

## The School at Play: Repositioning Students through the Educational use of Digital Games and Game Dynamics

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**Abstract:** The aim of this paper is to present findings from a pilot study that relates to an on-going research project on the use of digital games and game-based pedagogies for supporting children in learning difficulties. The research project is entitled “The School at Play: Learning and Inclusion through Games and Game Dynamics” (2015-2017) and has been funded by the Egmont Foundation to be implemented in eight math and Danish classes (grades 3-6) distributed across four different Danish schools. The methods involve the use of digital games for creating meaningful contexts for learning and a number of visual tools and pedagogical approaches for clarifying and reflecting on students’ progression in relation to social, curricular and game-related aims. Based on the theoretical framework of scenario-based education (Hanghøj *et al.*, 2014), the findings from the pilot study shows how a teacher and a student position themselves in relation to the shifting frames of the game-based teaching method. The preliminary findings suggest a number of possibilities and challenges involved in using the method for providing students with new learning opportunities, which emphasizes the important role of the teacher in adapting and facilitating the method.

Keywords: Game-Based Teaching, games and inclusion, teacher roles, scenario-based education, framing, positioning

### 1. Introduction

Schools in modern society face a major challenge in terms of including students, which are positioned as having or being in various types of learning difficulties. In the public debate, the challenge of inclusion is often related to teachers and students’ experience of “noise” in the classroom (Larsen & Dyssegaard, 2013; Nordahl & Sørliie, 1997; Ogden, 1998). However, the term “noise” is quite problematic as it reduces students’ troublesome behaviour to symptoms, which tell little about the cause of the behaviour or how particular students position themselves and become positioned as “noisy”, and what pedagogical methods that can be applied in order to address the “noise problem” – e.g. by focusing on students’ lack of motivation or interest in taking part in the learning activities in the classroom.

Parallel to the growing public perception of students with troublesome behaviour as a major educational challenge, the last 10 years have seen an increasing interest both among researchers (Gee, 2003; Stewart *et al.*, 2013) and teachers (FutureLab, 2009; European Schoolnet, 2009; Takeuchi & Vaala, 2014) in the use of digital games and game dynamics in the classroom. This interest is often driven by the assumption that game-based learning environments may provide students with more engaging and meaningful ways of participating in formal education. Arguing along similar lines, the focus of this paper is to describe how the use of particular game-based pedagogical approach entitled “the School at Play method” may be used to offer students new forms of participation in the classroom and reposition their identity as learners. More specifically, the empirical focus for the paper involves a pilot study of the School at Play method in relation to a Danish curriculum designed for the digital game *Torchlight 2*, which is a commercial action role-playing game (ARPG), where players collaboratively explore dungeons and fight monsters in order to gain experience and loot. The study was carried out by observing a teacher and her students in a 3rd grade in the subject Danish during the fall of 2014. Due to the limited scope of the collected data, the aim is not to make overall claims on the effectiveness of the School at Play method, but mainly to present a theoretical framework, which can be used to analyse and understand how the game dynamics of the method may frame students’ patterns of interaction and how it tries to reposition them as active participants in a formal school context. This leads to the following research question: How can the School at Play method be used to frame game-related learning activities in order to reposition and include students through meaningful participation in the classroom?

### 2. Relevant research

The research on games, learning and inclusion has mostly focused on the use of learning games or so-called “serious games”, which are often of low quality (Stewart *et al.*, 2013). The relatively few studies using commercial games for inclusion indicate positive results. As an example, one successful study involved the design of a two year experimental curriculum in a Swedish municipality mainly based around the use of *World of Warcraft*, which targeted boys in risk of dropping out of upper secondary school (Wiklund & Ekenberg, 2009). Moreover, there also exist research, which documents the valuable pedagogical use of analogue game dynamics such as the consistent use of role-playing

activities, narratives and quests at a Danish boarding school (Gjedde, 2014). Regardless of the particular games and game dynamics being used, there is increasing evidence and acknowledgement that the role of the teacher and choice of pedagogical approaches is crucial when it comes to facilitating game-based learning (Hanghøj, 2013; Hanghøj & Hautopp, 2015). In this way, there is a significant need for more detailed research on how the pedagogical use of specific games and game dynamics may be used to include marginalised students as meaningful participants in the classroom.

### **3. The School at Play method**

The School at Play method can be described as a combined pedagogical use of commercial games and game dynamics in order to achieve both curricular and social aims within a classroom context. The method has been developed by a teacher, Stine Melgaard Lassen, and a social educator, Tore Neergaard Kjellow, who has worked over the course of 3 years as colleagues in special education before starting a consulting firm that specializes in game-based learning ([www.skolenispil.dk](http://www.skolenispil.dk)).

