Unpacking the domains and practices of game-oriented learning

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INTRODUCTION

Theories on play and games tend to describe games as bounded and neatly delineated phenomena such as “magic circles” (Huizinga, 1950), “world-building activities” (Goffman, 1961), “multimodal texts” (Burn et al., 2006), or “rule-based systems” (Salen & Zimmerman, 2003). However, as Gee (2011) argues, it is important for educational game researchers to look beyond the isolated game design and take a broader perspective on the learning ecology, which emerges when teachers and students enact specific game environments. Thus, if we wish to understand game-oriented learning, we cannot simply reduce the phenomenon to questions of game design, as learning always involves negotiation and meaning-making processes between the involved participants. To complicate things further, the educational use of games both reflects and tends to move beyond the existing knowledge practices in schools, as games allow participants to not only explore specific game worlds, but also bring in their own game experiences or their everyday experiences of the worlds and practices that specific games try to simulate.

This raises a key question, which we address in this chapter: How can we describe and understand game-oriented learning environments as an interplay of practices across in- and out-of-school domains? In order to answer this question, we view game-oriented learning as an example of scenario-based education (Hanghøj, 2013; Hanghøj et al., 2017). This means that we conceptualize game-oriented learning as game participants’ active processes of imagining, enacting, and reflecting on particular courses of action and possible outcomes of situated game scenarios. The theory of scenario-based education further assumes that simulations or games used for education always enact several domains of practice, which both involve the
domain-specific practices of the school context and refer to practices outside the educational setting. This means that game-oriented learning reflects multiple ways in which the participants are able to frame and become framed by their game experiences. In this way, our aim is to present scenario-based education as an analytical framework, which can be used to describe and understand the translation processes of game-oriented learning that may both create clashes as well as congruence between frames across in- and out-of-school domains.

In this chapter, we will present two case studies that each explore the translation processes and framings in relation to game-oriented learning designs. The first case concerns the use of two different types of computer games in formal education and focuses on the relation between schooling and everyday life. The second case concerns the development and use of a specially designed practice simulation that invites school children into a universe as professional journalists and newspaper editors and hence builds on a designed relation between schooling and professional domains.

EDUCATIONAL SCENARIOS

The notion of scenario has multiple meanings (Hanghøj, 2008; Hanghøj et al., 2017). A scenario both refers to a process (e.g. teachers and students’ envisioned courses of action) and an object (e.g. the course of actions embedded in a lesson plan or in a design for learning). In an educational context, we can speak of educational scenarios, which refer to teaching-learning sequences that allow learners to explore more or less explicit scenarios. Scenario-based learning activities may be supported through various types of game-oriented learning designs, such as storylines, role-play, drama, what-if scenarios, simulations, and computer games.

Furthermore, we argue that scenario-based learning can be conceptualized using Dewey’s pragmatist philosophy of learning, which emphasizes transactions between experience and reflection (Dewey, 1916). Consequently, educational scenarios may promote learning through scenario-based inquiry, which allows learners to solve problems by conducting a “dramatic rehearsal” of various possible outcomes and to make decisions by weighing imagined as well as experienced consequences (Dewey, 1922: 190).

Finally, the term scenario also encompasses scenario competence, which involves the ability to imagine, enact, and reflect upon choices and their possible outcomes across game- and non-game domains. Thus, teachers may be more or less scenario competent in terms of planning and realizing game-oriented learning environments, just as students may be more or less scenario competent when exploring specific games and engaging in encompassed knowledge practices.

Our interest in understanding and exploring how scenarios can be used in educational contexts stems from our involvement in studies that explore several different approaches to game-oriented learning. These studies include the use of debate games in social studies and mother tongue education (Hanghøj, 2008); computer games in social studies and mother tongue education (Bourgonjon & Hanghøj, 2011; Hanghøj, 2011; Hanghøj & Hautopp, 2016); board game design in mathematics education (Bundsgaard, Misfeldt & Hetmar, 2011; Misfeldt, 2013); a
web-based learning game for teaching skills in planning and complexity for pre-service education in the construction sector (Misfeldt, 2010); and practice scaffolding interactive platforms in mother tongue education (Bundsgaard, 2009; Fougt, 2009).

