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# Feeling alienated – teachers using immersive digital games in classrooms

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## ABSTRACT

Significant barriers to using digital games in classrooms exist despite evidence to indicate digital games can enhance academic achievement. This qualitative, grounded theory study purports an interpretive understanding of the experiences of 13 Australian teachers who have used immersive digital games (IDGs) in the classroom. These teachers participated in in-depth, semi-structured interviews that were one to two hours in duration. A key finding of this study is that teachers who use IDGs in the classroom can experience varying degrees of alienation from their teaching colleagues. This paper presents a model of the process of 'Feeling Alienated' experienced by some educators using IDGs in their classrooms. It begins with 'the lone believer' teacher who has strong beliefs in the value of using IDGs for student learning. Resentment by some colleagues, curriculum and classroom concerns, and insufficient advocacy contribute to the lone believer feeling alienated. This leads the lone believer to minimise the impact of their use of IDGs. The study concludes that, whilst negative teacher attitudes towards the use of IDGs in the classroom persist, the potential impact of IDGs in the classroom will not be fully realised.

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issues

## Introduction

Digital games have been used in classrooms since the 1970s with some of the most successful early educational titles being *Oregon Trail* and *Lemonade Stand* (Egenfeldt-Nielsen, 2005). In the late 1980s there was a swing towards edutainment, short-form games featuring game mechanics largely based on learning by repetition, also known as drill-for-skill games (Egenfeldt-Nielsen, 2005; Kirkley, Kirkley, & Heneghan, 2007; Okan, 2003). Although digital games in the entertainment sphere have become more complex, immersive and engaging, the types of games predominantly used in schools continue to be short-form games made for education, not more immersive games leading to deep exploration (Takeuchi & Vaala, 2014; Vrasidas, 2015). More immersive, complex and engaging games are being designed for classrooms, such as *Lure of the Labyrinth* (<https://labyrinth.thinkport.org/www/>), *Orbit* (<http://www.orbit.org.au>, Jones, Stieler-Hunt, & Rolfe, 2013; Stieler-Hunt, Jones, Rolfe, & Pozzebbon, 2014) and *Quest Atlantis* (<http://atlantisremixed.org>) but they are not used in classrooms as commonly as edutainment-style games (Takeuchi & Vaala, 2014). In this paper, we will use the term *immersive digital games* (IDGs) to refer to digital games that are more likely to involve the player in deep exploration and have them participate in activities that vary greatly from didactic instruction (Takeuchi & Vaala, 2014). The use of IDGs in classrooms may refer to the repurposing of games primarily created

for entertainment purposes as well as using more complex and engaging digital games designed specifically for classrooms.

The benefits of using digital games in the curriculum have been well documented in the literature. Teachers who have used IDGs in classrooms have found that game-play can unite the class by developing affinity between students and providing unexpected student motivation and focus that can inspire students to build deep knowledge that can be applied to new contexts (Gee, 2003; Stieler-Hunt & Jones, 2015b). Further, using IDGs in their classrooms shows students that the education system values their real-life experiences (Beavis, 2014; Gee, 2003). These benefits can enhance academic achievement. For example, positive social relationships between class members have been linked to higher motivation levels (Goodenow, 1993) and higher levels of academic achievement (Wentzel, 1998). Further, using popular culture in teaching can raise students' motivation levels and understanding (Beavis, 2014; Chik, 2011; Duncan-Andrade, 2004; Dunn, Niens, & McMillan, 2014). In addition, games also provide players with opportunities to fashion and experiment with identities and choose the amount of effort they wish to expend in a low-consequence environment (Bassiouni, Hackley, & Young, 2016; Gee, 2008; Klopfer, Osterweil, & Salen, 2009) that nevertheless feels authentic (Barab, Pettyjohn, Gresalfi, Volk, & Solomou, 2012). Educators and researchers alike see the appeal in harnessing these features to engender better learning in classrooms (Stieler-Hunt & Jones, 2015b).

The literature has also documented the barriers to using digital games in classrooms. Commonly cited barriers include difficulties matching games to the curriculum (El-Masri, Tarhini, Hassouna, & Elyas, 2015; Stieler-Hunt & Jones, 2015a; Takeuchi & Vaala, 2014; Watson, Yang, & Ruggiero, 2013), insufficient access to adequate software and hardware (Hovious & Van Eck, 2015; Watson et al., 2013), negative views on games (Archer, 2016; Dickey, 2015; Friedberg, 2015; Greitemeyer & Mügge, 2014) and insufficient time in the school day (El-Masri et al., 2015; Hovious & Van Eck, 2015).

This paper presents a model of the process of 'Feeling Alienated' experienced by some educators using IDGs in their classrooms. The model emerged from qualitative research into the experiences of teachers using IDGs in their classrooms. A key finding was that teachers receiving little to no support from within their school community for their use of IDGs experienced varying degrees of alienation which had impacts on their teaching practices and their career. This paper also explores the impact these findings have on the adoption of IDGs for teaching and learning. This research responds to Bourgonjon, De Smet, Van Looy, Soetaert, and Valcke's (2013) call for qualitative research that focuses on teachers with game-based learning experience.

