

The first rule of gamification is “Don’t talk about gamification”:

Discussions about gamified workforce retraining in the age of digitalization

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Abstract. Accelerating workplace digitalization and increasing automation in society calls for swift retraining of the existing workforce. Existing research on gamification has investigated how to improve the outcomes of different learning contexts. However, the field of gamified employee training has been sparsely investigated. By participating in different gamification design workshops with a gamification studio and its clients, this study takes into perspective the challenges of designing a gamified solution for adult retraining situations. The findings of the study propose that designing gamified employee training involves complexities relating to the client’s preconceived notion of gamification.

Keywords: Gamification, Retraining, Users, Work, Learning, Workshop, Design, Challenges

1 Introduction

Given contemporary digitalization, the need for rapid retraining of the existing workforce has been stressed by, for instance, the automotive and manufacturing industries. According to McKinsey & Company, up to 14% of the global workforce will need retraining as digitalization, automation, and A.I. transform work [1]. Retraining is also an issue with regard to the increase in retirement age in the European countries [2]. With an ageing workforce operating in a rapidly changing work environment the need for retraining and upskilling becomes important. Previous studies primarily focus on how digitalization demands the retraining of adult professionals, but the shift could also reasonably affect young adults at the beginning of their careers. That group must also adapt more quickly to new professions. Up-skilling, retraining, and continuous learning are essential components for professional success throughout the digital shift [3].

The situation has called for more effective methods of retraining in companies. Gamification (i.e., the use of game mechanics in non-game contexts) is one of the methods discussed for accomplishing efficient learning in the future [4]. Some research have suggested that learning and employee training could benefit from gamification [5] [6].

Other studies that consider how to gamify indicate that gamification is difficult to design and develop effectively [7] [8]. Hence, this tension among different strands of research contests gamification's suitability as an approach for retraining. This present study attempts to contribute to this discussion.

By conducting participant observation studies in different gamification design workshops concerning retraining in the manufacturing industries, this study investigates discussions between gamification designers and course leaders before they implemented gamification into an existing course. The material and method enable the following research question:

How do gamification professionals and business specialists discuss the design and application of gamified solutions in digital retraining systems?

To answer this question, five different gamification design workshops were studied. During a four-month period, the author followed a gamification studio that held gamification design workshops with five different companies, that sought to add gamification to their existing employee training courses.

1.1 Designing gamification for employee training

This study employs the definition of gamification as: "the use of game design elements in non-game contexts" [9]. Notably, this definition distinguishes gamification from serious games, which use "complete games for non-entertainment purposes" [10].

Literature on gamification is to a large degree focused on educational contexts [11]. To narrow the scope, this paper discusses studies on gamification in employee training and how it differs from the educational context and studies on how to design gamification. Research on game-based employee training is often concerned with serious games, not with gamification [5]. In contrast to serious games, gamification does not per se incorporate complete or actual games. Gamification uses a variety of specific design choices inspired by video games and psychology to improve different outcomes [6]. Unlike serious games, where the learning material is part of what the developers create, gamification development depends upon the original course material and method. Because gamification is more dependent on the previous course design, merely adding game elements for training without understanding the psychological impacts on the end-user is unlikely enact a desirable change and may even do harm [6].

Concerning previous research on gamification and corporate training the effectiveness of gamified VR-training for an assembly process have been studied. The participants in the study were guided through a gamified and a non-gamified step-by-step tutorial outlining how to solve an assembly task. Performance differences were evaluated based on the time taken and specific errors made during the training session. The study shows that beneficial effects can be credited to the use of gamification in the VR-training, especially for the VR novice participants in the gamified group [12]. Regarding learning outcomes and attitudes towards game-based training, a study shows that groups that were receiving gamified training were significantly more satisfied with training over the control group. However, the overall test scores did not differ between the two groups. Trainees in the control group scored marginally higher on procedural knowledge than trainees in the gamified course. Moreover, the study shows that the

participants attitudes toward game-based learning did not appear to affect the effect of gamified training positively or negatively [13].

A study of simulated corporate training display that there is a gender diversity regarding how gamified competition in learning context affects males and females differently. Males seem more engaged in a competitive training context than females [14]. A study on systematic integration of gamified e-learning in Enterprise Social Networks in regard to Industry 4.0 investigated the potential of social games combined with learning on the job. The result is a conceptual visualization of a gamified framework that could operate in a social media context to facilitate on-the-job-training [15].