One of the key principles of the method is the design of game-oriented curricula, which involve the use of commercial digital games for creating meaningful contexts for collaboration, discussion and learning. This means that students are given the opportunity to play and explore particular game worlds (e.g. the co-op action role-playing game *Torchlight 2*) in order to understand specific game mechanics and tactics. Moreover, the students are also asked to analyse, understand and reflect what kinds of disciplinary knowledge within math or Danish that may be relevant to learn in order to get advantages when playing the game. In this way, a core aim of the method is to establish a dual interplay between, on the one hand, learning to play specific games and understand how their game mechanics relate to disciplinary knowledge in e.g. the subjects Danish and math, and, on the other hand, learning how to use different types of disciplinary knowledge in order to improve game play. In this way, the method share resemblances with the integrated use of game-based learning and systems thinking as it is practiced at the Quest2Learn school in New York (Salen *et al.*, 2010) and embedded in the educational online game design tool *GameStar Mechanic* (Salen *et al.*, 2014).

In addition to using digital games as a meaningful context for learning, the method also offers a number of analogue visual tools that facilitate game dynamics in the classroom such as a the “Progress Bar”, “Portal Assignments”, and the “Token Tracker”. The Portal Assignments asks students to explicitly link disciplinary knowledge to in-game tasks. An example that links *Torchlight II* and math: “A Health Potion gives 900 health over the duration of 8 seconds. A Big Health Potion gives 1.800 for the same duration. How much health per second do you get from 1 Health Potion?” Every time students solves assignments, which may both involve game-related Portal Assignments and non-game related assignments, the students are able to move their name on the Progress Bar, which is located on a wall in the classroom. The Progression Bar ranges from 0 to 100% completion with the additional option of progressing up to 150%. Beforehand, the students have been divided into three different levels of expertise by the teacher, which means that even low-performing students are given fairly easy possibilities for fast progression. In contrast to the other two tools, which link activities and curricular aims, the primary aim of the Token Tracker is to regulate students’ behaviour in the classroom. Based on “Class Virtues” such as arriving in class “On time” or showing “Respect” by not making unnecessary noise, which have been identified by the teacher in dialogue with the students, the teacher may award tokens to students, who practice the virtues listed on the board. Once given, students cannot lose their tokens. From time to time, the virtual economy of the tokens may be traded to real-life resources, which means that students may be allowed to leave class a bit earlier or spend extra time playing the digital game.

Finally, it is worth noting that the School at Play method is more than a “technical” pedagogical system as it goes beyond merely integrating digital and analogue game dynamics. The method is based on pedagogical values and approaches, which are highly important when facilitating the method. One of the most important values is to explicitly acknowledge students’ achievements, which may be in-game and/or in-class as well as related to disciplinary knowledge and/or only behavioural aspects. In this way, the teacher plays a crucial role not only in planning and staging the method, but also in facilitating dialogue and providing relevant forms of feedback to the students during their progression and behaviours in a game-oriented learning ecology.

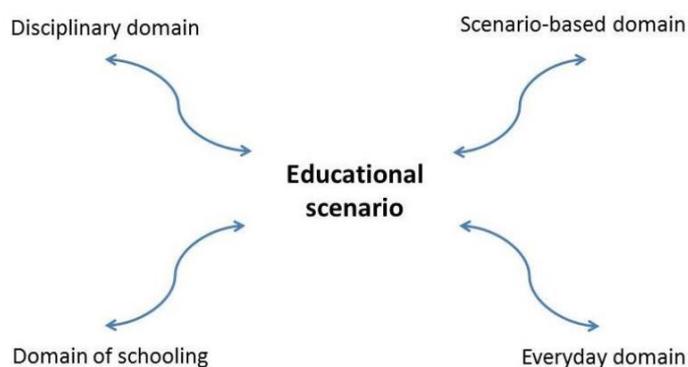
### **4. Theoretical perspectives**

Theoretically, the paper draws on two perspectives: educational gaming as a form of scenario-based education and the complementary concepts of positioning and framing.

#### 4.1. Scenarios and domains

Based on the author's earlier work, the educational use of games and game dynamics can be understood as a form of scenario-based education (Hanghøj, 2011a, 2013; Hanghøj *et al.*, 2014). This means that games represent interactive scenarios, which participants can explore by imagining, enacting and reflecting on different choices that involve "various competing possible lines of action" (Dewey, 1922: 132). Moreover, it is assumed that the process of facilitating and playing game scenarios in educational contexts involves translation of knowledge practices across four different domains: the domain of schooling, the domain of disciplinary knowledge, the domain of everyday life, and the scenario-based domain of particular games (Hanghøj *et al.*, 2014).