## Method

### (a) Study overview

This study purports an interpretive understanding of the experiences of teachers who have used IDGs in the classroom. Our research employed an inductive grounded theory approach (Corbin & Strauss, 2008) in which we conducted semi-structured interviews with teachers about how they have used digital games in their classrooms, their general beliefs about learning and the support structures they work within. We used qualitative data-analysis techniques from grounded theory (Charmaz, 2006; Corbin & Strauss, 2008; Saldaña, 2012). We aimed to discover insights and themes about the daily experiences of teachers who have used IDGs in the classroom.

### (b) Participants

Thirteen educators participated in this study (8 female, 5 male). All participants interviewed had experience using digital games in the classroom and had worked within the educational system of Queensland, Australia. A convenience sample was used. Participants responded to an invitation sent to a Queensland-based games in learning email list or were approached directly by the researchers because they were known within their professional networks. The educators were in different stages of

their educational careers from beginning teachers to retirees to educational advisors, and from diverse educational settings ranging from primary schools to secondary schools, mainstream to special education, rural to urban environments, and private to government schools. Eight of the participants were regular classroom teachers in primary or secondary schools. Five of the participants were working in advisory capacities within the Queensland state government education department, and of these all but one started using digital games in learning when based at a school. The teachers volunteering for this study were using digital games in the classroom before participating in this study.

### **(c) Interview procedures**

The data used for this study were in-depth, semi-structured interviews which ranged from one to two hours in duration. The semi-structured interviews were loosely based on an interview guide that explored participants' beliefs about learning, how they have used ICT in learning more broadly, their beliefs about using digital games for student learning and how they have used digital games for student learning.

### **(d) Data analysis procedures**

Interviews were audio-recorded and transcribed. NVivo computer-assisted qualitative data analysis software was used to manage the audio recordings, transcriptions and analysis process. Where possible we commenced analysis on existing data prior to collecting more data so that the analysis could be used to guide the next data collection, a process known as theoretical sampling (Auerbach & Silverstein, 2003; Corbin & Strauss, 2008). Firstly, we used the initial coding analysis technique to generate concepts (Saldaña, 2012). Then we purposefully used a variety of analytic tools and strategies designed to immerse the researcher in the data to find the 'essence' of what the participants were conveying (Corbin & Strauss, 2008). This resulted in the emergence of the 'Feeling Alienated' category from the data. Analytical tools and strategies that were flexibly and dynamically applied to the data included attribute coding, open-ended coding, subcoding, theming the data, pattern coding, axial coding, theoretical coding, code weaving, theorising (Saldaña, 2012), the conditional/consequential matrix and the paradigm (Corbin & Strauss, 2008) until the model for 'Feeling Alienated' emerged. The analysis concluded after reaching theoretical saturation (Corbin & Strauss, 2008). That is, the 'Feeling Alienated' category had considerable depth and breadth and the relationships between 'Feeling Alienated' and other key concepts were clear (Auerbach & Silverstein, 2003; Corbin & Strauss, 2008).

### **(e) Conventions used in the paper**

To preserve anonymity, this paper does not use participants' real names. Instead pseudonyms generated by a random name generator are used.

Within this paper we have used the convention of *italics* to denote categories and concepts identified during analysis. Quotations from participants are indicated by the indented quotation style. Definitions are in 'single quotes'.

## **Findings**

In this section we explore the process of how and why some teachers *feel alienated* from nearby teaching colleagues for using IDGs in their curriculum and how this impacts their teaching practices. We define *feeling alienated* as, 'conscious that their views on using IDGs in the classroom keep them somewhat intellectually and sometimes socially separated from their colleagues' and we define 'nearby teaching colleagues' as teachers that are at the same school. Figure 1 provides an overview of the process of *feeling alienated*.

