Chapter XVI
Games-Based Learning in the Classroom and How it can Work!

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ABSTRACT

Based on real-world experiences using a variety of digital games, this chapter presents a guide for teachers on how to use games-based learning in the classroom. Beginning with a theoretical overview of the change in learning styles and the growing digital divide, the impact that games have had on young people will be discussed. The limitations faced and ways to overcome these to create effective pedagogical experiences when using games will follow. The second half of this chapter aims to provide a practical guide for teachers wishing to integrate games into their classrooms, beginning with an overview of the changing role of the teacher, moving onto preparation guidelines, before finally discussing assessment and practical implementations.

INTRODUCTION

Throughout the years there have been significant paradigm shifts in learning practices and recently there has been a move from behaviorist reinforcement to knowledge regarding how the ways in which we think and feel affect our ability to learn. Despite these changes much of mainstream education is still based on behaviorist principles and external rewards, rather than a concern with individual cognitions.

The current trend towards a more constructivist (Vygotsky, 1969) approach, whereby the individual is responsible for his or her own learning, accomplished through individual experience and coaching, combined with the increasing presence of technology in the modern day classroom is resulting in a rift in the level of knowledge and understanding of these technologies between student and teacher. Games are just one example of how this rift has manifested itself.
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Games are intrinsically constructivist; the player or learner has to traverse a world where they are the centre of the learning experience, constantly constructing new knowledge and understanding, in order to progress. Refocusing towards this learner centric experience reduces the need for the traditional pedagogical methodology of the ‘Sage on the Stage’ and ‘Tell and Test’, such as King (1993 pp 30) who describes the teacher as the focus of the classroom, ‘the individual who has the knowledge and transmits that knowledge to the students, who simply memorize the information and later reproduce it on an exam—often without even thinking about it’.

The move towards constructivism and learner centered technology, has resulted in the challenge of bridging this rift and ensuring those who deliver education are comfortable with this approach – and the crux of the matter, they are unlikely to be avid gamers. To many this may sound like ‘Mission Impossible’ but that is far from the truth. What teachers need is advice on how to navigate through this maze to emerge on the other side with an understanding of how games can be used effectively in education.

In recent years there has been a phenomenal increase in interest in games in the classroom. Several papers funded by Government Bodies have been published, mainly concerned with Commercial off the Shelf games (COTS) such as the report by McFarlane and Kirriemuir (2003) on the ‘Use of Computer and Video Games in the Classroom’, together with the Federation of American Scientist report ‘Harnessing the power of video games for learning’ (2005). Both reports concluded that the use of games as teaching tools can have positive results for teachers and students.

Despite this research and the growing body of evidence pointing towards the positive impact of games, there is a still a belief that games have a negative influence on young people. A recent report by the British Board of Film Classification (2007) claimed that they are violent, time consuming, take hours and hours to complete and that they reduce players’ social interaction skills.

However people have learnt from games for thousands of years and from my experience working with schools, students and teachers over the past 5 years with several games-based learning tools, this chapter presents the lessons learned from integrating games into the classroom and school environment, aiming to move towards best practice for current and future design and implementation.

How Times Have Changed

There are many aspects of good pedagogy, such as the impact of motivation, cognitive engagement, overload and attention span that are not given the consideration they deserve in traditional teaching methods of drill and skill and tell and test. For example pupils are required to pay attention and absorb the information presented to them for up to and even exceeding 50 minutes at a time, no matter the content or delivery style. These and other aspects are important factors, which with the proper consideration are beginning to bring about a new and innovative method of learning.

Many educators use methodologies that were used when they were at school; their attitude is ‘it worked for me, it will work for them’. However this methodology may not be appealing to young people, who are used to instant access, and possess the ability for ‘parallel processing’. The result when faced with traditional teaching is that they simply turn off. This is not to say that they have short attention spans - just think of the number of hours they spend trying to solve puzzles and explore new worlds in video games. A recent Entertainment Software Association (ESA) report (2007) estimated that on average, young people spend around 7 hours per week, using games.

An examination of the skills acquired from video games has revealed some interesting results. Today, it seems, young people are very good at multi-tasking and it is claimed that they have a
wider span of attention than ever before (Greenfield, 1994). They live in a rich and engaging world where, to quote Prensky (2001), they have to ‘power down’ when they go to school. Greenfield goes as far as suggesting that digital media have altered our cognitive and social development, and that the skills learnt using video games are much more complicated than simple hand-eye coordination, as previously believed, and include increased problem solving, and pattern identification utilizing trial and error approaches.

