

Understanding the Game: An Examination of Ludoliteracy

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1 Abstract:

In the widening field of Game Based learning, games are included and addressed in many different ways. In this paper, the authors explore the possibility of using games to strengthen students' *digital literacy* and more specifically their reflective understanding of video games, which we label *ludoliteracy* by adopting the term from José P. Zagal.

For some years, *digital literacy* has been considered a pivotal competence due to the increasing digitization of information. It is simply not possible to become an actively participating citizen in society today without the skills and competencies required to navigate the digital information. Digital media are becoming ever more ubiquitous and intertwined, and games are a central component of this process. It is thus imperative that games are included in educational settings, and that we develop a framework for this inclusion. This leads to our primary research question:

How can we define "ludoliteracy" and how can games be included in education in order to develop this literacy with students?

As we are working within a new field at an early stage, neither theory nor practice is thoroughly consolidated. Our approach is therefore one of *convergence*, where we are fusing together available theory with our own empirical studies in order to build a more comprehensive framework for ensuring a sufficient understanding of video games. We draw on the last decade of research from the field of *game studies*, and the knowledge gained in relation to the broader *digital literacy*. *Game studies* have provided us with important insights, and should be considered part of the foundation for any approach to game based learning, not least one that is concerned with *ludoliteracy*. Building upon these pillars of theory, we have carried out several empirical projects with students at different levels in order to shed light on possible approaches towards *ludoliteracy*.

2 Keywords

Digital literacy, Game literacy, Practical experiences, Game based learning,

3 Introduction

In most aspects of contemporary society, we are relying heavily on digital media. Whether we are looking for information, shopping, communicating with the authorities, reading a novel on our Kindle or iPad, uploading a video on Youtube, catching up with friends on Facebook – we are interacting with different kinds of digital media. As part of these tendencies, video games have become almost omnipresent, and culture today is saturated with games and the aesthetics of games. Several studies indicate that playing video games is almost a ubiquitous activity among teenagers (Lenhart et al, 2008).

As an immediate consequence, it has become increasingly important for each individual to develop a comprehensive set of skills and competencies in order to *understand* games and their social, economic and cultural implications. This leads to the first question behind this paper, as we explore what it *means* to understand games.

Even though the pervasiveness of games is widely recognized, games continue to remain conspicuous by their absence in formal education. The array of initiatives is widening, however, and an increasing number of projects are initiated at different educational levels. The field is characterized by great fragmentation, and no clear common frame of reference exists. The aforementioned lack of clarity regarding the meaning of “understanding games” is only further strengthened by this absence of a collective framework and coordinated experiences on the practice of teaching about games.

Understanding games is important and valuable in itself, yet we identify an extra dimension closely related to the field of game based learning. We argue that *understanding* is a necessary prerequisite in order to *use* games as learning tools in any GBL-perspective, because knowing the characteristics, strengths and weaknesses are required in order to fully harness the potentials.

These deliberations lead to the primary question behind this paper:

How can we define “ludoliteracy” and how can games be included in education in order to develop this literacy with students?

In the remainder of the paper, we aim to answer this question by mapping available research in the fields of *digital literacy* and *ludoliteracy*, and supplement insights from research with concrete examples from different courses on video games.

4 Background

This paper is the result of studies done partly in relation to Project GAMEiT, partly in relation to GameIT College.

4.1 Project GAMEiT

Project GAMEiT is a developmental project supported by the Leonardo da Vinci programme, which is part of the European Commission's Lifelong Learning Programme. In this project, partners from Norway, Germany, UK and Denmark are exploring the field of game based learning with the following as our mission statement:

“We aim to identify, collect, test and distribute good practice in game based learning. Our project will result in a framework of game based learning pedagogy”.

These guiding principles are pursued by doing field studies in each country, exploring different approaches in a coordinated framework. Results of the project are, among other things, a handbook to teachers/practitioners and a model for doing courses on game based learning close to practice.

