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# Gamification: An Innovative Approach To Employee Training And Skill Development

Goran Pavlović <sup>1</sup>

<sup>1</sup> *Belgrade Metropolitan University, Faculty of Management, Tadeuša Košćuška 63, Belgrade, Serbia*

## Abstract

Gamification has emerged as a powerful tool for enhancing employee training and learning experiences. By integrating game elements such as challenges, rewards, competition, points, levels and leaderboards into training programs, organizations can create engaging and immersive learning environments that foster active creation and knowledge retention. Gamification offers several advantages in employee training, including increased motivation and engagement, accelerated learning, and improved knowledge transfer. Moreover, gamified training programs can simulate real-life scenarios, enabling employees to practice critical skills in a safe and controlled environment. This helps in building confidence and enhancing decision-making abilities. Additionally, the use of instant feedback and progress tracking allows employees to monitor their performance and identify areas for improvement. The main goal of the research is to investigate the impact of gamification on employee learning and knowledge creation. This paper is based on a theoretical analysis of a still limited number of academic research in the problem area. The results of the analysis showed that the integration of gamification techniques into employee training programs has the potential to transform learning outcomes and knowledge generation within the organizational context. This approach leverages digital tools to create engaging, personalized, and effective learning experiences, motivating employees to actively participate in their development. Through careful design and iterative improvement, gamification can enhance learning outcomes, foster skill growth, and create a more dynamic and engaging learning environment for employees.

## Keywords

Gamification, employee training, knowledge, learning, HRM

## 1. Introduction

The knowledge and skills possessed by employees emerge as pivotal components of competitive advantage in the contemporary business environment, since they represent resources that are rare, valuable and difficult to imitate [1]. Unquestionably, it can be affirmed that human capital, encompassing distinct proficiencies, expertise, and capabilities, constitutes the paramount facet of intangible assets and intellectual capital [2,3]. Thus, ensuring the ongoing advancement and education of employees becomes imperative, signifying that investments in workforce and learning should be regarded as endeavors yielding enduring advantages rather than mere costs to be minimized [4].

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EMAIL: [goran.pavlovic@metropolitan.ac.rs](mailto:goran.pavlovic@metropolitan.ac.rs)

ORCID: 0000-0002-5557-9262



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Employee development presents itself as a multifaceted HR initiative aimed at furnishing formal employee education, career management, personality and aptitude evaluation, all with the intention of readying employees for forthcoming roles and challenges [5]. For an organization to foster the requisite human capital, HR managers must initially scrutinize employees' existing competencies, gauge their alignment with organizational objectives, and only subsequently, upon identifying knowledge gaps, embark on the creation of tailored learning programs [6]. In today's business milieu, the formulation of employee development strategies relies profoundly on adept ICT support. Specialized software solutions, often rooted in Internet and cloud-based platforms, substantially streamline the learning process. Moreover, the added advantage lies in the potential for completely personalized learning agendas tailored to individual employee needs, which, with software backing, catalyze employee motivation and engagement in the learning process. It's in this context that the significance of leveraging gamification comes into the spotlight.

Gamification entails the integration of game design principles and elements into non-game scenarios to engender user participation and motivation in achieving specific objectives or behaviors [7]. In present times, HR managers have harnessed gamification across various staffing phases, with its pronounced impact evident in employee training and development [8]. By implementing game-like features, even trivial tasks can acquire intrigue - a considerable advantage in organizations where employee motivation for continual learning and growth often faces challenges. Hence, alongside its effectiveness in enhancing employee knowledge and competencies, gamification concurrently heightens employees' motivation and involvement in the learning process [9].

Based on the above, *the main goal of the research is to investigate the impact of gamification on employee learning and knowledge creation.* With regard to the set goal, the research question posed in the paper states: "*How does the integration of gamification techniques into employee training programs affect their learning outcomes and the generation of new knowledge within the organizational context?*" The motive for writing this paper is reflected in the fact that the issue of gamification in HRM and employee development is still an insufficiently researched area, especially in Serbian academic works. Therefore, the work represents a theoretical synthesis of relevant scientific works and research in the examined subject area.

