

Barriers and Enablers to the Use of Virtual Worlds in Higher Education: An Exploration of Educator Perceptions, Attitudes and Experiences

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ABSTRACT

Three-dimensional (3D) virtual worlds have been used for more than a decade in higher education for teaching and learning. Since the 1980s, academics began using virtual worlds as an exciting and innovative new technology to provide their students with new learning experiences that were difficult to provide any other way. But since that time, virtual worlds have failed to maintain their popularity as learning spaces; many builds falling into disuse and many disappearing altogether. The aim of this article is not only to determine why virtual worlds have not become a mainstream teaching tool, but to ascertain why they have even failed to maintain their popularity. In order to do this, the research team surveyed over 200 academics about the barriers and enablers to the use and perceived affordances of virtual worlds in teaching and learning. These responses are examined in relation to academics' past, present and future use, experience and knowledge of virtual world environments.

Keywords

Virtual worlds, Educator attitudes, Teaching and learning

Introduction

Interest in the use of virtual worlds in teaching has been maintained since their first wide scale use in the 1980s (Warburton, 2009). However, despite the persistence of interest, and with the development of many teaching facilities in virtual worlds, teaching in these environments has not become mainstream, and the numbers of educators using this environment for teaching is in fact decreasing. This is evidenced by the number of underutilized and disused builds that are seen in virtual worlds. When exploring virtual worlds such as Second Life, and looking for interesting or useful education sites to visit, another avatar may not even be encountered when visiting these spaces. What has become of the islands which have been reduced to virtual dust when their rent has lapsed or of the privately hosted virtual worlds sitting idle on their own dusty corner of a server? Why has so much effort gone into the development of these sites for them only to be discarded? After the considerable investment of resources in virtual world learning spaces, it might be expected that the use of virtual worlds would have reached the "plateau of productivity" on the Gartner Hype Cycle (Linden & Fell, 2003). However, recent analysis suggests they are still in the "trough of disillusionment" from which point, many new technologies fade into disuse unless maintained and their use progressed by a dedicated group of users and innovators (Fenn, 2008).

Virtual worlds are able to provide a diverse and relatively inexpensive environment compared to bricks and mortar, suitable for authentic learning experiences, potentially removing the tyranny of distance for students studying away from campus (Ritzema & Harris, 2008). They accommodate a range of learning styles (Bonk & Zhang, 2006) and provide risk-free access (Bronack, Sanders et al. 2008) to dangerous, complex or expensive environments (Monahan, Ullberg & Harvey, 2009). When teaching in virtual worlds, Steve Bronack and his colleagues describe the utilization of presence pedagogy, grounded in social constructivist theory, in which students and instructors become part of a community of practice, where all have the potential to be learners, teachers, peers and/or experts (Bronack, Sanders et al. 2008). This encourages reflective learning and engagement in the process (Boulos, Hetherington et al. 2007). If the pedagogy is sound and the initial investment of time and resources in developing the learning environment has been provided, why then are these spaces under-utilized or abandoned, and further, why have they not been mainstreamed? This research aims to identify issues that influence academics in their decisions about whether or not to use virtual worlds in their teaching, whether they are already using them or contemplating using them in the future. This article presents the results from a survey investigating educators' experiences and plans for future use of virtual worlds in teaching, and the issues that influenced these decisions. Two of the researchers have been involved in the development and teaching of higher education courses in virtual worlds since 2007.

Literature review

In 2007, the Horizon Report predicted a two to three year time frame for the adoption of virtual worlds in education (The New Media Consortium, 2007). Similarly, the subsequent Australia New Zealand Horizon Report (Johnson, Levine, & Smith, 2008, p. 6) enthusiastically identified virtual worlds as “spaces for truly immersive forms of learning and for a level of collaboration that is erasing traditional boundaries and borders rapidly.” In 2008 and again in 2009, the Gartner hype cycle positioned virtual worlds in higher education at the peak of its hype cycle (Lowendahl et al., 2008) and the information technology research and advisory company famously predicted that 80% of Internet users would have an avatar in a virtual world by the end of 2011 (Stamford, 2007). Many universities across the globe set up spaces and experimented with ways to leverage the learning opportunities virtual worlds afforded.