4.2 GameIT College

Project GAMEiT is, as indicated by the similarity in names, closely related to GameIT College. Where the former is a research and development project, GameIT College is a Higher Technical Examination Programme (HTX) at Grenaa Technical College in Grenaa, Denmark. GameIT College is particularly preoccupied with video games. Games are integrated into the curriculum in “regular” subjects like Danish, English, Social Sciences, Communication & IT and Mathematics, and in addition, students are participating in workshops, courses and projects in their leisure time. The focus is both on promoting a broad understanding of games, on applying game based learning to support subjects, and on developing actual games. The field studies described in this paper was carried out at GameIT College.

5 Digital literacy

“Digital literacy is an important entitlement for all young people in an increasingly digital culture. It furnishes children and young people with the skills, knowledge and understanding that will help them to take a full and active part in social, cultural, economic, civic and intellectual life now and in the future” (Hague & Payton, 2010)

Before looking more specifically at the notion of a “literacy of games”, it is important to understand the broader term “digital literacy”, as it shares many traits with the narrower “ludoliteracy”. As stated by Hague and Payton above, this new literacy is very important in contemporary society, where an increasing number of tasks are dependent on digital tools.

Where many researchers and practitioners have been inspired by Marc Prensky’s notion of *digital immigrants* (Prensky 2001), this idea now being challenged by several researchers (see Bennet, Maton & Kervin 2008 for an overview). We support the notion that no-one is born as an expert in using and understanding neither digital media in general nor video games more specifically, and that education and cross-generational dialogues are therefore required.

5.1 Defining digital literacy

Part of the explanation for the durability of Prensky’s terms probably has something to do with a widespread inclination towards focusing on the *functional skills* – the ability of children and young people to *use* media (Buckingham 2008, p. 17). This is not equal to being digitally literate, however, as this requires higher levels of critical reflection. In this sense, digital literacy may be compared to Bloom’s famous taxonomy of “levels of complexity” in learning (Anderson 2001). In addition, a perception of digital literacy must comprise several different “interconnected skills and practices”. (Jenkins, 2008)

This is a notion mirrored in a recent report from Futurelab (Hague & Payton 2010), where digital literacy is illustrated in a multimodal model:

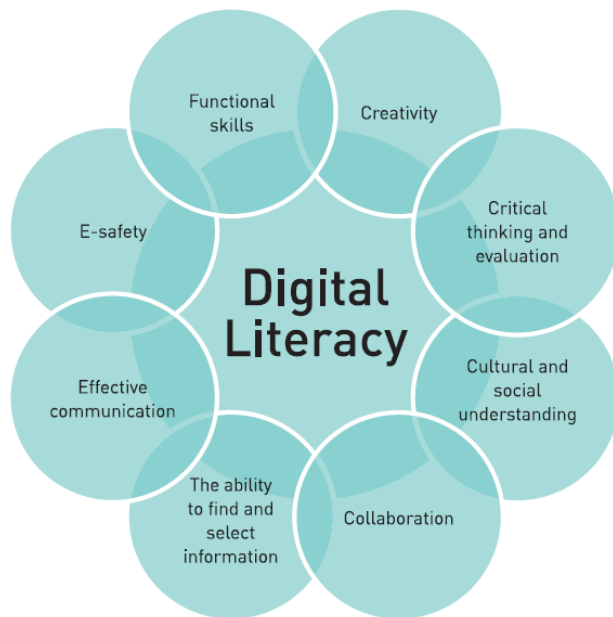


Figure 1 - Hague & Payton 2010

We do not suggest that this is neither a universal nor complete model, yet it serves to promote the idea of digital literacy as a diverse phenomenon composed of a variety of skills and competencies. Functional skills are included, and they are important, but far from sufficient.

6 Why ludoliteracy?

Our motivation for exploring ludoliteracy and developing a framework for integrating games in educational practice is twofold:

6.1 Understanding games and their context

Acknowledging the influence of video games on social, economic and cultural dimensions as well as the life of the individual, *understanding* video games is becoming increasingly important. Children and young people are “heavy users” of video games, but their *functional skills* are not automatically supplemented by analytical and reflective competencies. These are required in order to understand the meaning of games, relate games to other media, identify the impact on society, themselves etc.