## **2. Employee development**

In the contemporary business environment, competitive advantage is fundamentally fostered through knowledge acquisition. However, this pertains not to any generic knowledge, but rather to the distinct proficiencies of employees, cultivated through continual learning, refinement, experiential insights, as well as formal and informal training. In essence, the creation of tacit knowledge assumes paramount importance - a form of knowledge inherent solely to employees within a particular organization, distinct from those within competitor entities [1]. In order to form specific human capital, it is necessary to provide programs for the continuous development of the skills and abilities of employees.

Employee development can be understood as a process of formal education, development of work experience and interpersonal skills, as well as assessment of personality and abilities, with the aim of preparing the employee for future jobs [10]. It is a planned program to improve the professional skills and individual capacities of employees, in order to form human capital that will provide the organization with the generation of long-term value. The development and learning of employees can be realized at the workplace, within the organization or outside it. Regardless of the approach, in order for the development program to ensure good results, it is necessary for HR managers to first examine the existing competencies of employees and their alignment with the organization's strategy and goals. Aligned with the obtained results, the formulation of the educational program is undertaken, aimed at tailoring it optimally to each individual employee, particularly in cases involving organizational talents [6]. The efficacy of development initiatives can be further increased by ensuring a favorable influence on knowledge cultivation, alongside motivation and engagement. This can be achieved by meticulously exploring and honoring employees' ideas about knowledge that needs to be developed [11]. In such instances, employees perceive value when they are equipped with knowledge that aligns with their

interests and long-term needs. Simultaneously, this approach positively influences the organization's overall performance [12].

An effective employee development strategy implies that four important factors are taken into account. Those factors are development goals, employee competencies, the time needed to implement the development program and the benefits that the employee can expect [6]. First of all, the organization approaches the development of employees since it also expects certain benefits from it. The goal is not to invest in development just to emphasize that the organization invests in employees, but to realize certain benefits from that knowledge. At the same time, it is necessary to explain to the employees what benefits they can expect from the development and it is about modifying the reward system. For example, in addition to higher compensation, an employee can also expect a better job position, autonomy in work, more creative tasks, and the like. In addition to the above, the organization must assess the existing competencies of the employees, in order to determine the deficient knowledge and the possibilities and capacities of the organization to deliver the necessary knowledge. Finally, it is necessary to look at the time needed to ensure the employees development, since in certain cases the education of employees must be carried out quickly.

Within employee development, it's crucial to encourage employees to share their newfound knowledge with their peers. Through this transformation of tacit knowledge into explicit, the process of socialization takes place, giving rise to a distinct human capital unique to the organization itself [13]. Essentially, this underscores the necessity of devising knowledge management strategies, not only for retaining recently gained knowledge, but also for its dissemination and subsequent redevelopment into a novel facet of human capital. In addition to the above, employee development also involves answering the following questions [14]:

1. What form of knowledge should the employees acquire, that is, what should they learn?
2. Who will implement the employee development program?
3. What benefits can an organization expect from a new form of human capital?
4. In what way will the development affect the behavior, decisions and actions of employees?
5. What benefits does development provide to employees?

It is these questions that show that the issue of employee development is a complex strategic activity, in which human resource managers, as well as the top management of the organization, are involved. It is clear that the crucial role in that process is played by human resource managers, who are directly in charge of creating learning programs. In modern business conditions, the process of employee development is almost necessarily carried out through information and communication technology, whereby employees, in addition to technical skills, often acquire knowledge of using specific hardwares and softwares.

### **3. Gamification**

#### **3.1. Basic concepts of gamification**

The concept of gamification is a relatively new and certainly still insufficiently researched phenomenon, especially in the HRM field. It is emphasized that the term gamification was first used by the British programmer Nick Pelling in 2002, with the aim of describing game components, which, unlike the game itself, give the user a special experience and interaction with the environment [15]. However, a distinction needs to be made between gamification and game. Namely, the game implies a system of closed rules, and it is a process in which people establish social interaction, communicate and have fun while achieving goals. On the other hand, gamification implies a circumstance in which game elements are applied, such as points, rewards, challenges, goals, but in real and non-game situations. While the purpose of the game is to provide entertainment, gamification seeks to increase the level of engagement and motivation of people to achieve certain goals, and most often it is about solving problems or obtain knowledge. Therefore, gamification includes game philosophy, mechanics and game elements in solveing real problem situations [16].