Greenfield and others go on to suggest that the way young people process information has changed: they process information in parallel for example they can watch a news presenter, read the news ticker at the top of the screen, and do their homework, or they can text and talk to their friends simultaneously. Interactive technology and multimedia are a commonplace addition to their world. However, this world is not familiar to some educators. In her work Greenfield concluded that there is a new generation with unique cognitive skills; she called them the ‘Games Generation’. Prensky calls them Digital Natives.

**BACKGROUND: WHAT IS GAMES-BASED LEARNING?**

The overall objective of Serious Games covers everything from education and training to raising social awareness, and it acts as a catch-all term for using games technology for non entertainment purposes. However Games-Based Learning is specifically designed to transfer knowledge to the player through interaction with objects, characters or environments. In essence what differentiates Games-Based Learning from the overarching group of Serious Games is that there is a defined learning outcome. ‘They are designed in order to balance the subject matter with the gameplay and the ability of the player to retain and apply said subject matter to the real world.’ (Prensky, 2001).

Part of creating effective teaching tools involves understanding what works and doesn’t work for the learner. We have seen that learners and their preferences have changed, and some of the psychological reasons Games-Based Learning works and appeals to young people are outlined below.

Malone and Lepper (1987) comment that games are intrinsically motivating, that they are enjoyable and stimulate natural curiosity as a game has many levels of interest. This engagement can benefit education but it is important to embed the game within a structured course so as not to lose initial interest and curiosity.

Games include natural goals for players, for example, finish this level, collect 100 gems, or win the race. Goals allow people to plan for experiences and feel good about their achievements. These achievements in turn provide ‘Ego Gratification’ (Gee, 2003), where the individual is rewarded for their accomplishments in the form of new levels or abilities which in turn reveal new opportunities.

Games-based learning incorporates ‘Stealth Learning’, whereby the individual is learning unwittingly through their play and motivation to continue playing is found through gaining rewards as explained above (Gee, 2003). Players learn about the games’ tactics and strategies through experimentation and trial and error with the game world. Imagine what could be achieved if this trial and error was related to Physics or a Language: pupils would be motivated to keep trying different permutations to progress onto the next level of the game, gradually building up a picture of the subject matter through their own experimentation. In order to learn we must be aware of what we did wrong and what we did right. The need for reflection is vital for any form of learning or improvement in any walk of life. Games arouse natural reflection in their users, the individual needs to understand what works and what doesn’t in order to progress through the game.
Traditionally in school the class needs to move at the pace of the slowest learner. However games support individualized learning and generally allow each player to learn at their own pace. Some innovative games have the capacity to adapt to the ability of an individual, providing a smooth learning curve to keep players in the state of flow. Csikszentmihalyi (1990) defined flow as ‘the mental state of operation in which the person is fully immersed in what he or she is doing, characterized by a feeling of energized focus and full involvement’. Flow is more commonly referred to in the sporting world for example as being ‘In The Zone’. Games also provide feedback and interaction via audio, visual and sometimes tactile means and therefore they can appeal to different learning styles.

**Different Types of Games**

Not all games are the same; they vary immensely as do books, films and teaching styles. Games have genres, narrative, delivery styles, and game play mechanics unique to the context of the game. Games can be very effective learning tools, although it is not safe to make the assumption that all games teach. Most commercial games are designed for purely entertainment reasons and there are many types of game genre from strategy, turn based and real time to action and adventure games. The game mechanics and game play are often different in each of these genres and each tends to have a distinctive style. Due to the variety of games available it is important to understand the differences, at least at a high level. There is a certain level of cross over between genres and these categories should not be regarded as black and white, however I have aimed to distinguish, at a high level, how they differ.

Wolf (2001, pp. 116-117) lists 42 distinct genres of games in his adapted taxonomy of genre. Apperley, (2006, pp. 3) lists simulation, strategy, action, and role-playing as amongst the more popular video game genres. For simplicity, these are the ones we will look into further. Strategy games are games where some level of strategy is required to complete the game. Civilization, Command and Conquer and Theme Park are all examples of strategy games. It should be noted that strategy, to a certain extent is required in almost all games but this genre focuses on the art of strategy, without a strategic approach you will not ‘win’ the game.

There are also Simulations which are realistic representations of activities such as flying an aircraft or driving a car. Action and Adventure games generally consist of ‘twitch speed’ controls, relying on reflexes, such as shoot-em and beat-em ups, but Role Play and Interactive Movies are also included in this genre. It has been found that surgeons who play games that incorporate twitch speed reactions are 37% more accurate than surgeons who don’t play (Rosser, 2004). Finally there are abstract games, which consist of puzzles and problem solving such as Tetris.