By using the framework of scenario-based education it becomes possible to understand how the *Torchlight 2* curriculum, which created the context for the pilot study, involved knowledge practices from all the four domains. More specifically, the domain of schooling refers to the institutionalised pedagogical practices recognised as school only, e.g. practices deriving from the special asymmetric relationship between teacher and student. This involves the teachers' everyday practices for giving overt instruction or guiding students as well as the students' everyday work forms such as doing group work or solving individual assignments. The disciplinary domain refers to the subject-specific discipline of Danish, which implies specific disciplinary topics and concepts such as the analysis of genres and narrative structures. Third, the scenario-based domain refers to the in-game world of *Torchlight 2* and game specific practices such as exploration, combat, collaboration or trading. Finally, the everyday domain refers to non-specialised knowledge practices that mainly exist outside school contexts, such as the students' everyday knowledge and experience with digital games. The dynamic relationship between the four domains is illustrated below (fig. 1) as a series of translations between different knowledge practices.



**Figure 1.** The translation of knowledge practices across domains

In order to understand how teachers and students experience and create translations of knowledge practices across the four domains, I will now introduce the two complementary analytical perspectives of framing and positioning.

#### 4.2. Framing and positioning

The first analytical perspective concerns the *framing* of learning contexts, which refers to social actors' shared principles for organising their experience of "what is going here" (Goffman, 1974; Fine, 1983). As an example, a particular game-related learning activity may involve quite different experiences for the participating students, which relate to different domains – e.g. students being instructed by the teacher to form groups (pedagogical domain), students reading an assignment (disciplinary domain), students checking their phones for text messages (everyday domain) and students trying to progress within the game being played (scenario-based domain). Depending on the ongoing negotiation between the social actors of a learning context, the framing of particular situations may involve foregrounding and backgrounding of different types of domain-specific knowledge practices, which may sometimes create meaningful translations and other times result in frame "clashes" between different expectations (Hanghøj, 2011). In this way, the notion of framing may be used to analyse situated aspects of how the knowledge practices of specific game-related learning activities are experienced by the social actors of the classroom.

The second analytical perspective draws on the work of Dialogical Self Theory (Hermans, 2001; Ligorio, 2010), which argues that human beings continually take up different *I-positions* as they communicate and interact with others. This means that teachers and students may position themselves and be positioned quite differently in different situations.

Seen in relation to the domain model presented above, it may be argued that playing a digital game at home (everyday domain) offers a different range of I-positions than playing the same game at school (domain of schooling). In this way, game-related learning contexts may offer students the opportunity to enlarge and reorganise their repertoire of I-positions. Similarly, teachers may experience wholly different I-positions when teaching with games in contrast to their everyday identities as “authorities” in the classroom.

Taken together, the two concepts of positioning and framing may be seen as complementary analytical concepts as they can be used to describe different, but equally important, translations across domains and knowledge practices when facilitating and participating in educational game scenarios.

## **5. Methodological approach**

The pilot study described here is intended to inform a larger research project entitled “The School at Play: Learning and Inclusion through Games and Game Dynamics” (2015-2017) funded by the Egmont Foundation. The research project follows the methodological approach of Design-Based Research (Barab & Squire, 2004), which means that the pilot study represents the starting point for a continuing series of design interventions that aims to generate local theories and refine the School at Play method through several iterations between curricular design, use, analysis, and redesign. In this way, the findings of this pilot study presented here will inform future research and interventions with the School at Play method in the larger research project.

The curriculum design for the pilot study involved the use of the co-op action role-playing game *Torchlight 2*. In order to promote collaboration between the players, the game is played at the highest level of difficulty. This means that without close collaboration, the players are unable to progress significantly within the game. Moreover, the *Torchlight 2* curriculum required that teachers identified local curricular aims in both Danish and math (between grades 3 to 6) to be pursued over a period of three weeks. The curriculum had been developed as an offer to interested teachers at different schools in a Danish municipality, which had hired the two consultants behind the School at Play method to develop in-service teachers’ competencies. For practical reasons, I was only able to observe one Danish teacher using the *Torchlight 2* curriculum for a few days, which explains the limited scope of the pilot study described here.