The reason why gamification is applied in real practical and problem situations is to make them more interesting [8]. Namely, it is known that many jobs are trivial and repetitive in nature, which as such can lead to a decrease in employee satisfaction. In addition, employees within organizations are often reluctant to engage in new activities, especially when it comes to learning. Therefore, in order to

make these activities more interesting, game elements and concepts are implemented, and therefore gamification is often stated to aim to increase the level of engagement and motivation [17]. The degree of interactivity is increased by the application of game elements, which today is especially enabled by digital technologies. Namely, the idea of applying game concepts when learning or solving problems is not recent. But, thanks to the Internet and digital transformation, the concept of gamification has been significantly improved and enriched, and as such provides a much greater degree of interaction and engagement. Various elements, tools and methods of gamification therefore stand out as an important means of encouraging employees to engage in problem solving, decision making and learning in modern organizations [18].

According to one of the limited researches, three essential elements of gamification are dynamics, mechanics and components. In the first case, dynamics implies the creation of a gamification context. Second, the mechanics determine a set of activities that should be applied in a specific context and thirdly, as relevant components appear awards, points, badges, leaderboards, trophies and other elements related to the realization of specific activities [19]. The stated elements aim to increase the attractiveness of a certain activity and thus increase the engagement and motivation of people to realize them [20]. Nah et al [21] list the elements of gamification, which are presented in Table 1.

**Table 1**  
Gamification elements

Element	Basic characteristics
Points	They are used as a measure of achieved results or achieved success. Points are often used as rewards or as a basis for further progress through the implementation of activities.
Levels	They show the degree of progress through the game/activity. Usually, with advancement through the levels, the degree of complexity of the problem and the goal to be achieved increases, as a result of which it is necessary to develop additional knowledge and skills.
Badges	They show recognition for completed tasks or achieved goals. Badges are useful to keep people motivated to continue with activities.
Leaderboard	Leaderboard is a visual representation of the performance rankings of individuals or teams participating in an activity. It showcases their progress, scores, or achievements in a competitive format, fostering motivation and encouraging users to strive for higher rankings by completing tasks, earning points, or meeting specific goals.
Prize	Rewards that are received for completed tasks or goals. They are very important to maintain motivation.
Progress bar	It shows the degree of people's progress towards the achievement of the final goal.
Storyline	The narrative part of the game that explains to people the nature of the problem, context, goal, or action to be taken. It is of great importance for the learning process, because that storyline directly communicates the knowledge that needs to be learned.
Feedback	Feedback on the achieved results that must be transmitted in order to gain knowledge about whether and in what way it is necessary to correct behavior, decisions and actions.

In addition to the gamification elements shown in Table 1, Acknowledgment (medals, trophies, etc.) can be encountered, as a form of extrinsic reward that can be obtained, and Stats, as a special form of information board that shows the current score, as well as future levels and goals that should be realized [9]. Through the aforementioned, as well as other elements of gamification, an effort is made to increase the degree of motivation of people to engage in the realization of certain goals and activities. In addition

to the above, gamification elements engage the cognitive, emotional and social aspects of learning, as a result of which a specific form of knowledge is much easier to adopt and apply in practice [19].

Beyond the previously highlighted advantage of facilitating knowledge acquisition, gamification offers a range of additional benefits. Alongside the noted enhancements in motivation and heightened engagement, gamification also elevates productivity levels, fosters satisfaction, and instills a sense of accomplishment. These combined effects have a favorable impact on overall organizational performance [21]. Given the context characteristic of games, there is an increase in the degree of collaboration, the ability to work in a team, social skills, as well as the skills of joint development and knowledge sharing [22]. Instant feedback received during the game increases the degree of participation, empowerment and sense of achievement [15].

### **3.2. Gamification in HRM context**

Human resource management is constantly under the influence of technological changes. In this regard, we should not only consider the application of information systems and technologies in the management of employees (HRIS), but modern digital and Internet solutions of the Fourth Industrial Revolution. Since gamification can be applied within different contexts, its application in the context of human resource management is obvious. Gamification creates artificial and virtual conditions of real problem situations faced by employees and helps them to better overcome given problems and gain knowledge through a fun and interesting way. This has become especially relevant in the modern circumstances of business, where employees may encounter very serious and dangerous problems, where there is only one attempt to reach the final goal. In order to minimize mistakes and loss, gamification, today in the process of integration with artificial intelligence, creates augmented reality within which employees can learn and try to reach the solution, until a sufficient level of knowledge is acquired for work [23]. In this way, human resource managers can significantly more easily develop the necessary knowledge and human capital in the organization, with a simultaneous increase in the level of motivation and engagement of employees [15].

