Productive Disciplinary Engagement and Videogames

A Teacher’s Educational Design to Engage Students with Ethical Theories in Citizenship Education

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Abstract
Interactive learning environments such as videogames may facilitate learning through engagement. However, not all kinds of engagement are relevant to learning in formal education; much depends on the use of pedagogical approaches and videogames in the classroom. This study investigates a curricular unit in an upper secondary class using the commercial videogame The Walking Dead to teach ethical theories in a citizenship course. We focus on how the teacher’s design of the lesson facilitated students’ disciplinary engagement and find that productive disciplinary engagement (PDE) principles, together with dialogic interactions, extended students’ engagement beyond gameplay and helped them understand the meaning of the theoretical content. Based on our findings, we propose a set of recommendations concerning educational design for teaching and learning with commercial videogames.

Keywords
Productive disciplinary engagement, game-based learning, educational design, learning trajectories, teacher’s role

Introduction
‘At the heart of teaching well is the core challenge of getting learners engaged in productive work’ (Ball (2000, p. ix), as cited in Engle & Conant, 2002, p. 400). This quote, which concerns the design of productive disciplinary engagement (PDE), emphasises the importance of students’ active engagement and meaning-making processes in disciplinary work (Kumpulainen, 2014). Educational designs that incorporate students’ knowledge and interests outside of school can facilitate engagement (Bransford, Brown, & Cocking, 2000; Polman, 2006). Videogames are important in many people’s lives outside school, and thus game-based learning (GBL) offers innovative, engaging designs that might facilitate engagement also in formal education (Hanghøj, 2013). However, empirical studies about whether videogames facilitate learning have had varying results (Abdul Jabbar & Felicia, 2015; Huizenga, Admiraal, Akkerman, & Ten Dam, 2009). Using videogames in classrooms does not guarantee engagement (Squire, 2005), and engagement in games does not guarantee learning...
outcomes (Arnseth, 2006; Linderoth, 2012; Young et al., 2012). It is challenging to design and enact GBL that fosters engagement with conceptual knowledge, productive work and learning (Hanghøj, 2013), and this challenge cannot be solved by games alone.

This article focuses on the educational design of GBL and how students respond to such design, including both the game and the related disciplinary work. In this context, there are two aspects of educational design: design for teaching and design for learning (Hauge, Lund, & Vestøl, 2007; Lund & Hauge, 2011). Design for teaching refers to the teachers' interpretation of a curriculum and the planning of activities, influenced by pedagogy, experience and the local school culture. Design for learning refers to the teacher's enacted design, which is context-sensitive and enables serendipitous events to occur. The latter results from the interaction between students and teaching and involves social and cultural experiences in non-school contexts. According to this view, design includes both the content and form of teaching. In addition, learning refers not only to patterns of teaching but also to how one creates meaning for knowledge through interactional means over time (Hauge, Lund, & Vestøl, 2007).

We followed a class of students in a vocational upper secondary programme in Portugal in which the teacher used the videogame The Walking Dead (Telltale Games, 2012) to teach ethical theories. The design of such new learning activities strategically aims to prevent school dropout during the Portuguese economic crisis. In the GBL activity, students collaboratively played the game, and the teacher paused the game to lead discussions about moral dilemmas in the game narrative in relation to ethical theories the students had learned previously. In the field of citizenship education (CE), disciplinary learning involves not only acquiring theoretical civic knowledge but also understanding the values of a democratic society and gaining the ability to reason critically (Advisory Group on Citizenship, 1998). Here, we understand learning theoretical civic knowledge to involve mastering and appropriating both theoretical knowledge and civic skills, i.e. combining theoretical knowledge and applied discourse practices within a discipline. In this study, we aim to understand how the features of an educational design relate to students’ PDE and what constitutes this relationship. We do so by addressing the following research questions:

- What characterised the teacher’s educational design, and how did it foster students’ engagement beyond the game?
- How did the students engage in meaning-making regarding the ethical theories during the curriculum unit?

Educational design for productive disciplinary engagement

We focus on GBL principles that facilitate productive engagement for learning ethical theories. Specifically, we use a sociocultural and dialogical approach (Wegerif, 2007) to understand how mediational means, such as technology, discourse and other learning resources, were used to engage the students in the unit (Rasmussen & Damsa, 2015). We study the processes by which social interactions and class dialogues interweave with technological tools as mediational means (Rasmussen, 2012), and we follow the trajectory of discussions and class activities to analyse how participants construct knowledge from GBL activities.

Learning environments affect emotional and cognitive engagement, including students’ behaviour, speech and interactions (Bundick, Quaglia, Corso, & Haywood, 2014; Fredricks, Blumenfeld, & Paris, 2004). But not all kinds of engagement are productive for disciplinary work (Kumpulainen, 2014), and some types of discussion are more productive for learning than others (Howe & Abedin, 2013; Mercer & Dawes, 2008; Michaels, O’Connor, &
Resnick, 2008). Alexander (2008) argued that classroom dialogues should be collective, reciprocal, supportive, cumulative and purposeful, which are central dialogical principles. Furthermore, other authors have claimed that different forms of engagement lead to different ways of appropriating and mastering knowledge. This applies to digital learning environments, such as games (Gresalfi & Barab, 2011), and classrooms (Engle & Conant, 2002). Wertsch (1998) defined mastery of a cultural tool as knowing how to use it, while appropriation implies that one makes the cultural tool one’s own.

