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Gamification in the HR Training Context - A Systematic Literature Review of the Game

Elements Used

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Abstract

The usage of gamification and its popularity is rising more than ever. In domains such as research and organizational level this holds even more because for organizations it is important to give efficient training and gamifying the content of training will increase its efficacy. But for now, it is still unclear what type of gaming elements are being used in HR in a training context, but also in what frequencies they occur and what their effects are on the participants when exposed. In a systematic literature review this study investigates what an actual game element is and by applying a framework to it, an overview of the most used game elements is provided, which were mainly game elements on the component level together with the Achievement (Progression) type. The amount of game elements used per gamification setting can vary a lot, but they are mostly co-occurring. It can be concluded that the empirical literature shows support for the use of gamification in a HR training context, through improving engagement, motivation, or the delivery of the training itself. Limitations and suggestions for further research are discussed.

Keywords: game elements, hr, training, gamification, games, gamify

Gamification in the HR Training Context – A Systematic Literature Review of the Game Elements used

Within organizations it is an enormous challenge to keep employees inspired to be in a learning mode. Companies need to put effort into creating a learning culture and also offering training opportunities. As an example, Microsoft emphasizes an active learning culture, since skills and knowledge are changing at a fast pace they shifted from a culture of “know it all” to “learn it all”. Improved training leads to a more positive learning experience that is on the one hand enjoyable whilst at the same time ensuring a better retention of the information (Derler & Sadykhova, 2019). One approach to making training enjoyable and engaging is the use of gamification.

Gamification is about applying game-like elements in non-game environments (Deterding et al., 2011). It can also be seen as the application of game techniques or strategies to a context that is typically not game related, like exercising, shopping, or learning (Kapp, 2012). Gamification and the motivational potential of game elements has trended for its ability to increase and promote engagement of the user in many areas (Mekler et al., 2017). Besides this, gamification can be an effective tool in improving intrinsic motivation, learning, coping skills and compliance to the company and its values (Silic & Lowry, 2020).

The concept of gamification is derived from games which consist of game elements, but anything that is being used within the design of a game can be named ‘a game element’ (Mazarakis, 2021). To be more specific, Werbach and Hunter (2012) proposed clear categorizations for game elements putting them into a hierarchy in the form of a pyramid (see Figure 1) with ‘Dynamics’ (emotion, narrative, relationship, progression, and constraints) at the top. This is the so-called bigger picture of the game system that must be managed (Man, 2021). This is then followed up by ‘Mechanics’ (chance, feedback, win states, challenge, competition, cooperation) which is about the basic processes that are based on action and to

maintain the engagement of the player(s). And at the bottom of the pyramid ‘Components’ (gifting, quests, points, teams, achievements, virtual goods, rules, leaderboards, social graph, and levels) (Man, 2021). Game components represent the intentions of the dynamics and mechanics that are at play. Points, leaderboards, and badges are common components and these and other components can be seen as the building blocks of the dynamics and mechanics of a game to make it work properly. These physical and / or virtual tools are chosen by the designer of the game to make the game run smoothly according to the dynamics and mechanics of the developed game (Man, 2021).

Figure 1

Components, mechanics and dynamics



The aim of this systematic literature review is to identify the game elements that are used in organizations, which ones are the most popular, and also which ones have the most effect when it comes to the desired outcome for using them. The research questions are:

“What type of gamification elements are commonly used in training in an HR context?” and “What is the effect of gamification / game elements used on the studied populations?”.

Identifying which game elements are available for usage will support an understanding of the purpose or affordance of each of them in a training context and which can be implemented for the best outcome, whether it be for engagement, motivation, or other outcomes. To do this, I will conduct a systematic literature review focusing on identifying game elements and the associated outcomes that are reported.

Literature review

Game Elements

According to Jackson (2016) most game elements can be grouped as follows: Achievement (Progression), Rewards, Story, Time, Personalization and Micro interactions. These groupings of game elements can be divided into sub game elements. *Achievement (Progression)*, has points, badges, leveling, leaderboards, progression bars and certificates. The usefulness of Achievement (Progression) is that the game players get satisfaction from level accomplishment and skill development. Learners enjoy the same types of recognition. The sense of progression motivates continued effort. The leaderboards provide a social status, as do points and badges. In training, the course completion certificate signals achievement. *Rewards* consists of equipment, tools, and other resources. Collectibles, bonuses, and power-ups. The reason for using these is that it is closely related to achievement and the rewards can be scheduled into the learning experience. Both variable and fixed reward schedules are popular game mechanics. Rewards can be based on completing several actions or distributed at set intervals. Besides that, rewards provide extrinsic motivation and recognition for time, effort, and skills that are mastered. *Story* can be divided into narrative arc or for example a quest. It then becomes an adventurous setting, maybe some kind of disaster struck the people in the story, or you need to help beat the bad guys or a dark nemesis while at the same

learning and becoming motivated at the same time for a certain job. How this gets done? By putting the learning experience into a compelling narrative setting. Characters can get added for example, conflicts, and as a resolution for immersing the learner and his or her choices, into the storyline (Jackson, 2016).