E-learning experts were hopeful for the future of virtual worlds. Chea (2007, p. 205) stated that the success of these environments was almost inevitable due to the post-modern focus of our society on “irony, ambiguity, fragmentation, plurality and globalization” and the use of these environments in education flowed on from this as they encouraged a constructivist and immersive paradigm for student engagement as educators moved away from a didactic approach to teaching. However, in recent years, not only have the interest and activity in virtual worlds not been reflected by their widespread adoption, their popularity among educators has declined as evidenced by the underutilization of many existing builds. The Gartner Hype Cycle attempts to describe the typical pattern in the adoption of new technologies (see Figure 1). Hype cycles are used across many disciplines attempting to predict the changing use or adoption of a given idea or product. While they are based heavily in theory, they may provide us a useful guild to shape future efforts (van Lente, Spitters & Peine, 2013). After an initial “technology trigger” when a new technology appears to have potential for significant improvements, a “peak of inflated expectations” occurs, where initial success stories suggest that the application of the new technology will be broad and successful. The “trough of disillusionment” follows, when expectations are not achieved and some projects fail. If the technology continues to be used, the “slope of enlightenment” may follow, during which the technology is refined and its place in the existing world is better understood. Eventually, a “plateau of productivity” may be achieved, in which the technology becomes embedded in mainstream activity. In 2010, Gartner positioned virtual worlds as sliding into the “trough of disillusionment” and they were still there in 2013 (Lowendahl, 2013). Many authors suggest that one cause of the decline is the prohibitive cost in both time and money in a difficult economy. There is considerable time involved setting up and maintaining a place in a virtual world: As with “real” worlds, upkeep is required. In order to put the time and effort into developing virtual teaching spaces, academics need to be convinced that the educational outcomes are improved, at least for a majority of students.

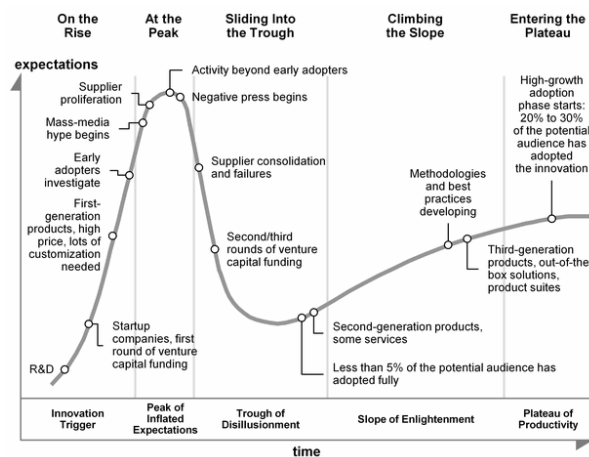


Figure 1. Gartner Hype Cycle

Much research into virtual worlds in education has focused on the potential for improved learning. For example, Standen, Brown and Comby (2001) demonstrated that virtual worlds could be effective in teaching living skills to people with an intellectual disability due to the simulated real world environment. In a review of the literature, Eschenbrenner, Fui-Hoon Nah, and Siau (2008) describe the benefits and potential limitations of teaching in the virtual world, but there is little available in terms of evidence of improved learning outcomes. Although Wiecha, Heyden, Sternthal and Meriardi (2010) demonstrated that learning outcomes in a small group of physicians undertaking Continuing Medical Education were positive and that participants liked the virtual world for learning, there was no comparison with traditional learning approaches. Triola (2006) established that there were no differences in learning outcomes between using Standardized Patients (SP) and Virtual Patients (VP) in a medical education program. Triola goes on to suggest that a significant advantage of the VP was the cost, standardization, reusability and access. However, most of the literature pertaining to virtual worlds is descriptive in nature, and although positive feedback from both educators and students is reported, more substantial evidence of outcomes may be required to convince academics to invest the time and resources required.

To successfully teach in virtual worlds, academics must not only learn the skills to use the space but also to understand the pedagogical affordances involved (Smith-Robbins, 2011). Institutional technical requirements are often difficult to implement and maintain, and are often cited as a significant barrier to uptake (Dudeney & Ramsay, 2009). The virtual world software is continually being developed, may need updating and therefore can be unreliable or in need of significant amounts of maintenance. Insufficient bandwidth can be problematic, especially if several computers are sharing a network. Also, because digital assets are not stored locally, they are streamed and rendered in real time, further taxing Internet bandwidth. Other reasons suggested for the disinterest is the lack of support to educators in terms of technical and pedagogical support or provision of additional time to develop virtual world lessons (Young, 2010; Smith-Robbins, 2011). Many are worried about the stability of providers: several virtual worlds have been discontinued leaving users in the lurch (Young, 2010). Yoon and George (2013) explored reasons why organizations have not adopted virtual worlds more widely. They developed a model based on the Technology-Organization-Environment Framework. This research differs from that of Yoon and George as we are interested in why educators have invested time and money into the development of virtual world spaces and activities and are no longer utilizing it. Why have these builds been abandoned or disappeared altogether? We also want to know why other educators have not taken up the challenge of using virtual worlds as a research, teaching and learning tool when most Australian higher education institutions have used, or are using, a virtual world at their institutions (Gregory et al., 2012).