Combined, these studies cover a broad range of game-oriented learning designs aimed at different school subjects and types and levels of education ranging from primary school to higher education. A common feature is that the designs facilitate teaching through game-related and scenario-based models of action, which position learners as imaginative producers of new knowledge through active experiments and reflections. However, the scope and breadth of the studies also point to the necessity for developing a common analytical framework for describing and understanding how game-oriented learning is enacted in practice. In order to present such a framework, two interrelated questions are addressed:

1. What domains and which translations of knowledge practices are involved in game-oriented teaching and learning?
2. How are teachers’ and students’ experiences framed through particular game-oriented educational scenarios?

Two case studies are used to address these questions. The first case concerns the translation of knowledge practices between the domain of schooling and the everyday life domain. The second case involves the translation of knowledge practices between the domain of schooling and the professional domain.

THEORETICAL FRAMEWORK

This section defines domains and framings as key concepts in our analytical framework for conceptualizing and understanding the practice of teaching and learning through educational scenarios.

Domains and educational scenarios

Educational scenarios are always enacted within and in relation to particular domains, which can be understood as “structured, patterned contexts”, in which specific practices unfold (Barton & Hamilton, 2000: 11). As we argue elsewhere (Hanghøj et al., 2017), scenario-based education involves the interplay of meaning across four domains, which each refer to specific groups of practices:

- **Pedagogical domain**: institutionalized pedagogical practices that are recognized as “school only”, e.g. by being based on an asymmetric relationship between the teacher and his or her students and modes of communication embedded in local classroom cultures.
- **Disciplinary domain**: specialized knowledge practices within disciplines such as mathematics, history, science, and mother tongue education.
- **Scenario domain**: knowledge practices that are enacted through specific scenarios, which may involve simulations of professional practices (e.g.
journalism, engineering, and medicine) or exploration of other types of imaginary worlds (e.g. literary fictions or commercial computer games).

- **Everyday domain**: everyday, non-specialized knowledge practices such as friendships, family, sports, and media use.

The empirical focus of this paper is formal education, which means that the educational use of game-oriented scenarios represents a common ground in relation to the other four domains. Figure 1 illustrates how the educational use of game-oriented scenarios relates to the four domains.

![Figure 1. The four domains of scenario-based education](image)

Drawing clear boundaries between the four domains is difficult, as the boundaries are often blurred—e.g. doing homework may take place within the physical domain of a student’s home, but the practice of doing homework still refers to the disciplinary and pedagogical domains of the school context. This blurring and crossing of practices across domains becomes even more relevant to consider due to the widespread use of digital media (Mills, 2010) and to the importance of “not-school” learning spaces (Sefton-Green, 2013). Even though the categories are not rigidly distinct from one another, maintaining the overall domain categories is useful for describing and understanding how educational scenarios are performed in practice.

Integrating non-school domains into school contexts is by no means a new practice and has often been described as a tension between progressive and traditional forms of education (Dewey, 1938; Shaffer, 2004). However, this paper does not focus on the philosophical aims and values of various types of education, but rather on describing and understanding the contingent translation processes that occur when trying to integrate different knowledge practices across school and non-school domains (Hanghøj, 2011). As a result, we assume that different domains always involve particular knowledge practices with corresponding validity criteria for what counts and what does not count as legitimate knowledge (Barth, 2002).
Furthermore, we assume that scenario-based teaching and learning that include non-school domains always involve reductions or simplifications of non-school knowledge practices. As will be shown, students’ experiences as gamers or as journalists in a school context are significantly different from the out-of-school practices involved in playing games and writing journalism. We wish to ask the following questions: How do teachers and students experience non-school domains within educational contexts? And, what forms of knowledge are created when students take on the identities and practices of non-school domains?

