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Digital Games: Exploring the Relationship between Motivation, Engagement and Informal
Learning

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Abstract

It has been suggested that digital games can be powerful learning environments that encourage active and critical learning, including participation within “affinity groups” and “semiotic domains” (Gee, 2004). However, there is a need to provide further empirical evidence to substantiate these claims, while there is little research that attempts to explore the links between motivation, engagement and informal learning. This paper reports on work in progress which aims to explore these links through three different studies of adult games players. The first study examines a series of email interviews to find out more about people’s game-playing experiences; the second consists of a set of eight case studies examining how involvement and learning come together in and around instances of game-play; and the third includes a survey, to find out how prevalent certain game-playing activities are amongst different kinds of players. Furthering our understanding of how motivation, engagement and learning relate to each other within commercially available digital games will have important implications for the design of more formal educational environments.

Digital Games: Exploring the Relationship between Motivation, Engagement and Informal Learning

Introduction

Research has suggested that digital games can be powerful informal learning environments since they encourage active and critical learning, including participation within “affinity groups” and “semiotic domains” (Gee, 2004). Arguably, the groups Gee refers too could be described as communities of practice, as defined by Lave & Wagner (1991). However, there is a need for further studies which examine how people playing games as part of a larger socio-cultural activity (Pelletier & Oliver, 2006) in order to fully understand exactly how players participate within these sorts of groups. In addition, at least part of the academic interest in gaming and learning seems to stem from the fact that games are seen as effective motivational tools that can be “harnessed” for learning (Kirremuir & McFarlane, 2004). However, while there are numerous existing frameworks that can be used to discuss various aspects of player involvement, such as Malone’s theory of intrinsic motivation (Malone, 1981; Malone & Lepper, 1987), a motivational model for video game engagement rooted in self-determination theory (Przybylski, Rigby, & Ryan, 2010) and the Digital Game Experience Model (DGEM; Calleja, 2007) these often fail to take the learning process explicitly into account. If educators want to try and replicate people’s enthusiasm for games within a formal educational context, then there is a need to first understand how this enthusiasm occurs within everyday gaming practices and how these practices are able to support learning (Iacovides et al., in press).

This paper reports on research being carried out in order to explore the links between motivation (why players play different games), engagement (the involvement experienced during play) and informal learning (how players learn to play games and what else they learn in the process). A brief overview of each of study that has been carried out, and a proposed third study, will be provided. The paper will then conclude with a brief discussion concerning the initial findings of the research.

Study 1: Email interviews

A series of email interviews was carried out with 30 participants (age 22-58, 10 Female, 20 Male) in order to find out more about the game-playing activities people engage in during their leisure time and about how learning is viewed within this context. An effort was made to recruit a wide range of game-players by asking casual and more dedicated gamers to take part.

The DGEM was used as an overarching framework for analyses, in which motivation and engagement were re-conceptualised as macro and micro involvement respectively. As such, macro level involvement relates to why people play games and to game-related activities outside of play, and micro level involvement refers to specific instances of play. A thematic analysis was carried out (in accordance with Braun & Clarke, 2006). The results suggests that there are varying levels of participation within the groups Gee (2004) discusses and that these levels may be dependent on how much the player identifies as a “gamer”. Consalvo’s work on gaming capital and paratexts (Consalvo, 2007) has also proved useful in terms of considering the relationship between informal learning and identity. There was also some evidence that learning was only seen as valuable if it could be seen to transfer outsider of the context of the game.

A set of learning categories was developed to capture both how and what people learn through their involvement with games. In terms of how people learn, there seem to be three categories: through play, through other players (e.g. observing them or asking for advice) and through external resources (e.g. consulting a walkthrough). In terms of what people learn, there were another three broad categories; learning about the game itself (e.g. underlying mechanics, developing strategies), learning different skills (e.g. problem solving, hand-to-eye coordination) and contributing to personal development (e.g. learning patience and perseverance). These categories suggest that when identifying learning through games it is important to consider more than just what occurs during play. The categories will be used in the next study in order to test their applicability.