In order to understand why virtual worlds are not being adopted by educators at the rate anticipated, it is useful to understand the performance pressures on higher education institutions. Yoon and George (2013) state that the organizational adoption of technology innovations can be significantly influenced by institutional pressure that helps them achieve organizational legitimacy. Therefore, an institution will adopt an innovative technology if other institutions are also doing so, a kind of eminence-based practice. Furthermore, they suggest looking to the adoption of the Internet as being similar to the adoption of virtual worlds with “relative advantage” or “the degree of perceived benefit” being a key driver in its adoption (p. 776). In terms of the adoption of ICTs in education, a number of studies have utilised Davis’ (1986) Technology Adoption Model, the premise being that the users’ perceived usefulness and perceived ease of use might influence user acceptance. This model has been adopted in an education setting specifically with an investigation into school teachers’ use of technology (Cox, Preston & Cox, 1999) and with pre-service teachers (Sime & Priestley, 2005; Gill & Dalgarno, 2010; Teo, Lee & Chai, 2008). It is our experience that this applies directly to some educators using virtual worlds. This may be especially the case where the educator is not the initiator of the virtual world project but is perhaps influenced by students’ experiences either through direct feedback or the institution’s student experience survey system (Salomon, 2010). McDonald, Ryan and colleagues (2012) discuss how student-reported technical difficulties were more likely to be due to user error. Selwyn (2009) describes the current generation’s use, and perhaps we can infer too, understanding of technology, as “unspectacular”. It would seem that it is not always a case of “build it and they will come.” Staff may choose not to use educational tools that students find difficult and which could result in complaints, poor scoring on student experience surveys and no significant outcomes. In addition, virtual worlds are just one more technology vying for the attention of students and educators (Smith-Robbins, 2011; Essid, 2012). The current trend in technology adoption is towards more available and ubiquitous mobile devices and social media. Until virtual worlds become more intuitive to use and can be accessed ubiquitously, they will lose the battle for prominence (Salmon, Nie, & Edirisingha, 2010).

There are a number of issues to overcome before virtual worlds become a mainstream teaching tool to be used by educators. A scoping study undertaken in Australia and New Zealand reviewed and analysed the use of 3D virtual worlds in teaching and learning in higher education (see Dalgarno, Lee, Carlson, Gregory, & Tynan, 2011a; 2011b; 2010; Dalgarno, Gregory, Carlson, Lee, & Tynan, 2013; Lee, Dalgarno, Gregory, Carlson, & Tynan, 2013). A number of problems were identified in relation to integrating virtual worlds into teaching and learning. Various categories of challenges were formulated from the feedback collected from educators using virtual worlds, including “[lack of] technology, support, funding and time, usability and familiarity, equity and ethics, inherent limitations of virtual worlds, acceptance of virtual worlds, and management and planning” (Dalgarno et al., 2013, p. 10).

Methodology

In order to discern why virtual worlds did not emerge as a mainstream teaching tool and in fact are declining in popularity with educators, it was decided to examine the factors that influenced the adoption and continued use of virtual worlds by educators. The research team, drawing from their own experiences with virtual worlds, envisaged a number of potential factors that could impact their adoption. The research team comes from a range of disciplines including the humanities, education and the health sciences. Some of the teams are teaching academics, some are in teaching and learning support and some are research-focused. This range of roles and perspectives gave rise to a broad experience of using virtual worlds across many contexts, allowing for the identification of a broad range of issues including lack of technical support, lack of expertise, insufficient funding, and student attitudes among others.

