Applying mobile devices and game-based learning in formal educational settings: Playing Pokémon Go as a tool for learning in a Swedish elementary school

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Background

From a Nordic perspective mobile applications and devices such as smartphones and tablets is part of everyday life for many people. These Internet-connected technologies are used to perform various tasks in leisure settings, workplaces and in the homes. Moreover, they also are linked to situations in which people learn. In these situations people could apply them in activities both with the intention to learn as well as learning being an unintentional or secondary effect of performing tasks. However, while mobile technologies are widely implemented in the lifestyles of Nordic citizens such technologies, it could also be argued that it is a reason for applying these technologies in formal educational settings. This paper focuses on how such technologies could be applied in elementary educational settings.

From an international perspectives mobile applications that enhances learning has been studied and discussed at least since 1976. After the millennium shift mobile learning has rapidly increased with applications that are more personalised, more contextualised, more intelligent and more user-friendly (Chiang et al., 2016). This involves all parts of the educational system and often combined with Game-based learning (GBL) with more serious games for higher education (Vlachopoulos & Makri, 2017) and with a more playful setup for primary school (Hainey et al., 2016). Like mobile learning GBL has been an emerging research field in the 21st century. Several studies have indicated that GBL and the use of educational games is not only a motivating educational idea, but also a didactic concept that carefully implemented could be an alternative to traditional instructional design (Gee 2003; Malone & Lepper 1987; Vlachopoulos & Makri, 2017).

A relatively younger phenomenon are the so called Location-based games (LBGs), where Pokémon Go (PG) is the most well-known, but far from the only LBG. PG has a relatively short history starting out in the summer of 2016, when this location-based game had a surprisingly fast global spread with a lively discussion in various media. Only in the first week after the game release, Pokémon Go became the most downloaded mobile app ever. The game uses real world maps with roads, buildings and lakes realistically depicted, in a blend with the fantasy world of Pokémon figures with its origin from a Japanese card collection game (Kent, 2010). In the PG version the figures pops up on the mobile screen and can be captured with the use of virtual balls. To catch the figures that are depicted on the maps, players must also physically move to the location of the figure, unlike other types of digital games PG and other LBGs are involving outdoor activities in the gameplay.

Two reasons for involving PG in formal primary school education are the game's identified motivational effect (Zsila et al., 2017) and the rich possibilities for integrating the game in outdoor

activities (Serino et al., 2016). In Australian higher education more specialised LGBs have been used successfully, in location-based mobile learning (Edmonds & Smith, 2016), and in Netherlands secondary school History activities have been augmented with a tailor-made LGB focusing on the the Middle Ages (Huizenga et al., 2009). However, it seems realistic to assume that the engaging gameplay and the fantasy based backstory in PG would better suit a primary school target audience. Therefore, this study reports preliminary results from a case study of mobile game-based learning in a Swedish elementary school.

The Case

The Pokémon Go project was born in an interest in what happens in the interplay between the individual and the environment when mobile devices and applications as tools are featured as mediating artefacts. In what way the children do discover the affordances that exist in the real physical world in parallel as they also discover offers through the smartphone as an artefact? We were also interested in how the school can use and utilise what the children are interested in their spare time in order to create motivation for traditional subjects using the mobile devices that the children use.

The study was implemented in two classes; a fifth grade and sixth grade. The teachers were instructed to plan a lesson in subjects SO and mathematics, where the students were expected to be outdoors and use smartphones and the game PG. The lessons were planned as walkings in the vicinity. Each group conducted two walks together with a teacher. Each walk took about 30 minutes to complete.

In each student group, there were one to two smartphones to hand in. When the student group passed the planned stop, the teacher tried to attract the students' attention to different Pokéstops. Immediately in connection with each walk, group interviews are conducted with the student groups to capture their experiences and perceptions of the previous activity. What they considered about the walk, what they thought they had learned and what they liked wearing the spy glasses. The teacher followed up the outdoor lesson with a common lesson in the classroom. The teacher then discusses with the students the contents of the outdoor activity. Teachers perceptions and experiences are followed up with teacher interviews.

Method

The teacher and the students wore spy glasses in order to enable us to capture documents and communication from the perspective of both students and teachers. In combination with the spy glasses, a simple hand camera has also been used to get a complete picture of the multiple perspectives that the spy glasses collect. The video material from the observations and lesson plans enables a description of what students and teachers actually do when they play Pokémon Go during the outdoor-based lesson. Students and teachers' reflections have been captured through interviewing techniques which has made it possible to also describe how teachers and students perceive the implementation of mobile technologies in teaching.

In combination with the spy glasses, a simple hand camera has also been used to get a complete picture of the multiple perspectives that the spy glasses collect. The video material from the observations and lesson plans enables a description of what students and teachers actually do when they play PG during the outdoor-based lesson. Students and teachers' reflections have been captured through interviewing techniques. The interview questions move around the content and structure of these lessons. This also enables a description of how teachers and students perceive the implementation of mobile technologies in teaching.

Preliminary results

The analysis is divided into categories based on the pupils' perceptions and expressions of various aspects related to the game PG, the lesson with smartphones, using smartphones, and how they consider learning and teaching at school.

This first step of the analysis work focused on questions about how students perceive this lesson, what they think about the game, about memories of how or where they actually did walk. Also expressions of the use of spyglasses and what they thought they did learn under the lesson, if they thought they learned something.

When the students expressed what was fun with the walking lesson, perceptions that concern both the game and which involve more surrounding aspects were evident. The perceptions that concerns the game expressed that most fun was to throw the balls, to catch Pokémons and to pass as many Pokéstops as possible during a walk.

It is possible to see in the data how some students think it's hard not to focus on the game, how they look at the smartphone instead of looking up and paying attention to what the teacher wanted to teach. In the discussion of what creates motivation and how to customise the teaching of individual students' specific needs, a recorded material with spyglasses provided valuable information and knowledge about how the motivation for learning worked.

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