The teacher was a first-time user of the method and only had limited experience with using digital games and game dynamics in the classroom. In order to observe how the game-based teaching method might reposition students in learning difficulties, I decided only to focus on a few students. Based on an interview with the teacher before the observations, a student which we will here call Peter was identified as one of the students in class to be observed. More specifically, the teacher described Peter as a student, who often had difficulties with concentrating in class, especially in relation to assignments, which he could not solve right away. The data collection was based on four days of observations with the School at Play method, which followed the two consultants and the Danish teacher using the method in the same 3rd grade Danish class. The observations involved video recordings of classroom interaction as well as field notes. A post interview was conducted with the teacher. I also tried to interview Peter, but he was not interested in being interviewed during my brief visits at the school. The data was transcribed and coded with an emphasis on significant events, which could be used to describe how the School at Play method could frame and reposition students. In this way, the analysis does not focus mainly on individual teachers and students, but rather on the meaning-making *relations* between the participants in the educational scenario (Gee & Green, 1998).

## **6. Analysis**

The analysis focuses on the positions of the student Peter in relation to the School at Play method and how it was facilitated by the two consultants as well as the teacher during the *Torchlight 2* curriculum.

### **6.1. Learning from games**

The *Torchlight 2* curriculum started out with a guided discussion lead by the two School at Play consultants Tore and Stine, who asked the students to describe what they experience having learned from playing commercial games out of school. During the discussion, several students mentioned that they have learned “English” and “collaboration” from playing computer games. Peter was quite excited about the discussion and eager to contribute, but his answers were explicitly ignored by Tore as Peter was unable to sit quiet on his rotating chair and blurted out answers without raising his hand. After several minutes of failed attempts to take part in the classroom dialogue, Peter managed to follow the rules for classroom dialogue and was allowed to describe how he had “become better at writing English” from playing *League of Legends*. By eventually following the shared ground rules implied in the framing of the classroom dialogue,

Peter was able to contribute meaningfully to the discussion and position himself as a *learner* in relation to playing games.

### **6.2. Playing “the school game”**

As mentioned, it was difficult for Peter to concentrate and he often ended up rotating on his chair, being distracted by other students or forgetting to raise his hand when he wanted to say something in class. During the introduction to the Token Tracker system, which was explicitly framed as a “school game”, Tore and Stine frequently awarded tokens to Peter and other students when they managed to avoid troublesome behaviour for longer periods of time and follow the norms for “Respect” in the classroom. Whenever Peter was given tokens he was also praised – e.g. through comments such as “you have quite simply become really good at sitting quietly with your hand raised!” In this way, the tokens were not just handed out in mechanical praise of Peter’s behaviour. Instead, the two consultants made sure to communicate the reasons for giving each of the tokens and each time describe what had been accomplished. Peter showed clear signs of appreciation of the tokens, e.g. by lifting both hands over his head in excitement, which indicated that he wished to position himself as a competent player of “the school game”. However, it may also be argued that the tokens could be experienced as punishments (e.g. by not getting one) or might have the unintended consequence of positioning students as individualised learners in contrast with the aim of promoting their mutual collaboration.

### **6.3. Exploration and cooperation in *Torchlight 2***

The students’ in-game activities when playing *Torchlight 2* was initially framed as an open-ended exploration of the game with no specific curricular aims. The students played together in teams of four and were quite engaged when discovering the game world, sharing knowledge on the game mechanics and coordinating their efforts to survive swarms of attacking monsters. This behaviour also characterised Peter, who shifted between conducting individual raids and helping team mates, who were not as familiar as him with the game genre. Lisa, who was sitting next to Peter, regularly asked him about in-game actions – e.g. whether the game characters were controlled by using the keyboard or the mouse. Sometimes Lisa was cut off by Peter with a “No!”, but he often showed her what to do and helped her to progress in the game. This behaviour was both observed by the teacher and the two consultants, who praised him “for helping others on his own”. In this way, the game allowed Peter to become positioned both as a game expert and as a valuable support to his classmates. At the same time, the teacher clearly also felt challenged due to her lack of experience with *Torchlight 2*, especially when asked by students, who came to her in order to get help on how to progress within the game.

### **6.4. Linking game experience to disciplinary knowledge**

The final example concerns the teacher’s attempt to link the students’ in-game experience of *Torchlight 2* to the disciplinary domain of the subject Danish. The teacher had planned to compare the students’ analysis of their in-game characters with the reading of the children’s book *I am Frede [Jeg er Frede]*, which revolve around the theme of being a hero. In this way, the hero theme should create a bridge between analysing the characters in the game and in the novel. However, this attempt to thematically integrate the framing of the two genres was clearly not successful. Whenever the teacher asked the students questions about their characters in *Torchlight 2*, she received numerous elaborated responses. However, when she moved on to talk about the novel, fewer students wanted to participate in the discussion. The majority of the students’ lack of interest in the novel created a lot of disruption and troublesome behaviour in the class and the teacher frequently asks the students to be quiet. Most of the teachers’ questions about the book were answered by the same small group of students, which did not include Peter. But when the teacher returned to ask questions about the narration in digital games, Peter raised his hand again in order to participate and described how the story in *Legend of Legends* was told through other players, “who tells you where to go”.