The University of New England’s Human Research Ethics Committee provided ethics approval for this study. A survey was designed by the authors and distributed in June 2013. The request to complete the survey was sent out to the researchers’ various networks from within their institution and working in virtual worlds education. The survey was distributed to members of the

Australian and New Zealand Virtual Worlds Working Group, virtual world users of LinkedIn, Facebook, various virtual world list serves, members of the researchers' institutions and virtual world user groups of other organisations.

The survey questions were created with the primary intention of eliciting responses in relation to why educators have persisted with or ceased with the use of virtual worlds. More specifically one of the questions focused on those that are not teaching in virtual worlds. Respondents were asked to choose from seventeen pre-designed answers or offering their own. The pre-designed responses were created from the range of experiences reported by the researchers themselves and from the review of the available literature on virtual worlds in higher education. The potential issues that influenced the design of the question responses had been identified as relating to institutional support, student support, technical support and access.

A subset to the question about why educators were not using virtual worlds was whether they perceived value in the use of virtual worlds. In order to identify the perceptions of the value of virtual worlds in education, respondents were asked to rate the importance of five identified learning benefits in relation to their discipline. The learning benefits were chosen based on the researchers' experience and a review of the literature.

A series of demographic questions were asked to gather data about the platforms used, class types and size, respondent's age and institution. Respondents were asked to indicate the time period in which they had been involved with teaching with virtual worlds. The choices were - now (to mean the date at which they undertook the survey), in the past or intended to in the future. They were also asked to indicate in which years they had used virtual worlds with specific reference to four time frames (2000 and earlier, 2001-2005, 2006-2010, 2011 and after).

Results/analysis

The survey was completed by 223 respondents. Responses were received from 134 institutions in 28 countries, including 38 from Australia, 37 from the United States of America, 12 from the United Kingdom, seven from Canada, three from New Zealand and Finland and the rest were made up of individual users from different countries, particularly in Europe and South America.

The largest age group of respondents was in the 46–55 years category (38%). The other age groups were represented in smaller numbers; 25 or under (4%), 26–35 (10%), 36–45 (24%), 56–65 (20%) and over 65 (5%). The 46–55 age group were the ones most likely to have stopped using virtual worlds after initially using them with 7% (15/223) indicating they had used virtual worlds in the past but no longer use them compared to the other age groups; 25 or under (0%), 26–35 (0.5%, 1/223), 36–45 (3%, 7/223), 56–65 (2%, 4/223) and over 65 (0%). Across all age groups the number of users who had previously used virtual worlds but no longer used them was 18% (36/204). Although the largest respondents were from the 46–55 age category, they were also the largest group of users who have discontinued using virtual worlds.

Twelve distinct groups of users emerged according to their past, present and future use of virtual worlds (see Table 1). The majority of respondents (52%, 110/204) were not currently using virtual worlds for teaching and 36% (74/204) had never used virtual worlds for teaching. Of the 74 who had not used virtual worlds 60% (44/74) said they might use virtual worlds in the future, 23% (17/74) said they would be using it in the future and 17% (13/74) indicated that they had no plans to use virtual worlds. The respondents who currently use virtual worlds (94/204) indicated that 84% (79/94) had used them in the past and 90% (85/94) would use them in the future.

Table 1. Past, present and future teaching in virtual worlds

Past	Present	Future	Number of responses	Percentage
No	No	No	13	6%
No	No	Maybe	44	22%
No	No	Yes	17	8%
No	Yes	No	0	0%
No	Yes	Maybe	3	1%
No	Yes	Yes	12	6%
Yes	No	No	4	2%
Yes	No	Maybe	18	9%
Yes	No	Yes	14	7%
Yes	Yes	No	0	0%
Yes	Yes	Maybe	6	3%
Yes	Yes	Yes	73	36%
Total			204	

Of those who had used virtual worlds, 71 (47%) indicated that Second Life was their preferred platform compared with a range of other platforms including; OpenSim (23%), Jibe or other Unity 3D virtual worlds (7%), with 3% indicating Reaction Grid or Kitley. Thirteen percent indicated they used a variety of “in house” or “bespoke” virtual worlds.

Responses to the survey showed a range of experience in using virtual worlds. Four percent of individuals (5/114) indicated that they had been using virtual worlds prior to 2001. Of those who are currently using virtual worlds, 76% (60/79) first used them in the period between 2006 and 2010. Equally significant is that the same period (2006–2010) is the time in which the majority (62%, 22/35) of those who are no longer using virtual worlds first used them. These time frames are indicative of Gartner’s Hype Cycle, which indicated in 2009 that virtual worlds were at their peak and were heading towards the trough of disillusionment.

