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EXPLORING ASSOCIATIONS BETWEEN SELF-EFFICACY, WORK ENGAGEMENT AND BEHAVIORAL INTENTION TO USE GAMIFICATION

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Abstract

Along with the growing interest and the continuous development in technology, gamification gained more recognition in the educational areas. While knowledge concerning gamified approaches and their advantages in the classroom are better understood for student populations, less is investigated in terms of factors that drive teachers to use such approaches in the classroom. The present study investigated the associations between self-efficacy, teachers' work engagement, and behavioral intention to use gamification among 170 teachers, aged between 18 to 64 years old (M = 34.9; SD = 9.69), with a teaching experience ranging from almost one year to 44 years of experience (M = 8.71; SD = 9.62). Correlation analyses showed that there are associations between teachers' self-efficacy, teachers' work engagement, and behavioral intention to use gamification. This study showed that there are significant associations between self-efficacy, work engagement, and the behavioral intention to use gamification. These results stress out the need for more investigations on the personal characteristics of teachers that may be related to the use of gamified approaches in the classroom.

Keywords: ***Self-efficacy; Work engagement; Teachers; Gamification.***

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Introduction

In general, definitions of gamification conceptualized it as using structures and elements that are specific to games in non-game situations in order to facilitate problem-solving (Su & Cheng, 2015). Gamification also proved efficient in educational contexts in improving learning outcomes and developing of soft-skills (Caponettol & Ott, 2014; Dicheva et al., 2015), by including features specific to games in various educational domains.

Previous studies showed mixed results concerning teachers' attitudes towards gamification. Teachers reported both positive and negative attitudes towards the use of gamification during the instructional process (Martí-Parreño et al., 2021), presenting benefits such as increased student motivation, promotion of a positive climate in the classroom, improved student collaboration skills (Moseikina et al., , 2022; Pektaș & Kepceoglu, 2019), but also promoting critical thinking, problem-solving skills (Kabilan et al., 2023). Some negative aspects related to using gamification were also suggested, including teachers having difficulties with classroom management, and several technical issues which negatively impact the activities carried out by both teachers and students (Pektaș & Kepceoglu, 2019).

The literature identifies a number of potential factors that influence a teacher's decision to use gamification for educational reasons. Two different types of factors were especially looked at in this study. First, the constructs that relate to the teacher's unique characteristics such as self-efficacy and work engagement. Secondly, constructs related to teachers' technological skills and attitudes towards gamification, such as technology proficiency and gamification`s perceived usefulness. In the following paragraphs, we define the main variables and we present the relationship between work engagement, technology proficiency level and perceived usefulness of gamification and how it can explain the relationship between teachers' self-efficacy and gamification usage during the instructional process, as they are suggested in previous research.

Self-efficacy and behavioral intention to use gamification

Self-efficacy was first defined by Bandura (1977) and describes one`s confidence in their ability to carry out an activity in an efficient manner. In the educational context, self-efficacy refers to teachers` beleif in their skills in carrying their activitites in a way that ensures the attaining of proposed educational outcomes (Skaalvik and Skaalvik, 2007).

Some preliminary studies suggested that creativity might be a contributing factor to using gamified applications in the classroom (Araújo & Carvalho, 2022). Considering that previous studies showed that self-efficacy predicted creative self-efficacy (Tierney & Farmer, 2002) and

some level of creativity in required for implementing gaming designs in the classroom, teachers with higher levels of self-efficacy could be more open to using such technologies in the teaching process. According to the theory of reasoned action, one's intentions lead to actual behavior, thus behavioral intention refers to a person's intentions on whether to behave or not to behave in a specific way (Fishbein & Ajzen, 1975).

On a similar note, Barz et al. (2022) reported higher self-efficacy related to digital media in the younger, less experienced teacher population, suggesting that teachers with high levels of self-efficacy also reported a high preference for using gamification in the classroom (An et al., 2021) and a high level of behavioral intention to advocate and use a gamified application in their teaching activities (Adukaite et al., 2017). Turan and colleagues (2022) obtained similar results showing that self-efficacy had a direct effect on the intention to use gamification in pre-service teachers.

Work-engagement and behavioral intention to use gamification

There are various potential factors for choosing to use gamification in educational contexts. Work engagement refers to a positive psychological state of mind characterized by dedication, vigor and absorption (Schaufeli et al., 2002a). Previous research clearly indicated that teachers with high levels of self-efficacy are more involved in their work (Llorens et al., 2007, Xanthopoulou et al., 2007).

Another interesting line of research has focused on the relationship between work engagement and the adoption of innovative and diverse teaching methods. A recent study showed that all teachers' work engagement dimensions (vigor, dedication and absorption) were found to be significantly and positively associated with the adoption of a diverse and rich repertoire of teaching practices, which means that when teachers perceive their work environment as supportive, satisfying, they tend to use a broader range of teaching practices such as co-teaching, differentiation and classroom management among Swiss inservice teachers (Addimando, 2019). These results suggest that teachers' work engagement may play a mediating role between teachers' self-efficacy and behavioral intention to use gamification in the classroom.

Method

- **Participants**

As part of a larger study, this section was previously presented in more detail in Cramariuc et al. (under review). All relevant information is mentioned here.