McFarlane and Kirriemuir (2003) claimed that the games that are most suitable for use in the classroom generally fit into the role play, strategy, simulation and puzzle genres. These genres lend themselves to experiential learning and problem solving in a particular context and are relatively gender agnostic. Whist Commercial off the Shelf games (COTS) produced by the games industry for entertainment purposes are also popular tools within schools, structure, skill and effort is needed to ground the game in an educational context otherwise the effectiveness may be reduced.

**Why have Games not been Widely Adopted?**

There are two main reasons for the lack of uptake of computer games in learning, the limitations of the applications and the limitations of the environment; namely cost and infrastructure. It is important to consider these aspects to maximize the effectiveness of any application.
Limitations of Current Applications

The caveat mentioned in the introduction to this section, may seem flippant but is vitally important. There are many games-based learning applications produced every year but they vary in quality. Many lack the understanding of how the game will actually be used and who will be using it.

The reality is that many educational games are not fun. When considering games for your classroom think carefully about how much fun the students will think the game is. If it isn’t fun, it won’t engage them and may be a waste of your very tight budget. It may be worth asking for a trial of the software from a developer, especially if it is a new product. If it is well established, there should be a wealth of evidence available for you to check out. Take a similar approach as you would to buying a car for example; look at what other consumers have said about it and what they think.

The balance of content and engagement in games is often lacking; the physical and emotional release we get when we achieve something, especially when we are under the simulated pressure of saving a person’s life, for example, is extremely rewarding. However some applications have relied too heavily on subject matter, in other words they felt too much like work. There is a general misconception that for learning to be effective it needs to be serious, formal and rigid. However for games-based learning to work it should follow the principles of free exploration, experimentation, and is to a certain extent informal. Not everything that games are applied to are fun subjects, such as surgery, emergency response and disaster control but ‘fun’ can come in the form of engagement or satisfaction as a result of achieving a goal. Quinn (2005) refers to this as ‘Hard Fun’ (p. 11).

Related to the lack of fun, is the lack of ‘out of the box thinking’ by some designers. Too many applications rely on text surrounded by colorful graphics and little animation, what is sometimes called ‘the dancing bananas’ effect. Incorporating text into a virtual world with avatars does not make for an engaging experience for the user. Many applications also rely on ‘Click to Turn’ the page methodology, as this is an easy way of adding content but in reality is no different from e-learning, merely displaying content in a digital format. The best games-based applications intertwine the subject matter with the game play, so you learn through interacting with the game.

Finally, this brings me on to the importance of emotion which is so often forgotten in this field. It is an integral aspect to an effective learning environment. Emotion can be achieved in games as it can be in film, and many games stimulate some level of emotion in the player, whether it be frustration, fear, excitement or relief, each of which we might find ‘enjoyable’ to varying degrees. When a subject is emotionally linked to an experience, it acts just like a marker or flag and establishes a privileged place in memory (LaBar and Cabeza, 2006), thereby making it easier to access in future situations. This emotion can then be linked to other memories and learning experiences and therefore builds a network of knowledge and improves the accessibility of the memory. Finally and most surprisingly, is that the learning framework is commonly forgotten and people believe the game is all that is required. There is the illusion that if you ‘use this game, learning will be fun and kids will learn more!’ But this is just not the case; just like any other tool it requires effort to fit games into the learning environment.

Limitations of the Environment

The classroom is not considered a natural gaming environment and many people still have a negative view of games. On the other hand a report by Entertainment Software Association (2007) found that the majority of pupils spend a lot of their free time playing games, suggesting young people enjoy using and interacting with games. Misconceptions about games, confusion over to
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how to use them as teaching tools and limited access to PCs may, in part, be responsible for the lack of games in the classroom.

This misconception was perfectly highlighted, for me, by one teacher who suspected that a game was encouraging bullying. The accusation had been sparked after a little girl ran from the classroom in tears. The teacher immediately blamed the game, thinking it was providing a conduit for bullying and closed it down. What the bullies didn’t know was that everything was recorded; there was a log of the evidence. The log revealed that, this case of bullying had been continuing for some time, but the game acted as a mechanism to bring it to light. The logs were shown to the students, the Principal, and the parents and therefore this case was tackled. The invisible had become visible.

Within the 50 minute time-frame of a class, teachers need to get students’ attention and impart a certain level of knowledge and confirm their comprehension, and therefore are incredibly pressured for time. Some applications take a phenomenal amount of time before you learn anything; in a class of 40-50 minutes, for example, you have to set up and load the game, students need to get to know the controls and do their first mission. This may leave no time for reflection and for understanding the achievements and gaps.