There are different levels of engagement. Simple procedural forms of engagement may cause students to act without exactly understanding why, and conceptual forms of engagement lead students to apply disciplinary concepts to some extent, but only consequential forms of engagement allow those concepts to be perceived as disciplinary tools that can be used to accomplish goals that are meaningful in the world. Critical engagement implies reflection on this application of tools (Gresalfi & Barab, 2011). In GBL, progression towards critical engagement is argued to promote attitudes that allow students to succeed in the real world (Barab, 2016).

Engle and Conant (2002) describe indicators of engagement in students’ discourse, including (a) making substantive contributions to the topic under discussion; (b) contributing in coordination with each other rather than independently; (c) paying attention to each other and aligning their gazes and body positioning; (d) participating in few off-task activities; (e) expressing passionate involvement through emotional displays; and (f) remaining interested in the topic over a long period of time. The authors’ study of a controversial discussion among 5th graders revealed that the controversy helped the students gradually create more complex arguments leading to a deeper understanding of the curriculum topic. They conclude that the educational design was central to the students’ engagement and their journey to becoming disciplinarily productive. The authors used the term disciplinary to refer to ‘contact between what students are doing and the issues and practices of a discipline’s discourse’ (Engle & Conant, 2002, p. 402). The present study uses the term in the same way. Engle and Conant (2002) also identified four guiding principles for teachers promoting PDE:

1. Encourage students to problematise topics instead of vertically assimilating teachers’ explanations.
2. Give students authorship of their own contributions and promote their intellectual agency to collaboratively solve problems.
3. Ask students to account for disciplinary standards and others’ ideas while elaborating upon their own arguments and justifying their own positions.
4. Provide students with adequate resources for this work, including access to relevant information, enough time and support.

Part of the teacher’s responsibility is to manage tensions while maintaining a balance between the four guidelines over time. A balanced authority – accountability axis encourages students to offer ideas and request elaborations. A balanced problematizing – resources axis leads students to perceive the situation as challenging but avoid unproductive frustration (Engle & Conant, 2002).

Following this seminal work, several studies have portrayed the moment-by-moment and long-time composition of learning trajectories in different school subjects (e.g. Furberg & Ludvigsen, 2008; Krange, 2007; Ludvigsen, Rasmussen, Krange, Moen, & Middleton, 2011; Twiner, Littleton, Coffin, & Whitelock, 2014). Our study uses PDE to analyse how the
teacher’s design extended engagement from the videogame to theoretical content about ethics. The notion of trajectories is employed to describe the learning process and explain how it unfolds through a meaning-making process that results in different degrees of mastery and appropriation (Rasmussen, 2012; Rasmussen & Damasa, 2015; Thompson, 2015). Other studies that followed a similar approach have shown how teachers’ enacted designs are central to PDE within technology-rich learning environments. For example, Krange (2008) followed a group of science education students’ interaction with a computerised 3D DNA model and described the students’ need for the teacher’s support to apply meaning to the theoretical knowledge in the digital representation. Also, the newest edition of How People Learn discussed the importance of the design of learning environments, arguing that new technologies have the potential to enhance learning but that there is a need to consider students’ background knowledge, interests and cultural stances, and that new technology/knowledge resources and assessments should be designed to facilitate understanding, not only memorisation (National Academies of Sciences, Engineering, and Medicine, 2018).

Even though research on games has documented their ability to motivate (Dickey, 2011), translating a gaming experience into a learning experience is not straightforward. Research has demonstrated that even technologies designed with the intention of teaching specific content are actualised as learning resources only in interactions (Furberg & Rasmussen, 2012). Teachers are especially important when a tool is not intended to educate, such as in the case of commercial videogames (e.g. Egenfeldt-Nielsen, 2006). Commercial games require teachers to assume the responsibilities of designers, managers and facilitators (Van Eck, 2009). These games can be used (1) prior to studying new material as an orientation activity intended to establish relevance, context and interest; (2) while studying new material as a means of practicing and providing feedback or assessing prior knowledge; or, in the ideal case, (3) both prior to and while studying material. In the latter case, game activities serve ‘as an anchoring environment that encapsulates the full learning cycle’ (Van Eck, 2009, p. 14).

Multiple studies provide reasons to acknowledge the importance of the contextual aspects of engagement (Fredricks, Blumenfeld, & Paris, 2004; Lawson & Lawson, 2013) when studying principles of the educational design of GBL that might be productive for learning. We thus acknowledge this when we analyse the interactional aspects of the teacher-enacted design and students’ engagement over time to understand how they relate to meaning-making regarding curricular content.

**Method**

**Context of the study**

The participant school, which offers vocational programmes to high school students, is located in Portugal. The students at the school are mainly of low socio-economic status, some had dropped out of schools for some time, others had other challenges. Hence the students age ranged between 18 and 22 years. The teacher was recruited through the researcher’s professional contacts and was interested in GBL as an opportunity to engage students and combat motivational problems. The teacher chose the class that would participate in the study. The class was composed of 14 students. Neither the teacher nor the students had previous experience with GBL, but the students reacted to the idea with visible enthusiasm. All participants voluntarily gave informed consent to participate in the activities and the study. Their identities will remain anonymous.