Why educators are not teaching in virtual worlds

The responses to the question asking for reasons why educators are not teaching in virtual worlds (see Table 2) were clustered into four groups according to those that related to:

- Technological issues (T)
- Potential student difficulties (S)
- Institutional issues (I)
- Personal perceptions (P)

Table 2 illustrates the responses to these questions grouped by those currently using virtual worlds and those who are not. Table 3 unpacks the data by looking solely at the group who are not currently teaching in virtual worlds.

Table 2. Comparison of the reasons for not teaching in virtual worlds between those respondents not currently teaching using virtual worlds and those who are

Question: What are your reasons for not teaching in virtual worlds?			
Cluster	Response numbers	Those currently using virtual worlds (17)	Those not currently using virtual worlds (95)
I	My institution doesn't provide adequate technology to use virtual worlds	30%	44%
I	My institution doesn't provide funding to use virtual worlds	30%	40%
I	My institution doesn't provide teaching support to use virtual worlds	36%	29%
I	My institution doesn't provide technical support to use virtual worlds	54%	37%
P	I don't have the time	6%	29%
P	It's all just too hard	6%	11%
P	I feel uncomfortable in the virtual world environment	0%	7%
P	I don't have the computing skills to use virtual worlds in teaching	6%	17%
P	My colleagues don't think it is a good idea	12%	5%
P	No-one else I know is using them	18%	20%
P	My students gave poor feedback	12%	5%
P	Virtual worlds are just a game and not suitable for use in teaching and learning at a tertiary institution	0%	2%
P	My classes are going very well as they are	6%	4%
P	I've heard they are a poor educational tool	0%	1%
S	My classes are too big	6%	4%
S	I don't want my students exposed to the kind of material you can come across in virtual worlds	18%	2%
T	The virtual world I use is too unreliable	6%	9%

A further breakdown of the respondents focusing on the ones who are not currently using virtual worlds in teaching shows some differences in their reasons. Users who had used virtual worlds in the past but will not use them in the future cited the unreliability of the virtual world as a reason, as did the group who had never used virtual worlds. More significant was the choice of “feeling uncomfortable in the virtual world environment” as those who would not use virtual worlds in the future chose this, yet those who may or those who will, did not choose it at all. Table 3 shows the responses to the question: “What are your reasons for not teaching in virtual worlds?” from the group of respondents who are not currently teaching in virtual worlds. Each of the columns indicates whether the respondents had used virtual worlds in the past and whether they were considering using virtual worlds in the future.

Table 3. Reasons for not teaching in virtual worlds

Question: What are your reasons for not teaching in virtual worlds?							
Have used virtual world in the past	No			Yes			All
Planning to use virtual worlds in the future	No	Maybe	Yes	No	Maybe	Yes	
Response to question	10	40	14	4	16	11	95
My institution doesn't provide adequate technology to use virtual worlds	40%	45%	21%	75%	56%	45%	44%
My institution doesn't provide funding to use virtual worlds	40%	45%	21%	25%	50%	36%	40%
My institution doesn't provide teaching support to use virtual worlds	40%	38%	29%	0%	13%	27%	29%
My institution doesn't provide technical support to use virtual worlds	50%	43%	14%	75%	44%	27%	37%
The virtual world I use is too unreliable	20%	5%	0%	75%	13%	0%	9%
I don't have the time	30%	40%	7%	25%	31%	18%	29%
It's all just too hard	20%	15%	0%	25%	6%	0%	11%
I feel uncomfortable in the virtual world environment	10%	10%	0%	50%	0%	0%	7%
I don't have the computing skills to use virtual worlds in teaching	40%	25%	14%	0%	0%	0%	17%
My colleagues don't think it is a good idea	20%	0%	7%	0%	0%	18%	5%
No-one else I know is using them	50%	27%	7%	0%	6%	9%	20%
My students gave poor feedback	0%	3%	0%	75%	6%	0%	5%
My classes are too big	0%	5%	0%	0%	6%	9%	4%
Virtual worlds are just a game and not suitable for use in teaching and learning at a tertiary institution	0%	0%	0%	50%	0%	0%	2%
I don't want my students exposed to the kind of material you can come across in virtual worlds	0%	0%	7%	0%	6%	0%	2%
My classes are going very well as they are	0%	8%	0%	0%	0%	9%	4%
I've heard they are a poor educational tool	0%	3%	0%	0%	0%	0%	1%