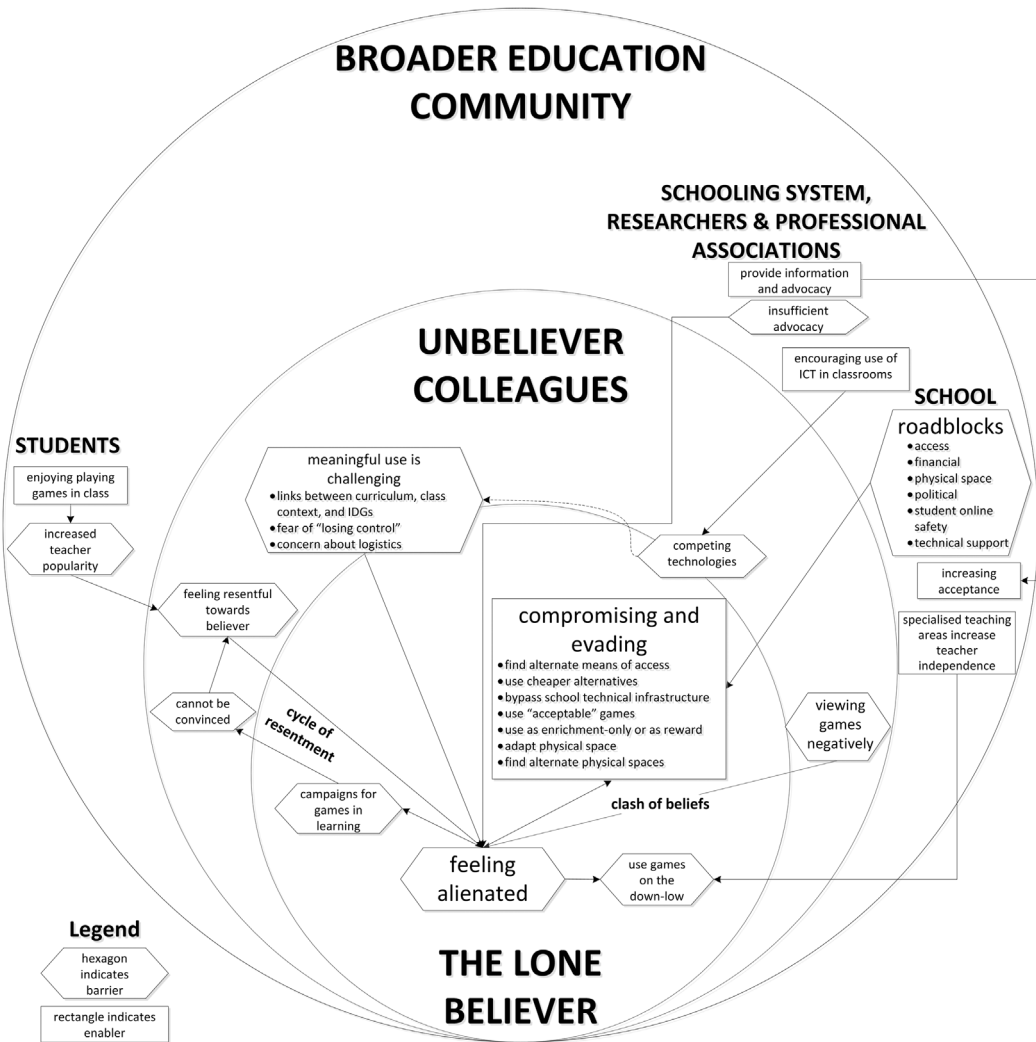


Figure 1. Model representing the process of Feeling Alienated.

The circle at the core of Figure 1 represents the issues influencing *the lone believer* and their responses to these issues. The middle circle outlines relevant influences over *the lone believer's* nearby *unbeliever colleagues*. The outside circle reflects the *broader education community* which includes the school community and the milieu within which *the lone believer* and the nearby *unbeliever colleagues* operate. Within the *broader education community*, we refer only to segments of that community that emerged from our data as being meaningful to explain the *feeling alienated* phenomena, namely *students*, *school* and the *schooling system, researchers* and *professional associations*.

Within the diagram of the model we have indicated factors that predominantly enable the use of IDGs in the curriculum with a rectangular border and those that are predominantly barriers to the use of IDGs in the curriculum with a hexagonal border. Further, the arrows pointing towards our main concept explain the causes of *feeling alienated* and the arrows leading away from our main concept describe the effects of *feeling alienated*.

The following sections unpack the process of *feeling alienated* as depicted in Figure 1. We begin by describing (a) *the lone believer*, then we explore the (b) *clash of beliefs* between *the lone believer* and

nearby *unbelieving colleagues* that begins the process of *feeling alienated*. This leads us to discuss the (c) *cycle of resentment* this provokes. We then outline how (d) curriculum and classroom concerns and (e) *insufficient advocacy* also contribute to *the lone believer feeling alienated*. Finally, we examine the (f) *compromising and evading tactics the lone believer employs in response to feeling alienated*.

### (a) *The lone believer*

Teachers who use digital games in the classroom can experience varying degrees of alienation from their nearby teaching colleagues. If there are very few (if any) teachers at a school using IDGs in their own teaching practices, then the degree of alienation is likely to be greater. We have labelled these teachers *the lone believer*. The term *believer* (Stieler-Hunt & Jones, 2015a) is used because these teachers tend to be extremely passionate about their use of IDGs and tend to have an almost religious fervour about their use. *The lone believer* can be defined as ‘an educator who is persuaded that using IDGs in the classroom can be beneficial for learning and feels that this belief somehow keeps them apart from most if not all of their nearby colleagues’.

It’s always been something I believe in ... [Other teachers] would be very, very nice and say, ... ‘I’m a bit too old for that sort of stuff’. (Bernita, secondary school teacher)

[Using games is] something I’ve had to do on my own. (Linn, primary school teacher)

Further, teachers using digital learning games traditionally associated with classrooms (e.g. short-play games such as drill-and-practice games) did not report experiences of alienation. However, it was not uncommon for enthusiastic *believers* to have a strong dislike of what is seen as a traditional classroom learning game:

No, I’m not a big fan of the overt, slap you in the face, this is the outcome that you will definitely get at the end of this game, and I think kids know the difference ... so I’m not necessarily a fan of educational games. I think that a lot of them are pretty lame actually. (Esta, primary school head of curriculum)

Next, we explore the forces at play in *the lone believer’s* professional life that lead them to *feeling alienated*.