6.2 Ludoliteracy and game based learning

The second argument presupposes the former, but relates more directly to the field of game based learning. When researchers are arguing that games are valuable vehicles for learning, they try to do so with a firm grip of the characteristics and affordances of video games (e.g. Gee 2007, Egenfeldt-Nielsen 2005). This approach is important, as it is precisely *because of* the unique affordances of games, that they can be particularly relevant as *learning machines* (see Gee 2004). Just as researchers must understand this, so should practitioners and students using games for learning, as “education about the media should be seen as an indispensable prerequisite for education with or through the media” (Buckingham & Burn 2007, p. 323).

In this light, it must not be overlooked that understanding *how games work* is important, both to teachers and students when attempting to harness the learning potentials of games.

7 Towards a literacy of games

“Developing a deep understanding of videogames can be likened to chasing a moving target, since ideas and notions of what games are and what meanings they can convey are continually being challenged and negotiated.” (Zagal, 2010)

While we are moving towards a more holistic and comprehensive perception of digital literacy, “ludoliteracy” is still largely underdeveloped. This is in part due to the young nature of video games in general and game studies more specifically. New games, types of games and research in relation to games are thus likely to continue to change our perception of what is important in a literacy of games. At the same time we must attempt to describe this “moving target” in order to work with ludoliteracy in practice – knowing that our attempts will need continuous revision.

Ludoliteracy is a subset of digital literacy, boasting the same diversity, and any framework must therefore acknowledge this diversity; e.g. ludoliteracy cannot be reduced to a matter of functional skills – being able to *play* is not enough. This has been acknowledged and pointed out by several researchers, who have contributed to our current understanding of a “literacy of games” (Squire 2004, Buckingham & Burn 2007, Caperton 2010). It is only lately, however, that a more elaborate framework has been put forward by José P. Zagal together with the notion of ludoliteracy in the publication “Ludoliteracy – Defining, Understanding and Supporting Games Education” (Zagal 2010).

7.1 Ludoliteracy defined

Zagal elaborates on a model developed by James Paul Gee (Gee, 2007), and proposes a definition of ludoliteracy, which comprises the following three major components:

- Having the ability to play games.
- Having the ability to understand meanings with respect to games.
- Having the ability to make games. (Zagal, 2010, p. 23)

He thus concludes that being literate in the field of games requires an ability to *play*, *understand* and *make* games. These three dimensions are interrelated and interdependent, but, in the light of the aforementioned “levels of complexity”, we might regard *playing* as the basic level, and *understanding* and *producing* as building upon this foundation:

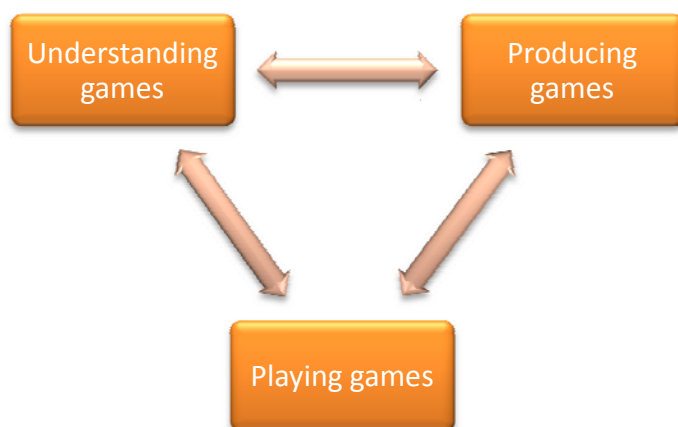


Figure 2 - The three dimensions of ludoliteracy

In the following paragraphs, we will further explore these three dimensions, linking available research with a number of empirical field studies.

7.2 Playing games

The playing of video games is very often a “key entry point” to the world of digital media, and one that, subsequently, works to promote the need for a more elaborate understanding of digital media (Salen 2007). This understanding should, according to Zagal, begin with the ability to play games, which equals the *functional skills* of digital literacy and can be compared to the ability to *read* in the traditional perception of literacy (Caperton 2010). Despite the validity of such comparisons, *playing* greatly differs from *reading*, as playing entails “such basic hardware skills as the ability to operate the relevant technology, to load and save a game, and to use the controls efficiently; but it might also include software-related skills such as the ability to navigate around the game space, to utilise menus and options, to customise assets to one’s requirements” (Buckingham & Burn, 2007, p. 329).