Framing educational scenarios

In order to answer these questions, we need to address how particular scenarios frame and become framed by social actors within educational contexts; in other words, we must address how the meanings of particular scenarios and domains are created through teachers’ and students’ sociocognitive negotiation of different interpretive frames (Goffman, 1974; Fine, 1983; Hanghøj, 2008). One of the most commonly recurring forms of framing within educational domains is formed around teacher-centered initiation-response-evaluation (IRE) dialog structures (Sinclair & Coulthard, 1975), in which a teacher initiates dialog, students respond, and the teacher conducts an evaluation. Many people view this form of communication as simply being synonymous with schooling or “school-only” (Purcell-Gates, Duke & Martineau, 2007), as it only occurs in schools. Thus, IRE is “… almost universally accepted as ‘the essential teaching exchange’” (Wegerif, 2004: 4). To some degree, the IRE structure of communication is a staged scenario, with teachers and students playing different roles in an orchestrated dialog. This form of communication, however, is rarely experienced as a scenario and is instead framed as a naturalized or tacit pedagogical practice within the domain of schooling. By contrast, scenario-based teaching with games or simulations aims to be experienced as explicit scenarios that break with the framing of the IRE structure.

In educational research, the notions of frame and framing have been used prescriptively to identify educational aims such as the acquisition of “epistemic frames” in relation to professional practices (Shaffer, 2006) and the rhetorical framing of language within mother tongue education (Andrews, 2011). In this chapter, we propose a more descriptive use of frame theory in order to understand how teachers and students experience the interplay of the domains and knowledge practices in relation to specific educational scenarios. Applying the descriptive use of frame theory to the example of a student taking part in a debate game on parliamentary elections reveals that the student continually shifts between the following overall framings in relation to the four domains (Hanghøj, 2008):

- The frame of being a student and taking part in classroom dialogue (the pedagogical domain)
- The frame of being a person with individual beliefs and ideological values (the everyday domain)
- The frame of adopting the assigned role as a politician representing an ideological and political function/position (the disciplinary domain)
The frame of the *performance as a player* (the scenario domain).

Thus, educational scenarios enable a variety of possible framings, which require mutual negotiation between the intentions of students, teachers, and learning resources in relation to the knowledge practices of different domains. Obviously, describing how individual teachers and students experience particular situations is complex, as interpretive frames and framings often constitute *tacit* aspects of human experience. As a result, frames sometimes only become visible when there is a conflict or clash of frames (Goffman, 1974). At the same time, underplaying the importance of framing in scenario-based teaching and learning is problematic, especially in relation to the mix of school and non-school domains, which involve a complicated interplay of different framings—e.g. between the experience of being a student, a person, a role, and a player—that may be experienced as more or less meaningful.

From a realist point of view, it is tempting to assume that educational scenarios represent a continuum of learning trajectories that gradually introduce students to intended out-of-school ways of thinking, knowing, and being. However, as the case studies presented below indicate, educational scenarios often involve conflicting and sometimes contradictory frames, which may be difficult to predict. Thus, there is no guarantee that educational scenarios or any other type of teaching necessarily lead to more engaging, authentic, or realistic learning experiences (Petraglia, 1998). In order to address this complexity, we believe that the notion of frames forms a highly relevant part of a framework for understanding educational scenarios for at least two reasons. First, frame analysis pays close attention to the ways in which the tacit dimensions of different knowledge practices become visible when teachers and students break or re-frame their experiences in relation to different domains. Second, frame analysis can be used to describe and understand teachers’ and students’ explicit social negotiation of the meaning and validity of the different knowledge practices involved, when using scenarios for educational purposes.

**BRIDGING SCHOOLING AND EVERYDAY LIFE**

The first aspect of educational scenarios described here concerns relations between students’ experience of “doing school” and their everyday worlds as children outside school contexts. As Bruner notes, one of the most important points to learn in school is assimilating the culture of schooling: “The chief subject matter of school, viewed culturally, is school itself. That is how most students experience it, and it determines what meaning they make out of it” (1996: 28). Following this claim, the analytical framework of scenario-based education can be used to explore the ways in which students do identity work to become more or less legitimate members of school domains.