Later on, the students were given “solo quests” (individual assignments) that related to the novel, which Peter was unable or uninterested in solving. During a break, Lisa came up to him and sat next to him in order to help him with the assignment, somewhat similar to when he had helped her learning to play *Torchlight 2*. However, Peter found it difficult to concentrate on the assignment and positioned himself as a non-participant through his passive behaviour. After having raised his hand for help repeatedly, he started crying silently and was eventually comforted by the teacher, who sat next to him and tried to help him with the assignment, which he did not succeed in solving. At another point, he dragged his hood over his head, which he placed on the table, thereby signalling that he had given up. In this way, Peter became repositioned from being an in-game expert and helpful support when playing *Torchlight 2* to being a non-participant when given the individual assignment with limited guidance.

## 7. Discussion

The aim of the analysis has been to show how the tools and learning activities of the School at Play method may reposition students' identities as learners by providing them opportunities for meaningful participation in the classroom. As the examples show, the method involves framing of a number of game-related learning activities – e.g. by explicitly acknowledging commercial games as valid resources for learning, promoting positive behaviour in the classroom through a “school game” (the Token Tracker), allowing students to freely explore and cooperate in order to progress in *Torchlight 2*, and attempting to link the students' game experiences and progress to assignments framed by disciplinary aims. By following Peter's learning trajectory through a game-oriented curriculum, the analysis suggests how these framings and learning activities provide a number of opportunities for repositioning Peter as a legitimate participant in the classroom dialogue, as a game expert and as a supporter for his classmates. However, the examples also indicate how the tools and learning activities of the method may easily be used to maintain Peter's position as a marginalised participant in the classroom. This became particularly clear when the teacher gave individual assignments that required the students to use disciplinary knowledge for analysing a novel, which was based upon a weak thematic relation between being a hero in a novel and a hero in a computer game.

These preliminary findings point to the crucial importance of the role of the teacher in terms of preparing and facilitating game-related scenarios, which confirms findings from other studies conducted by the author (Hanghøj & Brund, 2010; Hanghøj & Hautopp, 2015). Moreover, the findings also indicate the importance of creating meaningful translations of students' experiences from game domains into disciplinary domains. When interviewed afterwards, the teacher and the two consultants pointed out how the *Torchlight 2* curriculum being studied here lacked a more meaningful integration with the curricular aims of the subject Danish. Instead of trying to “match” the game experience with the genre-specific norms, themes and structure of a literary text, the students might have benefitted more from closer analysis of genre aspects of *Torchlight 2* that related directly to their in-game experiences. One approach to create such links would be to adopt a systems thinking perspective, which could help students to understand how digital games relate to disciplinary domains in terms of being complex knowledge systems (Salen *et al.*, 2010). Another approach could have been to let the students design different types of “paratexts” (Apperley & Beavis, 2011) such as walkthroughs or game reviews, which should meaningfully communicate the experience of playing *Torchlight 2* to specific audiences. The important point here is that teachers should act as a facilitator, which is able to facilitate and frame dialogue that links in-game and “game-like” experiences to non-game topics – e.g. by relating the game experiences to disciplinary aims or to other types of learning aims in the classroom.

As mentioned, the preliminary findings presented here will be further explored through on-going work in a large-scale research project, which applies the School at Play teaching method in eight math and Danish classes (grades 3-6) distributed across four different Danish schools. In addition to providing more detailed descriptions of teacher and student positions, the project aims to explore how the use of games and game elements may support student motivation and self-determination (Deci & Ryan, 2000; Ryan & Rigby, 2010). Finally, the project also aims to study how the method may benefit students' metacognition by providing structured feedforward on visible learning aims (Hattie, 2009).

## 8. Conclusion

The analysis has shown how the School at Play method frames game-related learning activities through the use of digital games and game dynamics, which may reposition students as legitimate participants in the classroom. In this way, the method could provide a valuable means for empowering and including marginalised students by providing them with meaningful contexts for learning. However, the findings also indicate that the value and effectiveness of the method is highly dependent upon the role of the teacher in terms of facilitating feedback and dialogue around the students' game-related learning activities. Moreover, there is a clear need for curricular design of learning activities that meaningfully integrate game-related knowledge practices with disciplinary concepts and aims. This calls for more research on the method in order to assess its usefulness.

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