Through achievements and points, HR managers motivate employees to engage in business activities or the learning process, while badges and leaderboards encourage a degree of competitiveness among employees, where each of them strives to achieve the best possible result and score, simultaneously maximizing organizational performance [18]. Through gamification, it is possible to redesign tasks so that they become more interesting for employees. Additionally, it is possible to increase the degree of interactivity during work, which would have a positive impact on productivity [16]. The positive effects of gamification in the HR context are particularly visible in the implementation of trivial and routine tasks [23]. Research shows that employee motivation in the context of gamification is mostly influenced by levels, challenges among employees, points and rewards [7]. These are just some of the reasons why some of the famous companies in the world actively use gamification as part of HRM strategies. For example, SAP uses gamification to develop awareness of sustainable development among its employees, Unilever, Marriott hotels, L'Oreal, PwC and numerous others use it for employee training [16]. Actually, gamification is mostly used for the employee development process, which requires a special analysis.

## **4. Gamification and employee training and development**

### **4.1. Gamification as an innovative tool for employee development**

While the integration of information and communication technologies in employee learning and development is not a recent development, recent years have witnessed a marked surge in the digital transformation of human resource management and employee development processes. Today, these activities are especially supported by artificial intelligence, machine learning and augmented reality [23]. Gamification for employee development involves integrating game-like elements into training and learning processes. It can motivate employees through interactive challenges, rewards, and progress tracking. For instance, it can be used for onboarding, skills enhancement, continuous learning, goal achievement, collaboration, and recognizing achievements, thereby fostering engagement and skill

growth. In the context of learning and development, gamification is used to increase the level of interest and employees engagement. It usually involves the application of badges when mastering a certain lesson or acquiring certain knowledge. Nevertheless, it's crucial to exercise caution during this process, ensuring ample clarity and information. This is particularly pertinent due to the potential for badges to inadvertently discourage employees in the event of lower scores, which are publicly visible on leaderboards. Such instances can inadvertently undermine motivation, leading to disengagement from the development programs [20]. This shows that even in the context of the application of modern technology in the development of employees, it is necessary to approach this process in a planned manner and with a clearly defined strategy.

Employee learning is at the center of the gamification process. Research shows that the degree of employee motivation is highest if they receive points or badges for lessons learned and results achieved. Employees prefer to receive rewards, where points and badges are rewards in the context of gamification. Leaderboards also have a significant impact, since employees are motivated to achieve a high score, and then strive to achieve the best possible results in order to preserve that score. In the context of development, it is understood the acquisition of as much knowledge and skills as possible, in order to get more points and achieve a better rank among employees [24]. An example of how gamification can be used in the context of employee development is shown in Table 2.

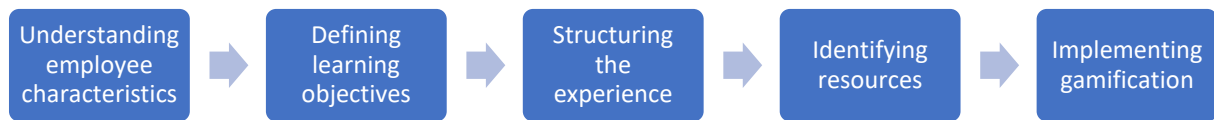
**Table 2**  
Gamification and employee development

Gamification method	Description
Points	Points can be integrated into employee development by attaching them to learning modules, quizzes, challenges, and tasks, with higher scores leading to more points and potentially unlocking advanced training; employees can compete for points on leaderboards, earn badges for achievements, redeem points for rewards, and follow personalized learning paths based on their point history.
Levels	Levels can enhance employee development gamification by structuring learning into progressive stages, granting access to advanced content, challenges, and rewards as employees achieve higher levels; this approach fosters engagement, personalization, and healthy competition, motivating continuous skill improvement and a sense of accomplishment.
Rewards	In addition to points and badges, employees can receive real rewards for achieved results. For example, with achieved levels, employees can receive additional bonuses, flexible working hours, the possibility of early absence from work.

