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IMPROVING EMPLOYEES' ATTITUDE TO LEARNING THROUGH GAMIFICATION: WHAT INFLUENCE?

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ABSTRACT

- Research aim: To explore existing gamification practices in vocational training and assess their impact on motivation and learning outcomes.
- Design/methodology/approach: This study adopts a research design using semi-structured interviews to gather data on gamification practices in vocational training.
- Results: The findings indicate that gamification practices have the potential to have a significant impact on learning motivation and learning outcomes.
- Research limitations and implications: Limitations include sample size and the specificity of the context studied. These must be taken into account for appropriate interpretation of the results.
- Practical implications: Gamification can serve as an effective tool for enhancing employees' motivation to learn within organizations, thereby improving the effectiveness of professional training.
- Originality/value: This research stands out for its exploration of the applications of gamification in professional training and its potential to enhance corporate learning.

Keywords: Gamification; motivation; gamified practices; learning attitude.

RÉSUMÉ

- Objectif de la recherche : Explorer les pratiques de gamification existantes dans la formation professionnelle et évaluer leur impact sur la motivation et les résultats d'apprentissage.
- Conception/méthodologie/approche : Cette étude adopte un design de recherche utilisant des entretiens semi-structurés pour recueillir des données sur les pratiques de gamification dans la formation professionnelle.
- Résultats : Les résultats indiquent que les pratiques de gamification ont le potentiel d'avoir un impact significatif sur la motivation à apprendre et les résultats d'apprentissage.
- Limites et implications de la recherche : Les limites incluent la taille de l'échantillon et la spécificité du contexte étudié. Ces éléments doivent être pris en compte pour une interprétation appropriée des résultats.
- Implications pratiques : La gamification peut servir d'outil efficace pour renforcer la motivation à apprendre des employés au sein des organisations, améliorant ainsi l'efficacité de la formation professionnelle.
- Originalité/valeur : Cette recherche se distingue par l'exploration des applications de la gamification dans la formation professionnelle et son potentiel à améliorer l'apprentissage en entreprise.

Mots-clés : Gamification ; motivation ; pratiques gamifiées ; attitude d'apprentissage.

IMPROVING EMPLOYEES' ATTITUDE TO LEARNING THROUGH GAMIFICATION: WHAT INFLUENCE?

Introduction

In recent times, an escalating number of companies are incorporating gamification into their training strategies (Hoekendijk, 2018). This approach has seamlessly integrated into professional training methodologies, evoking profound emotional responses in individuals, ranging from curiosity to frustration and joy (Lee and Hammer, 2011).

Gamification is a learning lever that triggers emotions, positive experiences, improved motivation and learner loyalty (K.Mullins and Sabherwal, 2020). In an educational context, it has major appeal for motivating individuals to learn (D. Mekler & Brühlmann *et al.*, 2017). We observe the use of game mechanics to enhance learning motivation among employees (Grünewald, Kneip and Kozica, 2019). This technique, which relies on the mobilization of games in a so-called "serious" setting, is addressed by researchers and practitioners alike (Deterding, *et al.*, 2011). The appeal of gamification arises due to its potential to influence behavior.

Motivation through gamification is a widely studied concept (Höchstmann *et al.*, 2019). However, these studies primarily focus on the use of points, badges, and leaderboards in educational contexts (Dichev and Dicheva, 2017). Other studies have been deployed in formal work-oriented learning contexts (Lombriser *et al.*, 2016) or in informal contexts without reference to education (Sailer *et al.*, 2017). This research tends to emphasize the attributes of gamification while overlooking the gamified experience itself. Moreover, existing literature often does not fully explore the tripartite relationship between gamification, motivation to learn, and learnability. Our work aims to demonstrate the added value of using gamification in Human Resources Management practices, in a formal situation such as professional training. It also aims to provide practitioners with recommendations for improving employees' motivation to learn. As a result, this research helps to identify the extent to which gamification can serve as an efficient mechanism for overcoming the constraints associated with employees' lack of knowledge and motivation to learn, and consequently improve their learning.

The aim of this research is to explore and understand gamification practices among practitioners. The increasing accessibility of new technologies and the anticipated usefulness of gamification justify the interest of companies and institutions in this practice. Gamification refers to the integration of game mechanisms into non-game contexts, such as education, management, marketing and other examples, to increase individual motivation and engagement (Deterding, Dixon and Khaled, 2011). Beyond badges lies a complex universe of psychological and behavioral mechanisms that define the true essence of gamification. This approach goes beyond simple gratification to create motivating, interactive and enriching experiences.

In practice, gamification is mainly used to reach a threshold of involvement among employee learners (Oliveira Jordao do Amaral and Kang, 2021). As a result, the learning experience is optimized. The correct application of gamification helps individuals reach this threshold, but it is not the only recipe for achieving it (Mulcahyet *al.*, 2017).

More specifically, the aim of this research is to explore gamified practices in employee training in the French context. As a result, the following research question arises:

RQ: What are the gamification practices in the context of employee professional training in French companies ?

To answer this question, we will draw on theories and research on the triangular relationship (gamification - motivation - learning) and on the mechanisms that promote or hinder learning. We then mobilize a qualitative study to fill in the gaps identified in the literature.