### (b) *Clash of beliefs*

Differences in beliefs between *unbelieving colleagues* and *the lone believer* teacher were the main contributors to *the lone believer* teacher *feeling alienated*. We define *unbeliever colleagues* as ‘teachers from the believer’s school who do not accept that IDGs belong in the classroom’.

Study participants proposed that this non-acceptance of IDGs in the classroom stemmed from pre-conceived *negative views on games* such as IDGs being a waste of time, showing no interest in seeing IDGs used in their classrooms and being resistant to change. They felt that some of these negative attitudes were due to *unbelievers* not having recent, personal gaming experience of their own or with their own children. Table 1 further outlines these perspectives.

This clash of beliefs is what sets the scene for *the lone believer* teacher to *feel alienated*. The level of alienation felt was different for each teacher. For example, primary school teacher Linn felt so alienated from her colleagues that she eventually changed schools.

In this quote Linn describes her negative experiences at her initial school:

[Using games is] something I’ve had to do on my own and I, I did it in a school that was very negative towards computers and games ... it has been negative to me professionally, like your own, your teaching partners will stop talking to you ... you’ll be perceived by people for being a show-off or you’ll be perceived as being anti-social.

In contrast, secondary school teacher Milly did not experience negativity from her colleagues, however she did feel mostly alone in her use of games in her school. When she was asked if she passed on her work with IDGs to her colleagues when she left her school to work in a regional education office, she said:

A lot of them weren’t, time factor didn’t just seem to be there. They knew the things I was doing ... but a lot of them didn’t take it on.

**Table 1.** *Believer teachers' perspectives on their unbelieving colleagues' attitudes towards games.*

Why <i>lone believer</i> teachers think their colleagues do not value games	Supporting evidence
<i>Games are a waste of time:</i> 'colleagues are prejudiced against games because they don't have recent personal gaming experience or experience playing with their own children.'	People who don't play games don't see that [games have educational potential], because they just view it as this old button-mashing ... time waster of the past. (Miles, secondary school teacher) I think most of the ... teachers, don't have kids of their own, so they ... don't have [games] at home. (Jennifer, primary school teacher)
<i>That's not happening in my classroom:</i> 'colleagues have no interest in seeing IDGs used in the classroom.'	They would be very, very nice and say, 'Oh well, you know, you're a computer programmer' or ... 'You were into that sort of thing' ... All of the comments that they made in a light-hearted way were ways of saying ... 'I'm a traditional teacher and there's no way known that would happen in my classroom'. (Bernita, secondary school teacher)
<i>I've been doing fine without games:</i> 'colleagues are resistant to change.'	There are so many teachers who are comfortable with doing what they've always done. (Miles, secondary school teacher)

Special education teacher Steven felt frustrated at being the only person to use games in his school, especially when he saw first-hand how much a student with disabilities benefited from using games during special education withdrawal time. However, the mainstream teacher would not adopt the game:

and that's probably one of the biggest problems I've found if you don't have a lot of people [other teachers] sharing that same belief or understanding umm, you know, it can be a bit of an issue.

### (c) *Cycle of resentment*

Some of the *lone believer* teachers felt the need to win over their *unbelieving colleagues* to the merits of using IDGs in the classroom so they continued *campaigning for games in learning*. When their attempts to *convince* their *unbeliever colleagues* were unsuccessful, the *resentment* levelled at the *believer teacher* continued to grow. The more the *lone believer* tried to *convince unbelieving colleagues*, the worse the *resentment* got. At the same time, the *lone believer* teacher was becoming *increasingly popular* with students because most *students enjoyed playing games in class*, and in some cases this added to the *feelings of resentment* levelled at the *lone believer* by the *unbelieving colleagues*. In this way, this *cycle of resentment* contributed to the *lone believer's feelings of alienation*. Table 2 defines and provides supporting evidence for each key concept in the *cycle of resentment*.

### (d) *Curriculum and classroom concerns*

*Encouragement* for teachers to use *information and communication technologies (ICT)* in the classroom has not necessarily led to an increase in the use of IDGs in the classroom. This is partially because there are many *competing technologies* such as learning objects, smart boards, digital cameras and robotics *competing for teachers' attention*. Another contributing factor is that the *meaningful use* of IDGs in the classroom can be *challenging* for any teacher, even for teachers who are highly motivated to use them, because it can be difficult to discover *meaningful links between curriculum, class context and IDGs*. In addition, there may be a *fear of 'losing control'* of the class and there may be *concerns about logistics* associated with games in the classroom. Since *unbeliever colleagues* already do not value IDGs as a medium for classroom learning, these difficulties make them even less likely to use IDGs over other technologies, thus leaving the *lone believer feeling further alienated* and isolated. Definitions and supporting quotes for each of these research concepts are provided in Table 3.