The teacher was inspired to design the activity by a Norwegian teacher (Staaby, 2015), about whom she learned through conversations and co-designing with the observing
researcher. The game used in this study is the first episode of *The Walking Dead*, a commercial role-playing adventure videogame. In the game, an escaped murderer named Lee makes difficult decisions to protect himself and a little girl, Clementine, during a zombie apocalypse. The game is more story-driven than action-packed and features an open narrative that unfolds based on the player’s decisions, which affect dialogue and the actions performed by the characters. The game’s design focuses on narrative and character development, and the emotional, empathic tone of its narrative has been noted (Madigan, 2012). Many decisions involve moral dilemmas, such as whether Lee should give a gun to someone who wants to commit suicide before becoming a zombie. Thus, the game is an interesting way to teach ethics. Figure 1 illustrates the character representation and dialogue interface in *The Walking Dead* game; the player can choose between several dialogue options that reveal or conceal Lee’s past to varying degrees.

![Fig. 1 Screen shot from The Walking Dead](image)

The class was followed as they learned a subject called *Área de Integração* (Integrational Area). A part of some vocational programmes in Portugal, this subject focuses on social conscience and citizenship as well as philosophical, social and ethical concepts. We followed a unit of the curriculum that was taught in seven lessons over one month. The teacher presented the curricular content and then allowed students to play the game. The game was in English but subtitled in Portuguese, projected onto a screen, and students took turns controlling it. The students played the game’s first episode from its beginning an all through the game action, until the presentation of the first five dilemmas posed by the game. Despite the time countdown given by the game for the players to make choices, the teacher interrupted the countdown by pausing the game at each of the five moral dilemmas. As those moments, the teacher led discussions using the theoretical content about ethics presented in the lessons. After each discussion, the students voted on what decision to make in the game. The activity ended with a post-reflective plenary discussion. A graphical representation of the activity flow is presented in Fig. 2
Data collection and analytical work

We consider the video-recorded classroom interactions (487 minutes, one fixed camera) to be the main data. Field notes supplemented the main data to enable better understanding of the context.

Studies addressing the sequentiality of the learning process (Mercer, 2008; Rasmussen, 2012) emphasise the ways learners interact, not only in a given situation but also across situations. The analytical solution we describe involves two levels of analysis, to distinguish the infinite interconnections within the data:

- **At the trajectory level**, we considered the learning process as a whole and analysed the students’ progress within the temporal boundary of the unit. Contextual aspects central to engagement were used to characterise not only moments of PDE (interactional level) but also determine characteristics over time (trajectory level).
- **At the interactional level**, we investigated the moment-to-moment social construction of engagement in relation to the design of the GBL environment. This level helps us to understand how meanings are created through the teacher and students’ interactions with the available resources.

The two levels of analysis inform each other and, taken together, provide insights into not only how certain activities or knowledge become relevant at a point in time but also how and why they stay relevant throughout an activity.

At the trajectory level, we characterised the teacher’s enacted design and sequenced the classroom GBL activities. Using methods inspired by thematic analysis (Braun & Clarke, 2006) we identified patterns within the whole dataset. Through this inductive process, we described how the trajectory of GBL unfolded over time. Over multiple viewings of the videos, we performed substantive categorisation (Maxwell & Chmiel, 2014), meaning that we inductively generated descriptive categories of the data. We identified the main parts of how the teacher organised class activities, particularly how gameplay was integrated with other activities and resources. Then, we focused on each of these parts, analysing the way meaning was created through dialogue at the interactional level. This involved analysis of the data to identify the dialogic aspects that characterised disciplinary engagement using micro-analytic approaches inspired by Jordan and Henderson (1995). We also sequentially analysed utterances as ‘turns’ to describe how the inter-animation of different voices (Bakhtin, 1981) allowed meaning to emerge and develop while students engaged in meaning-making about the ethical theories presented in the unit.

The excerpts in the results section were selected for their relation to our research questions and to illustrate the central findings of prior literature about what characterises engagement and PDE (Engle & Conant, 2002; Fredricks et al., 2004; Gresalfi & Barab, 2011; Lawson & Lawson, 2013). These excerpts were transcribed in Portuguese and then translated into English using a simplified Jeffersonian transcription system (Jefferson, 1984). The transcriptions include all verbal and non-verbal elements that aid analysis of engagement indicators (see Appendix A for transcription conventions).

**Analysis**

The GBL trajectory

We start by analysing the educational GBL design at the trajectory level and how activities were sequenced. Figures 2 presents a visual representation of the classroom activities, where we identify 4 parts along the activity proposed by the teacher.
Part 1: Introduction of theoretical content and GBL activities

Part 1 mostly consisted of presentations of the theoretical content (shown in red in Fig. 2). The teacher created a four-page handout, adapting the level of difficulty of the concept to the class profile, and addressed the content by combining dialogue with reading activities. The handout presented three ethical theories, which are summarised in Table 1.