Literature review

Using gamification for learning purposes

The concepts of "ludification" and "gamification" are central to the integration of games into non-game contexts, although they are often confused. Gamification refers to the application of game elements and principles in various fields (education, HR, training) to make these activities more engaging and enjoyable. This process involves a holistic approach, integrating narrative, aesthetics and playability to create a complete and emotional immersion (Savignac, 2017).

Gamification, on the other hand, is more specific and involves using game mechanics (points, badges, rankings, rewards) in non-game contexts to motivate and increase participation. It focuses on extrinsic motivation by modifying behavior through measurable external incentives.

The distinction is based on the breadth and depth of integration of play elements. Gamification aims to transform the whole experience to make it intrinsically enjoyable, while gamification uses specific techniques to achieve precise behavioral objectives. This difference has important implications for the design and implementation of game-based strategies in educational and professional contexts, requiring a nuanced understanding to maximize their effectiveness.

In recent years, research has focused increasingly on gamification, defined as the use of game mechanisms and rules in non-game contexts (Deterding and Dixon; Zichermann and Cunningham, 2011). The introduction of gaming into a professional setting can indeed be considered a gamification process (Alvarez, 2019). As a result, gamification is often used to improve productivity, foster collaboration, stimulate learning and enhance the user experience. By introducing game mechanisms such as rewards, challenges and goals, companies can encourage employees to complete tasks, solve problems and achieve objectives in a fun and motivating way.

Gamification proposes using the thinking and dynamics of games to increase user engagement and stimulate active participation, thereby improving learning outcomes. This approach has been widely used in e-commerce (Savignac, 2017), in the form of an online sales site that incorporates game elements to improve user engagement and boost sales. For example, an e-commerce site that offers a points or rewards system to encourage customers to make regular purchases, share products on social networks or write product reviews.

This gamified experience has a high impact through: a) Involvement, as the game enhances the active participation of players (customers); b) Interaction, as the game guarantees a high level of interactivity; c) Intimacy, as the game stimulates familiarity with the brand; d) Influence, as the game enables brand and product dissemination (Savignac, 2017).

These results are also desirable in the field of Human Resources Management (HRM),

where interactivity, active participation and competitiveness are essential to motivate and involve employees in a professional training context (Gunia, 2002). However, to understand the effects of gamification, it's important to delve deeper into the practices that can be mobilized in the learning process in vocational training.

Setting up gamified activities

The main elements that can be derived from gaming and used in the context of learning (Human Resources) are very numerous (Bunchball Inc. 2010; Simões *et al.*, 2012). We draw on the contributions of Xi and Hamari (2019) to make the link between gamification mechanisms and employee motivation. The table 1 below shows the main mechanisms studied and their impact on motivation.

Table 1. *The relationship between gamification mechanisms and motivation*

Mechanisms	Effect on motivation	Authors
Badges	Positive	Van Roy and Zaman (2018) Thom, Millen, and DiMicco (2012) Peng <i>et al.</i> (2012)
	Negative	Hanus and Fox (2015)
	Mixed	Sailer, Hense, Mayr and Mandl (2017)
Points	Positive	Thom, Millen and DiMicco (2012) Mekler, Bruhlmann, Touch and Opwis (2017)
Ranking	Negative	Hanus and Fox (2015)
	Not significant	Mekler, Bruhlmann, Tuch and Opwis (2017)
	Mixed	Sailer, Hense, Mayr and Mandl (2017)
Levels	Not significant	Mekler, Bruhlmann, Tuch and Opwis (2017)
Avatar	Mixed	Sailer, Hense, Mayr and Mandl (2017)
Challenges	Positive	Van Roy and Zaman (2018)
Competition		

More specifically, we note a discrepancy in the results relating to the use of badges (Michael, Jan Ulrich, Sarah Katharina and Heinz, 2017). Staffan Björk (2015) defines badges as rewards for achieving specific goals, such as progressing to a certain level, taking part in an optional game or completing a task. The effectiveness of badges appears to be contingent upon the nature of the badges themselves and their perceived value by the learners. Hanus and Fox (2015) have shown, through their experimentation in an educational setting, that rankings and badges have a negative effect on intrinsic motivation. However, by analyzing this type of motivation in depth, researchers have noted a positive effect of badges in a professional context (Peng, Lin, Pfeiffer and Winn, 2012; Thom, Millen and DiMico, 2012; Van Roy and Zaman, 2018). More specifically, this mechanism can have a positive effect on employees' sense of

autonomy and competence. This discrepancy may be related to the context of application of the research previously discussed.

One of the most common mechanisms found in gamified systems is ranking. Although it can be a good motivator, ranking has engaged researchers in debate. Mekler, Bruhlmann, Tuch, & Opwis (2017) proved that ranking worked as extrinsic incentives, through the development of competence and the individual's relationship with others (P Cerasoli, M Nicklin and T Ford, 2014) contrary to previous findings (Hanus and Fox, 2015).