Time can be divided into countdown and schedule. Timers are often used in board games (counting total time) and countdown clocks let gamers know that time is running out for completing the game. Even using a schedule of events, for example letting the gamer know that certain activities need to be done in a certain order helps focus a learner his or her attention to the task at hand. *Personalization* can be divided into avatar selection, avatar customization, character naming and interactive conversation. By letting people select and customize an avatar, their preferences can be accommodated and so enhance the experience whether it be a theme in the background, styling the hair of the character or by simply adding a name. When for example a gamer made a choice in-game, provided their name, or gave an answer, repurpose that by showing it later in the game to provide a sense of intelligence and / or awareness of the gamer and his or her action(s), because personalization will then boost learner engagement in such a way. *Micro interactions* can be divided into SFX (special effects), toggles, animated rollovers and easter eggs. These micro interactions are there to make sure that a great experience gets created, because details matter a lot whether it is a sound effect, a hover-state animation, or a cut-screen narration, but be aware of it, so it must be applied in a moderate degree (Jackson, 2016).

Outcomes

The review will examine the outcomes of gamified interventions, while the model of Werbach and Hunter (2012) and the classification of Jackson (2016) will aim to explain which gamification are mostly used in a HR Training Context, but also what their effects are within this context. Desirable outcomes that are often mentioned when gamification is applied

are increases in motivation, learning and engagement (Mekler et al., 2017). The application of game elements has become a general strategy in the field of education and training (Gupta & Gomathi, 2017). However, there are currently mixed results on gamification in the literature with regards to the successful implementation of gamified interventions (Liu et al., 2017). For example, Armstrong and Landers (2017) found no significant gains in improvement, except for that it was more enjoyable than its non-gamified counterpart. In contrast, Cechella et al. (2021) reported that gamification had a positive effect on learning but with similar results to training that was based on an instructional design without gamification.

This ambiguity needs to be resolved which is why this review will identify and categorize the outcomes and effects of gamified interventions. The following two research questions guided the review: “What type of gamification elements are commonly used in training in a HR context Game Elements?” and “What is the effect of gamification / game elements used on the studied populations?”.

Method

Systematic literature reviews

Daniels (2019) points out several advantages of a systematic literature review. It is described as a way to integrate the available research that may define the current situation of a topic and it might demonstrate the amount of certainty, we may have in that topic’s research so far. Siddaway et al. (2019) suggest that this method is an essential tool in the replication crisis in psychology. This is because systematic reviews follow a well and thorough pre-defined methodical procedure which therefore makes the procedure easier to comprehend for the reader and besides that, it makes the procedure more easily replicable. Siddaway et al. (2019) highlight the weaknesses of individual studies, like reporter bias, that a systematic review can address to provide consistency to the results, explaining how studies fit together to

implicate broader theories and research. A systematic literature review can be useful to combine the research so far and see whether there are gaps when it comes to evidence or for looking at inconsistent findings that can provide information on what to look out for in future studies with regards to evading limitations and weaknesses from the previous work.

Search strategy

A systematic literature review was conducted by a research team consisting of one researcher and three master students from the University of Groningen. The review was conducted in accordance with the PICOS framework to maintain a standardized procedure (Higgins & Green, 2011). The PICOS framework is a list consisting of inclusion criteria being separated into the population, intervention, comparison, outcome, and the study type that is being conducted. McLeroy et al. (2012) find this framework necessary for searching for specific study characteristics from the articles that are being extracted. It is also beneficial, because at the same time you are providing as much transparency as possible to the research methods. Figure 1 / Table 1 outlines the PICOS framework with the inclusion criteria and the exclusion criteria for this systematic literature review. These criteria were decided upon during our discussion within the team of researchers. The exclusion criteria were not based on a specific protocol, they were again discussed within our group of researchers during a consultation.

Literature search and coding strategy

Search strings of key words relating to gamification and training in a HR environment were formulated in consultation with the research team. These search strings were used to search the scientific databases: EBSCO Host, Science Direct, Google Scholar and Scopus. These databases were chosen, because they could all potentially contain information about gamification in an HR training context. Firstly, the search results from the initial search

strings were reviewed and discussed among the research team to get an idea of what inclusion criteria and what exclusion criteria need to be applied (Table 1).