Study 2: Multiple case study approach

The next study aimed to look at how involvement and learning in this context come together in practice by addressing the following sub-questions:

1. How can we identify breakdowns that occur during play?
 - a. How do players attempt to resolve these breakdowns?
 - b. What role do breakthroughs play in this process?
2. What does examining breakdowns and breakthroughs tell us about how involvement and learning come together in practice?
3. What evidence is there that players are learning anything other than learning how to play?
4. To what extent do players engage with different gaming-related communities and resources?

Eight exploratory case studies were carried out and the data collected is currently being analysed. Each case involved a single participant who came into the lab on three different occasions and kept a gaming diary over three weeks; except for one case which consisted of two participants. The lab was set up as a comfortable living room environment. Participants were recruited from the previous email interview study (age 23-59; 5 male, 4 female). Methods included observation of game-play, post-play interview, collecting physiological data (including electromyography, galvanic skin response and electrocardiography) and the use of diaries. The physiological measures were chosen on the basis of research carried out by Mandryk and colleagues who looked at the efficacy of using biometric data for evaluating entertainment technologies (e.g. Mandryk & Atkins, 2007). The data was collected using the ProComp Infiniti system and sensors and BioGraph Software from Thought Technologies.

The first session included a preliminary interview, a questionnaire and an introduction to the physiological sensors and general procedure. In the second session, the participant was asked to bring in a game they were currently playing so they could be observed playing in the lab. In the third session, the investigator chose a game for the participants on the basis that it was not sort of game they usually played. For both these sessions, the participant played for up to an

hour, during which time recordings were made of the player, their game-play and their physiological reactions. The investigator observed the session from a separate room. The player and the investigator then reviewed the game-play recording together during the post-play interview. Throughout the period, participants were also asked to keep a semi-structured diary of their game-playing activities outside of the lab. A final interview was carried out at the end of the study in order to discuss the activities recorded in their diaries.

Initially, the physiological data was intended to signal significant instances to the investigator during observation, which could then be followed up during the post-play interview. However, this proved difficult to keep track of in addition to the screens of the player and the game-play, and so the data will require further analysis. The post-play interviews are first transcribed before using INTERACT (Mangold International GmbH) to code the multiple data streams (player, game-play and physiological recordings). While initial breakdowns and breakthroughs (Sharples, 2009) are identified from the transcripts, INTERACT is used to develop a coding scheme to capture these in terms of player actions and game events that occur during play. In addition, Nvivo 8 is being used to analyse the diary data. The focus here will be on applying the themes and categories developed in Study 1, in order to consider player learning and participation within different communities.

Study 3: Survey

Due to the exploratory nature of the previous study and the subsequent small sample size, it would be interesting to see how a greater sample differ in terms of the game-related activities they engage in and in terms of how much time they spend on these activities. The previous studies also suggest that identity is an important issue here, as not all players choose to identify as “gamers”. Carrying out a survey on a larger population will help to test the generalisability of some of the findings and will also provide more information about the different practices players engage in, especially when it comes to activities that occur around (but still relate to) game-play. This will be a short, mainly quantitative survey, that will rely on a snowball sampling method

(where initial participants are asked to forward on the survey to other game players they know; similar to Consalvo, 2007).

Discussion

The research outlined aims to explore of how involvement and learning come together in different ways both in and around the experience of game-play. By finding out more about the everyday activities different players engage in, we are starting to build a picture of how motivation, engagement and informal learning come together in practice. The research carried out so far suggests that players differ in terms of how they identify themselves, in terms the communities they participate in, and in terms of the activities they engage in but further work needs to be carried out before any claims can be generalised. It also seems that theories like Malone's, which focus purely on game design features, are unable to capture the complexity of the game-play experience. It is important to note how activities external to game-play e.g. talking to friends or using a guide, can support learning and impact on player involvement. By first increasing our understanding of gaming practices and how they support learning, we can start to consider the issue of how to make involving games with increased educational value.

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