the gamified platform.

3.3 Analysis

The analyses were conducted using the full sample of 61 participants. Rather than assigning participants to discrete player type categories (e.g., Socializer, Achiever), we treated player type scores as continuous variables. This decision was made because the number of participants who would have fallen into each category was too small to support meaningful statistical comparisons. By including all data points in the model, we were able to examine correlations across the entire range of player type scores. This approach allowed us to identify relationships between variables and both high and low tendencies in each player type, providing a deeper understanding of the data than would have been possible through categorical analysis alone. This means that for each player type, we analyzed data from all 61 participants. Based on the exploratory nature of the analysis and the need to identify the models that better linked the predictors to the dependent variables (overall score and average score in the dimensions of interest), we used stepwise variable selections with a combination of forward and backward elimination, maximizing the Akaike Information Criterion (AIC) (R v.4.3.1). Although the stepwise selection helped identify significant predictors, the method

¹The questionnaire also included the options "Other (specify)" and "Prefer not to say," but none of the participants selected either of these.

is sensitive to sample size and data variability. To address this limitation, the model was validated using Leave-One-Out Cross-Validation (LOOCV) and calculating the mean squared errors (MSEs). Indeed, LOOCV shows robust estimates for small datasets. For each RQ, a model was run focusing on a different dependent variable. The data of three participants were not included in the analyses as they used a different code for the UX questionnaire; five other participants did not fill out the UX questionnaire, and their data were not included as well. Starting from a total of 69 participants, the final sample consisted of 61 participants.

4 Results

The overall score mean ($M = 58.240$, $SD = 10.372$) indicates that the platform reached overall good levels of UX (see Table 1). All subscales of the MEEGA360 scale received a slightly positive evaluation, except for engagement, which scored below the neutral value of 3 (perceived learning $M = 3.339$, $SD = 1.108$; motivation $M = 3.566$, $SD = 1.063$; engagement $M = 2.858$, $SD = 1.038$; fun $M = 3.590$, $SD = 1.059$; social $M = 3.175$, $SD = 1.123$; challenge $M = 3.623$, $SD = 0.829$).

Overall, participants showed higher scores in the *Philanthropist* player type ($M = 5.611$, $SD = 0.765$; see Table 2), followed by *Free spirit* ($M = 5.574$, $SD = 0.641$), *Socializer* ($M = 5.525$, $SD = 0.078$), and *Achiever* ($M = 5.369$, $SD = 0.827$). Following, with the lower scores are *Player* ($M = 4.881$; $SD = 1.302$) and *Disruptor* ($M = 3.689$, $SD = 1.171$).

Table 1. Mean and standard deviation of participants' scores in the MEEGA360 scale.

MEEGA360 subscale	M	SD
Overall score	58.240	10.372
Perceived learning	3.339	1.108
Motivation	3.566	1.063
Engagement	2.858	1.038
Fun	3.590	1.059
Social	3.175	1.123
Challenge	3.623	0.829

Table 2. Median, mean, and standard deviation of participants' scores in the Hexad scale.

Player type	Median	M	SD
Philanthropist	5.500	5.611	0.765
Socializer	5.500	5.525	0.878
Free spirit	5.750	5.574	0.641
Achiever	5.250	5.369	0.827
Disruptor	3.500	3.689	1.171
Player	4.750	4.881	1.302

The stepwise process identified a model for the overall score and each dimension of interest, except for *perceived learning*, for which the stepwise analysis did not find any factor explaining the variable. All the models identified through the stepwise process were significant (see Table 4, Table 5, and Figure 2). *Overall_score* model is the worst one in terms of predictive power, as demonstrated by the high MSE value ($MSE = 103.416$). The MSEs for the remaining models are lower, indicating a better predictive power (range 0.631 – 1.091; see Table 3). Considering the MSEs, it is not surprising that the *Overall_score* model is the one explaining the least variance of the dependent variable ($R^2 = 0.079$). On the other hand, the *motivation* model explains almost 18% of the variance (for the other R^2 values see Table 4 and Table 5).

Table 3. Mean squared errors (MSEs) for each of the dependent variables.

Model	MSE	Range
Overall	103.416	$formula = 50 + (\text{mean} - 3) * 15$
Motivation	1.022	1 (disagree) – 5 (agree)
Engagement	1.047	1 (disagree) – 5 (agree)
Fun	1.091	1 (disagree) – 5 (agree)
Challenge	0.631	1 (disagree) – 5 (agree)
Perceived learning	NA	1 (disagree) – 5 (agree)

Table 4. LMMs for the overall score, motivation, and engagement.