Table 1

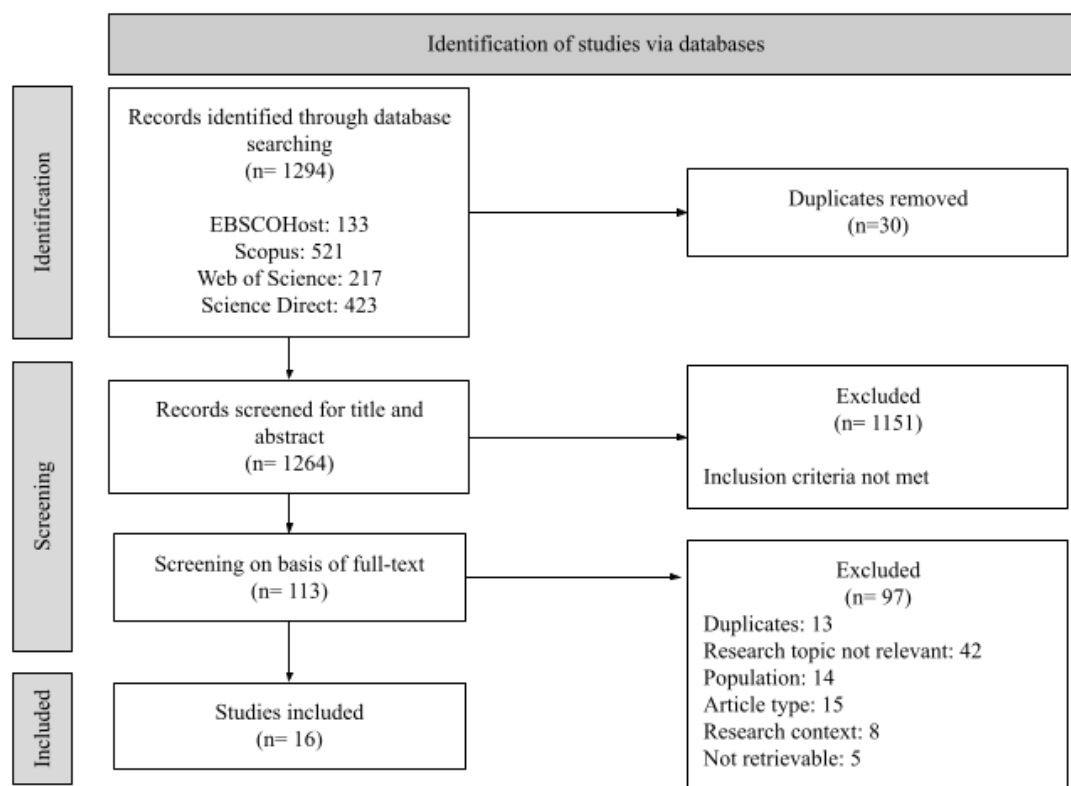
Inclusion and Exclusion Criteria

Criteria for inclusion and exclusion studies	
Inclusion criteria:	Exclusion criteria:
<ul style="list-style-type: none"> • Full-text peer-reviewed articles • Conference proceedings • Reviews about the use of gamification in HRM • Articles based on gamification in any area of HRM • Studies with any research design • Qualitative and quantitative studies • Papers that make use of gamification in conjunction with other technologies: serious games, simulations, etc. • Local and international papers 	<ul style="list-style-type: none"> • Literature in languages other than English • Gamification used in other contexts (marketing, education, etc. • Studies of technology in the workplace without gamification: virtual reality, simulations, etc. • Articles that must be purchased • Articles that do not relate gamification directly to HRM processes or activities

As encouraged by Siddaway et al. (2019) the inclusion and exclusion criteria were updated during each step of the coding process, because some criteria may not become apparent with regards to the familiarity of the literature by the researchers (Siddaway et al., 2019). For example, it was decided that after review that a population based on students was

not something we would prefer to use, because we want to aim at the working force that is getting trained. When the initial inclusion and exclusion criteria were formulated, the articles were coded in the following steps:

1. The resulting articles from the database search were downloaded to EndNote and duplicates were removed. The remaining articles were then transferred to an excel file for screening and coding.
2. The article titles were screened for eligibility based on the inclusion and exclusion criteria. Articles not eligible were removed and articles that appeared eligible (containing key words or similar phrasing) were put forward to step three.
3. Article abstracts were coded based on the inclusion and exclusion criteria. Articles clearly matching the inclusion criteria were included. Articles clearly matching the exclusion criteria were excluded. The remaining articles were put forward to step four.
4. The full articles were read and coded based on the inclusion and exclusion criteria. Regular meetings were held during each stage of the coding process to discuss uncertainties about the eligibility of articles. All articles that caused uncertainty were double checked by a team member and discussed with the research team.

Figure 2*The systematic review process*

Data extracted from each article for the review included: article title, author, year of publication, reason for exclusion, context, game elements and outcome. The results / final articles at the end of the filtering via the literature search were checked for whether they contained game elements and if so, which game elements were present. The effects of the gamification used in each study will be discussed later.

Analysis

The selected studies were analyzed as a systematic literature review and summarized under the following categories: Article number, Reference (author(s)), Year of publication, Participant number / N, Population, Goal of the study, Game Elements used and Outcomes (Table 1). An elaboration on each article of the most important aspects are briefly reviewed and discussed.