Games are *learning machines*, as James Paul Gee have described them (Gee 2004). *Learning to play* is integral to the process of playing, and thus the functional element is to a large degree developed in the informal settings of leisure time activities. Not every child or young person is an expert or even experienced player of video games, though, and in addition many *gamers* are finding it hard to distinguish between playing for *fun* and playing for *critical analysis* (Zagal 2010, p. 50). Furthermore, as the actual playing of a game is considered one of the most important ways to acquire knowledge about a game (Aarseth, 2003), playing a game makes for an obvious point of departure before moving on to the “higher levels of complexity”.

7.3 Understanding games

Whereas playing is labeled as a set of functional skills, *understanding* requires a more complex set of analytical and reflective competencies. In Zagal’s work, the area of “understanding meaning with respect to games” is his primary focal point, and what he explores throughout the book and preceding articles (e.g. Zagal 2010, Zagal 2008). In order to more systematically approach the question of understanding, he proposes the following framework, where one must develop:

“The ability to explain, discuss, describe, frame, situate, interpret, and/or position games:

In the context of human culture (games as a cultural artifacts)

In the context of other games (comparing games to other games, genres)

In the context of the technological platform on which they are executed

By deconstructing them and understanding their components, how they interact, and how they facilitate certain experiences in players” (Zagal, 2010)

This is an *ideal* model describing what it means to understand video games, and such an understanding is truly dynamic and never “finalized”. It is also rarely possible to address all dimensions at once or with equal weight.

As a consequence, every approach only contributes to a fragment of truly *understanding* games, yet we have been doing a number of courses as part of our field study to support this understanding. We have used Google Wave to establish and discuss a framework of video game genres, we have worked with the “Understanding Games” series as a game based learning approach to understanding games, and we have been analyzing games to understand their intertextual references – among other things.

7.3.1 Reviews as assessments

In a sense peripheral to the game itself, *video game reviews* are central to the broader culture of video games (Zagal, Ladd & Johnson 2009). Many people are using reviews as “buying guides”, and to some critics, this is all they are (Costikyan 2008). Even so, it is possible for a game review to cover all four dimensions of Zagal’s framework at the level of understanding, and as such, writing a game review is a good exercise to assess and expand students’ level of ludoliteracy. The students were asked to write a review, in which they should move beyond the dichotomy of good vs. bad, and analyse the game in question, relate it to other games etc.

Many of the students' reviews show, that they are not only experienced *gamers*, but are also to some extent able to identify the intertextual relation *between* different games (2.dimension), as is shown in this review of the game "Braid":

"The game is much like the old Mario games, and you can definitely see that Braid is paying homage to Mario in several aspects, From the furry two-legged creatures which resembles Goombas, the tubes with carnivore plants trying to rip you apart, to the castles at the end of every completed world" (student review).

Reviewing "Dragon Age: Origins", a student investigates a specific component (4. Dimension), namely the combat system, and compares this to another game, Fallout 3 (2. Dimension):

"The combat system in Dragon Age is quite interesting. Like the V.A.T.S system in Fallout 3, you are able to pause your game in combat, enabling you to make tactical decisions and then continue fighting, after giving orders to your character and the party members you might have" (student review)

In another review, a student demonstrates the ability to deconstruct a game and understand its components (4. Dimension), as he criticizes the game "Brütal Legend":

"You take command of the battlefield by being able to summon and control your troops, and then lead them across a closed map, to destroy the enemy's base. This part of the game held great potential, since every unit type is special, and possess special abilities, but it somehow fails. You never really need to use the special abilities, and I often found myself just resorting to brute strength" (student review)

Here the student picks apart the game, showing that there is an imbalance between different components, thus making a potentially diverse playing experience blander and less varied than it was probably intended by the game designers.

In general, the game reviews showed considerable amount of *understanding*, especially in relation to the second and fourth dimensions (context of other games, deconstruction).

7.4 Producing games

As the third branch of Zagal's framework, students of games are expected to be able to *produce* games. If we re-apply the former parallel between *playing* and *reading*, then *producing* is often compared to *writing* (Caperton 2010). When we consider the historical perspective, the notion of *production* clearly resonates with earlier approaches to media education, where "practical work [...] will be an important, indeed an essential, component of any worthwhile course in media education" (Masterman, 1981, p. 26).