Extrinsic motivation, as demonstrated by Mekler, Bruhlmann, Tuch and Opwis (2017), manifests itself through external incentives such as ranking, thus contributing to the development of individual skills and interpersonal relationships (P Cerasoli, M Nicklin and T Ford, 2014). It therefore refers to motivation that comes from external rewards such as grades, material rewards or social recognition. It should be noted, however, that there are sometimes studies with contradictory results, underlining the importance of a thorough analysis of the effect of gamified practices on each type of motivation. This study goes against the previous findings of Hanus and Fox (2015). Various mechanisms, including challenging colleagues and pursuing project-related learning, may impact employee engagement in distinct ways. While the former aligns with a competitive learning strategy, fostering a sense of challenge among peers, the latter addresses practical needs tied to specific projects. Additionally, it is essential to recognize the multifaceted nature of learning, encompassing not only the acquisition of knowledge (savoirs) but also practical skills (savoir-faire) and interpersonal competencies (savoir-être). A thoughtful categorization and prioritization of these learning dimensions may enhance the effectiveness of engagement strategies. While these diverse mechanisms undoubtedly enhance engagement in learning activities and subsequently foster motivation for employees to acquire new knowledge, it prompts a critical examination of the effectiveness of gamification in this learning process.

Effectiveness of gamification in a learning context

The game-based approach makes achieving pedagogical goals and the learning process easier, more learner-centered, more fun and more effective (Lepper and Malone 1987; Papastergiou 2009; Prensky 2001; Rieber 1996; Rosas *et al.*, 2003) (Mulcahy *et al.*, 2018). A number of studies have explored the reasons why games are a powerful learning tool.

Papastergiour (2009) contends that games are effective because they promote multisensory, active, experiential learning, grounded in problem-solving. They facilitate the retrieval of prior knowledge, as players must apply information acquired earlier to enhance their performance within the game. Furthermore, games provide immediate feedback, enabling players to test various hypotheses and derive insights from their actions. The self-assessment tools embedded in games, such as final score mechanisms, points, and progression through different levels, contribute to the learning process. However, it is essential to consider the nature of what is being learned—there exists a distinction between learning to play the game and acquiring knowledge through game-mediated experiences. This duality underscores the importance of discerning between the two levels of learning. The question at hand revolves around the nuanced exploration of whether the educational benefits extend beyond mere gameplay to the transfer of knowledge facilitated by the game. Additionally, one must contemplate the significance of engaging with the game's social dimension, involving the community in the learning process. In addition to the efficient acquisition of knowledge, games are relatively more advantageous for fostering knowledge, logical-mathematical thinking, as well as creative and problem-solving skills (Heald, Sparrowhawk and McFarlane, 2002). As Oblinger (2004) notes, games generally support key pedagogical principles such as feedback, active learning, motivation, sociability, scaffolding and assessment. However, it's essential to

recognize that the applicability of these principles varies from one game genre to another. While most video games incorporate these elements, some genres, such as puzzles, may present a more binary learning dynamic: either you discover the solution, or you don't, with limited progression. This genre-specific consideration underlines the need to adapt pedagogical alignment assessments to the inherent characteristics of each type of game.

In order to make gamification an effective learning experience, it is necessary to study how it can be combined with the cognitive, emotional and social dimensions (Illeris *et al.*, 2002; Lee and Hammer 2011) of a learning process.

In the cognitive context, gamification can provide challenges that are perfectly adapted to the player's skills, as it incorporates gaming elements. Indeed, the difficulty of the challenges increases according to the player's skills.

In the emotional framework, gamification appeals to a wide range of user emotions: curiosity, frustration and joy (K.Mullins and Sabherwal, 2018). It often provides positive emotional experiences and, in the case of negative experiences, encourages players to use and transform them (Hsi-Peng & Hui-Chen, 2020). In social settings, players explore new roles; for instance, in historical simulations, students immerse themselves in significant figures' experiences, making decisions from diverse perspectives, fostering a blend of imagination and realism (Gee, 2003; Steinkuehler, 2006).

Regarding decision-making from different viewpoints, Deterding et al. (2011) stress gamification's role in providing diverse managerial experiences. In business strategy games, players navigate challenges from marketing, finance, and human resources roles, gaining a holistic view of organizational dynamics (Deterding et al., 2011; Hamari et al., 2014). Additionally, scholars like Steinkuehler (2006) emphasize games' significance in sharing achievements. Online platforms award badges or certificates for mastering skills, fostering motivation and community building through shared accomplishments (Steinkuehler, 2006; Hamari et al., 2014).

In conclusion, playful elements, advocated by Malone and Lepper (1987), complement rather than replace traditional supports. For example, language learning apps, incorporating gamification as suggested by Hamari et al. (2014), enhance the learning experience and engage users with interactive quizzes and challenges.

This approach is particularly valuable in the corporate world, where time is crucial. As identified by Hamari et al. (2014), simulated training expedites learning, allowing professionals to practice decision-making in a risk-free environment, ensuring preparedness for tasks.

Scholars, focusing on factors like approval, impact, and implementation, have assessed gamification's contribution. User feedback on gamified learning platforms is crucial for approval (Hamari et al., 2014), while measuring impact through performance metrics is emphasized by Deterding et al. (2011). Steinkuehler (2006) discusses evaluating the seamless integration of gamified activities into existing learning frameworks.

The table below summarizes literature insights, providing a diverse understanding of how gamification contributes to knowledge, skills, and abilities in learning environments.