Table 2
Summary of Articles

	Reference	Year	N	Population	Goal	Game elements	Outcomes
1	Lai et al.	2020	32	Junior Doctors	To improve the effectiveness of point-of-care ultra-sonographic training	Points Badges Leaderboards Rewards	Gamification is an effective alternative (increase in engagement and enjoyableness)
2	Müller et al.	2016	NA	Assembly workers (e-bike)	To shorten the period of training, but also increase effectiveness at the assembly line	Points Countdown clock Narrative Arc	Increase in motivation and learning / retention of information
3	Cechella et al.	2021	53	Brazilian Bank Management Positions	To improve the learning and training by switching to a higher order variant	Leaderboards Points Bonuses Avatar selection Power-ups Super avatars	Gamification yields positivity while learning, although gamification is similar to non-gamification
4	Kim	2021	293	South Korea Automotive Retailers	To stimulate intrinsic motivation, to provoke voluntary participation and to create and maintain continuous flow	No game elements / gamification is applied / Fits with the criteria of HR & Training	N/A
5	Mullins & Cronan	2021	248	Professionals from 3 different organizations	Improve ERP* training / ERP efficacy, to improve attitude	No game elements / gamification is applied / Fits with the criteria of HR & Training	Useful and better outcomes for gamification than non-gamification
6	Silic & Lowry	2020	384	Employees from organizations prone to phishing	To enhance intrinsic motivation, improving security learning and efficacy	Avatar selection Leaderboards Points	Increase in motivation and coping needs for gamification condition
7	Kornevs et al.	2019	16	Public servants	Increase training effectiveness and to decrease the complexity of procurement processes	Leaderboards Points	Gamification > non-gamification
8	Kampker et al.	2014	22	German car assembly line workers	To increase the efficiency in learning the assembly sequences of the product	Leaderboards	Reduced costs while applying gamification together with an increased productivity
9	Rocha et al.	2020	7600 & 10052	Salespeople / professionals	To increase the sales performance through training	No game elements / gamification is applied / Fits with the criteria of HR & Training	Increased readiness for training as a result of gamification
10	Thongmak	2021	255	Thai full-time employees	To investigate the influential factors that are at work during online learning	Points Leaderboards Leveling Badges Certificates Collectibles	Lifelong learning intentions combined with continuation for gamification condition
11	Seo et al.	2021	18	Assembly line workers Hyundai Motors	To sustain flow (continuation), to prevent boredom and to	Narrative Arc Points Badges	Gamification is better than non-gamification,

					optimize an affective state during work	Leveling	narrative story gamification predicts and maintains Flow
12	Nair & Mathew	2021	60	India Managerial Role	To increase learner motivation, to get better results from training and to provide a better training in general	Badges Leveling Avatar selection Power-ups	Learning and motivation levels go up when gamification is applied versus a non-gamified condition
13	Dincelli & Chengalur-Smith	2020	1718	Amazon Mturk	To reduce online self-disclosure from individuals / groups and organizations for better protection against security and privacy threats	Narrative arc	Training is being improved a lot in a gamified context versus non-gamification
14	Armstrong & Landers	2017	273	Amazon Mturk	To improve learning outcomes via game fiction and / or TETEM**	Narrative arc	Similar results for gamification versus no gamification, but gamifying creates joy / Flow / positivity
15	Brull et al.	2017	115	Nurses	To potentially improve training through gamification with better retention	Avatar selection Narrative arc Badges Leaderboards Leveling Certificates	More engagement, fun and better retention of information while gamified
16	Miller et al.	2018	27	New IT employees	For improved engagement to the company's working climate via gamification of new employees	Leaderboards Leveling Easter eggs Leveling	Gamification is enjoyable, but no control-group included for comparing results
17	Newcomb et al.	2019	135	School direct care staff	To improve training for entry-level staff	Badges Certificates Sub badges Leaderboards	Gamification gave an increase in: engagement, participation and retention of learning information
18	Hamari	2017	1579	ShareTribe (trading service peer-to-peer)	To increase user engagement, to increase service profitability, to increase goal commitment and behavioral outcomes	Badges	Gamification made significant contributions for participants in adhering to norms and values on ShareTribe (more posting / trading)

*Enterprise Resource Planning (ERP)

** (Technology-Enhanced Training Effectiveness Model)

Results

Out of the $n = 1294$ articles found, 18 of them in total were applicable to this study.

The year of publication of the selected articles ranged from 2014 to 2021. The number of participants per study varies a lot, but with regards to the Game Elements being studied it is

not necessary a limitation. The article by Müller et al (2016) for example does not mention a total number of participants at all. The smallest sample size is coming from the article by Korneys et al (2019) in which newly hired public servants were used in combination with highly experienced public servants. One article is using two different samples within their research, namely a group consisting of 7600 participants, which are sellers and 10052 participants, that can be seen as professionals in sales. (Rocha et al., 2020).

The populations in this systematic literature are diverse when it comes to countries that participants are coming from and their professions. There are two articles gathered participants through Amazon Mturk (Amstrong & Landers, 2017; Dincelli & Chengalur-Smith, 2020). Three articles had a population that is working at an assembly line, with two of them focusing on producing cars and one on manufacturing an e-bike (Müller et al., 2016). The article by Brull et al. (2017) is focusing on nurses, while Lai et al. (2020) studies Junior Doctor positions in the health care domain. For the rest, each study's context differs from each other, for example Hamari (2017) used participants from ShareTribe and Korneys et al. (2019) researched public servants being active in a rather complex context, namely a procurement process.

The game elements

All the articles were examined for game elements. We found 15 out of 18 articles contained game elements. Three articles (Cechella et al., 2021; Kim, 2021; Rocha et al. 2020) did not mention the type of game elements used, although there was an HR context and gamified training was applied.