The relationship between students’ school practices and their everyday life practices outside school contexts has often been described as the difference between learning processes that take place in formal and informal learning contexts (Scribner & Cole, 1973; Sefton-Green, 2013). Hence, it is often argued that formal school
activities may benefit from the inclusion of learning experiences, literacies, and knowledge practices that mainly exist outside the school context. In recent years, attempts to integrate phenomena outside of school into educational scenarios have increasingly focused on the use of online digital media in and outside school contexts (Mills, 2010; The New London Group, 1996). Thus, it is assumed that school curricula and teaching practices need to change and reflect the ways in which digital technologies promote valuable forms of knowledge production, communication, and participation.

In order to illustrate this complexity, we use the research and practices of Digital Game-Based Learning as an example. Several researchers within the field of games and learning have made strong claims regarding the potential of games and game elements to reform the pedagogical practices of teaching, learning, and schooling (Gee, 2003; Shaffer, 2006; Squire, 2011). These sweeping claims, however, are only backed by limited empirical research in everyday school contexts and have been criticized for creating problematic dichotomies between the “boring” reality of schooling and the “engaging” learning processes taking place when children play games (Buckingham, 2007; Pelletier, 2010). Consequently, there is an important demand for more empirical research on how play and game phenomena can—and cannot—be meaningfully included within the context of formal schooling.

Case: Framing computer games in educational contexts

To illustrate the complex meaning-making processes involved in using computer game scenarios for educational purposes, we compare two studies of game-based learning. The first example concerns a study in Danish, Norwegian, and English 8th and 9th grade classrooms on the use of Global Conflicts: Latin America (GC: LA), a learning game designed to meet cross-curricular aims in secondary and upper secondary education (Hanghøj, 2011). The second example, taken from a study of a Danish secondary teacher’s game literacy practices, focuses on the educational use of Penumbra, a commercial computer horror game, in an 8th grade classroom (Bourgonjon & Hanghøj, 2011). Comparing these two examples (see Figure 2 below) allows us to describe how game-based learning can entail widely different framings related to the possibility space of particular game genres, teachers’ design of educational scenarios, and students’ game experiences of educational gaming.
With regard to game design, the two computer games represent two exceedingly distinct genres designed for quite different purposes. GC: LA is an educational adventure game that invites players to take on the role of a journalist who must navigate a conflict-ridden environment (e.g. border crossings between the U.S. and Mexico) to collect various types of information to confront the villain (e.g. a corrupt mayor) at the end of the game. The game session is either followed by an assignment, which requires the students to write a critical chapter, or a class group discussion, which requires students to engage in a discussion regarding what they experienced and the topic of the game. The game is accompanied by a relatively comprehensive set of teaching materials that guides the teacher in presenting the game to the students and matching the curricular objectives. As a result, GC: LA is primarily an educational game with relatively limited game worlds designed to be played within the scope of a few lessons.

In contrast, Penumbra is a commercial horror computer game in which players must locate and use an assortment of objects, such as keys and weapons, to solve various puzzles and fight monsters. The game scenario is based on a compelling, suspense-driven narrative that takes place in a highly immersive atmosphere in an abandoned mine filled with dark locations and creepy sound effects. The absence of learning objectives and a highly difficult game play that may easily leave players stuck for hours trying to solve a puzzle clearly suggest that Penumbra was not designed for educational purposes.

The next aspect of our comparison concerns the educational scenarios, which teachers plan, enact, and evaluate when teaching using the two games. Classroom studies of ten GC: LA game sessions documented how most of the participating teachers found themselves “looking over the shoulders” of their students without interrupting their game play (Hanghøj & Brund, 2011). This indicates that the majority of the teachers was relatively passive during the game sessions and only gave limited instructions on how to play the game or on the educational purpose of playing the game. Partly, the teachers’ passive approach may have stemmed from their overall lack of gaming experience and the actual design of the game, which required students to read large amounts of text. The post-game interviews made it clear that several of the teachers believed that the game would intuitively appeal to the students, especially the boys, who the teachers felt should be allowed to explore the game independently. In this way, several of the teachers felt less obliged to plan detailed educational scenarios for enacting and assessing the outcome of the game sessions.