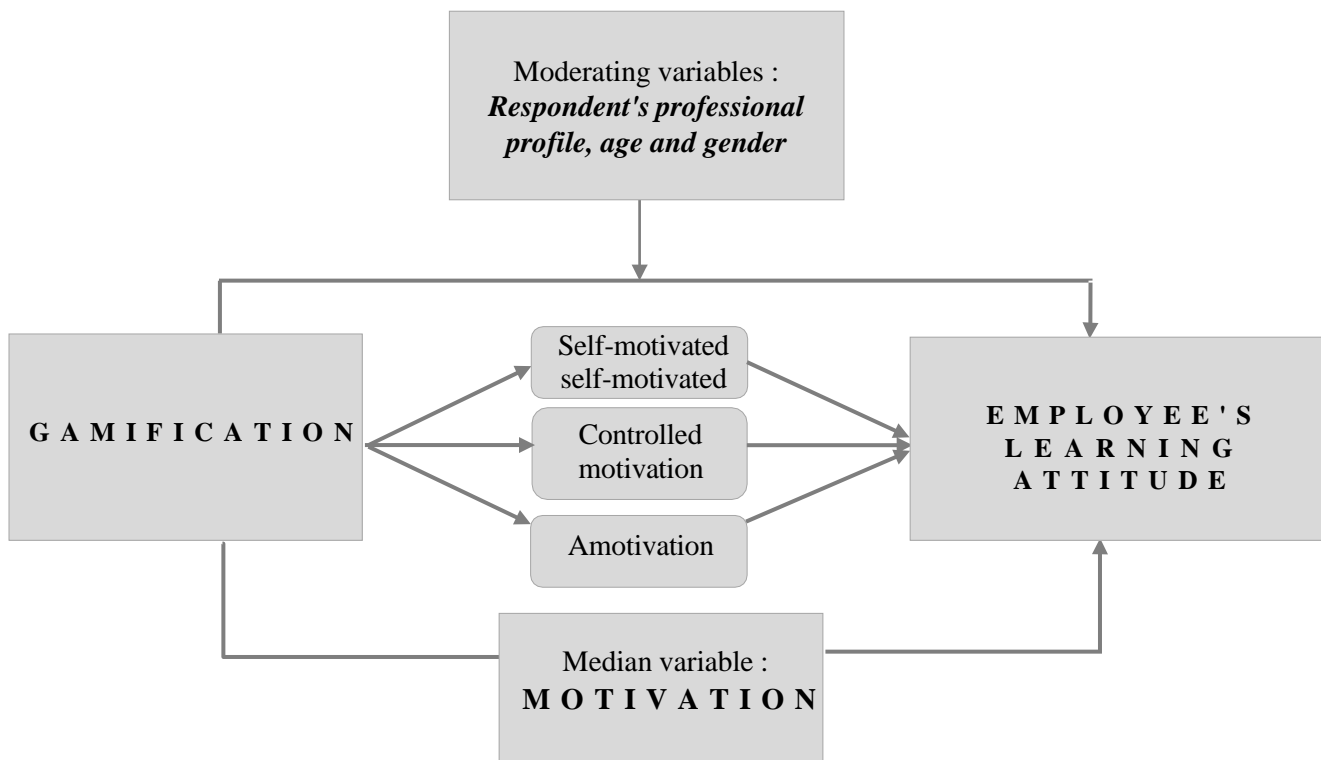
Table 2. Summary of various studies on the contribution of gamification to the development of learning (category & sub-categories).

1. Approval of play activities		2. Impact of entertainment activities		
1.1. Obstacles and reservations		2.1 General impact		
<ul style="list-style-type: none"> - Lack of curiosity among participants - Unserious perception of the game - Lack of time 		- Faster continuous improvement	- Interactive participants	
		2.2 Measurement indicators (success)		
		- Final number of participants	- Satisfaction questionnaire	- Number of sales
		4. Using gamification for learning purposes		
3. Implementing fun activities		4.1. Definitions (Huotari and Hamari, 2016)		
3.1 Application context		<ul style="list-style-type: none"> - History of ludicization - With actionat stake - Complementary to the Serious Game - Learning-related 	<ul style="list-style-type: none"> - Motivation - Facilitator - Inspired by Game Design - Means (not ends) 	<ul style="list-style-type: none"> - Game mechanics - Animation method - Process - Knowledge transfer through play
<ul style="list-style-type: none"> - Psychological education - Pedagogical training - Professional training - Integrating new employees 				
3.2. Type of motivation		4.2 Integrating the gamified tool		
- Desire	- Passion	- Adaptive Gamification	- A warm welcome	
		4.3. Reasons for using gamification		
		- Improving knowledge	- Solving problems	
3.3. Learning outcome		3.4. Play techniques		
		<i>Depending on the game (competitive, cooperative, performance, linear) :</i>		
- Training needs met	- Fun to learn	<ul style="list-style-type: none"> - Badges - Progress bar - Board games - Challenge 	<ul style="list-style-type: none"> - Sponsorship - Awards - By-laws - Ranking 	<ul style="list-style-type: none"> - Card games (physical) - Points - Timers - Challenge

Although few studies that have examined gamification have a solid theoretical foundation (Seaborn and Fels; 2015), some authors have attempted to explain the relationship between gamification and learning by providing frameworks such as gamified learning theory (Landers, 2014). The aim of our study is to establish a theoretical framework for investigating the role of gamification in the employee learning process. We therefore proceed to explore gamified practices in this context and how they influence learning motivation. Specifically, we seek to answer the question: What are the gamification practices in the context of employee professional training in French companies? First, we present the methodology that enabled us to achieve this objective.