The game elements that were identified included the following: Points, Leaderboards, Badges, Narrative Arc, Avatar selection, Leveling, Countdown, Easter eggs, Certificates, Power-ups, Collectibles and Bonuses (see Table 3). Each game element was classified as a 'component', 'mechanic' or 'dynamic' (Werbach and Hunter, 2012). To

finalize the classification, a second label was given based on their game element form, namely: Achievement (progression), Rewards, Story, Time, Personalization or Micro-interactions (Jackson, 2016).

Table 3

Game Elements frequency

<u>Classification</u>	<u>Form</u>	<u>Game Elements</u>	<u>Frequency</u>	<u>%</u>
<i>Components</i>	Achievement	Badges	8	16
		Leaderboards	9	18
		Points	7	14
		Levels	6	8
		Certificate	2	4
	Rewards	Power-ups	2	4
		Collectibles	2	4
		Bonuses	2	4
	Micro interactions	Easter Eggs	1	2
	Time	Countdown	1	2
<i>Mechanics</i>				
<i>Dynamics</i>	Personalization	Avatar selection	5	10
	Story	Narrative Arc	5	10

When reviewing the 18 articles, we identified 50 occurrences where game elements were used. However, 12 specific game elements were reported across these occurrences.

Leaderboards were used in nine of the 18 articles. The second most used game element

with 8 occurrences, is the game element of 'Badges'. This was then followed up by 'Points' which had 7 occurrences. The fourth most used game element with it covering 6 out of 50 game elements is 'Leveling'. The fourth most used game element with it covering 6 out of 50 game elements is 'Leveling'. Overall, the most popular game elements that were used are in the category of 'Components' (Werbach & Hunter, 2012) in a combination with 'Achievement' type game elements (Jackson, 2016). The top 4 most used game elements were mentioned 30 times out of the 50 occurrences counted and fell in the category Components and Achievement. The majority of the identified game elements in this systematic review primarily focused on components, which of course was the intention right at the start, because all game elements from the table are indeed components (Jackson, 2016). But the second label being applied is more interesting, because what kind of component / used game element is a question that can be answered by this, and with the given data, the answer is to be found in the domain of Achievement (progression). And if several game elements are used, they mostly co-occur in the form of Achievement (Components) once more, for example making use of the following game elements at the same time: *Points, Leaderboards, Badges, Certificates, and Leveling*.

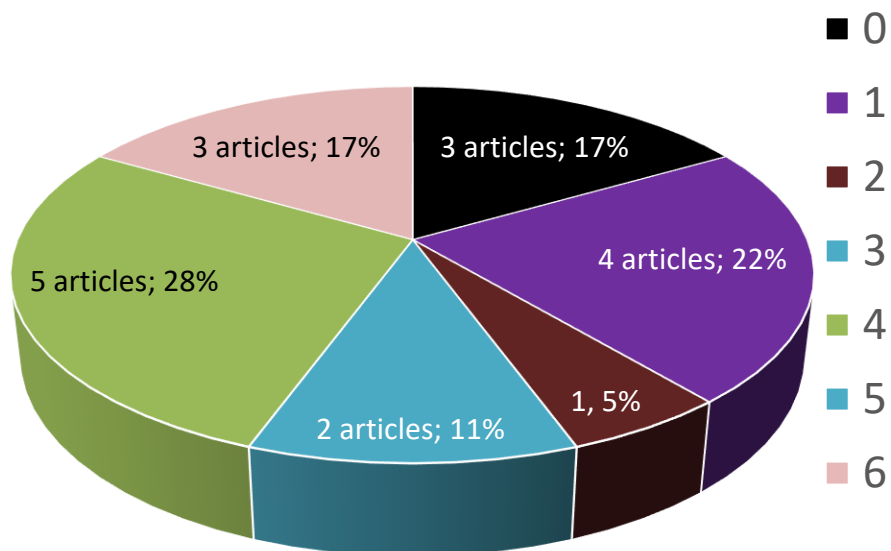
In the sample, the studies used between one and six game elements. Three articles did not specify the game elements used, four articles had one game element, one article had two game elements, two articles had three game elements and five articles had four game elements. Three articles had the largest number of game elements used at the same time, with in total of six game elements used at once, like Cechella et al. (2021), Thongmak (2021) and the article by Brull et al. (2017). Frequencies of game elements that are in studies become visible in the research by Toda et al. (2018). But unfortunately, there is not much to be found regarding game elements co-occurring. It does show a similarity with this

literature review because Badges, Leaderboards, Points, and Leveling are present in the top 4 most used game elements.

Figure 3

The Number of Game Elements used per article

Amount of Game Elements used per article:



Outcomes

The articles had various outcomes such as improving engagement, improving learning information retention, shortening the period needed for providing training, increasing effectiveness, increasing participation, strengthening attitudes toward training, increasing motivation, creating better training in general, and increasing goal commitment and behavioral outcomes. Most articles reported that the outcome was positive and that the goal of the study was met when comparing gamification versus non-gamification.