In comparison, the Danish secondary teacher who taught with Penumbra chose a rather detailed approach when planning, enacting, and evaluating his educational game scenario (Bourgonjon & Hanghøj, 2011). Due to the complexity of the horror game world and the lack of inherent learning objectives, the teacher had to make several educational decisions in order to translate the knowledge practices of the game into a meaningful learning resource to be used within the disciplinary domain of Danish as a school subject. More specifically, he used the game demo (approximately an hour of free game play) with his 8th grade class as a part of a
teaching-learning sequence on genre writing and linguistic awareness, which focused on defining the characteristics of horror genre across games, films, and books. By letting the students play Penumbra, the teacher aimed to let the students become “immersed” in the narrative experience of the horror genre. Next, the students were asked to write a horror scene from the game using their own words. In order to fully immerse the students in the horror game, the teacher asked them to play the game demo in small groups using laptops in the school’s dark basement. By choosing this setting, the teacher deliberately opted out of the everyday physical learning environment of the classroom and the computer lab in favor of staging an unfamiliar, but more relevant place in terms of supporting the experience of the horror scenario.

The final aspect of our comparison concerns the framing of the students’ experience across the two game examples. The GC: LA study shows how the game received a rather mixed reception by the participating students (Hanghøj, 2011). To the majority of the boys, the adventure game clearly failed to live up to their expectations of a 3D computer game due to, for example, the limited possibilities for interaction, lack of explicit violence, and no risk of dying. When watching the game trailer, some boys initially compared the game to the violent sandbox game Grand Theft Auto, but their excitement was soon replaced by lack of interest and disruptive forms of play. Following this clash of expectations, some of the boys explicitly framed the game as a “school game” and failed to create meaningful translations of their game experiences into disciplinary concepts and the written assignment. At the same time, other students clearly became engaged in the game and managed to translate their game experiences into lengthy journalistic feature articles. In particular, one of the girls surprised her teacher by coming up with a well-written feature told from a first-person point of view that positively exceeded her classmates’ expectations of what was allowed to be written in the genre of journalism. As these examples indicate, there were significant differences in how the students perceived the game design of GC: LA as being meaningful or not.

Returning to the Penumbra example, the teacher’s framing of the educational scenario around the game clearly influenced the students’ game-based writing experience. Drawing on their game experience, the students were asked to write a short horror scene from the game. This task required the students to translate their game experience into the fictional genre of horror writing, which related to their knowledge of the discipline and their everyday knowledge of the horror genre. To prevent the students’ fictional texts from being reduced purely to school texts (i.e. texts that only exist and only have relevance within a school context), the teacher asked each of the student groups to select their “best horror sentence” to be compared and discussed in class. After writing these sentences on the board, the teacher then orchestrated a discussion on how the sentences could or could not be viewed as good horror sentences and how they differed from other related genres, such as the splatter, noir, or thriller genres. In this way, the students were asked to write and present sentences that should convince not only the teacher, but also their classmates of the quality of their “horror literacy”. According to the teacher, the students were both quite engaged when they played the game in small groups in the basement and when they discussed the quality of their horror sentences in class.
In summary, we have compared two examples of game-based writing experiences, which involve dissimilar game genres, distinct educational scenarios, and contrasting framings of the participating students. We have shown some of the complex knowledge translations and framings involved when integrating students’ game practices and everyday experiences with the pedagogical and disciplinary practices of the school. The findings indicate that educational scenarios designed to bridge and integrate the domains of “gaming” and “schooling” imply contingent outcomes and learning experiences that can be difficult to predict. The example of GC: LA shows how following the commonsensical assumption that computer games appeal more to boys, who can find out what to do on their own, is problematic. As the teachers only briefly addressed the dynamics of the game world and their relation to the disciplinary domain of social studies, the students were often left on their own for either discarding or accepting the game as a school game. Similarly, the educational use of commercial computer games such as Penumbra can create immersive learning experiences, but this approach requires that teachers have sufficient game literacy and disciplinary knowledge to develop meaningful educational scenarios. Consequently, the educational use of commercial games may potentially provide more demanding and more engaging learning experiences than learning games.