The sample consists of 170 k-12 teachers, with ages ranging from 18 to 64 years old (M = 34.9; SD = 9.69), with a teaching experience ranging from 1 to 44 years (M = 8.71; SD = 9.62). 92.4% of participants are female and 47.6% of the total of participants are teaching in rural areas.

- **Measures**

Self-efficacy. A Romanian translation of Teachers' Self-Efficacy Scale (TSE; Schwarzer, Schmitz, & Daytner, 1999) was used to assess teachers' self-efficacy. This scale consists of 10 items, evaluated on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Example of items: "I am convinced that I am able to successfully teach all relevant subject content even if it is difficult.". The Cronbach's alpha of TSE for this study was .93.

Work engagement. A Romanian translation of Utrecht Work Engagement Scale (UWES; Schaufeli & Bakker, 2003) was used to assess teachers' work engagement. This scale consists of 17 items, assessed on a seven-point Likert scale, ranging from 0 (never) to 6 (always). Example of items: "I am proud of the work I do". The Cronbach's alpha of UWES for this study was .91.

Use of gamification. A Romanian translation of Behavioral Intention to Use Gamification Scale (Gardner & Amoroso, 2004) was used to assess teachers' behavioral intention to use gamification during the teaching process. This scale consists of 3 items, assessed on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). As previously stated, because some of our respondents might not know what gamification is and it would be difficult for them to assess its usefulness, we added another answer option, 8 – I am not familiarized with the concept of gamification. Example of items: "If I had enough time, I would use the gamified application.". The Cronbach's alpha of the scale in this study was .88.

- **Procedure**

This study followed the same procedure previously described in detail in Cramariuc et al. (under review).

Results

The descriptive statistics and bivariate correlations between the study variables are presented in Table 1. In general, the means for teachers' self-efficacy, teachers' work engagement, and behavioral intention to use gamification were rather high.

Table 1. Descriptive statistics and bivariate correlations between study variables

	M	SD	Min	Max	1	2	3
1. Teachers' self-efficacy	3.37	.46	1.90	4.00	-		
2. Teachers' work engagement	4.53	.78	1.41	5.65	.50**	-	
3. Behavioral intention to use gamification	5.61	1.25	1.00	7.00	.49**	.52**	-

** $p < .001$

Correlation analysis showed that teachers' self-efficacy was positively and significantly associated with teachers' work engagement ($r = .50$, $p < .001$), and teachers' behavioral intention to use gamification ($r = .49$, $p < .001$). Teachers' work engagement was positively and significantly associated with teachers' behavioral intention to use gamification ($r = .52$, $p < .001$). All these results are small to medium (Cohen, 2013).

Discussion

The aim of the present study was to investigate the associations between self-efficacy, work engagement and teachers` behavioral intention to use gamification. We conducted correlation analysis between all study's variables. The results showed that teachers' self-efficacy was positively and significantly associated with teachers' work engagement, and teachers' behavioral intention to use gamification. The same pattern of results was found in previous studies. For instance, research on teachers showed that there is a link between self-efficacy and positive attitudes toward integrating technology in the classroom (Abbitt, 2011; Almaiah, 2020). More specifically, teachers with higher self-efficacy levels, also tend to see gamified approaches as useful (Alsamawi & Kurnaz, 2023) and actually use it more in their activities (Adukaite et al., 2017; Alsamawi & Kurnaz, 202; An et al., 2021; Turan et al., 2022).

Moreover, these results are consistent with the previous studies showing significant associations between teachers' self-efficacy and work engagement (Llorens et al., 2007, Xanthopoulou et al., 2007), and behavioral intention to use gamification (Asiri, 2019; Cramariuc et al., 2022). Additionally, it was shown that when teachers are involved in their work, they tend to use a more diverse and richer repertoire of teaching practices, which indicates that when teachers view their work setting as supportive and satisfying, they are inclined to employ a greater variety of teaching practices such as co-teaching, differentiation, and classroom management (Addimando, 2019).

This study has more limitations that were previously mentioned in Cramariuc et al. (under

review). All relevant information is included here. Although our findings covered a gap concerning the personal characteristics of teachers and their link to the use of gamification in the classroom, the correlation analyses make it difficult to conclude which factors are more decisive in using gamification in the classroom.

Conclusion

In sum, these results showed that there are associations between teachers` self-efficacy, work engagement and the behavioral intention to use gamified approaches in the classroom. The present study emphasises that several personal characteristics, such as teachers` confidence in their skills to efficiently manage educational activities and the level of engagement in their work may be linked to using a larger repository of methods and didactic strategies, including gamification.

Recommendations

The results of the present study also have practical implications. More precisely, the results highlight the rational for the development of interventions with the aim of increasing psychological characteristics such as self-efficacy and work engagement. For example, school managers can plan programs and activities to increase teachers' work engagement by making them to be proud of what they are doing, and to find their work meaningful and purposeful. Additionally, workload assignment policies should be examined in order to promote a better work-life balance and to further drive teachers to be more satisfied, devoted, and involved in their profession.

Notes

Author contribution: All authors contributed equally to this paper.

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