Gamification streamlines the learning and skill development journey for employees by fostering a trial-and-error learning method, encouraging the exploration of different paths until the knowledge culminating in a satisfactory outcome is attained. This approach contrasts with traditional learning models, which frequently face limitations stemming from restricted resources and time constraints. [16]. Of course, it is clear that the concept of gamification is not possible and at the same time it is not necessary to apply it in absolutely all situations of learning and development of employees. There are jobs where the traditional model of employee learning and development is more effective. It should also be taken into account the possible resistance of employees towards the application of modern technologies in learning and development, when they prefer traditional learning methods [20]. In addition, it should be borne in mind that gamification in the process of employee development requires high resources and special competencies for the development of learning models, which HR managers often do not have, and consulting agencies in this regard can be expensive.

## 4.2. Designing gamification for employee development

HR managers who apply gamification for the needs of employee learning and development must approach this process in a planned and careful manner. Govindarajan [15] identifies a process approach, which consists of the stages shown in Figure 1.



**Figure 1:** Process of designing gamification for employee learning and development

Before implementing gamification, it's crucial to understand the employees' preferences, motivations, and learning styles. The first phase involves gathering insights through surveys, assessments, and discussions to tailor the gamified experience to their needs. Clearly defining the learning goals and objectives is the next phase of gamification development. These objectives could range from skill development to knowledge retention. Designing the gamified learning experience by determining the structure, progression, and challenges is the next phase. Content needs to be divided into modules or levels, each focusing on specific skills or knowledge areas. Identifying the resources required to support the gamified learning experience is the fourth phase. This could include learning materials, interactive content, quizzes, and challenges. Finally, integrating gamification elements into the learning process and implementing gamification is the last phase. HR managers need to assign points for completing modules or passing quizzes, with levels indicating progression; badges for achieving milestones, and rewards for reaching specific levels; introduce challenges that encourage problem-solving and application of knowledge; display a leaderboard to foster healthy competition and motivation; provide immediate feedback on performance.

Gamification will provide more effective results for the needs of employee development, if important factors are ensured during design. First, it is necessary to design gamification in such a way as to provide a trial and error system, so that employees can achieve the desired result and acquire the necessary knowledge through several new iterations. It will not be effective if employees go back to the beginning of the learning process every time in the event of a poorly achieved or unachieved result, because in that process time is wasted and motivation is reduced. Second, after each achieved result, employees should be given feedback immediately, so that they can be convinced of the correctness of their decisions or actions and the acquired knowledge. Progression stands out as a very important element of gamification. When learning, the employee must know how many levels they have achieved, i.e. what is his current level of knowledge, as well as how much is left until the final goal. In order to provide as complete and comprehensive knowledge as possible, gamification should include storytelling. Through narration, it is necessary to point out to employees the characteristics and content of the lesson, the content and importance of knowledge for problem solving, as well as information about what to do during different levels of learning [25].

As with traditional employee development, in gamification it is necessary to clearly define what the goal of employee learning and development is, because the entire process of designing game elements will depend on it. The design of the first gamification model needs to be tested on a sample of employees, in order to ensure its correctness and completeness. After the tested group of employees has implemented the learning process, it is necessary to collect information about the achieved performance, including information about the correctness of the learning system. In addition, it is necessary to measure the degree of acquired knowledge, as well as employee satisfaction with gamification, in order to evaluate its justification in relation to the traditional learning system [20]. If designed effectively, gamification can provide a greater degree of employee participation during learning, as well as a greater degree of motivation and engagement during development [24, 26].

## 5. Conclusion

Starting from the research goal and the conducted theoretical analysis, an answer to the previously posed research question can be given. The integration of gamification techniques into employee training programs significantly influences learning outcomes and the generation of new knowledge within the organizational context. As the digital transformation of human resource management and employee development evolves, gamification stands out as a dynamic approach fueled by technologies such as artificial intelligence, machine learning, and augmented reality.