Even if gamification has become more common in contemporary technologies, designing gamification in real-life situations has its challenges. Both practitioners and researchers acknowledge that gamification is difficult to design and implement. These challenges arise from the differences among participants' backgrounds, what goals they have, and their understanding of gamification [16]. There is no coherent design method for gamification, and existing methods tell little or nothing about how to design gamification [17]. To design meaningful gamified products the designer have to take into consideration three main topics 1) games are composed of many interconnected parts and therefore complicated to transfer from one context to another; 2) gamification involves motivational information system design that entails an understanding of motivational psychology; 3) the goal of gamifying is to affect behavior, which adds a layer to the scope of the design [18]. The design should appeal to the user's intrinsic or internalized motivations rather than solely relying on extrinsically motivating game elements. Meaningful gamification should underscore a clear connection to the end-users [19]. In addition to highlighting the lack of solid field case studies on how to design gamification for training situations, studies suggest that the field of gamification design needs multidisciplinary research methods with a variety of approaches to grasp the overall comprehension of the gamification business [5] [6] [16]. Studies argue that there is insufficient detailed guidance or information on how to design gamification, and that contemporary approaches to creating gamified solutions lack comprehensive descriptions of the targeted clients [7] [20]. Despite the growing interest, a need remains for a better view of how to design and develop gamification for different scenarios [20].

Overall, research on the design of gamification for learning or training consistently points out a lack of structured approaches and understandings of clients, use contexts, and actual development praxis. Moreover, the business field of gamification has grown rapidly and simultaneously been surrounded by an aura of excitement and hype, which has made it challenging to frame for both researcher and professionals [21]. Gamification was included in the Gartner Hype Cycles for Emerging Technologies [22] which probably contributed to the excitement when the advisory firm announced that more than 50% of organizations that work with innovation processes would gamify their processes by 2015 [23]. Furthermore in business & economics literature gamification is sometimes described as a "truly revolutionizing concept that might change the way employee perceive work and [...] might transform corporations and business in general" [27 pp XI]. Statements like these made gamification one highly touted behavior design trend in the 2010s [25]. The excitement has problematized the interpretation of the gamification context [18]. Although the gamification studies of recent years have

been improved, Nacke and Deterding believe there is much that needs to be done for the research field to mature [26].

This situation furnishes a need for problem-oriented gamification research that focuses on studying and describing real-world cases. The development process, especially the different roles and stakeholders involved in the gamification process, is a promising point of departure for future studies. This type of research would provide an understanding of gamification analysis, design, and implementation. The study presented in this paper aims to explore these processes by describing a gamification studio's working processes and its interaction with various stakeholders in a series of design workshops.

2 Method

2.1 The gamification studio and its design workshop process

The gamification studio in this study that carried out the gamification design workshops operates in the field of education, retraining, and human resources. In these fields the gamification studio's platform GWEN (Gamify the World ENgine) is regularly implemented in Learning Management Systems (LMS). The studio has performed over 30 gamification implementations using GWEN in already-existing software. The definition of gamification in the platform is "using elements from the world of games in a non-gaming environment" [27].

The author of this paper works at the gamification studio where the study was conducted. The research is part of a development work at the studio with the purpose of providing insights into how the team co-operates with their newly developed gamification platform GWEN.

Gamification design uses different techniques. One method has been to incorporate initial design workshops. Previous research has described design workshops between gamification designers and stakeholders as important in order to outline the gamification design [7] [28]. Herzig, Ameling, Wolf, and Schill suggest that a team of multiple roles should come together and discuss before designing, developing, and implementing [28].

Business specialists and designers were in attendance at the design workshops analyzed in this present study. The clients were represented by a diverse group of professionals comprised of individuals from the company's human resource management, operations management, research and development and training and development. The common denominator for the participants was that they possess extensive knowledge in the specifics of the client regarding business processes, the longtime goals of the company, why employee training is required in their company, how the current corporate courses are executed in their company/department and the courses end-users. This group are hereafter called business specialists. Gamification designers in this context are responsible for the gamification scheme of the discussed courses. The gamification designers organize the design workshops and ask most of the questions about the courses, its materials, its users, and its intended outcome regarding increase employees' knowledge and work skills desired by the business specialists.

Each design workshops took about three to five hours to complete and was held similar to a round table discussion. In the design workshops, the business specialist was asked to describe their corporate courses. Questions were asked about the current obstacles with the enterprise existing training courses, with an emphasis on the target groups. The designers also asked questions about why the business specialist desired to implement a gamified course and what performance indicator should be evaluated for the success of the GWEN implementation in the e-learning course. All this information was put together into different personas during the workshop and was included in the gamification design document.

The outcome of the design workshops is the gamification design document. The gamification design document is the result of the design workshop used to map target audience characteristics (e.g., existing knowledge, gamification experience level, drives, and best practices). This document assists design decisions in the gamification development process.