Table 1 The three ethical theories presented in the handouts

<table>
<thead>
<tr>
<th>Theoretical Framework</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kant’s deontology</td>
<td>Moral action is a duty guided by universal goodwill towards others. The moral value of an action depends on its intention, not on its results. Examples include ‘always protect the weaker’ and ‘never steal or lie’, regardless of one’s motives.</td>
</tr>
<tr>
<td>Utilitarianism</td>
<td>An action should be chosen based on its consequences, which should be useful to the greatest number of people and best contribute to the happiness of society.</td>
</tr>
<tr>
<td>Psychological egoism</td>
<td>Acting according to personal benefit is part of human nature; serving one’s own interests is a moral imperative. The main opponent of this theory is Kant’s implicit altruism.</td>
</tr>
</tbody>
</table>

The teacher orally presented the content to students. She made connections to students’ previous knowledge, posed questions and asked for examples. Students participated orally when required and followed the handouts. Small talk and parallel conversations were quite frequent. Since the school bell was broken, students were eager to note when class time was over.

Part 2: Game play and whole-class open discussions

In Part 2, the class played the game (green) and, when the game was paused, discussed the first three dilemmas it presented with the whole class (blue). The discussions started with simple invitations for students to freely express their opinions about the dilemmas. They were long and included passionate argumentation among students.

Part 3: Game play, structured small-group work and class presentations

The class played the game and discussed the last two dilemmas in organised groups (magenta). Each group (3–4 students) was assigned one theory to employ in relation to the game dilemma and later report to the class (pink). The teacher reminded them to use the handouts. During the group work, the students talked and read from the handouts.

*Officially the lessons were of 45 minutes or of 90 minutes; however, they hardly started on time, so GBL activities in the seven followed lessons lasted respectively 77, 36, 29, 90, 81, 31, and 84 minutes.
Decisions regarding the 5 dilemmas in parts 2 and 3 were made through a voting process (orange). For each dilemma, the game presented two possible actions, but three options were presented for the students through the digital app Kahoot. These options were created by the teacher to reflect the ethical theories. Each student used a computer to vote, and the option with the most votes led to an action that was then enacted in the game.

**Part 4: Whole-class evaluation of the GBL activities**
The unit ended with a post-reflection led by the teacher concerning how the GBL activities helped the students learn the curricular content and relate it to real-life contexts.

**Results**

**Teacher’s design and students’ engagement**
In this section, we describe the students’ response to the teacher’s design over time at the interactional level. The teacher combined collective gameplay with whole-class and small-group discussions that were structured and facilitated in different ways. Before starting gameplay the teacher said to the class that: “We have three theories that I would like you to (...) apply; we will then make the practical dimension of these theories because in the videogame that we will analyze here (...) we will have to commit ourselves; we will have to make decisions. We will make decisions; we will opt among paths within the game, according to moral-ethical theories”.

While playing the game we observed attentive expressions and vivid emotional reactions among students. The participatory nature of the experience was evident in students’ use of the first person when speaking. For example, we observe that students commented on the game dialogue by saying ‘I want to be honest here’. During Part 2, students engaged in long, passionate discussions about the three first dilemmas (respectively 17, 12 and 11 minutes). They defended their views with visible conviction, constantly overlapped each other and asked each other to talk. The quieter students followed these debates with attentive expressions. Parallel activities or requests by the teacher to stay on task were almost non-existent. In contrast to Part 1, the students did not want to finish the class; they asked to stay over the breaks and tried to be dismissed from their next class to continue their discussions and gameplay. We also observed that the teacher often asked students to justify their positions by posing ‘why’ questions and prompting them to make connections to the theoretical content.

We selected excerpts from Parts 2, 3 and 4 to illustrate how the educational design relates to students’ PDE. Table 3 presents an excerpt from Part 2 that was observed after 45 minutes of gameplay. In the game, Lee and Clementine arrive at a farm and seek shelter. The first dilemma is whether Lee, a runaway criminal, should tell the truth about his background—which could be risky because he was a criminal—or lie.