There can also be problems with the peripherals required for the games themselves. These sometimes require specialized equipment which may be priced out of a teacher’s budget. Also some games require very high spec machines, something that some schools just don’t have.

It is clear that the environment in which we hope games-based learning will be used can be far from ideal. There is a problem with time, attitude, as well as an enormous amount of pressure and a lack of materials for teachers to use. However all is not lost and the following section begins to break down what is required for integrating games into the classroom effectively.

INTEGRATING GAMES INTO THE CLASSROOM

Teaching with games is not about sitting students down in front of a pc and then forgetting about them until the bell rings. I have seen this happen on numerous occasions where teachers have left the kids and chatted at the front of the class thinking the game is a magic bullet for their subject.

Games are highly interactive. They involve the individual player, the team, the guild, the NPC’s (Non Player Characters) etc. Games used for educational purposes include the learner, the teacher and sometimes even the parent.

Games rely heavily on free exploration which is a move away from traditional methodologies. Through the changing landscape of education, the teacher’s role in the classroom has altered and it is common for teachers to misunderstand the use of games as a replacement for their role. I have often heard teachers say ‘this game teaches my subject and therefore you don’t need me’. In fact the opposite is true. Teachers are integral to the learning process. Gone are the days when the teacher stands at the front of the class and dictates. Utilizing constructivist techniques such as experimentation, games allow students to discuss and demonstrate actions and reactions; this is part of inductive discovery, learning through practice and learning through experience.

Games can allow the teacher a level of interaction, some only dream of. Second Life, for example, a Multi-User Virtual Environment, developed by Linden Labs is being used by many universities and institutions for virtual campuses where teachers and students interact online (Cohen, 2006).

From my personal experience, when one teacher used a multiplayer game with disengaged young people with learning and behavioral difficulties, the results amazed both the teacher and the students. The students asked him to participate in the game as one of the team; he agreed reluctantly, not wanting to make a fool
of himself in front of his students, but ended up enjoying himself. This showed the students a side to the teacher they hadn’t seen before. They saw him as a human being not just the teacher. The students ended up leading the teacher through the game and this shared experience improved the rapport between the teacher and students fostering more open communication, trust and a better working relationship, something which had been very difficult before, much to the surprise of all participants.

When the game is complete, a further window of interaction occurs; students will want to talk about their achievements, their battles, their mis-

sions, what they did right and where they went wrong, and crucially what they will change next time, in order to become more successful. In the context of games-based learning, they are learning about the strategies they need to complete the game and consequently the subject matter. This is reflection and is explored in more detail below.

**Be One with the Game**

A game is a tool like any other. Some look at games, and immediately panic, thinking ‘how am I supposed to use this in my classroom?’ However all tools require familiarity and games are no different. They are tools to be used alongside other methods.

To use games in the classroom the teacher must be familiar with the game at the very least. At the very most they should be an expert on all the rules, levels, characters etc, in order to guide students through the experience. Some believe it is too much to ask to be an expert in game as well as their subject area, but it’s similar to knowing the location of information in a textbook for example and it comes with practice.

With a cleverly designed application becoming familiar with the game should not be too much of a burden as you should hopefully play the game yourself to plan lessons, and the interface and game play should be clear and understandable. Some applications come combined with lesson plans to aid the smooth transition into the classroom. Any developer of games-based learning should provide guidance on how to use their games and as a teacher you should expect this to be packaged with the software.

Teacher training is vital as you must feel confident that you know what to do and say if asked a question. Often I hear feedback from teachers relating to the fact that they don’t know everything about the game, the kids know more than they do…the tables have turned in a way. So a good training course can help to allay this fear. Don’t look at the game and think, I don’t understand this, so they won’t. As you know kids play games and you may not, but they will understand the game, and most likely dive right in. As referenced earlier from the ESA (2007) report young people spend up to 7 hours a week playing games and therefore are willing to experiment and are reasonably familiar with the gaming environment from playing at home.

Using games in the classroom will change the way you work. Games are not a replacement for teachers but they should enhance the teaching experience. Students require the skills of the teacher to guide and draw out the learning as you would if your students went on a field trip for example.

Don’t be afraid to pick up the game and play it yourself. You won’t break it and no one will be there to see if you make mistakes, in fact it’s a great way to pick up and understand the principles behind the game.

The game is a tool, and may come supplied with a learning framework. However games can be used for many things, and are only limited by your imagination. By playing the game you will be able to tailor the experience to your students by understanding the subtle nuances as well as seeing the learning outcomes in practice. You will be able to devise strategies and plans that you can use to assess your students, and by pulling this information together it will help to
create lesson plans. Also think about what other teaching techniques, such as class discussion or creative writing, can be applied and which ones will complement the game play.