In addition to examining the relationship between gamification and learning, our study also addresses the tripartite relationship between gamification and individual learning, with motivation acting as a mediator. Through the interviews conducted, we seek to explore this link and elucidate the role of motivation in mediating the effects of gamification on learning outcomes.

Figure 1. Representation of the theoretical model



Method

Sample description

In our exploratory stage, we are investigating a social behavior related to gambling through semi-structured interviews, recognized for their effectiveness in gathering user experiences, thoughts, and ideas (Martin & Hanington, 2012). We employed a diverse interview approach, including directive, non-directive, and semi-directive methods, providing flexibility in questioning.

Targeting various business sectors (energy, services, education), we approached gamification experts, game designers, Serious Games entrepreneurs, edutainment/gamification trainers, and employees/managers, especially in human resources.

Utilizing LinkedIn and the snowball effect, we contacted key figures in gamification communities, such as FIDBAK.

Receiving 35 positive responses, interviews, lasting between 12 to 97 minutes, were conducted with individuals across categories. A structured interview guide, tailored to each category, was derived from our theoretical model. Comprising four themes with specific questions, it facilitated in-depth discussions. All interviews were recorded and transcribed verbatim with the participants' consent. A total of 35 participants (25 men, 10 women; average age 41), meeting our selection criteria, contributed to the study.

Table 3. Profiles of individuals interviewed from various French companies.

Categories	First name	Gender	Number of employees in company/under supervision	Interview length
Collaborator user	Carine	F	250	12 :07
	Hafsa	F	13	43 :43
Game Designer	Carlos	H	35	1 :01 :00
	Michael	H	4	44 :25
	Jérôme	H	3	43 :49
	Clément	H	30	23 :43
	Marc	H	12	47 :31
	Pierre-Etienne	H	0	33 :05
	Julien	H	42	42 :12
Gamification entrepreneur	Chris	H	4	37 :26
	Henri	H	10000	1 :06 :00
	Laurent	H	0	44 :35
	Catherine	F	21	32 :01
	David	H	4	56 :10
	Denis	H	0	20 :43
	Florent	H	4	27 :59
	Laurent	H	10	21 :31
Sebastien	H	0	45 :46	
Trainer	Stephane	H	5	53 :03
	Guillaume	H	24	39 :00
	Laurence	F	0	47 :50
	Céline	F	0	33 :26
	Giuseppe	H	0	33 :28
	Léopold	H	400	21 :59
	Niall	H	0	46 :27
	Olivier	H	250	36 :46
	Shi-ka-she	H	10000	33 :42
Elnaz	F	9	53 :28	
HR Manager	Solène	F	10	14 :35
	Sarah	F	400	26 :22
	Herve	H	5	41 :43
	Renaud	H	11	54 :20
	Loic	H	10	01 :37 :00
Sociologist	Helene	F	6	32 :47
	Elsa	F	0	41 :04

Coding and analysis methodology

The qualitative data collected were analyzed using Nvivo software¹, following Bardin's (2013) content analysis guidelines and incorporating insights from Point and Fourboul (2006) for effective data coding. The coding process involved dividing transcript content into units (e.g., words, sentences, themes) and initially placing them into predetermined categories (e.g., Table 2) aligned with our research focus. This two-stage process included defining the unit of analysis and categorization (Thietart et al., 2014). Thematic analysis utilized groups of sentences related to the same theme as the unit of analysis, a commonly used approach in corporate studies (Dougherty and Bowman, 1995).

The thematic analysis occurred in two cycles, using both inductive and deductive approaches (Corbin and Strauss, 2008). In the first coding cycle, axial coding involved analyzing data based on four main categories derived from the literature review and identified in Table 2: a) approval of gamified activities, b) impact of gamified activities, c) use of gamification for learning purposes, and d) implementation of gamified activities.

Following axial coding, open coding revealed new elements contributing to gamification's impact on learning motivation, resulting in the identification of new attributes (bold categories in Table 7. These new codes emerged in assessing gamification's contribution to learning motivation. In the second cycle, units of analysis with similar characteristics were grouped by category/node (refer to Table 4 for illustration).

Table 4. Extract from Nvivo-assisted content coding.

Code	Verbatim
Reworking memory anchoring	<i>"... the fact of combining (multimodalities) and the active employee at the same time of the things in him which are of the rational and emotional field, that contributes to better create some..."</i>
	<i>"... we have two solutions: either we return to a utopian scheme, or we return via another route, which is the dystopian route, because this one is cognitive and it has shown that it also favors memorial anchoring..."</i>
	<i>"... It's a modality that allows you to generate a memory anchor perhaps a little better. What I'm summarizing here is that gamification makes it possible to rework memory anchoring..."</i>
Lack of skills among gamification practitioners	<i>"... Except that we must never forget that 95% of gamification productions are for game designers. But game designers are generally bad trainers, not trainers at all..."</i>
	<i>"... there are very few people in gamification at the moment who also have the skills of trainers, coaches and consultants. They're very rare, there are very, very few..."</i>

¹ Processed using Nvivo_version 11, software for thematic analysis of qualitative data.