Lai et al. (2020) described the gamification approach for point-of-care ultrasonographic (POCUS) training, and that it could be an effective alternative to the conventional non-gamified approach. The strength of incorporating gamification into

POCUS training, is that the gamified version provided the trainees with an enjoyable, but also an engaging platform for the delivery of training to junior doctors. The delivery of the training was done via using progression, scoring via points, usage of leveling and a real-time live leaderboard. To be more specific, game elements were based on: Teamwork, competition, Points (Component / Achievement), Badges (Component / Achievement), Leaderboards (Component / Achievement), immediate feedback, rewards (Component / Rewards).

The second article by Müller et al. (2016) describes a simulation game consisting of a tutorial game and the actual game, called the Assembly Game. Participants reported that they felt that the process was easier to comprehend, and they felt even more motivated than before as an outcome. The training was delivered by making use of a simulation-based format. The game elements used were XP (Component / Achievement), countdown clock (time factor), immediate feedback, and The Assembly Game (web-based game) had a story mode style/narrative based on the movie "Madagascar".

The third article by Cechella et al. (2021) showed that gamification had a positive effect on learning but with similar results to training that was based on an instructional design without gamification. Learning was facilitated by gamification with less time being used for conceptual explanations and discussions. Six game elements were used in total namely; Leaderboards (Component / Achievement), Team Points (Mechanics & Components / Achievement), Upgrade points (Components / Rewards), usage of avatars (Dynamics / Personalization), digital feedback system, XP and combo's (Rewards / Components) and eventually 'super' avatars (Dynamics / Personalization) for extra performance appraisal.

The article by Kim (2021) explained why context is important when it comes to applying gamification. Their hypothesis: "Challenge strategy positively affects Flow" was

supported. The same can be said about their other hypothesis: “Relationship strategy positively affects Flow”. “Usability strategy positively affects Flow”, “Usability strategy positively affects Continuous usage intention” and “Flow positively affects Continuous usage intention” were supported as well. This article was mainly focused on the mechanisms and motivational processes of gamification strategies that influence the Flow and Continuous usage intention of mobile learning application users.

The article by Mullins and Cronan (2021) focused on shaping belief systems and attitudes towards domain-relevant knowledge towards ERP, which stands for Enterprise Resource Planning, and this knowledge was also taught via a variant that used gamification. They developed and tested a model of informed technology acceptance in the context of ERP systems, and it moved beyond transactional training and step-by-step business process walkthroughs. They reported that gamified training in this ERP context proved to be useful, effective, and added up substantial benefits when compared to a non-gamified version.

The article by Silic and Lowry (2020) has shown on a theoretically and empirically level, that a carefully selected design with IT artifacts has big potential for improving an organizational security (training) system. The experiments were fruitful in the sense of enhancing intrinsic motivation through gamification to comply and adhere to the safety measures of a company and by improving the learning process of security and efficacy. Over a period of six months, the study demonstrated that users’ motivations and coping needs via gamification were improved and resulted in statistically significant positive outcomes regarding behavioral changes. Three game elements were used primarily, namely: Avatar (Dynamics / Personalization), Leaderboards (Components / Achievement), Points (Components / Achievement) and the presence of a game-master.

The project procurement process is a hard and complex process that is hard to grasp by using traditional tools in a holistic way (Kornevs et al., 2019). However, this process can

be gamified with success for specific purposes, such as behavioral observation or training. In this research, gamification was applied successfully and was better when compared to non-gamification, because crucial elements could be used: total scores, the ability to implement the strategic goals of the organization and aspects that contribute to decision making. For applying gamification, they made use of friendly competition, scores, leaderboards (Components / Achievement), immediate real-time feedback in form of short de-briefing sessions, and extra points being rewards when teams were at a tie (Components / Achievement).

Kampker et al. (2014) did research based on earlier work, namely the four-step model for making use of a participant his or her mental channel while being trained by using the following four steps: Preparation (trainer prepares associate for his / her designed work task), Demonstration (the trainer shows and explains, how to execute a work task), Execution (associate imitates the demonstrated work task) and Completion (associate gains full control over the process). And this method got extended by adding gamification, which meant that an extra step, 'The Gamification Step' was also added. The game they developed was called: "Sequence Poker" with a bank, players that can play 1 versus 1 or in groups against each other by betting on a correct sequence or order of how to assemble a car or part (Component / Achievement). The implementation of the new five-step model was successful in reducing the qualification time of employees and also increasing their productivity. This resulted in reducing the ramp-up costs and an increase in the ramp-up productivity.

Rocha et al. (2019) aimed to increase sales performance by using a sales simulator game to predict future sales. By doing so, they wanted to minimize problems for organizations via predictive gamification. Predictive gamification was able to show the actual level of readiness of the sales force four months in advance before the actual new

line of products would arrive in the physical stores. For measuring the level of readiness there are three steps fundamental in trying to assess this property, namely: adequately defining the content of the training, defining the simulation of the reality of the store and being able to analyze the learning process. To conclude, this model of simulation could predict neatly via gamification what to expect for this population of shoe salesmen, although it was only a single case study. Gamification was applied via the "Sales Simulation Game": a salesperson attends to the customer by performing the seven main steps of the sale flow: opening, survey, pre-approach, approach, objections handling, conversion, and closing of the sale. This study had no clear game elements being formulated.