2.2 The case(s)

This paper reports a study of five different gamification design workshops with different companies. The companies that took part in the design workshops were different organizations that provide courses for employee training for Industry 4.0 (the manufacturing-to-digitization transformation).

Table 1. The design workshops

Study number	Industry	Participants	Course	Design workshop date
1	Automotive company	6	New materials related to Industry 4.0	December 2018
2	Learning cluster for Industry 4.0	6	3D Printing	December 2018
3	Manufacturing company	5	Onboarding for the smart factory	March 2019
4	Research Institute focusing on Industry 4.0	8	Internet of things (IoT)	February 2019
5	Robot manufacturing	5	Collaborative Robots	February 2019

2.3 Participant observations

This study used participant observation as its method. Participant observation is a method used in social sciences, but also in interaction design because it gives a nuanced understanding of human behaviors when they interact with technology [29] [30]. Here, observations were gathered in different gamification design workshops conducted before the gamification implementation in the courses' LMS. In each design workshop, the author performed an observer role [31]. Prior every design workshop every participant where asked for their consent to participate in the research.

The observational data—observer field notes—were collected throughout all the design workshops. The field notes content concerned the participant's ongoing discussion and on the main events happening during the design workshops.

The observer field notes are a source for this study as well as for the gamification team's design documents, which were completed by a designer from the gamification team. After the gamification design workshop, the gamification designer completed the gamification design documents, which ensures "common" data were used in the gamification design context and which is recommended for this type of study [29]. The author analyzed the gamification design documents after the gamification studio designers finalized it. Therefore, information exchanged in other mediums, e.g. e-mail or telephone between the gamification designers and the business specialist could have been added to the document after the design workshop took place.

This study also used personal notes from the gamification team as data to collect valuable thoughts about the upcoming implementations. Because different gamification designers during the design workshops composed these personal notes, they differ in length and value for this study. In totality the material that was used in this study was; five different completed gamification design document, researchers field notes from five different workshops, five different personal notes from the gamification designers. All in all, 15 data sources were analyzed in this study.

The Gamification Design Documents (hereafter referred to as GDD), the Gamification Designer's Personal Notes (hereafter referred to as GDPN), and Field Notes (hereafter referred to as FN) were analyzed with help from the MAXQDA software.¹ All data were imported into the software and processed during the first level of analysis. The focus for analysis was to detect communication patterns between the business specialists and the gamification designers. The material was processed and read by the author several times, which caused patterns to emerge. Then the author started to search the emerging patterns for different "meaning units"[32], words and sentences that expressed similar meanings, that were identified and labelled with different codes. The author utilized the MAXQDA software coding system labeling the units. Next, the MAXQDA code-system was used to construct an affinity diagram according to the patterns detected in the material [33]. Evaluating how these meaning units were linked led to the identification of different themes. Some initial patterns were omitted early due to lack of consistency in all the workshop. These patterns regarded the manufacturing companies concerns about their learning platform and the implementation of the gamification studios platform GWEN, if gamifying the course really was going to have an effect and why the companies choose to use gamification as a motivational tool. The most frequent codes were chosen by the researcher and are discussed in this paper. It should be stressed that the full result of this study is not presented here. Two distinct discussion themes, "End-users attitude towards gamification" and "Business specialist perceptions of the usefulness of gamification for retraining", were omitted because of page limitation. The themes will be presented in a future study.

¹ The shortenings in the study result section are displayed like this (FN2,3) this means that the source for this information comes from the Field Notes from study 2 (Learning cluster for Industry 4.0) and study 3 (Manufacturing company).

3 Results

3.1 Is gamification not a game?

In the design workshops, there appeared to be a (mis)understanding that gamification was a full-fledged game (FN1–5). Questions arose at various moments about how the envisioned game would come to look or how the company should incorporate the game into its existing course material. There was a limited understanding of what it meant to gamify existing course content. Instead, the perception seemed to be that producing new content was the aim (FN2,3). There was also a perception among the participants that the GWEN platform from the gamification studio would take the LMS course material and convert it into a browser game, playable within the LMS (FN1). These misconceptions caused the design workshop to backtrack, and the gamification designer had to recite what GWEN intended to do with the course material (FN1,3). This misunderstanding also led to frustration in the design workshop in some cases, and there was sometimes tension after repeated explanations of the concept (FN2,4,5).