This is true of video games as well, and ideally, the production process also comprises both of the aforementioned dimensions, namely *playing* and *understanding*. Where Zagal focuses primarily on *understanding*, researcher and game developer Katie Salen has long been exploring the *productive* dimension. Working with the "game-design game" "Gamestar Mechanic", she studies the different skills and competencies required to develop games:

"Game design as a domain of professional practice involves a rich array of knowledge and skills. Knowing how to put together a successful game involves system-based thinking, iterative critical problem solving, art and aesthetics, writing and storytelling, interactive design, game logic and rules, and programming skills [...] And each of these involves a melding of technological, social, communicational, and artistic concerns, in the framework of a form of scientific thinking in the broad sense of the term (e.g., hypothesis and theory testing, reflection and revision based on evidence, etc.)(Salen 2007, p. 305).

By allowing students to actually design and develop games, it becomes possible to fuse in one creative process a number of highly relevant skills and competencies – technological, social, communicational, and artistic - which are in great demand in society today. The scientific thinking referenced by Salen also pretty closely resonates with the "innovative skills" and entrepreneurship sought after by companies and governments (The Danish Government 2006).

7.4.1 Through the pipeline

In order to strengthen the student's competencies on all the areas mentioned by Salen, a group of teachers at GamelT College have designed and completed a comprehensive video game production process, usually referred to as *the pipeline*. This project was carried out in the subjects "Communication & IT", "Technology" and "Danish (native tongue)", and was further supported by workshops after school for the duration of approximately two months. During the process, the groups passed through these phases:

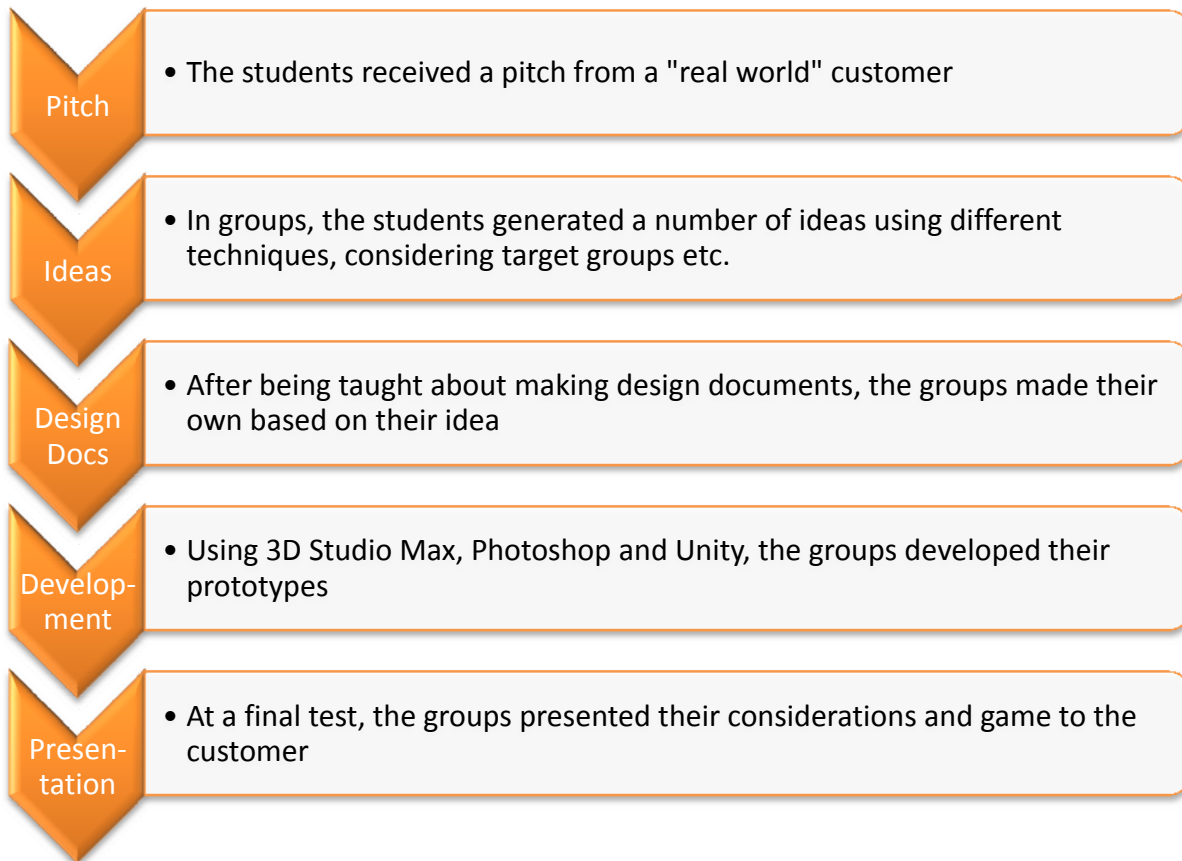


Figure 3 - The game production pipeline

The project was initiated in cooperation with a local museum called "Djurslands Museum", which has actively been searching for new ways of attracting a younger audience. Seeing the enormous interest in video games, and the potential of games to let the player experience all kinds of situations, many museums have recently begun considering using games as part of what they offer their audience (Egenfeldt-Nielsen 2009). In a dialogue with GamelT College, the entire class visited the Djurslands Museum, and was given a pitch to depart from. By establishing this relation between a game developer (the students) and a potential customer (the museum), the project rather closely resembled a "real life situation". This way it was attempted to bridge the gap between theory and practice addressed by learning theorists (Lave & Wenger 1991, Wenger 1998). The majority of the students experienced this setup as motivating, inspiring and instructive:

"This is a special project, as we have been working with a company, a real customer, which made us feel, that this meant something, and our ambitions grew because of this. We have been stubborn and just wanted this to work out" (student)

Motivation remained high throughout the project, and most groups kept seeking out the best possible solutions, which is also mirrored in a thorough process of generating ideas. Here it also becomes clear, that the students had to develop their knowledge about game design and the components of a game:

"We started out with just security cameras to avoid. Then we discussed, if we should have a guard to walk around, and how he should walk? Should he turn slowly or just turn around? The idea with both the guard and then laser traps was to slow down the player, or else he would just rush through the level. The laser

traps, which are invisible until you get very close, makes the players paranoid and forces them to sneak through the level” (student).