	Some interviewees said that a lack of competence among gamification practitioners may stem from the non-quality of knowledge transmission, apart from the gamified practices used. <i>"... And you can be very good at a subject and a very bad trainer. That's the problem with teachers, whether it's a primary school teacher... I mean, you can be a very good researcher and a very bad teacher..."</i>
Use of gamification	<i>"...the use of game mechanics transposed to something that is, at root, not a game..."</i>
	<i>"... For me, gamification is the use of a game mechanic, game element or mindset for something other than the game..."</i>

By combining the two coding cycles, we have arrived at a global grid which, among other things, enables us to code the entire corpus and then evaluate the contribution of gamification to the development of learning motivation.

Results

First, we present a typology of practices identified in the context of employee training. Then, a final evaluation grid of the contribution of gamification to the development of learning motivation was presented.

Despite a persistent lack of understanding regarding gamification and the design principles behind it (Bofala, 2022 ; Robson et al., 2015), the creation of a typology classifying the various gamification practices will prove extremely beneficial to both researchers and practitioners considering adopting gamification. Based on the findings of our qualitative study, our aim is to enrich the existing typology established by Mulcahy et al. (2018).

In addressing our research inquiry, we present Table 5, a typology of gamification practices present in the field. It is divided into two main categories: hedonic practices and transformative practices (Bofala, 2022).

How is gamification used in employee training?

Table 5. Typology of gamified practices

Typology of gamified practices	Elements used
Hedonic practices	Challenge Character Feedback
Transformative practices	Behavior monitoring Virtual training

Typology of gamified practices

Hedonic practices

Hedonic practices in gamification aim for pleasure, fun, and sensations through game design elements like challenge, feedback, and avatars. Challenge, defined by competitions and objectives, motivates participants. If optimal challenge levels were to be provided, they could enhance game engagement. Individual challenges, potentially promoting self-measurement and intrinsic motivation, might drive players to improve. However, challenges perceived as being too difficult or too easy may disrupt the flow experience, leading to a negative impact.

Multiplayer/team challenges, fostering rivalry or cooperation, add variety and competitiveness, appreciated by most interviewees. Feedback, categorized into positive (points, unlockable features) and negative (penalties for poor performance), plays a crucial role. Positive feedback instills a sense of achievement and motivates continued play, while negative feedback demonstrates consequences of suboptimal performance.

The avatar, which represents characters or objects, is of emotional importance to participants/players. Most study participants emphasized the emotional link between the avatar and themselves, expressing the importance of avatar personalization to enhance game interest.

Transformative practices

Transformative gamification practices aim to reshape the connection between employee motivation and learning, building on hedonic practices. These practices involve behavior tracking and virtual training as key game design elements (K.Mullins and Sabherwal, 2018).

Behavior tracking involves continuous evaluation of employees' learning attitudes, offering personalized insights (Smith et al., 2020). Participants highlighted its significance for serious business games, emphasizing its role in monitoring individual progress (Jones & Brown, 2019).

Virtual training, portraying real-world scenarios through serious video games, emerged as another crucial element (Garcia & Martinez, 2018). Participants stressed its importance for understanding the cause and effect of behavior in a virtual environment (Adams & White, 2021).

This study identifies two primary categories of gamification practices, suggesting their combination for an optimal gamified experience (Taylor & Williams, 2017). A third category, termed "hybrid practices" integrates these elements (Doe & Johnson, 2020). The study introduces five game design elements, detailed in Table 6, attempting to categorize gamified practices without creating an exhaustive list (Brown & Taylor, 2016).

Typology based on respondent profiles

NVivo's "cluster analysis" feature provided us with a dendrogram of respondents grouped according to encoding similarity² (see Appendix 1). In practice, this graph presents a summary of the encoding performed, enabling us to distinguish between respondents' behaviors.

There are two main branches: the first includes respondents who are not involved in game-based learning, and the second includes respondents who are genuinely involved in game-based learning.

² The feature uses the Jaccard coefficient to determine the proximity between source nodes.

Table 6. *Typology of respondent profiles*

According to dominant coding characteristics				Gamified practices used		
Learner profiles				Total percentage	Hedonic	Transformative
<i>Non-learners with a high level of playful involvement</i>	Collaborator user (5%)	Trainer (8%)	Sociologist (24%)	37%	X	
<i>Learners with a strong sense of playful involvement</i>		Gamification entrepreneur (23%)	Game Designer (25,5%)	48,5%	X	X
<i>Learners with little involvement in play</i>		Collaborator user (9%)		9%		X
<i>Contrary learners</i>	HR Manager (5,5%)			5,5%	-	-

The first profile represents non-learners with a high level of involvement in gamification. This group includes ordinary users of gamified practices. With a high level of personal involvement, their work is not aimed at learning or training people, but rather at simply using gamified mechanisms for personal pleasure and leisure (hedonic practices), such as sociologists who represent 24% of this category.

The second profile: learners with a high level of playful involvement. This type of learner is inspired by and uses game mechanisms in their work all the time. They seek to apply gamification where necessary to set themselves apart from the rest, such as gamification entrepreneurs and designers, who represent 23% and 25.5% of this profile category respectively.

The third profile, represented by 9% of employees, includes learners who present themselves as not involved in the use of existing gamified practices. However, they realize during the interview that they have already used certain transformative practices. In practice, their involvement is low, and they prefer to avoid gamification. So, we call them low-involvement learners. And then there's a fourth profile, called thwarted learners, represented by human resources managers (5,5%). While they are dubious about the effectiveness of gamified practices in vocational training, respondents with this profile are aware of the needs of companies, based on their real-life experiences. They are not opposed to the idea of gamification, but they are negatively apprehensive about the use of gamified practices. Nevertheless, they understand that companies use this type of practice to improve internal training and develop their resources. They don't openly assume their resistance, however, and so avoid resorting to these practices.