**Table 2.** Definitions and supporting evidence for key concepts in *cycle of resentment*.

Key concepts in the <i>cycle of resentment</i> followed by its definition	Supporting evidence
<i>Campaign for games in learning</i> : 'The believer teacher goes forwards and onwards with activities that promote the use of IDGs for learning in their school.'	I've sort of had to just keep talking about [games] all the time. (Linn, primary school teacher)
<i>Cannot be convinced</i> : 'The believer teacher is unable to persuade unbeliever teachers that IDGs can be valuable for learning.'	No matter how much research you can show them [colleagues], no matter how much you can tell them they still resist. (Miles, secondary school teacher)
<i>Feeling resentful towards believer</i> : 'Unbelieving colleagues were annoyed with the believer teacher.'	When I first started teaching it [with games], every other kid in the grade who wasn't in my class, got a little bit snotty with their teacher, which didn't help things for me particularly much ... 'cos there was teachers getting, 'oh, why do they get to do this and we don't?' (Miles, secondary school teacher)
<i>Enjoying playing games in class</i> : 'Most students in the class take pleasure in playing IDGs as part of their learning activities.'	... gaming is just something the kids love. (Jennifer, primary school teacher)
<i>Increased teacher popularity</i> : 'The believer teacher's methods received greater favour and approval from students.'	I guess, well in those days, I was, I suppose a very groovy teacher. I knew all the latest games ... and you know, that has its advantages as well. They all wanted to be in my class, all of that sort of thing. (Bernita, secondary school teacher)

**Table 3.** Definitions of research concepts and supporting quotes related to curriculum and classroom concerns for using IDGs in the classroom.

Research concept followed by its definition	Supporting evidence
<i>Encouraging use of ICT in classrooms</i> : 'Schooling systems, researchers and professional associations have a goal to persuade teachers to use more Information and Communication Technologies with students.'	... lots of new initiatives, lots of new things ... particularly ICT... at the moment we've got Probots, we've got easyspeak mics, we've got webcams ... we've got umm, umm, flip cameras, we've got digital cameras, we've got videos ...
<i>Competing technologies</i> : 'There are a large number of ICT devices and software for teachers to choose between.'	We've got sooooo many tools ... that teachers are kind of struggling with ... what do I use, what do I value above other things? (Esta, primary school head of curriculum)
<i>Meaningful use is challenging: links between curriculum, class context and IDGs</i> : 'It is not easy to bring about a significant connection between curriculum frameworks developed by education bodies, perceived needs of the student population or the school community's collective beliefs about learning and characteristics or elements of IDGs.'	... it was an uncomfortable feeling for me. I felt as though I needed to integrate it [games] into the curriculum and to find excuses and to find little opportunities ... in order to umm, leverage the potential of that for a curriculum purpose and I was challenged by that and I didn't see an easy pathway forward. (Grant, primary school teacher)
<i>Meaningful use is challenging: fear of 'losing control'</i> : 'Concern about how IDGs can be played in the classroom whilst maintaining acceptable levels of student behaviour.'	... there's still that fear factor of losing control ... that, if you let them go, you know, it's hard to draw them back. (Milly, secondary school teacher)
<i>Meaningful use is challenging: concern about logistics</i> : 'Worried about managing practical details associated with using IDGs in the classroom.'	... part of the problem is the restriction is the security ... Where do I set it up? Where is it safe? So it won't get stolen. Do I have to pack it up, put it out every single lesson? I think that puts teachers off. (Milly, secondary school teacher)

### (e) *Inadequate advocacy*

The lone believer teachers reported that having *advocacy* from the *schooling system, researchers and professional associations* was helpful in bringing about *increasing acceptance* at a school level but there was *insufficient advocacy* to stave off the *alienation* the lone believer felt from *unbeliever teaching colleagues*.

We define *insufficient advocacy* as 'the support and recommendations for the use of games in learning provided by schooling systems, professional associations and researchers is not strong enough to filter down to the majority of educators in schools'. Primary school teacher Linn describes her frustrations with *insufficient advocacy*:

for games to go ahead in Queensland, we need to have someone in the Learning Place [an eLearning environment provided by the Queensland education system] that actually decides if this site [by site she was referring to games that use the Internet] is ok or not ... I have spent three years just still getting nowhere.



We define *increasing acceptance* as 'games are beginning to receive a more favourable reception in schools'.

with the advent of computer games and more of an acceptance here at the university ... it sort of gave a legitimate aspect to gaming. (Bernita, secondary school teacher)

### **(f) Employing compromising and evading tactics**

This section explores the consequences of *the lone believer* teachers *feeling alienated* from their *unbeliever colleagues*. Frequently, *compromise and evasion* tactics are required to negotiate *school-based roadblocks*. Further, those that have curriculum independence in their schools may also *use games on the down-low* so that their use of IDGs has very little impact on their *unbelieving colleagues*.