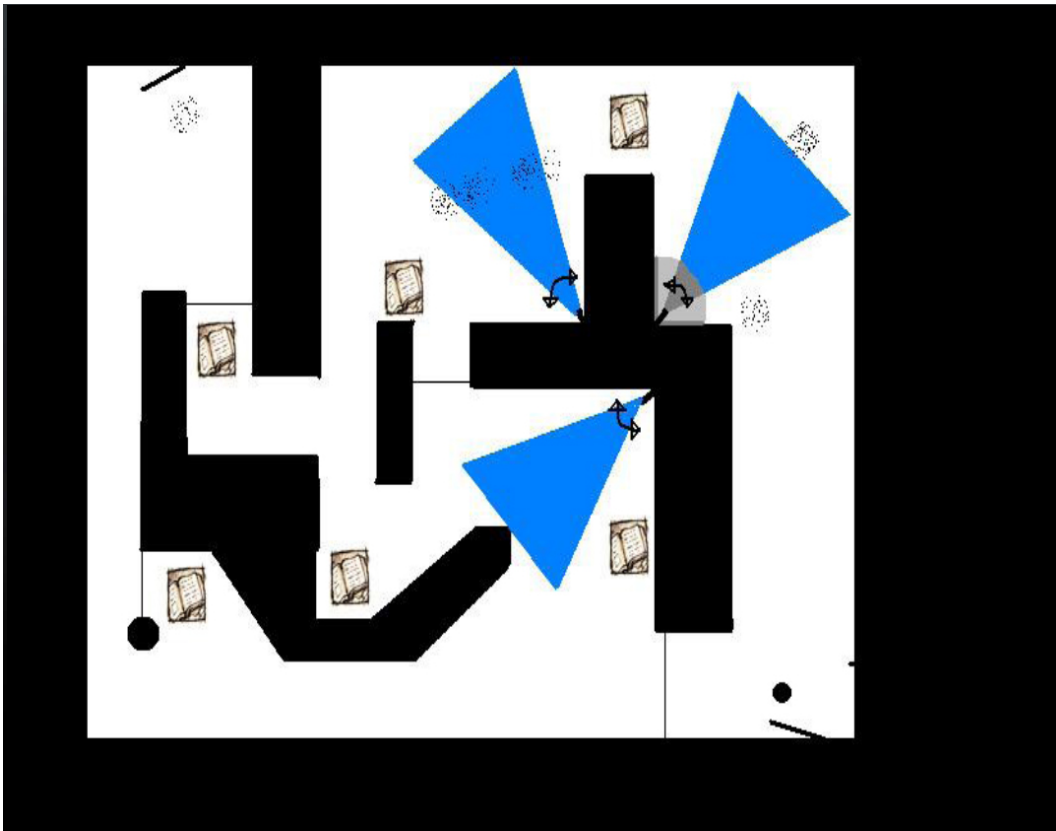


Figure 4 - A sketch showing the level layout – cameras etc.

Concluding the process, the groups participated in a session, where their two teachers, an external consultant and the museum keeper from Djursland Museum acted as the panel to whom the concepts and games should be presented. This was designed to closely resemble the phase, where a game developer should sell their product to a customer (or a publisher):

“I am not usually nervous before an exam, but this time, when we had to sell our product, and convince them to pick us, it made me feel differently. It was a sales situation, which gave us a bigger challenge, and a completely different feeling, that we just had to succeed. It feels good to be in there, presenting your product – it makes you proud” (student).

It is clear, that the larger majority have gained quite a lot, both in terms of the different elements (generating ideas, writing design documents, technical skills, presentation skills etc.) as well as knowledge about the overall production pipeline. Several students also reflected upon what might seem a contradiction between developing a game *to entertain*, but being extremely serious about doing so:

“Compared to what I had imagined, this was much more serious. I mean, you are doing a game to entertain people, and yet you are so serious about it. It has been great to experience, that you can work so seriously with something, which is primarily meant to entertain” (student)

8 Conclusion

Throughout this study, we have aimed to explore the potentials of developing students' digital literacy, and, more specifically, their literacy of games – or *ludoliteracy*. We have been gathering knowledge from different areas, and have applied Jose P. Zagal's framework, which can help strengthen the perception, that ludoliteracy must be about *playing, understanding and producing*.

Playing equals the functional skills (e.g. reading), *understanding* covers *playing* and reflective, critical and analytical competences, whereas *producing* comprises both *playing* and *understanding*, and can reasonably be compared to *writing*.

We have been investigating the second component, *understanding games*, through a number of small and larger courses and projects. By applying the four dimensions of understanding (context of culture, context of games, technology and deconstruction), it is possible to discuss, analyze and criticize games from different perspective, eventually deepening and broadening understanding.

We placed, however, our primary emphasis on the *production* of games, and have demonstrated how the creative process of developing games contribute greatly to students' ludoliteracy, but also to a number of related skills and competencies. By developing games, students must understand and be able to tweak the components of a game, work constructively in a team, communicate their ideas and concepts, and apply the "scientific way of thinking", from generating ideas, revising them, developing a product, testing and revising, and initially "selling" the product.

8.1 Future perspectives

As initially argued, someone's *ludoliteracy* never reaches any final state, yet remains highly dynamic and fluid, and in this paper we have only shown a framework and some possible ways to apply this framework in educational practice. Further research in this area certainly remains much needed, and we continue to investigate the three dimensions – playing, understanding, producing – and the relations between them.

The interrelationship is particularly important; as it is only by knitting the three approaches tightly together, and by reinforcing the dialectics between them, that we can move towards a more comprehensive *ludoliteracy*. We would therefore attempt to do more studies in exactly this field, showing how theoretical insights can be combined with practical production.

Another area for future exploration would be the connection between an elaborate understanding of games and the application of game based learning. Much research on games based learning is currently examining the potential of different types of games in order to support the learning of pupils and students. These tendencies are valuable, yet it remains important to provide students and teachers with a fundamental knowledge of games, if they are to succeed actually *using* games.

9 Acknowledgements

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