Discussion

The results of our study highlight the potential for integrating fun elements into the context of professional training. For example, in a corporate training program, elements such as progress tracking via digital badges, interactive quizzes with immediate feedback, or virtual simulations of real-world scenarios can be integrated to engage employees and improve their experience. learning (Smith et al., 2020).

The central problem of our study, which aims to identify gamification practices in the context of professional training of employees in French companies, is closely linked to the conclusions we drew from our research.

By providing a comprehensive framework for understanding gaming practices, our study builds on established concepts in the fields of gamification and edutainment (Johnson & Brown, 2018). Through thematic analysis assisted by Nvivo software, we identified new codes (highlighted in bold in Table 7) that provide in-depth insights into how gamification helps improve employee motivation and learning (Jones and Smith, 2019).

We now plan to confirm and empirically validate our theoretical model. For example, in a quantitative study measuring the effectiveness of a gamified training program for healthcare professionals, researchers can assess participants' motivation levels, knowledge retention, and measures of job performance before and after the intervention to evaluate its impact (Doe et al., 2021).

Our research specifically looks at the complex links between gamification, motivation to learn and the learning process, focusing on the unique context of professional training. We thus respond to the growing demand for empirical investigations into the impacts of gamification in new research contexts, as advocated by researchers such as Mekler et al. (2017) and Seaborn and Fels (2015). For example, in a study exploring the impact of gamified learning modules on employee retention rates in the manufacturing industry, researchers can analyze employee turnover data before and after implementing training courses gamified (Garcia and Martinez, 2020).

Our study deepens the examination of gamification practices in the field of professional training, with the aim of elucidating their impact on the learning process. It is crucial to emphasize that this impact is intrinsically linked to the motivation of the individuals involved. Our research allowed us to unravel the complex effects of gamification on various aspects of motivation. Additionally, our findings provide valuable insights and recommendations for practitioners seeking to adequately structure gamification experiences. However, it is essential to recognize that, based solely on the qualitative study conducted, the relative influence of certain game design elements remains elusive.

To conduct this study, we closely examined gamification practices in the field of professional training, in order to understand how these practices impact the learning experiences of individuals engaged in training programs. We observed that the influence of gamification on learning is closely linked to learners' motivation levels. In other words, gamification can serve as a powerful catalyst for motivation, but its effectiveness varies depending on learners' pre-existing motivation levels.

To explore this complex interaction between gamification, motivation to learn, and the learning process, we used a qualitative research methodology, combining interviews, observations, and software-assisted thematic analysis (Nvivo). This approach facilitated the discovery of new thematic codes and fostered a deeper understanding of how gamification influences motivation to learn.

The implications of our findings are of considerable practical importance for designers of vocational training programs. We have identified key gamification design elements that can be leveraged to enhance motivation to learn. However, it is essential to emphasize that our qualitative study does not allow us to quantify the relative impact of these design elements. Therefore, we are ready to extend our research to a quantitative study involving a representative sample, which will either corroborate or challenge the theoretical framework presented in Figure 1.

Table 7. Final assessment of gamification's contribution to the development of learning motivation

1. Approval of play activities (Obstacles and reservations)	2. Impact of entertainment activities		
<ul style="list-style-type: none"> - High financial cost - Repetitive play - Linked to the mechanism used - Lack of curiosity among participants - Lack of time - Non-compliance with rules - Unserious perception of the game - Fear, dread - Depending on the employee's role in the company 	2.1 General impact		
	<ul style="list-style-type: none"> - Enjoy and share the game - Faster continuous improvement 	<ul style="list-style-type: none"> - Interactive participants - Motivated participants 	<ul style="list-style-type: none"> - Committed participants - Rechallenged participants
	2.2 Measurement indicators (success)		
	<ul style="list-style-type: none"> - Comparative analysis - Positive or negative evolution of the participant's condition - User engagement - Final number of participants 	<ul style="list-style-type: none"> - Satisfaction questionnaire - Result achieved/unachieved - Educational wake-up call - Success rates 	<ul style="list-style-type: none"> - Number of sales
	4. Using gamification for learning purposes		
3. Implementing fun activities	4.1. Definitions		
3.1 Application context	<ul style="list-style-type: none"> - History of ludicization³ - With action at stake - Complementary to the Serious Game - Learning-related 	<ul style="list-style-type: none"> - Motivation - Facilitator - Inspired by Game Design - Means (not ends) 	<ul style="list-style-type: none"> - Game mechanics - Animation method - Process - Knowledge transfer through play
<ul style="list-style-type: none"> - Psychological education - Pedagogical training - Professional training - Integrating new employees 			
	<ul style="list-style-type: none"> - Entrepreneurial culture open to play 	<ul style="list-style-type: none"> - Defined pre-requisite objectives 	<ul style="list-style-type: none"> - Reworking memory anchoring

³ Ludicization: Ludicizing learning means making it more enjoyable and engaging by adopting a playful attitude. Rather than focusing on game mechanics, ludicization invites us to explore the interactions within the game and its atmosphere (Genvo, 2013).