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1. [https://kahoot.it](https://kahoot.it)
Table 3  Excerpt from Part 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher: Let’s try to understand, what do you think it is happening here? Should he tell the truth? (.) should he lie ... ?</td>
</tr>
<tr>
<td>2</td>
<td>Carolina: (..) He must tell the truth, teacher.</td>
</tr>
<tr>
<td>3</td>
<td>Marcia: On the one hand, yes; on the other hand, no.</td>
</tr>
<tr>
<td>4</td>
<td>Teacher: Why? On the one hand, why?</td>
</tr>
<tr>
<td>7 turns:</td>
<td>Students discuss how the character would be sent out if admitting to be a criminal.</td>
</tr>
<tr>
<td>5</td>
<td>Marcia: On the one hand it is bad to lie, but when it comes to (..) for our own good… ((smiles, looking around and Carolina looks back to her and laughs ))</td>
</tr>
<tr>
<td>6</td>
<td>Teacher: Oh, so if it is for (..) We in an egoistic attitude...?</td>
</tr>
<tr>
<td>7</td>
<td>Isabel: (. No, because it is to help the girl as well.</td>
</tr>
<tr>
<td>8</td>
<td>Teacher: = Only thinking of !- (. ) So, there is no egoistic perspective, here.</td>
</tr>
<tr>
<td>9</td>
<td>Ernesto: (. Yes, there is, yes there is! )</td>
</tr>
<tr>
<td>10</td>
<td>Isabel: (. No, there is not ! It is ! for him and for the girl!</td>
</tr>
<tr>
<td>11</td>
<td>Teacher: (. Because he is [. asking help for him and ] for Clementine.</td>
</tr>
<tr>
<td>12</td>
<td>Marcia [. Thinking also on the girl ]</td>
</tr>
<tr>
<td>13</td>
<td>Teacher: So, there is no egoism (. ) there is...? what?</td>
</tr>
<tr>
<td>14</td>
<td>Isabel: There is (. ) (( looks briefly towards the handout lying on the table )) Kant.</td>
</tr>
<tr>
<td>15</td>
<td>Luana . Al-truis ... Ihhh, I can ’t [. say this word! (. Ernesto pick the handouts ))</td>
</tr>
<tr>
<td>16</td>
<td>Teacher: [. No, not altruism! [. Is he ? =</td>
</tr>
<tr>
<td>17</td>
<td>Isabel: ((look through handouts) [. It is the theory from !-</td>
</tr>
<tr>
<td>18</td>
<td>Teacher: = Is he acting with no interest? [. No. He is...</td>
</tr>
<tr>
<td>19</td>
<td>Marcia: [. No, he is acting with interest</td>
</tr>
<tr>
<td>20</td>
<td>Isabel: [. It’s the theory from Kant !</td>
</tr>
<tr>
<td>21</td>
<td>Teacher: Kant? No... You think that? ((Stir) Then in Kant ?shall we lie or tell the truth? (( Joaquina and Carolina pull handouts toward themselves ))</td>
</tr>
<tr>
<td>22</td>
<td>Luana: Tell the truth. (( Ernesto reads from the handouts ))</td>
</tr>
</tbody>
</table>

This excerpt illustrates how the teacher engaged the students in connecting the game narrative and theory. The class discussion is opened with a binary choice (lines 1–3), and the students appropriated the narrative by using first-person pronouns (e.g. ‘our’ in line 3). The teacher tried to connect the narrative to theory (line 6) and asked the students to make theoretical links (line 13). The students’ utterances were partly overlapping, and some of the students turned to the handouts. However, in this part, rapid glances at the sheets did not provide the necessary insight. The teacher posed new questions based on the students’ wrong answers (lines 16, 18 and 21). The conversation lasted for about one more minute before Lucas, who was attentively following the discussion, presented a valid theoretical connection: ‘I think that it is utilitarianism, because his action is individual but it is for a greater happiness, meaning for his own good and the girl’s’.
We raise the issue of time to show that making connections between the game narrative and the theoretical content of the unit was not straightforward, even when the students seemed to listen actively and participate in the discussion. The collaborative reasoning shown in the excerpt helped Lucas provide a valid answer by building on others’ contributions. As such, we argue that the dialogue was disciplinarily productive and showed how engagement with the game led students to tentatively use different ethical theories (Wertsch, 1998).

Even though the students were held accountable and were given the necessary resources, appropriation of the theories were not frequent in this part. However, conflicting views were common. The unstructured form of the class debates sometimes caused tentative theoretical elaborations to disappear. Nevertheless, the teacher maintained a balance between problematising and accountability (Engle & Conant, 2002), sustaining students’ interest by allowing them to engage in long, personal arguments and then bringing the conversation back to the theoretical concepts.

In Part 3, students’ discussions included more explicit references to the theoretical framework. The discussion and presentation activities about the two last dilemmas lasted 25 and 23 minutes, respectively. The students paid more attention to each other’s arguments, questioning and elaborating upon each other’s ideas. The group members also silently read the handouts to form arguments. The teacher maintained physical proximity to the groups and occasionally intervened to help the students make theoretical connections more explicit. The next excerpt, from the sixth lesson, is taken from a small-group discussion in Part 3. In the game, Lee and his group must decide whether to risk their lives to rescue a human they do not know who is surrounded by zombies.

The focal group was asked to defend utilitarianism. According to the handouts, this theory ‘valuates actions for their results’, which ideally involve ‘bringing happiness to a larger number of people’ based on the idea of ‘promoting greater social happiness’. It opposes Kant’s deontology. According to the handouts, ‘Kant’s ethics is deontological since the moral value of an action does not depend on its consequences, but on the respect for the duty (…) what counts is intention, the motive, not the result’. The students were tasked with writing two arguments, both adopting a utilitarianism perspective, to justify saving the woman and not saving her. We enter the excerpt in Table 4 at the moment the three students start their discussion, after about one minute of silently reading the handouts.

The students collaboratively engaged in meaning-making during the task in the form of interrogations (line 3), reflexive silences (lines 6 and 10) and reading from the handouts (lines 6, 9 and 10 and immediately before the excerpt). Long silences, which were followed by relevant contributions, indicate reflection. The excerpt shows the students reasoning collaboratively, using the theoretical handouts to jointly interpret the situation, make meaning and gradually distinguishing between different theoretical perspectives on the game’s narrative (lines 11 and 13).

After the group work, the teacher began to lead the presentations, telling students to adopt a particular theoretical stance: ‘You are utilitarians (…) [consider] what a utilitarian should do; should he help or not (…) what matters to you?’ While the group presented, the teacher used ‘why’ questions to encourage them to justify their claims. When a student from another group posed a doubt, the focal group found it difficult to clarify the reasons behind its position. Thus, even though they developed arguments that aligned with the theories, the students could not clearly verbalise their reasoning to the class. Achievement of success in their analytical work, and thus mastery, were hindered by the students’ difficulty appropriating the theory practically and conceptually justifying their arguments. This led
the teacher to intervene, formalising the answer to the class in more conceptual terms. A second round of the task with similar intentions took place in the next lesson. The teacher ensured that each student was assigned a theoretical perspective that was different from the one that he/she had defended the first time.