We define *compromising and evading* to negotiate *roadblocks* as 'making concessions or finding ways around school-based obstacles to using games in the classroom'. Some of the types of *roadblocks* encountered included not having *access* to the resources required, not being able to purchase resources required (*financial*), not having *physical space* to play a particular game, not being able to get permission to use a game they want to use (*political roadblock*) or not being able to get the *technical support* required to get a game working using the school's technology infrastructure. The types of *compromise and evasion* tactics employed by the *believer* teacher are outlined in Table 4.

The *compromises* and *evasion* tactics employed show *the lone believer* to be very resourceful and further shows that a determined teacher will find a way to use games in their curriculum. However, if such tactics are required to use games in the classroom, it is unlikely that their use will become mainstream.

A subset of *the lone believer* teachers had the *independence* to choose their own teaching methods, usually because they were teaching in a *specialist area*, and were likely to *use games on the down-low* to avoid negativity from *unbeliever colleagues*.

We define *use games on the down-low* as 'discreetly using games so that it will not impact other educators'. Secondary school teacher Bernita explains:

They [other teachers] didn't believe it [an entertainment game] developed any sort of logic in those days so it might have been done a little bit under cover.

We define *specialised teaching areas increase teacher independence* as 'teachers in specialised areas have more freedom in their teaching methods than those teaching in more mainstream curriculum areas'. That is, teachers in specialised fields such as special education, secondary school multimedia, a low-achieving class where the school has suggested the teacher depart mainstream curricula to meet the students' learning needs, still felt that they were intellectually separate from other teachers; however, they used games without encountering as much resistance as those using them in the mainstream. Secondary school teacher Milly explains that whilst she felt that she was the only one in the school using game-play in her classes, it did not concern her because her school's administration team permitted her to do it in her specialty area:

I did go to them [the administration team] and say, 'Look, I'm going to [be] putting games into this [specialty] subject', and they were quite happy for that to happen. (Milly, secondary school teacher)

It seems promising that a teacher in a specialist area can use games in autonomy without encountering too much resistance from *unbelieving colleagues*. However, these specialist teachers may have less informal opportunities to share their successes with nearby colleagues and therefore, they are less likely to influence other teachers in their school.

## **Discussion of these findings in light of the literature**

This study suggests that teachers who do not have adequate local school-based support for using IDGs in the classroom are likely to experience resistance and animosity from colleagues in their school. Other studies do not indicate such consequences for teachers who use digital game-play in the classroom.

**Table 4.** Roadblocks encountered and the corresponding compromise and evasion tactics employed.

Roadblock type and definition		Compromise and evasion tactics employed	Supporting evidence
Access: 'Not having the means or opportunity to use the gaming hardware or software required.'		Finding alternate ways to access games other than using school infrastructure (e.g. bringing in games and consoles from home or allowing students to bring in their own).	... I tried to get computer time for them but it was just near impossible ... I brought in consoles and stuff like that ... All the consoles are mine and the games are mine. (Miles, secondary school teacher)
Financial: 'Unable to purchase required gaming hardware or software or subscriptions.'		Using cheaper alternatives such as older game consoles and different games.	We had other teachers who had older consoles, like the old xbox and stuff like that who donated them for us for the unit. Aah, someone even found an old Sega Mastersystem in an op shop somewhere. (Miles, secondary school teacher)
Physical space: 'Not having adequate floor area to play a particular game. This usually applies to games requiring the player to move.'		Limit the simultaneous involvement of students to conform to the limitations of the physical space. Find/make physical space in the school to play games.	[The game can accommodate] four [players], and we had two [players] ... well, we didn't have a lot of room in the classroom ... [The other students] just sat up the back and watched ... it would be better to have it in a larger area next time so ... I'd probably look at the library next time. (Jennifer, primary school teacher)
Political: 'Those who hold influence over what the teacher does in the classroom show resistance to using IDGs in the classroom.'		Compromises and only uses games labelled 'educational'.	... now Pacman I was doing in the early 80s ... The students, they loved Pacman ... I was always in trouble [with administration]. It was not easy ... So I had [to change to] ... the maths games. (Secondary school teacher Bernita explains her history of using games in the classroom)
Student online safety: 'School administration wanting to keep students free from dangers associated with games that connect to the internet whilst they are at school.'		Compromises by only using games as an extra or add-on, not in a way that is integral to the curriculum (e.g. at a computer club, as a reward).	For a long time there was a lot of opposition to anything [like that [games] in the classroom but I got around it by making it a reward ... but I was never satisfied that it wasn't a part of the actual learning process. (Bernita, secondary school teacher)
Technical support: 'Difficulties getting adequate assistance to get games working on school computers or school's ICT infrastructure.'		Use the online game in a very supervised, scaled-down way.  Bypass anything that requires the school's computer infrastructure.  Find different games that will work on the school's computer network.	My school has to decide whether it's safe or not ... and at the moment I'm being told it's, it's ok to use as an experience for our students, to take them in there to look around ... but I'm not allowed to use it as a learning environment ... but it's like an obstacle that I'm dealing with ... (Linn, primary school teacher)  The network would be slow, you know? ... The kids couldn't access the network or everyone would be accessing the same thing and it would slow down and ... there's nothing more frustrating ... that's why when the [Nintendo] DSes came out, I jumped, when the Nintendos and the Playstations came out. Anything to get out of that network! (Bernita, secondary school teacher)  ... I remember spending about three hours trying to like install these games on MOE EO network systems which was painful ... [the school] computers that weren't terribly good to start with, so I had to find all the older games I had. (Miles, secondary school teacher)

However, there are varying reports on the level of uptake of digital games for classroom learning by teachers.