The research by Thongmak (2021) studied the influential factors of full-time / employees' lifelong learning intention through online means. The outcomes of this study were that gamification together with an organization's online learning readiness has a positive and significant indirect impact on employees' online learning continuation intentions through the application of their self-determination. They used an online survey to ask how participants would feel about: Points, Leveling, challenges / trophies / Badges / Achievements, virtual goods, and/or leaderboards being applied. Three out of four hypotheses were supported in this study. The first hypothesis was: "Gamification positively influences employees' self-determination in learning". Hypothesis 2: "An organization's online learning readiness positively influences employees' self-determination in learning" and hypothesis 3 stated: "Employees' self-determination in learning positively influences their online learning continuance intention".

The study by Seo et al. (2020) compared three different testing conditions for workplace gamification to create self-directed behaviors in manufacturing workers. The three conditions were: No Gamification, Conventional Gamification, and Narrative

Gamification with narrative persuasion being the most effective in creating the desired behavior on the work floor, showing less apathy, a higher state of Flow, and less boredom. Gamification was in the form of Narrative Gamification on why and how, versus Conventional Gamification with the following game elements: Points, Badges and Ranks).

The article by Nair and Mathew (2021) confirmed that gamification can have potential benefits for the training of employees within organizations in India. The study provides evidence to support the adoption of gamification. In general, the respondents reacted more positively to the gamified module when compared to a non-gamified counterpart. Learning outcomes went up and the same is true for learner motivation. Badge, Rank, Leaderboards, Powerups (extra time, bonus questions, bonus points), and selecting an Avatar (Personalization) were the forms of gamification being applied in this study.

A study focusing on choosing your path in adventure-like training based on gamification by Dincelli and Chengalur-Smith (2020) is trying to improve information security and privacy through interactive storytelling. Via a gamified SETA artefact, interactive storytelling was used and successfully applied by reducing people, groups, and organizations' self-disclosure online making them all less prone to threats from outside threatening information security and privacy. To conclude, it is more effective than the current solutions so far and you could see this, especially in the memorability of the content and the user experience. Dynamics was here used as the classification style and its form was based on Story Telling / Narrative Arc.

Armstrong and Landers (2017) evaluated gamified training that used narrative to improve reactions and learning. They showed that the trainees were significantly more satisfied with the training in general when gamification was applied. There was no real difference between the control condition and the gamified condition when looking at the declarative knowledge being gained. There was a decrease in the procedural knowledge

aspect for the gamified group versus the control group. To conclude, for gaining knowledge on all levels, gamification did not benefit the trainees, but the trainees did have a far more enjoyable experience when compared to the conventional way of delivering training.

Dynamics was here used as the classification style and its form was based on Story Telling / Narrative Arc.

To summarize the article by Brull et al. (2017), there was a noticeable difference between the gamification orientation group when compared with the didactic and online module groups, namely the highest mean scores post orientation were found when gamification was applied. It resulted in a higher rate of retention of information, besides that the type of learning through gamifying was enjoyed more intensely and higher levels of engagement were experienced in that same group. Gamification was applied using game elements such as: Avatar, Storytelling / Narrative (World of Salus), Challenges, Badges, Leaderboards, higher rank Badges (Ranks/rankings), Certificate of completion via 10 badges, gifts, and the ability to share a badge on social media.

The article by Miller et al. (2018) shows that the initial results of this case study can be interpreted as either positive or negative. There needs to be some caution in consideration when doing statements about the evaluation of the theme(s) of the experiment called “Space Camp”, because the results come from open-ended responses, because of its subjective nature when evaluating qualitative items. On an overall level the participants seemed to enjoy the whole experience, but like the authors state it would be good to compare it in the future with a non-gamified version, because now it lacks comparisons that can be made, but gamification still did show higher levels of satisfaction and experiencing fun when compared to an earlier edition of Space Camp from previous years. The game elements in this study are: (physical/digital) Leaderboard, tasks/activities, Easter Eggs, Leveling up through experience points, and making use of Ranks.

The research by Newcomb et al. (2019) showed promising results in favor of a ‘Gamified System’ when compared to a ‘Promotion-Based System’ and this was clearly visible when looking at the results from the research showing based on a 3-month interval showing Salary and PD Units (Professional Development Units) where the Professional Development when gamified exceeds its non-gamification counterpart enormously. There was also a high increase in factors such as engagement, elective participation, and retention of information. Gamification was applied through making use of so-called competency areas, Badges, (personal) Certificates, public displays showing someone's effort and personal success, Badges (even had sub-badges), Leveling up through first gaining the first 4 badges, and then being able to proceed to badge 5 up till 8.

The last article by Hamari (2017) about the usage of badges and whether they would increase user activity among people using ShareTribe has findings that indicate that a gamified version has promising results over one without gamification. Participants were significantly more likely to post trade proposals, to carry out transactions, to comment on proposals, and generally use ShareTribe actively the way it was designed to be used. All hypotheses were supported based on the following categories: Productive use, Quality of use, Social use, and General use activity and gamification and this was all supported by making use of the game element of Badges (Component / Achievement).