**Table 4 Excerpt from Part 3**

<table>
<thead>
<tr>
<th>No.</th>
<th>Student</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ernesto</td>
<td>So this is the one we chose, right? –U-U-utilitarianism ((locates that part of the text on the handout and opens it on the table)). Two arguments. We must help the women because it is (.) our duty to give happiness to the society.</td>
</tr>
<tr>
<td>2</td>
<td>Manuel</td>
<td>But to us, in this case, to the group, right?</td>
</tr>
<tr>
<td>3</td>
<td>Iuri</td>
<td>Because it is our duty to help the weaker?</td>
</tr>
<tr>
<td>4</td>
<td>Ernesto</td>
<td>Because... ((writes))</td>
</tr>
<tr>
<td>5</td>
<td>Manuel</td>
<td>In this case, the opposite sex.</td>
</tr>
<tr>
<td>6</td>
<td>(Ernesto writes and Iuri assumes a wondering face. Looks briefly to writing and the handouts for 10 seconds)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Iuri</td>
<td>I am not sure if it is (.) Kant who says that or...</td>
</tr>
<tr>
<td>8</td>
<td>Ernesto</td>
<td>((pointing to the handout with the pen)) No. Kant is here, ethics [is here.]</td>
</tr>
<tr>
<td>9</td>
<td>Iuri</td>
<td>[Yes, but I think that it is Kant that says that thing about the weak. ((reads the handout, as does Ernesto)) (11.0) Where does it say that?</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>The students analyse the text. Ernesto dedicates 40 seconds to this, and the others quit after 10 seconds, distracted by another group.</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Ah, I’ve got it! Here is the duty. ((points to the upper part of the handout, where it describes Kant’s deontological theory))</td>
</tr>
<tr>
<td>12</td>
<td>Iuri</td>
<td>Hm. ((all students look to the handouts))</td>
</tr>
<tr>
<td>13</td>
<td>Ernesto</td>
<td>Here is more for the result. ((points to the part of the handout where utilitarianism theory is described))</td>
</tr>
<tr>
<td>14</td>
<td>Iuri</td>
<td>Hum-hum</td>
</tr>
<tr>
<td>15</td>
<td>Manuel</td>
<td>Hum-hum. Yes. ((Ernesto starts writing again))</td>
</tr>
</tbody>
</table>

The discussion in Part 4 was opened by the teacher with an invitation to evaluate the activity: ‘What have we learned here, even [though it is] a story, a fiction in a game?’ One student claimed, ‘the game has served as a way to help us take on more difficult decisions in the future’. Another student added to this, referencing psychological egoism theory and the choice ‘to be an egoist or not’. These quotes illustrate how the students perceived the game as an educational resource, that is, how they connected the game to disciplinary forms of discourse and their relevance to real life. The excerpt in Table 5 shows how the unit ended.
Part 4 involved reflection about whether the game offered a learning experience that was relevant to real life (lines 2 and 5). In line 8, Ernesto referred to the videogame as a learning resource. We argue that what Ernesto perceived as an intentional method of education in the game design was, in fact, created by the educational design. Some students considered games to be safe places in which mistakes can be fixed. Others argued that life also provides multiple learning opportunities. This idea was supported by the teacher, who ended the unit by saying that learning goes beyond school: ‘We keep on learning, right?’

**Discussion of findings**

The distinction between *design for teaching* and *design for learning* (Hauge, Lund, & Vestøl, 2007) is helpful for discussing how the educational design fostered students’ engagement beyond the game and meaning-making concerning ethical theories.

Our study demonstrates that teachers are also designers of classroom activities and resources (Hauge, Lund, & Vestøl, 2007; Kress et al., 2005; Lund & Hauge, 2011). The planned tasks, handouts and organisation of activities constitute central aspects of *design for teaching*, confirming the importance of designing GBL environments that mix games with other learning tools and materials (Abdul Jabbar & Felicia, 2016). The game and the teacher’s self-developed resources (lectures and handouts) were emphasised and served as structured resources for the students. Resources were made available to achieve the teacher’s educational goals, which were clearly not the same as the goals of the game, a commercial product.