Takeuchi and Vaala's (2014) findings suggest that most United States K–8 (kindergarten to grade 8) teachers are using digital games in their classrooms, however very few were using IDGs. Almost all of these teachers were using short-form learning games (drill and practice, trivia and puzzle games). Bourgonjon et al. (2013) found that most teachers are not currently using and do not intend to use digital game-play in their classrooms. Hamari and Nousiainen (2015) similarly acknowledged that use of games in classrooms is not widespread and identified institutional and individual factors that impact teachers' perceived value of games for classroom use. This indicates that most teachers, at best, do not consider the use of IDGs in the classroom a priority and, at worst, may not approve of IDGs in the classroom at all.

Many studies acknowledge that adoption of games-based learning relies on acceptance by individual classroom teachers (Baek, 2008; Bourgonjon et al., 2013; Can & Cagiltay, 2006; Hamari & Nousiainen, 2015; Sandford, Ulicsak, Facer, & Rudd, 2006) and that personal approaches to introducing games in classrooms including support from nearby colleagues and students (Becker & Jacobsen, 2005) may be more effective than top-down approaches (Bourgonjon et al., 2013; Kenny & McDaniel, 2011). Further, studies have shown that the teacher plays a significant role in optimising learnings from IDGs (Hämäläinen & Oksanen, 2014; Jenkins, 2003; Kebritchi, 2010; Proserpio & Gioia, 2007; Stieler-Hunt & Jones, 2015b; Van Eck, 2006). Earlier studies often cite barriers to using digital games in classrooms as technical problems, lack of adequate hardware and software, and lack of financial resources (Baek, 2008; Becker & Jacobsen, 2005; Rice, 2007; Sandford et al., 2006). However, it is possible that these barriers masked the real issue: that teachers find it difficult to garner adequate support for implementing games-based learning initiatives because of negative opinions of nearby colleagues.

Why do nearby teachers have a negative view of their colleagues using IDGs? Our research does not give a definitive answer because its focus was on the teachers who were using IDGs rather than those around them. However, our research participants believed that their colleagues were already predisposed against IDGs because they see them as time-wasters, not something they would want in their classroom and they saw no need to introduce IDGs as they had never needed them before. Further, some of our research participants felt that nearby colleagues not only disapproved of their use of games but also began to resent it when students from their classes also expressed a desire to use IDGs in their class work.

Teacher perceptions that digital games are just entertainment and a waste of time permeate the literature (Bourgonjon et al., 2013; Can & Cagiltay, 2006; Hodges & Prater, 2014; Kennedy-Clark, 2011; Rice, 2007). Further, in Becker and Jacobsen (2005), most teachers said they would not use commercial off-the-shelf (entertainment) games in their classrooms. Similarly, Takeuchi and Vaala (2014) found that although 74% of K–8 US teachers claim to use digital games in the classroom, less than 10% of these games-using teachers use IDGs in their classrooms. These perceptions about games may also be based in an undervaluing of play in the learning process. If we look at digital games as a way to provide meaningful play opportunities for players (Salen & Zimmerman, 2003), then teacher and societal attitudes to play are at the core of these beliefs. Rieber (1996) suggested that play is quite often seen as 'irrelevant or inconsequential' to learning especially as people age, despite research indicating that play is an 'important mediator for learning and socialisation' (p. 44) at all stages of life.

So then, if games are generally seen as irrelevant or inconsequential to learning, it follows that most teachers will not be trying to establish meaningful links between entertainment games, class context and the curriculum and, even if they were, this study has found that these links can be difficult to establish. Other studies (Baek, 2008; Bourgonjon et al., 2013; Hovious & Van Eck, 2015; Proctor & Marks, 2013; Rice, 2007; Takeuchi & Vaala, 2014) also found that finding appropriate games for curriculum and teaching context is problematic for teachers. In a meta-study, Rice (2007) found that a 'lack of alignment to state [educational] standards' (p. 249) was a significant barrier to the use of digital game-play in the classroom. Similarly, Hovious and Van Eck (2015) explained that although teachers may identify educational potential in games, they may not be able to identify how to use them within confines imposed by state educational standards. Similarly, Baek's (2008) study found that teachers identified

'inflexibility of the curriculum' (p. 666) as a barrier to using digital games and they also found it difficult to find an appropriate game or know if it was appropriate. Bourgonjon et al. (2013) concluded that teachers should therefore be helped to understand what works, how it works and when it works, not simply have games presented as a magic bullet.