Discussion

This systematic literature review set out to identify the game elements that are used in organizations, which ones are the most popular, but also which ones have the most effect when it comes to achieving the desired outcome for using them. To integrate the results coming from what game elements are used per study in relation to their outcomes, a brief discussion with the highlights of the findings on an overall level will be presented.

The articles originate from the years 2014 up to the year 2021 with populations differing a lot concerning age, sex, occupation, and other demographics. Badges, Points, Leaderboards and Levels were the most used. They belong to the classification of components under the form of Achievement. With regards to other occurrences in other domains, there is nothing to find within Mechanics. The dynamics mentioned included Personalization (Avatar Selection) and Story (Narrative Arc) which occurred moderately too. Game elements often come in pairs or in larger amounts than just having one, with for example having four game elements used during the same study for applying gamification. The systematic review contained for example five articles with four game elements at the same time, because out of 18 articles there were four articles with 1 game element, the rest was either without game elements (3 articles) or had more than one game element (11 articles).

It seems that most articles combined several game elements to apply to their trainings. Not understanding the properties of game elements makes it difficult to advise other practitioners on what is an effective combination of game elements to improve the effectiveness of a gamified intervention. More game elements do not lead to more success. This is demonstrated by Cechella et al. (2016) using several elements like leaderboards, points, bonuses, avatar selection, power-ups, and even super-avatar and still did not make the gamified condition superior at all, only an increase in positivity was noticeable.

Three articles from the systematic review did not contain any game elements at all if you look at it through the components-mechanics-dynamics model or based on the work of Jackson (2016). Although they did not have any game elements, however gamification was being applied successfully.

To conclude, results are mixed when looking at game elements and their outcomes. Based on the different research designs and methods used in the studies different

approaches were used to study the strength and effects of groups of game elements. It is therefore not possible to comment how game elements in isolation influence the outcomes of the studies. This systematic review has outlined what game elements are currently being used in training in a HR context, but also highlights what made the intervention successful, the degree of success, and the relationship between using multiple game elements and their direction is difficult to tell with for example only knowing that the most popular game elements originate from the form of components (leaderboards, leveling, badges and points). A start has been made with this review, with gamification being more popular than ever, soon it will be unraveled.

Implications

The theoretical implication of this systematic literature review is that gamification can be observed and explained through many different perspectives, frameworks, typologies, and models that have not been mentioned. This review was guided by two models, namely Werbach and Hunter's (2012) categories and the summary of game elements (Jackson, 2016). What should also be considered, is combining various models which seem more fruitful and useful to understand the application of game elements better. It is also necessary to classify game elements correctly, but also the potential effect of each type of game element. From a practical point of view, future research should elaborate on this review to develop a comprehensive system of categorizing game elements for the most effective outcomes.

Limitations

The studies examined in this systematic literature review are a result of the used search strings from the method with a very narrow scope, especially in a situation where you only look at game elements makes it very limited. Besides that, there are many ways to describe game elements, and in this literature review there was mainly a focus on the game

elements from the Components, while Mechanics and Dynamics also have game elements to offer, but there had to be drawn a line to be able to set boundaries. (Werbach & Hunter, 2012). It is also difficult to compare and draw conclusions from the examined studies due to the different research designs, the number of participants, but also where the samples/populations come from if you look at their origin, professional domains, etcetera. In general, it is also noteworthy that the sample of papers for this systematic literature review was extremely small. With only 18 studies being examined the evidence is limited to convincingly answering the research questions of this study. For the rest, it should also be mentioned that while searching in a database, for example Scopus, researchers can end up with completely different search results depending on where the search results are being retrieved (location), via which browser, the time or by their settings based on cookies or a program synchronizing by Google, therefore there can be distortion and/or variation in the data retrieval while searching.

Future research

One possible approach for future research is to go into more depth when it comes to discovering 'Mechanics' and 'Dynamics' from Werbach and Hunter (2012), because the bigger picture of the gamified system that must be managed also deserves more attention. The Mechanics are responsible for the basic processes that drive the action forward and generates player engagement, so not solely 'Components'. Secondly, an alternative method or scope for viewing gamification and its elements would also be a good idea, because to ideally explain and completely describe these there must be comparable alternatives, that are better than the combinations proposed by Jackson (2016) and Werbach and Hunter (2012). As a final resolution, it would also be interesting to find a way to isolate each game element and see what its effects are on specific target populations so that firmer conclusions

can be made about how each game element influences engagement, motivation, and learning outcomes, and enjoyableness.

Conclusion

In conclusion, the present systematic literature review presents an overview of game elements used in training through the models of Werbach and Hunter (2012) and Jackson (2016) concurrently. The findings present the answer to the research question of what type of gaming elements are commonly in training in a HR context and what influence gamification has on the outcomes of training. Several directions for future research are presented, among them extending the search by broadening the scope of focusing more on for example mechanics or dynamics or by using different models than the two last mentioned.

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