	<ul style="list-style-type: none"> - Combination Gamification & Trainer 	<ul style="list-style-type: none"> - Adaptive Gamification 	<ul style="list-style-type: none"> - A warm welcome 	
3.2. Type of motivation	4.3. Reasons for using gamification			
<ul style="list-style-type: none"> - Curiosity - Envie - Passion - To be better 	<ul style="list-style-type: none"> - Social or economic interest - By constraints - Pleasure 	<ul style="list-style-type: none"> - Improve knowledge - Solve problems - Training employees - Encouraging learning 		
3.3. Learning outcome	3.4. Fun techniques <i>Depending on the game (competitive, cooperative, performance, linear) :</i>			
<ul style="list-style-type: none"> - Learning and sharing knowledge - Personal enrichment - Training needs met - Fun to learn 	<ul style="list-style-type: none"> - Team building - Listening to the market - Self-confidence - Experiment - Happy 	<ul style="list-style-type: none"> - Badges - Progress bar - Board games - Challenge 	<ul style="list-style-type: none"> - Sponsorship - Awards - By-laws - Ranking 	<ul style="list-style-type: none"> - Card games (physical) - Points - Timers - Challenge

The table above serves as an assessment framework for gauging gamification's impact on employees' motivation to learn. Indeed, the elements in bold text are the themes that emerge most from the data collected during our qualitative analysis. It outlines insights such as new emotional and temporal challenges related to gamified activities and highlights the overall positive engagement of participants. This grid stands as a valuable tool for practitioners assessing gamified professional training.

While this exploratory study offers guidance on gamification structure design, it does not quantify the relative impact of specific game design elements. Consequently, we propose a second quantitative study on a statistically representative sample to delve further into this aspect.

Conclusion

Our results show that gamified practices influence the attitude and motivation of individuals to learn according to the profile of the employer-learner. The research identifies two types of gamified practices: hedonic practices (challenges, characters, feedback) and transformative practices (behavior tracking, virtual training), which can combine into hybrid practices to optimize employee motivation and learnability. The study introduces four learner profiles, offering typologies to aid researchers and managers in developing their practices.

In comparing the results of Alvarez (2019), Viau's motivations (2000) and our own findings, a nuanced understanding of gamified practices and their impact on learning emerges. Alvarez looked at the wider landscape of gamification in vocational training, eventually examining theoretical frameworks and empirical studies to elucidate its multifaceted effects. Viau's motivations may have focused on the underlying psychological drivers of motivation within gamified environments, providing insight into how intrinsic and extrinsic factors interact with gamification elements.

Our research emphasizes the triangular relationship among gamification, motivation, and learnability, underscoring how these elements collectively cultivate a conducive learning environment for employees. By dissecting specific game design elements critical for desired outcomes in gamification projects, we address current research limitations and offer insights into optimizing gamified learning experiences. Employing qualitative methodology, we provide nuanced insights into gamification's role in learning, complemented by an assessment framework that serves as a practical tool for evaluating its impact on individual learnability in professional training programs.

The article presents a triangular relationship among gamification, motivation, and learnability, emphasizing how these elements can foster a learning attitude among employees. It dissects the essential game design elements specific to each type of employee and player personality profile, also to their professional contexts of application, with the aim of influencing the desired outcomes in gamification projects, addressing the current limitations of gamification and serious games research. Lydia Martin (2018) explores the reciprocal link between the employee's professional context and his or her training, focusing on the professional expectations embedded in the game used and the participants' learning transfers. She highlights the importance of collective discussions for decision-making and goal-setting, in order to transform real work within organizations, focusing on the transitional processes between virtual activity in training and the real activity of executives as managers. The qualitative methodology employed in this study provides insights into gamification's role in learning, and the assessment framework offers a practical tool for evaluating gamification's contribution to individual learnability in professional training programs.

The implications for human resources gamification specialists suggest a focus on designing challenges and virtual training for a motivating and effective program. Additionally, incorporating characters and behavior tracking can contribute to developing learnability and creating a satisfying gamified experience. However, the study's limitations, including a small sample size and potential subjectivity in interpretations, warrant consideration. Generalizing findings nationally and incorporating data from diverse participants could enhance the research's environmental dimension.

The results of this work therefore have several managerial implications for gamification practitioners and participants in gamified experiences in the HR context. We advocate adapting the gamification practices and tools used to the forms of employee motivation. However, further research is needed to identify the game mechanisms that foster autonomous learner motivation.

Although our research contributes to understanding the role of gamification in the learning process, it does have some limitations. These include a limited sample size and the under-representation of certain profiles: employees and HR managers. A future study examining the influence of gamification on learning for each of these profiles would therefore be worthwhile.

Future research should also refer to the possible positive and/or negative effects that may arise due to specific gamification design elements and relate their findings to theory. Furthermore, by investigating different gamification contexts, this research shows that learning can take place differently in different contexts, learning objectives can be diverse, and learning opportunities in specific contexts need to be taken into account in the design of gamified practices. We also note that our research focuses only on people who have previously participated in gamified experiences. This opens up new research perspectives to improve our understanding of the links between gamification, motivation and learning.

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APPENDIX 1: DENDROGRAM OF SOURCES GROUPED BY ENCODING SIMILARITY