We found that the teacher’s design, which aimed to encourage students to connect the game and theory took time to be realized. In Part 2, the teacher allowed the students to be emotionally engaged with the game’s narrative and use their previous knowledge as a resource to make meaning regarding the ethical theories. This design choice supports the idea of a game as an anchoring environment that encapsulates the learning cycle (Van Eck, 2009). Drawing upon the game, the teacher introduced bottom-up theoretical connections based on the students’ prior experiences and knowledge. Our results align with empirical findings indicating that teachers’ contextualisation of instructions with students’ experiences and knowledge is beneficial for learning content (e.g. Silseth, 2018). In Part 3, a more top-down approach was used to connect the theories to the game. This type of approach tests connections and promotes progressive formalisation to achieve abstraction and conceptual understanding (Silseth, 2018). The teacher’s choice to use both bottom-up and top-down approaches in sequence effectively promoted meaningful learning (de Sousa, in

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**Table 5 Excerpt from Part 4**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Iuri</td>
<td>It is a pity that the game ends today!</td>
</tr>
<tr>
<td>2</td>
<td>Isabel</td>
<td>The issue is that the game doesn’t end just today, it has continuation!</td>
</tr>
<tr>
<td>3</td>
<td>Teacher</td>
<td>You will continue the game, right?</td>
</tr>
<tr>
<td>4</td>
<td>Iuri</td>
<td>In the class? ((students laugh))</td>
</tr>
<tr>
<td>5</td>
<td>Teacher</td>
<td>You will continue playing along your lives =</td>
</tr>
<tr>
<td>6</td>
<td>Vania</td>
<td>Yes, that’s right.</td>
</tr>
<tr>
<td>7</td>
<td>Teacher</td>
<td>= and also this particular game, when you feel like it because now the technical means are available</td>
</tr>
<tr>
<td>8</td>
<td>Ernesto</td>
<td>They are teaching us that life is a game.</td>
</tr>
</tbody>
</table>
Regarding design for learning, we point out three features that are important for extending students’ engagement beyond the game to engage in meaning-making regarding ethical theories:

1. **Drawing on the nature of the videogame to promote PDE:** Commercial role-playing videogames like *The Walking Dead* are designed to engage and immerse players. The majority of these types of games allow first-person experiences and feature open-ended stories in which players’ agency impacts the storyline. Differing from other media, this artefact reinforces authorisation because it facilitates appropriation of the narrative in unique ways. Videogames present problems and gradually provide resources that allow a player to solve them. The pleasant but frustrating balance between solving problems with authority and resources is one of the educational design principles (Gee, 2006; Shaffer, Squire, Halverson, & Gee, 2005), which mirror the PDE principles described by Engle and Conant (2002). However, commercial games usually lack the content and disciplinary design to make resources disciplinary. For example, they rarely ask players to problematise or account for their decisions while playing. Importantly, our analysis demonstrates how the teacher’s enacted design transformed the game into an educational resource that helped achieve the curricular goal.

2. **Using dialogue to extend engagement beyond the game:** The dialogic teaching observed in this project encouraged a plurality of voices, accepted the co-existence of several perspectives, fostered questions and answers in iterative sequences while meanings were permanently re-constructed and kept the students accountable by asking them to justify their opinions in relation to the curricular content (e.g. ‘and what theory is that?’; O’Connor & Resnick, 2008). The trajectory demonstrates how the teacher problematised topics through dialogue from the initial reading activities in Part 1 and throughout all four parts. Technology was used to sustain, broaden and deepen dialogues, and the teacher constantly invited debate by asking questions and elaborating on students’ answers to generate new dialogue.

3. **PDE principles assist engagement in GBL to disciplinarily engagement:** When starting the game activity, the teacher mentioned that there were different paths within the game and that the dilemmas would require commitment to personal decisions (authorising). She also noted that students’ decisions could be inspired by different moral-ethical theories (accountability) and positioned the given theories as tools for solving the problems (resources). In Part 2, problematising was seen to emerge from the game dilemmas (which were considered legitimate problems) and was maintained over long, immersive, whole-class discussions. The teacher constantly positioned the theoretical framework as a valuable resource for reasoning. The second half of the excerpt of part 2 (table 3) shows that the teacher required the students to justify their opinions using theoretical perspectives, promoting accountability. The students recognised the theoretical handouts as a relevant resource, skimming through the sheets to help them construct arguments during the discussions. In Part 3, accountability was supported by requiring students to use the theories presented in the lessons to create arguments. While working in groups, students continued to problematise, as we see Iuri doing in the excerpt on table 4. The theoretical handouts and long reflexive silences were used as resources for problem-solving, and accountability was reinforced by the teacher’s use of ‘why’ questions during students’
presentations to the class. Throughout Parts 2 and 3, the teacher ensured that the locus of agency remained the class. Letting the class decide what should happen in the game authorised the students. Also, by embedding theoretical content in the voting options, the teacher made the voting process disciplinary, with options serving as additional resources for problem-solving.

It is also important to note that students’ engagement varied along the trajectory in accordance with the multidimensionality of the construct (Fredricks et al., 1994). Despite the teacher’s efforts, the discussions in Part 1 were characterised by short question-and-answer sequences. As we consider the length and pattern of students’ participation to be a qualitative indicator of engagement (Engle & Conant, 2002). The teacher attempted to involve the students in conceptual engagement, using their examples to elaborate upon the theoretical content. This attempt aligns with a well-established finding in GBL studies: there is a need to bridge gameplay with subject practices (Arnseth, 2006; Egenfeldt-Nielsen, 2006).