Overall score			Motivation			Engagement		
$R^2 = 0.079$, p-value = 0.035			$R^2 = 0.179$, p-value = 0.004			$R^2 = 0.092$, p-value = 0.037		
Factor	β	p-value	Factor	β	p-value	Factor	β	p-value
Age	3.527	0.079	Age	0.030	0.058	Philanthropist	0.345	0.065
Free spirit	4.203	0.041*	Free spirit	0.660	0.002**	Achiever	-0.349	0.040*
			Disruptor	-1.475	0.139	Player	0.242	0.021*
			Player	-0.148	0.165			

4.1 Demographic Factors

The models presented in Table 4 and Table 5 indicate that *age* plays a role in shaping user experience. Specifically, older participants reported higher levels of *fun* ($\beta = 0.041$, $p = 0.047$) and found the *challenges* more balanced ($\beta = 0.440$, $p = 0.006$). Additionally, male participants tended to experience greater *fun* ($\beta = 0.650$, $p = 0.030$). While the age factor also appeared in the models for *overall user experience* and *motivation*, its influence in these areas was not statistically significant (overall $\beta = 3.527$, $p = 0.079$; motivation $\beta = 0.030$, $p = 0.058$).

4.2 Player Types

The analysis revealed that the *Free spirit* player type predicted several aspects of user experience. In particular, it was significantly related with *motivation* ($\beta = 0.660$, $p = 0.002$), *fun* ($\beta = 0.430$, $p = 0.042$), and the overall UX ($p = 0.041$). On the other hand, the *Achiever* type showed a negative impact on *engagement* ($\beta = -0.349$, $p = 0.040$). Similarly, the *Player* type presented a significant effect on *engagement* ($\beta = 0.242$, $p = 0.021$). However, when it comes to *fun* and *motivation*, the *Player* type showed a negative relationship, though these results are not statistically significant (motivation $\beta = -0.148$, $p = 0.165$; fun $\beta = -0.204$, $p = 0.072$). The *Philanthropist* player type showed a positive but non-significant impact on *engagement* ($\beta = 0.345$, $p = 0.065$). Similarly, the *Disruptor* player type appeared in the models with a negative, non-significant relationship with *motivation* ($\beta = -0.148$, $p = 0.139$). Finally, the *Socializer* player type did not appear in the models at all, suggesting that there is no relationship – either positive or negative – between this player type and the overall MEEGA360 score or its dimensions. All data are reported in Table 4 and Table 5. A summary of the main results is provided in Figure 2.

5 Discussion

The findings of this study provide valuable insights into the relationship between player types and user experience, motivation, engagement, perceived challenge, fun levels, and perceived learning

Table 5. LMMs for fun, challenge, and perceived learning.

Fun			Challenge			Perceived learning
$R^2 = 0.119, p\text{-value} = 0.025$			$R^2 = 0.123, p\text{-value} = 0.008$			No model identified
Factor	β	p-value	Factor	β	p-value	
Age	0.401	0.047*	Age	0.440	0.006**	
Gender (male)	0.650	0.030*	Free spirit	0.260	0.102	
Free spirit	0.430	0.042*				
Player	-0.204	0.072				

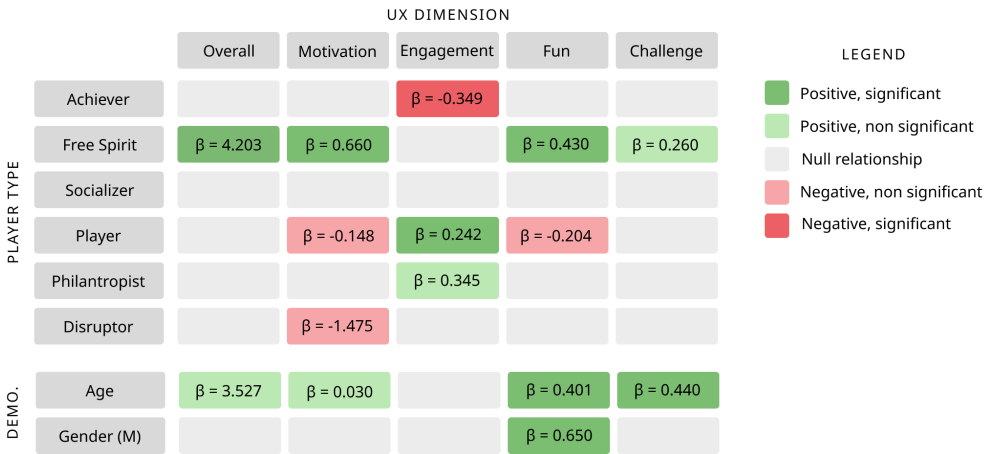


Fig. 2. Summary of the models.

within the StandByMe platform. These results partially align with the existing literature on gamification and the Hexad model, particularly in identifying Free Spirits as among the most common player types and Disruptors as the least frequent [56, 87].