The role of virtual worlds in specific disciplines

The majority (82%) of all respondents stated that they did believe that virtual worlds have a role to play in their particular discipline. All of the current users agreed that virtual worlds have a role to play. The respondents who either felt that they did not have a role to play (4%) or were unsure (14%) were predominantly from the group of respondents who had never used virtual worlds either now or in the past (see Table 4). There was a direct link to the group who had never used virtual worlds but were considering using them, with the largest response to being unsure about whether the virtual world has a role to play in their discipline. This correlation might suggest that the barrier to use of virtual worlds in teaching is not only connected to the institutional support but also to whether the educator has been introduced to the possible benefits in terms of their specific disciplinary context. Table 4 connects the beliefs of educators that virtual worlds have a role to play in their discipline, with the actual use they have had with virtual worlds in their teaching.

Table 4. Comparison of use of virtual worlds in teaching and whether they have a role to play in the respondent's discipline

Use of virtual worlds in their teaching						
Question: Do you believe virtual worlds have a role to play in your discipline?						
Past	Present	Future	Yes	No	Unsure	
No	No	No	30%	30%	40%	
No	No	Maybe	55%	5%	40%	
No	No	Yes	86%	0%	14%	
No	Yes	No	0%	0%	0%	
No	Yes	Maybe	100%	0%	0%	
No	Yes	Yes	92%	8%	0%	
Yes	No	No	0%	25%	75%	
Yes	No	Maybe	88%	0%	12%	
Yes	No	Yes	100%	0%	0%	
Yes	Yes	No	0%	0%	0%	
Yes	Yes	Maybe	100%	0%	0%	

Yes	Yes	Yes	100%	0%	0%
	Combined		82%	4%	14%

Respondents were also asked to rate five learning benefits of 3D immersive virtual worlds. Consistently, the majority of respondents rated the five learning benefits as very important or important (see Table 5). Interestingly, for this research, are the respondents who have never used virtual worlds for teaching. Despite having not used virtual worlds, they still rated the learning benefits as important. The consistency in the responses showing that educators believe that virtual worlds have a role to play in their discipline and that they have specific learning benefits of value to their discipline highlight that there are factors outside of pedagogical potential that influence the use of virtual worlds. Table 5 shows the response rates to the question that asked respondents to rate the importance of five identified learning benefits of virtual worlds for their discipline. The table compares data between three groups; (1) those who have never used virtual worlds, (2) those who have used virtual worlds but are not currently using them, and (3) those who currently use them.

Table 5. Response rates comparison

Question: Rate the importance of the following learning benefits of 3D immersive virtual worlds as they apply to your discipline area.			
Respondents categorised by experience of teaching using virtual worlds			
	Those who have never used virtual worlds	Those who have used virtual worlds in the past but not currently	Those who currently use virtual worlds
Learning Benefit 1 – They can assist learners in developing familiarity with a place and the objects within it			
	62 responses	35 responses	93 responses
Very Important	16%	26%	42%
Important	58%	40%	43%
Neither	13%	14%	13%
Unimportant	6%	11%	1%
Very unimportant	6%	9%	1%
Learning Benefit 2 – They can be motivating and engaging to learners			
	63 responses	35 responses	93 responses
Very Important	37%	46%	62%
Important	54%	43%	33%
Neither	6%	6%	3%
Unimportant	2%	3%	1%
Very unimportant	2%	3%	0%
Learning Benefit 3 – They can lead to improved transfer of learning to real situations			
	61 responses	35 responses	93 responses
Very Important	28%	43%	65%
Important	67%	49%	32%
Neither	3%	3%	3%
Unimportant	2%	3%	0%
Very unimportant	0%	3%	0%
Learning Benefit 4 – They can enable more effective collaborative learning			
	61 responses	34 responses	93 responses
Very Important	30%	44%	56%
Important	54%	32%	34%
Neither	15%	15%	8%
Unimportant	2%	9%	2%
Very unimportant	0%	3%	0%
Learning Benefit 5 – They can allow learners to learn through experience in context			
	61 responses	35 responses	93 responses
Very Important	43%	54%	71%
Important	54%	29%	27%
Neither	2%	11%	2%
Unimportant	2%	3%	0%
Very unimportant	0%	3%	0%