Together, the two examples show how attempts to bring students’ everyday game experiences into the domain of schooling are not simply a matter of importing knowledge from one domain to the other. By using the analytical framework of scenario-based education, it becomes clear that the translations and framings of game-based learning involve reconfiguration of all the involved domains—especially in relation to the framing of the “student” (the pedagogical domain) and the framing of the “player” (the everyday life domain). Moreover, the examples show that teachers tend to choose widely different pedagogical approaches—e.g. as passive observers or as active re-designers of game-based learning processes—when translating the knowledge practices of computer games into educational scenarios.

SCHOOLING AND PROFESSIONAL PRACTICE

The second aspect of scenario-based education this article deals with concerns the relationship between professional practice and schooling. Pedagogues such as Dewey (1916) and Freinet (1941; 1969) promoted the simulation of professional practice in school settings, and Kent (1990), for example, promoted realistic problem solving in the more recent movement for entrepreneurship education. In this way, it is assumed that learning activities that resemble professional work practices can motivate and increase meaningfulness, as well as engage students in active dialog (Freinet, 1969; cf. Acker, 2007) and create “thick authenticity” (Shaffer, 2006).

Simulating a professional practice in a school setting is by no means an easy task. Being a journalist or an architect is a demanding profession that involves complex practices. A scenario consisting of simply saying to students, “Now you’re journalists”, is unlikely to make the students frame their activities in relation to a deep understanding of the professional domain of journalism. The students—and probably their teacher—would typically identify journalism with writing and lay
outing articles, and perhaps interviewing, for example, politicians. The students would not know, however, all of the other parts of the professional practice, such as the process of selecting or identifying stories, focusing and selecting an angle, preparing for an interview, doing research, making appointments with editors and photographers, aligning with genre conventions, and meeting deadlines in a timely manner.

Thus, most aspects of a professional practice remain invisible or tacit to non-professionals, which make simulating the practices of journalists difficult. Consequently, students and teachers need support for framing their understanding of the scenario that they work with towards the professional domain of journalism. This kind of support can be carried out by making, for instance, processes, interactions, and rules more manifest. Furthermore, structuring the work process, collaboration, and the acquisition of relevant knowledge can also support the students’ journalistic practices. All these functions can be integrated into a coherent computer-based design for learning, which is called a Practice Scaffolding Interactive Platform (PracSIP) (Bundsgaard, 2009; Bundsgaard, 2018).

Case: Translating journalism into classroom contexts

The Editorial Office is an example of a PracSIP that supports students’ production of a newspaper by addressing the well-known challenges of project-based teaching, which can be summed up as the challenges involved in structuring the work process and organizing collaboration and learning content while working on a project (c.f. Barron et al., 1998; Bundsgaard, 2009). Figure 3 shows how The Editorial Office scaffolds students’ journalistic work process.

**Figure 3. The “Planner” tool in The Editorial Office.**
The Editorial Office manifests journalism processes by guiding students through seven phases from idea to print\(^1\). A planning tool helps students on the editorial teams organize their collaboration by making a simple Gantt chart to support which articles to write, the delegation of subtasks, and the setting of deadlines. During the work process, the students must continuously update the status of the subtasks they are each responsible for, thus providing the editorial team and the teacher with an overview of the process. To support students’ acquisition of content knowledge about journalism practices and the newspaper’s main subject (e.g. developing ideas, searching the internet, preparing an interview, choosing an angle, and writing in a given journalistic genre), The Editorial Office integrates more than 40 interactive assistants who guide students through a reflective process relevant to their current task, which involves introducing students to core terms, instructing students in professional and academic work processes, and collecting relevant student answers in a report to be used in later work (cf. Bundsgaard, 2009; Fougt, 2009).

One major finding stands out from studies of students who used The Editorial Office (Fougt, 2009; Henderson, 2008). This PracSIP primarily works as a scaffold for the students and their teacher by structuring and organizing their work, offering content-related support along the way, and helping students produce high-quality newspapers, with respect to the newspapers’ content, look, and feel, compared to student-produced newspapers made without the aid of tools like The Editorial Office. The studies further suggest that PracSIPs have considerable potential for supporting the management of work and collaboration process while also supporting the acquisition of content, thereby engaging students in a meaningful practice (Henderson, 2008:103).