5.1 RQ1 Participants’ Player Type and Overall UX

The results indicate that overall UX evaluation is influenced by player type, though the effect size remains moderate. The lower explanatory power of the overall UX model can be attributed to the inclusion of dimensions of the questionnaire that are not necessarily affected by player type, such as usability. The simple and intuitive gamification mechanics (design principle #2) likely helped reduce cognitive load, contributing to the positive UX scores.

5.2 RQ2 Participants’ Player Type and Involvement with the Platform

The analysis showed that player type played a significant role in shaping participants’ involvement with the StandByMe platform. Participants categorized as *Free Spirits* reported higher levels of motivation. This suggests that StandByMe successfully supports intrinsic motivation in high school students, especially for those who enjoy autonomy [21]. In particular, the possibility to complete part or all the activities, in the order students preferred, and/or being able to repeat the activities for a better score without it being mandatory to advance in the platform allowed students to build their own narrative within the gameful system [64]. This may particularly motivate *Free Spirits*, who seek

exploration and self-expression and are motivated by choice-based, exploratory environments [87]. *Players*, who are more reward-driven [87], did not demonstrate significant differences in motivation, which may be due to the platform's emphasis on intrinsic rather than extrinsic motivation. This aligns with design principle #1, which prioritizes gamification elements that reinforce educational goals over extrinsic rewards. The platform's focus on intrinsic motivation may have supported Free Spirits but offered limited appeal to *Players*, who are driven by clear and tangible rewards. While this is in line with our design choices (design principles 1. *Align Gamification with Educational Objectives*; 2. *Keep Gamification Simple and Intuitive*; and 3. *Leverage Narrative and Storytelling for Engagement*), future iterations could explore whether adding more explicit gamification elements, such as highlighted missions or clearer goal-setting, enhances motivation for *Achievers* and *Players* without detracting from intrinsic engagement [80]. However, the non-significant effect observed for *Players* suggests that such modifications may not be necessary, particularly given the positive relationship between *Players* and *engagement*.

Engagement results indicate a negative relationship with *Achievers* and a positive but non-significant relationship with *Philanthropists*. Their interest may influence the engagement of *Philanthropists* in the topic itself, which could take precedence over the gamification design. Indeed, while the design principles surely played a role in the UX of StandByMe, it is important to consider that the topic of the application also influences the effects of the design. The non-significant relationship suggests that the platform can engage a wide variety of player types. On the other hand, *Achievers* show lower scores in engagement, which may indicate that – similar to what happens for *Players* and motivation – highlighting clearer goals could help engage *Achievers* without requiring drastic changes to the gamification design. By making goals more explicit or introducing structured challenges, the platform may better cater to *Achievers* while maintaining its intrinsic motivation focus. Another way to engage *Achievers* could be represented by a *stats* page, in which users can track their achievements and results within the application. Indeed, the simplicity of StandByMe may have resulted in a lack of structured, escalating challenges, possibly explaining lower engagement levels among *Achievers*.

The results indicate that fun levels were higher among older participants and male participants. The relationship between gamification user experience and gender aligns with previous findings, whereas age more frequently exhibits a negative impact [43, 47]. Although the age difference between younger and older participants is minimal, it is important to note that adolescence is a period of significant brain development. As highlighted by Steinberg [82], cognitive development during this stage shapes adolescents' understanding of social issues, including gender-based violence. Their ability to critically evaluate social norms and identify unhealthy relationship dynamics is closely linked to their cognitive and emotional growth. The design elements that support Free Spirits, such as autonomy and the ability to navigate content freely, may contribute to higher enjoyment among this group. However, *Achievers* may find the lack of explicit goals to be a detriment to their enjoyment. Also in this case, introducing structured challenges could help balance engagement for different player types while maintaining the platform's intrinsic motivation focus.

5.3 RQ3 Participants' Player Type and Cognitive Experience

Age played a notable role in perceived challenge, with older participants reporting a more balanced challenge-to-skill ratio. This aligns with findings from prior studies indicating that maturity and experience influence how challenges are perceived in gamified settings [10, 47]. The platform's design may be better suited for older participants, as they have greater familiarity with the subject matter, making challenges feel more appropriate and balanced. For what concerns player types, though, the model does not highlight significant relationships. This may indicate that the platform has adequate levels of challenge, similarly appreciated by all player types. This result suggests

that the difficulty of the platform's activities was calibrated in a way that avoided overwhelming or under-stimulating most users. The results are in line with the design principle #2, which emphasized simple and intuitive gamification mechanics to reduce cognitive load. Additionally, by aligning challenges closely with educational objectives (design principle #1), the platform may have supported constructive engagement without introducing frustration – particularly important when addressing emotionally sensitive content [34]. The lack of differentiation across player types further suggests that the platform achieved a balanced approach to challenge that accommodated a range of user preferences.