But the problem is more than just alignment with curriculum. Our study also indicated that teachers were scared of 'losing control' and concerned with the logistics of managing games in the classroom. Research indicates that teachers not knowing how to accommodate games is a large barrier (Chee, Mehrotra, & Ong, 2015; Hodges & Prater, 2014; Kirriemuir & McFarlane, 2004). For example, in Hodges and Prater's (2014) study, teachers expressed that 'competition and fun' of games may 'interfere with students' education' (p. 75). Further, Chee et al. (2015) stated that teachers can be 'agents of resistance' (p. 435) and that teachers need professional support to maximise the potential of IDGs for learning. In contrast to these studies, Bourgonjon et al. (2013) found that when they administered questionnaires to teachers, their views on the complexity of using games in the classroom did not predict their intention to use games in the future. Therefore, this study coupled with literature findings suggests that in trying to improve acceptance of IDGs in the classroom, pedagogies for using games in the curriculum need to be addressed at the same time as addressing teacher attitudes to using IDGs in the classroom.

In some cases, the alienation prompts the believer teacher to work around 'the system' so that they can continue with games. This requires compromise and evasion tactics such as not using school resources to play games, only using games as rewards and not widely telling others about their work. This may require teachers to scale back the amount, scope and types of games which they would have otherwise used. This bears some similarities to a cluster analysis Takeuchi and Vaala (2014) performed on survey data from 694 US K–8 teachers where they labelled a subgroup of teachers as 'Barrier Busters', teachers who show ingenuity to overcome the barriers to using digital games in their classrooms. Most other studies do not report teachers employing these tactics, although other researchers do list barriers to using games (Chee et al., 2015; El-Masri et al., 2015; Groff, Howells, & Cranmer, 2010; Hodges & Prater, 2014; Hovious & Van Eck, 2015; Watson et al., 2013). If this is a widespread phenomenon, then it is unlikely that games will have maximum impact on learning until teachers do not feel they must hide their use of IDGs in the classroom. It is possible that addressing barriers such as hardware and software limitations will not be effective until the underlying cultural and political issues are also addressed.

Rogers (2003) has identified five characteristics of innovation that affect its diffusion rate: (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability and (5) observability. Arguably, the most relevant to this study is 'compatibility', which refers to the degree to which the innovation is perceived to be consistent with current values, views and needs (Rogers, 2003). The part of our model labelled *clash of beliefs* indicates that the lone believer teacher perceives that the use of IDGs is consistent with their values, views and needs but their unbeliever colleagues do not. Therefore, it is likely that the rate of diffusion of the use of IDGs in classrooms will continue to be slow until these nearby colleagues perceive that using IDGs is consistent with their values, views and needs.

## Conclusions, recommendations and further research

This study implies that although the commonly cited barriers (such as lack of access to resources and difficulties aligning games to curriculum) to using IDGs in the classroom do exist, the solution does not lie in addressing each barrier individually. Rather, the solution may require redressing assumptions made about playing IDGs in classrooms so that this will no longer leave teachers who wish to use IDGs for curriculum purposes feeling alienated from their colleagues. If this were to happen, it is possible that some barriers will automatically diminish and others will be easier to address.

The use of digital games in classrooms could not yet be considered mainstream despite the large body of research available on the benefits of digital game-play for learning and that digital games have been used in small numbers of classrooms for decades. What are some possible strategies that could increase their use? We believe that the answer lies in cohorts of teachers working together at a single school site rather than small pockets of innovation. There is very little written on whole-of-school

approaches to implementing digital games in the classroom. However, some studies describe professional development programmes that cater for teachers from multiple schools where some schools have more than one teacher present (e.g. Chee et al., 2015). Further, teachers participating in the Becker and Jacobsen (2005) study identified that games not being a school priority was a reasonably significant barrier to using digital games in the classroom.

This study found that many teachers using IDGs, at best, work in a silo with little influence on the practices of others and, at worst, feel alienated from nearby colleagues because of their use of IDGs. Embracing carefully and purposefully selected IDGs in a meaningful way can create a more potent school world for learners where they are engaged, focused and motivated to learn. Also, the shared game-play experiences can lead to improved social relationships between class members (Stieler-Hunt & Jones, 2015b). Further, studies have shown links between belonging and academic motivation and achievement (Goodenow, 1993; Osterman, 2000; Wentzel, 1998). Since games can offer opportunities to improve a learner's sense of belonging and motivation, it follows that adopting digital games should be seriously considered by all educators. However, whilst negative teacher attitudes towards the use of digital games in the classroom persist, it will be difficult for the use of IDGs to become mainstream teaching practice and the potential impact of IDGs in the classroom will not be fully realised.

## Limitations

Since this is a small-scale study based on 13 teachers within Queensland, Australia, more research should be undertaken to determine the applicability of the 'feeling alienated' process in other settings and locations.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

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