Gamification, in the context of employee learning and development, involves infusing game-like elements into training processes to enhance engagement and motivation. This approach finds relevance across diverse areas like onboarding, continuous learning, skill enhancement, goal achievement, collaboration, and recognition of achievements. The process aligns with employees' intrinsic motivation for rewards and recognition, creating a more engaging and interactive learning experience. Central to the effectiveness of gamification is its impact on employee motivation. Points, badges, and leaderboards serve as tangible rewards that resonate with employees' desire for recognition and achievement. Leaderboards, for instance, encourage friendly competition, propelling employees to pursue higher scores and improved learning outcomes. A gamified approach to learning supports trial-and-error learning, where employees can explore different paths until they discover effective solutions. This iterative learning process is conducive to skill acquisition, fostering a deeper understanding of content and encouraging creativity. In traditional learning models, this form of experiential learning is often constrained by limited resources and time. However, the integration of gamification requires a thoughtful strategy. Badges and leaderboards can inadvertently discourage employees if they perceive lower scores as public failures. It is essential to balance competition with inclusivity and ensure that the system caters to diverse learning styles and preferences. Moreover, successful gamification demands an understanding of employee preferences, precise learning objectives, and the careful structuring of the learning experience. Identifying resources, implementing gamification elements, and regularly collecting feedback are key phases that contribute to a refined and impactful gamified learning process. Nevertheless, it is important to recognize that gamification may not be universally applicable in all learning scenarios. Some employees might prefer traditional learning methods, and the potential resistance to technology adoption should be considered. Additionally, gamification requires resources and specialized expertise for its development, which could pose challenges for some organizations.

In conclusion, the integration of gamification techniques into employee training programs has the potential to transform learning outcomes and knowledge generation within the organizational context. This approach leverages digital tools to create engaging, personalized, and effective learning experiences, motivating employees to actively participate in their development. Through careful design and iterative improvement, gamification can enhance learning outcomes, foster skill growth, and create a more dynamic and engaging learning environment for employees.

## 6. Contribution, limitations and future research

The exploration and analysis undertaken in this study provide a significant theoretical advancement by addressing the research question concerning the impact of gamification techniques on employee learning and knowledge creation. The findings shed light on the substantial influence of integrating gamification into employee training programs within the organizational framework. This contribution is rooted in the recognition of gamification as a dynamic approach that harnesses contemporary technologies like artificial intelligence, machine learning, and augmented reality. By incorporating these technological advancements, organizations can effectively leverage gamification to enhance learning outcomes and facilitate the generation of new knowledge. In this way, the existing limited knowledge in the subject area is expanded, and at the same time it creates a basis for further research, since according to the author's knowledge, the number of such works in domestic academic research is insufficient.

From a practical standpoint, the conclusions drawn from this study carry profound implications for organizations seeking to optimize employee learning and knowledge creation. Organizations can harness gamification techniques to enliven employee training programs across various dimensions,



including onboarding, continuous learning, skill enhancement, goal attainment, collaboration, and recognition of achievements. By integrating elements like points, badges, and leaderboards, organizations can tangibly reward and recognize employees' efforts and accomplishments.

The limitation of this work is primarily reflected in the methodological part. As the number of academic works is limited, the research is based on theoretical analysis, and therefore it is necessary to carry out research in future. In this regard, case studies of individual companies that apply gamification in employee development can be useful first. Future research could delve into the nuanced aspects of gamified employee development to uncover its potential impact on diverse learner groups. By conducting comparative studies that consider age, learning styles, and technological familiarity, researchers could gain insights into how gamification can be tailored to different segments of the workforce, thereby optimizing its effectiveness. Exploring the sustainability of gamification's effects over the long term presents another avenue for investigation. Longitudinal studies could offer valuable insights into whether gamification maintains its positive influence on employee engagement and learning outcomes beyond initial implementation. Moreover, research that delves into the optimal design elements of gamification for specific learning objectives could provide valuable guidelines for organizations seeking to maximize the benefits of gamified learning. Understanding how different combinations of gamification elements impact learning effectiveness would contribute to the development of evidence-based strategies. Examining the behavioral changes resulting from gamified employee development would offer practical insights into how gamification translates into real-world workplace practices and problem-solving skills. This could shed light on the practical applicability of gamified learning experiences. Further investigation into the factors influencing employee resistance or acceptance of gamification is warranted. Understanding the barriers and facilitators of gamification adoption would aid organizations in navigating potential challenges and developing strategies to encourage wider use. Finally, exploring the relationship between gamified learning and employee well-being could uncover the potential benefits of gamification in promoting employee satisfaction, motivation, and work-life balance. This could have implications for both learning outcomes and overall workplace dynamics. Collectively, these areas of future research could provide a comprehensive understanding of gamified employee development, helping organizations fine-tune their approaches, optimize learning outcomes, and create engaging, effective, and tailored learning experiences that enhance knowledge generation and skill growth within their specific organizational contexts.

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