Interestingly, our results did not identify a statistically significant relationship between player types and perceived learning. This finding suggests that, while gamification elements and player preferences may influence users' motivation, engagement, and enjoyment, they do not necessarily translate into a different perception of learning. This may reflect a broader trend observed in the literature, where perceived learning is often influenced more by content relevance and clarity than by gamification mechanics or motivational profiles [24, 80]. One possible explanation is that the educational content of the StandByMe platform minimizes the variability in students' perceived learning regardless of player type. This is consistent with the idea that structural gamification, which supports but does not alter learning content, may enhance engagement without compromising learning objectives [29, 39]. Moreover, perceived learning is often shaped by prior knowledge, interest in the subject, and the design of the educational material [48], rather than game-related traits. Therefore, the absence of a link between player types and perceived learning might reflect the strength of the platform's design in fostering educational objectives across different motivational profiles. Future research could further explore the relationship between player types and actual – rather than perceived – learning outcomes.

5.4 Design Implications and Future Directions

The findings suggest that the current design effectively supports *Free Spirits*, while *Achievers* and *Players* may benefit from more explicit challenges and gamification cues. *Socializers* might require additional socialization activities, though these must be carefully designed to ensure safety given the platform's sensitive content. The low motivation of *Disruptors* is not necessarily negative, as their presence does not significantly harm motivation or learning outcomes. Furthermore, given the sensitive nature of the topic, researchers should carefully consider adapting the design of the gameful system to a player type that – by definition – likes testing and challenging the system, in order to maintain the platform's integrity and prevent misuse.

Future iterations of StandByMe could explore ways to introduce more structured challenges for *Achievers*, enhance gamification cues for *Players*, and cautiously implement socialization features for *Socializers*. Asynchronous socialization methods (e.g., discussion boards with moderated interactions, team-based missions, or peer recognition features) could help maintain engagement while ensuring safety. Additionally, demographic factors such as age and gender should be considered, as research on adaptive gamification suggests that difficulty scaling based on user experience levels could improve engagement across age groups [46, 86].

Overall, while player type and demographic factors significantly explain part of the variance in UX and engagement, they are not the sole determinants of gamification outcomes. Future research should also explore additional variables, such as prior subject knowledge and digital literacy, to develop a more comprehensive understanding of how different user characteristics interact with gamified learning platforms.

6 Limitations

The study has several limitations. First, the small sample size prevented us from using models that incorporated all variables simultaneously (e.g., confirmatory factor analysis). Second, participants were recruited from schools, with a total of three classes taking part in the study. Due to the study's nature, gender distribution was unbalanced and could not be controlled. The narrow age range, while representative of the StandByMe platform's target audience, constrained the scope of the analysis. These two aspects limit the generalizability and interpretation of the results, as the comparisons across demographics have low reliability. Furthermore, all participants in this study shared a similar cultural and educational background—having the same nationality and attending the same high schools. This cultural homogeneity limits the generalizability of the findings, as the influence of player types may vary across different demographic and cultural contexts. As highlighted by Oyibo et al. [61, 62], cultural differences can significantly affect how users perceive and appreciate game elements. Our study is also subject to a common limitation associated with using self-report questionnaires: the data collected relies on participants' perceptions, which can introduce different biases, such as desirability bias, where respondents provide answers they believe to be more socially acceptable [51], and recall bias, which can affect the accuracy of their responses [49]. As a result, the findings should be interpreted with an understanding of the subjectivity inherent in self-reported data. Finally, the study also does not compare the gamified platform to a non-gamified version, making it difficult to isolate the impact of gamification itself.

7 Conclusion

We presented a study in which we explored the relationship between player types – measured through the Hexad scale [87] – and user experience in the context of a gamified educational platform designed to raise awareness of GBV. Our findings highlight that UX varied significantly based on player type. In particular, *Free Spirits* showed higher motivation and engagement, while *Achievers* reached lower levels of engagement, possibly due to the lack of structured challenges. *Disruptors* and *Socializers* did not show any specific impact on the UX, suggesting that these two player types are not particularly affected by the design of the platform. Additionally, demographic factors such as age and gender predicted user perceptions, with older and male participants reporting higher enjoyment levels. Despite these insights, the study revealed that player types alone do not entirely determine participants' UX. While the platform successfully fostered intrinsic motivation, the results suggest that incorporating clearer goals and progress-tracking features may better engage *Achievers* and *Players* without compromising the platform's educational goal.

Future studies should explore (1) the design of explicit challenges, structured goals, or a stats page to improve *Achievers* appreciation of the platform; (2) carefully introduce more social interactions to motivate *Socializers* without hindering the safe environment created in the platform; and (3) consider the introduction of adaptive gamification and the customization of game elements based on user preferences and demographic factors to improve the UX across a diverse pool of users.

Overall, this research contributes to the growing knowledge of the tailoring of gamification for educational purposes, particularly in the context of sensitive topics.

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