Even with an opening lecture in all the design workshops about what gamification is and how GWEN is used, participants remained uncertain what gamification is and how GWEN works. This ambiguity was audible in dialogues between the gamification studio and the business specialists, and it was a pattern of communication that emerged in all but one design workshop (FN1,3,4,5). The business specialists continuously referred to the gamified course as “the game” (FN2), “the game has to be motivating to work” (FN4), “the learning game” (FN3), or “the onboarding game” (FN3). Expressions from the business specialists linked gamification to imagery concerning the activity of playing games: “I have seen my son play. He can be at it for hours. I want our course to function like that” (FN4); “I would like to see what the game will look like, when can you deliver the mockups?” (FN5); “It’s important to the staff to understand why they should take this game” (FN3); “It is an obstacle to get the employees to actually download the game, how do we do this? How do we sell the concept to them?” (FN2). One could interpret the business specialists’ expressions as evidence that they were not grasping the concept of the product. This cognitive dissonance becomes problematic in the final stage of the design workshop when they were tasked with discussing different game mechanics: the uncertainty about what the discussion was really about—is it a game or is it something else?—persisted. This frustration created distance with the design workshop situation for some of the business specialists. Here, too, several questions arose as to how the game would look when completed (FN2,5).

The discussion concerning the terminology of gamification shows that it can be challenging to communicate the difference between games and gamification. This communication problem caused obvious friction in several of the design workshops (FN1,4,5), and was mostly triggered by misinterpretations, or a lack of unified understanding, of the purpose of the design workshop discussions.

4 Conclusion

This study shows that in all of the five gamification design workshops, there occurred one central discussion between the gamification professionals and business specialists regarding the terminology of gamification. This study's key finding is the confusion over what gamification is or is not between the business specialists and gamification designers. A preconceived notion — referring to the gamification as a game in the design workshops, talking about their children playing video-games and asking about how the game will look when it's delivered — of what gamification involves guides the business specialists to want it to be something that it is not. This presumption and outcome can also be seen in previous research [16]. Even when the gamification designers explain what GWEN does, the business specialists still do not want to visualize the upcoming course in that way. Working through the misunderstanding of gamification as a concept expends effort in all the design workshops, and it is a challenge to communicate the difference between game and gamification. This communication problem causes friction in the design workshop, because it leaks into misinterpretations of the overall concept and goal. The confusion in the design workshop indicates uncertainty about the outcome of the meeting. The circumstance provokes one to consider whether the business specialists has consumed the hype surrounding gamification (e.g. [18] [25]) and if s/he, in the last minute, is uncertain about making the right choice to implement it in the company retraining courses. A valid point could be made that the gamification studio lacks the proper communication skills for clarifying the difference between a gamified course and a digital game before the design workshops takes place. This could be interesting to investigate in a future study

The definitions of gamification in a business to business context should benefit from being more distinct and clearer than “Gamification is using elements from the world of games in a non-gaming environment” [27]. For professionals working with gamification as well as their clients perhaps the definition, adapted from the academical world, are too abstract and leaves much for interpretation for a direct business to business exchange. The definition confusion could be detrimental for the business field of gamification. Clients probably do not want to purchase “a pig in a poke”. Defining gamification might be more fruitful from the vantage point of what it is not. In a business to business situation the definition could perhaps start with “Gamification is not a game”. This reasoning contributes to the existing literature on definitions of gamification [9] [34] [35] as well as the research and literature on how to gamify [7] [21] [24], especially when working with design gamification for a client.

A conclusion from this is that a clear definition of gamification and its limits is required from the start in order to modulate expectations and prevent frustrations. This discovery is important to reduce the hype around gamification and to promote progress in the business as well as the research field [18] [24] [26]. This knowledge could be useful for researchers, business specialists, gamification salespersons, and gamification designers alike. Another finding is that the discrepancy between the gamification designers' and the business specialists' views of gamification likely affects design workshops wholly. When the specialists talk about end-users and the challenges of using gamification in the course, their communication betrays their conception of a serious game and not gamification. This finding adds and deepens previous gamification design

research that argues that the analysis phase (prior to the design phase) could be of greater importance for making meaningful and well-designed gamification [17] [18] [19].

Although this study examines gamification in corporate training concerning Industry 4.0; the results are potentially consistent with other cases where retraining an existing workforce is an ongoing project.

5 Future Research

Further study could investigate how gamification is expressed and described by professionals working with gamification. What kind of semiotics and tropes are in use to deliver their communicated message? The dataset could consist of gamification professionals' webpages, gamification salespersons selling techniques, sales presentations, business whitepapers, popular science articles, keynote speaker presentations at conference etcetera. Also, there would be noteworthy to investigate how different business fields discuss and describe the gamification term. The business specialist in this study seems to have a similar understanding of the term, but where does it generate from? Also, is the understanding the same in other business fields?

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