In traditional forms of teaching, primarily referred to as the pedagogical domain in our model, the teacher alone mediates the tools, processes, and concepts that may be connected to a professional practice, but the focus is typically on academic content, and the teacher does not address professional practices. With such teaching practices, students may be working with, for example, newspaper genres, but without access, or maybe even attention to the practices of journalism. In other words, the domain of schooling has detached and assimilated a selected subset of artifacts from the professional domain. In a teaching practice using a PracSIP, the students receive support to help them understand and simulate a professional practice by accessing manifestations of the professional practice that the PracSIP provides, thus giving the students highly tangible support to frame their experience as a journalist practice. Even though the professional practice is more manifest in a PracSIP approach, the students do not actually participate in the practice of journalism. Instead, they participate in a boundary practice (Henderson, 2008:34f; cf. Wenger, 1998) between the ordinary domains of the school context and the professional domain with the practices of journalism they are simulating. They have a more explicit relationship with the simulated practice, but it is still foreign or unfamiliar. This means that

\(^1\) The seven phases are: deciding the paper’s profile; planning which articles to write, delegating responsibilities, and setting deadlines; doing research; selecting, managing and editing photos; focusing the article; writing the article; layouting the paper; and sending the paper to print.
teachers and students can be observed negotiating how to frame their practice while interacting with the PracSIP.

Observations of two 8th grade classes at the same school showed significant variation in how students and teachers accepted and took part in the scenario of journalism practice (Henderson, 2008). The students expressed, for example, two opposing framings of working with The Editorial Office: some students framed working with The Editorial Office as part of a journalism practice, while other students did not. In the following quote from a group interview on what the students thought about The Editorial Office, one student speaks about the role of the teacher:

Interviewer: What did you think about Gry [the teacher] during this project?

Student 1: Eager, again... She was eager for us to learn something about this. She likes journalism I suppose, and she likes it ... that we’re a real editorial office. She likes it ... that we pictured ourselves like a real newspaper production process. She was very proud, not like different. Yes, she was more proud of us this time than the last time [we produced a newspaper]... last time was just like a little ...

Student 2: The keyword is just PROUD.

Student 1: “Proud teacher!” [talks like she is quoting a headline]

(Henderson, 2008:12).

In another study of The Editorial Office by Bundsgaard (2009), the teachers and students were more hesitant about framing their experience as being part of a journalism practice:

Interviewer: Did you feel like journalists in this project?

Student 3: I didn’t ... I didn’t entirely feel like a journalist, but like ... I don't know ... not quite. But a little… (Bundsgaard, 2009:9).

As this example indicates, not all students enacted their parts in the role-play about making a newspaper. When students who are used to class teaching primarily based on an IRE-dominated conversation structure (cf. Sinclair & Coulthardt, 1975) suddenly must work and learn in a scenario-based teaching practice, they may experience difficulties adapting to a new practice and tend to play “their traditional roles” (Stigler & Hierbert 1999: 99). On the other hand, the studies also showed that when one of the two teachers introduced and willingly played her role as chief editor, it encouraged the students to fulfill their assigned roles.

To some degree, the tensions between different framings may be explained by a clash between everyday school practices and the simulated practices of the professional domain. Some of the students clearly resisted working like journalists as a relevant practice in a school context. In an interview with a group of students, who had been preparing an interview using an interactive assistant, one student stated, “the activity did not produce any learning about the school subject” (Fougt, 2009: 71). The interview further clarified how learning about the school subject for these students meant learning about grammar, punctuation, and spelling. When
asked about the subject content introduced through the PracSIP (e.g. learning questioning techniques), the students hesitated to accept it as learning properly about a subject. Other students emphasized less narrow aspects of their learning outcomes:

Interviewer: So, you think, broadly speaking ... that you’ve learned something about Danish and you’ve learned something about project ...?

Student 1: Yes ... I’ve learned very much about the project and collaborating ... and I’ve learned that you always need to have a plan, so you know what to do ... everyone ... (Henderson, 2008: 16).

This student accepted complex collaboration, process management, and communication practices as relevant and legitimate to the academic content, which justified her framing of her experience as journalism in practice, even though it took place in a school context.