Parts 2 and 3 involved various forms of participation. Students were given longer turns to talk, and they assumed the role of the protagonist when making choices. In Part 2, during gameplay and open discussions we observed visible emotional displays including laughing, crying, speaking loudly, overlapping, dramatic gesturing and disputational talk (Fredricks et al., 1994; Mercer & Dawes, 2008). Off-task activities were almost non-existent. The students’ engagement was evident in their appreciation of the challenge (for example, asking to stay after class). In Part 3, the more structured school-like task lessened the students’ engagement. This part also involved long discussions, but discussions between students were more organised, featuring turns. The students used the theoretical handouts, and long silences indicated on-task focus to make meaning concerning the different theories and cognitive engagement (Fredricks et al., 1994). During discussions in Parts 2 and 3, different students were invited to use the theories presented in the lessons to make choices in the game. The enacted design supported the progression of procedural and conceptual engagement to consequential engagement (Gresalfi & Barab, 2011). However, as we saw, it took time and effort to make theoretical connections. It was mainly in dialogical activities in Part 4 that we observed more elaborate forms of consequential and critical engagement. According to Gresalfi and Barab (2011), only certain design principles can lead players to progress from procedural engagement to consequential engagement with a game. In the present case, students made meaning during their active encounter with the tool and through discussions with their peers. Since higher levels of engagement involve the ability to apply knowledge across contexts and make decisions as informed citizens (Barab, 2016), achieving them is especially important for the curricular goals of CE.

**Educational implications and recommendations**

Videogames represent a central part of young peoples’ lives and have the potential to engage students in academic learning. We do not simply defend the use of commercial games in formal education; we recommend that such resources be used with care. This study contributes to knowledge about learning using games as an educational resource and how such resources can be used in combination with more traditional educational resources. We empirically corroborate Hanghøj’s (2013) claim that GBL should include (a) a whole learning situation (b) that makes use of the affordances of game design, (c) extending them with pedagogical methods, including diverse educational resources (physical or intellectual) and didactic activities, (d) to intentionally create an engaging learning experience intended to
teach students the selected knowledge. We found that, even when using a commercial game, ‘the designed context of videogames can become another context to support whole class discussion and deep engagement with disciplinary content’ (Gresalfi & Barab, 2011, p. 301).

Other resources can also be valuable if well integrated into the classroom. In line with an increasing number of studies, we found that not all classroom talk was productive, and we recommend that teachers promote conversations about the game that are critical and constructive and keep students accountable (Mercer & Dawes, 2008; Michaels, O’Connor, & Resnick, 2008). In line with dialogical principles, our study shows the importance of not giving correct answers too early and ensuring that the teacher has the stamina to sustain and support students in creating connections and making meaning about the theoretical concepts (Alexander, 2008).

Finally, we demonstrate that GBL can serve as metaphorical participatory representations of reality and create a dialogic space in which it is possible to test the meaning of theoretical content (Silseth, 2013; Wegerif, 2007; Wiig, Silseth, & Erstad, 2017; Wegerif, 2007). One does not learn complex theoretical content suddenly; it takes time. Hence, we recommend that activities encourage progressively elaborate forms of engagement (Gresalfi & Barab, 2011). In line with previous studies, our results show that consequential and critical forms of engagement are more likely to emerge with the help of post-activity reflections, reinforcing the importance of incorporating post-metareflective activities in lesson designs (Felicia, 2009). Reflection and feedback are essential, and it is important for students to feel like they are part of a learning community with access to diverse learning resources (National Academies of Sciences, Engineering, and Medicine, 2018).

This article contributes to the understanding of learning with games as an educational resource and shows how teachers can use this resource in combination with more traditional educational resources in formal education. Our analysis of the GBL trajectory identified what facilitated students’ disciplinary engagement and how this happened. We also made recommendations based on our empirical analysis that may be of interest to teachers attempting to implement GBL.

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References


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**Appendix A**

**Game dilemmas**

<table>
<thead>
<tr>
<th>Dilemma 1</th>
<th>To lie or to say the truth about our past to someone helping us?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilemma 2</td>
<td>To rescue a child or an adult, both simultaneously attacked by zombies?</td>
</tr>
<tr>
<td>Dilemma 3</td>
<td>To send outside (to zombies) or keep safe inside a child under the suspicion of having already been bitten by a zombie?</td>
</tr>
<tr>
<td>Dilemma 4</td>
<td>To risk ourselves to try to save a stranger surrounded by zombies?</td>
</tr>
<tr>
<td>Dilemma 5</td>
<td>To help someone already bitten to commit suicide to prevent becoming a zombie?</td>
</tr>
</tbody>
</table>

**Appendix B**

Transcription notations adapted from Jefferson (1984).

<table>
<thead>
<tr>
<th>[]</th>
<th>Start and end points of overlapping speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>Break and subsequent continuation of a single utterance</td>
</tr>
<tr>
<td>(# of seconds)</td>
<td>The time, in seconds, of a pause in speech</td>
</tr>
<tr>
<td>(.)</td>
<td>A brief pause, usually less than 0.2 seconds</td>
</tr>
<tr>
<td>up arrow</td>
<td>Rising pitch or intonation</td>
</tr>
<tr>
<td>::::</td>
<td>Prolongation of a sound</td>
</tr>
<tr>
<td>Underlined</td>
<td>The speaker is talking louder than the surrounding speech</td>
</tr>
<tr>
<td>!-</td>
<td>An abrupt halt or interruption in utterance</td>
</tr>
<tr>
<td>*</td>
<td>Whisper, reduced volume or quiet speech</td>
</tr>
<tr>
<td>(( italic text ))</td>
<td>Annotation of non-verbal activity</td>
</tr>
</tbody>
</table>