Discussion

These results provide some insight into why virtual worlds have not become a mainstream teaching tool and why some educators that have made use of them feel unable or unwilling to continue using them because of a range of issues across diverse areas including technical support, student attitudes and time pressures. Though virtual worlds were initially welcomed by educators amid great fanfare, this enthusiasm, reflected in the quick rise to the “peak of inflated expectations,” has not been maintained. New technologies can sometimes disappear forever after reaching this peak on the Gartner Hype Cycle (Lowendahl, 2013) and plunging deep into the “trough of disillusionment.” Perhaps the question to be asked in relation to 3D virtual worlds is whether the bottom of the trough has been reached, whether it is at the lowest point or is indeed on the way up to the “slope of enlightenment?” A recent development in education may give some insight: Tapson (2013) discusses the phenomenon of MOOCs (Massive Open Online Courses) in relation to the hype cycle and concluded that the MOOC phenomenon has climbed to the “peak of inflated expectations” very rapidly and will experience a short-lived “trough of disillusionment” before climbing the “slope of enlightenment” in the period between 2017 and 2022, then proceeding tsunami-like to overtake traditional university teaching once reaching the “plateau of productivity.”

With articles such as this one and those cited throughout, looking into the reasons people may not be using virtual worlds, we could soon see this information used to formulate best practice solutions. Most of the respondents discussed here are either using virtual worlds and intend to continue doing so or have never used them but may use them in the future. The data in this article also suggests that educators are not basing their intention to use virtual worlds on hearsay, hype or opinion, but on an understanding that there is sound pedagogy and educational merit in their use. For most, the reason they may not be using virtual worlds was focused around institutional concerns. Whether currently using virtual worlds or not, the respondents agreed that an institution that does not provide funding, technical or teaching support is the greatest barrier to the continued adoption of virtual worlds for teaching, learning and research.

Conclusions and looking to the future

Higher education institutions invest large amounts of funds in training staff to use new teaching platforms such as Learning Management Systems, for example, Moodle or Blackboard. Learning advisors skilled in the use of these technologies are available to assist those wishing to engage with the technology or to further resource their learning. This has not been the case with the adoption and use of virtual worlds. When new buildings or laboratories are built in the “real” world, they are seen as a concrete asset that should be used by successive groups of students, irrespective of which teacher is utilizing them. We suggest that as the assets in the virtual world are not obvious and not subject to space-utilization audits, they can sit vacant or are disposed of when a project finishes, rather than being re-used or re-purposed. It is imperative to have a sustainability plan in place if virtual worlds are to be a viable resource in future education. If one person is the instigator of the initiative and leaves the institution, there needs to be someone in place to take over the virtual world subscriptions and everything that comes with that academic’s work over the years. In order to keep the space and the classes that someone has established, there needs to be more than one person involved. So that each new project does not have to forge the exact same path, there needs to be a community of practice at each institution, even if that only consists of a small but accessible team. This team would preferably involve members that have the experience and ability to access documentation, resources and procedures needed to inform prospective users. With this type of resource in place and a policy to manage funding of virtual spaces, the authors agree that educators are ready to lift virtual worlds out of the Gartner trough and up the slope. Following the Gartner Hype Cycle, this would be an opportune time for the introduction of the third wave of virtual world solutions to help mitigate the barriers while ascending the slope.

Initial funding is often provided for the establishment and uptake of a virtual world for teaching and learning. However, provision is not made for ongoing technical support. This should be provided to update, back up, trouble-shoot and establish a “go to” person or group to curate the virtual space. Students need to be trained in how to use the virtual world for their learning. Academics should be trained in how to teach in a virtual world. This problem can be exacerbated by the increased casualization of the academic workforce and the delay in appointing casual teaching staff (just in time employment) so that it is not possible to educate sessional staff in how to use a 3D virtual world for teaching and learning in the time available. Often, there is no provision for the time it takes to upgrade a virtual world site or the expertise in the academic staff to undertake this, without additional training.

The authors contend that there is a future for teaching and learning in virtual worlds. The evidence outlined supports the notion that those who are teaching in a virtual world perceive these spaces are important for teaching and learning. Individuals and groups worldwide are undertaking research to provide empirical evidence of the value of teaching in a virtual world. Maybe in the light of this emerging evidence and with the issues mitigated by careful planning, resourcing and practical support solutions, the great educational potential of virtual worlds could be realized with them becoming a powerful tool in the arsenal of educators.

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