In summary, the students and their teachers found it challenging to work, think, and act like journalists. Generally speaking, the students and teachers were accustomed to more traditional teaching practices, which may explain why many of them found it difficult to simulate professional practices and why some of the students did not experience the activity as “doing school” (Gee, 2003) the right way. By drawing in journalism as an out-of-school knowledge practice (cf. Figure 1), the framing of the educational scenario made it unclear and difficult for the students to understand their writing activities as a part of the disciplinary domain of Danish as a school subject. In this way, the case shows how educational scenarios require that both teachers and students adapt to new roles of participation to undergo meaningful learning experiences. As the examples indicate, teachers may benefit from accepting new roles as managers, guides, or co-players in an educational scenario that supports students’ use of different resources and from discussing students’ work and experiences with such resources.

The students, on the other hand, may benefit from accepting new roles as self-managing and collaborating professionals that produce valuable products. Thus, the educational use of professional scenarios only makes sense if both teachers and students can identify and follow the relevant validity criteria (Barth, 2002) for professional knowledge practices within school domains. This requires teachers and students to view academic content not only as facts and basic procedural knowledge, but also as knowing how to collaborate, produce, and communicate critically about the production of written and multimodal products (Bundsgaard & Fougt, 2017).

DISCUSSION

The two different types of cases, computer games versus simulation, showed how translations and framings of practices across domains may take on quite different forms, depending on the contexts of specific educational scenarios. Thus, the first case showed how attempts to integrate the students’ everyday game knowledge into the pedagogical and disciplinary domains of schooling may easily run counter to teachers’ prior expectations—e.g. that all boys like to play computer games and that they should be able to play the game without guidance. The case further emphasized the crucial role of the teacher in being able to design educational scenarios, which
clearly identify and communicate the goals and dynamics of specific games in relation to selected pedagogical and disciplinary activities. The second case, which describes the educational use of an interactive platform for scaffolding writing within the domain of professional journalism, showed how teachers and students need to accept new roles, as well as new validity criteria for subject-related content, in order for educational scenarios to become meaningful.

Taken together, the two types of cases argue that the idea of integrating untransformed, game-oriented learning designs directly into schooling is problematic, as it does not account for differing knowledge practices and potential clashes between different framings. In this way, assumed “authentic” or “realistic” potentials of practice simulations and game-oriented scenarios should not be taken for granted but subjected to empirical analysis. The use of game-oriented scenarios in schools will always frame and be framed in relation to teachers and students’ mixed experience of the enacted practices and how they translate across domains in relation to different knowledge practices and validity criteria.

As the cases show, the use of game-oriented educational scenarios can lead teachers to become passive observers of their students, who, in turn, may lose sight of the disciplinary aims. In this way, the learning potential of game-oriented scenarios is challenged by the high complexity of game scenarios, which may obscure teachers’ curricular and pedagogical aims or transform those aims into unquestioned assumptions. Thus, the targeting of non-school domains may easily lead to confusion or frame clashes concerning aims, activities, and validity criteria. In this way, the cases show how the aims and practices of game-oriented learning designs must be translated, communicated, negotiated, integrated, and thus reframed by teachers and students in ways that produce relevant and valid forms of educational knowledge.

CONCLUSION

Game-oriented teaching and learning directly and explicitly enacts the imaginative aspect of students’ scenario-based inquiry. The complexity of cross-domain framings that emerges when enacting educational scenarios, however, arguably both represents the most significant challenge and the most rewarding opportunity of using game-oriented learning designs. Hence, it is crucial for teachers to be able to not only design, communicate, enact, and assess educational scenarios, but also to address the implied knowledge practices of the involved domains and how this relates to school domains. Meaningful game-oriented learning requires that teachers and students can articulate the assumptions of particular educational scenarios and reflect similarities and differences through translations of practices across the involved domains. This is not a simple task. In order to address this challenge, this chapter has outlined a theoretical framework for understanding how the practices and explicit frames of game-oriented learning unfold across school and non-school domains. Thus, the framework and the cases presented here can hopefully be used for further analysis and facilitation of game-oriented learning, which is always present in the contingent continuum between imagined possibilities and the taken-for-granted aspects of existing pedagogical practices.
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