**Preparation, Practice, and Realization**

**Briefing**

It is important to set the right expectations about the experience, the format it will take, and the process you are planning to implement. The students need to be in the right frame of mind, that is, they need to understand this is a learning activity and they need to use the game for more than fun. You don’t need to ‘suck the fun out’ but students should be informed of what is expected of them and the types of activities that will follow. Students should be aware the game is for learning and that they should be prepared to do some work!

After one gaming session, focused around communication skills, a class who, after playing through a game, and thoroughly enjoying themselves, were told to take out a pen to complete a worksheet, something with which they should be familiar, however, surprisingly, they all groaned as they weren’t expecting to do any work! They had interpreted the introduction of a game as a frivolous activity something akin to activities that occur towards the end of the semester.

**Activity**

Now, the fun part; it’s time to let the students play the game.

Students will take to the game like ducks to water; they will jump right in and click everything; they have no fear, and understand the need to experiment. Often I have seen students do this, play and then fail; however what is so often the case is that they ask to play again.

This was highlighted during a competition I ran with local High Schools. One boy had taken control of his team and wasn’t listening to their suggestions. After the first round his team was last. This was a total shock to the boy as he had genuinely believed his ideas were the best! After a quick time out, he sat back during the next round and more discussion took place. It turned out that he didn’t understand the game but wanted to take control, but once he listened to his team-mates, they managed to claw their way back to the league table to finish in a comfortable 3rd place.

Time and time again students playing games are motivated to improve their score, to work better as a team, to communicate more, and to plan. We do not see this very often in traditional pedagogical methodologies in schools today.

During a session with a group from an average high school, using a multiplayer game focused on problem solving, I was surprised to witness 86% of students, who, after about 10 minutes in game, when asked what they could do to improve on their score, were able to come up with an effective strategy. They had recognized their weaknesses and wanted to put them right. The interesting thing was that they were keen to discuss their weaknesses, review their peer’s performance and write down a new strategy and try it out.

This was Stealth Learning in practice; they were learning about the game and learning outcomes through experimentation and peer interaction. A well designed game will inspire students to keep playing; beat their score, or beat their friend.

**Debriefing**

Reflective learning is just as important a step in using games as teaching tools. Although games are important for the experience, learning will also happen away from the PC and it is essential to encourage students to think about the activity after the game has finished. You can encourage reflective learning using techniques such as class discussion or written evaluation.
Add in time for reflection throughout the lesson. You should be able to pause or save the game so you can discuss what is happening. As seen above, peer debriefing is also a great tool. Young people love to talk and share their experiences, their points, or whatever the game rewards them with.

The reflection and debrief often lead to what I like to call the ‘Aha’ moment, where the student links their activity in the game back to the real world and transference is achieved. The student can then go back into the game and apply their newly constructed knowledge, and the learning cycle begins again.

ASSESSMENT USING GAMES

Beyond the benefits of reflection is the need for more formal assessment. Some games have the benefit of recording certain pieces of information and these are referred to as Game Logs. These can prove invaluable as ready to use pieces of evidence of learning. However games can’t do all the assessment, there is still the need for some level of manual work. Observation of in-game behavior as well as creating assignments for students to do out with the game can be engaging and interesting. As logs differ from game to game, the focus of the following section is around creating a structure for using games in the classroom.

Lesson Structure

Think of the game as a context for learning. The learning outcomes set by the teacher do not have to meet the goal, challenge, or mission set by the game and you can adapt the lesson, focusing on any aspect of the game you choose for example, Civilization has been used to teach History (Squire, 2003). Nintendogs, currently being piloted in Scotland can be used to teach social responsibility. However, you will need to be aware of the games’ rules and variables for each mission, challenge or task. An example of this using COTS games would be to use The Sims to examine interpersonal relationships or to use Championship Manager, a soccer management game, for accounting. A game designed as a learning tool should come with these learning outcomes outlined, if it does not you can gather this information by playing the scenarios. Pick a scenario that is relevant to what you want to teach, taking into account the difficulty level of the problem or challenge. It is best to test the experience yourself to get an idea of the time it will take coupled with other activities as part of the lesson. Think about the end state. What can students achieve in the allotted time and will they complete the scenario? This is important as, if students do not complete the scenario, will they gain all the knowledge from the experience? You should note when crucial learning moments occur within the game to aid in planning the session.

Framework

Use the structure below to help create well thought-out plans for using games-based learning:

- Name, learning outcomes and aims of the scenario – this will help to maintain the focus of the session and understand the goal for the game and the lesson
- Rules, Variables and Interactions are also useful to note
- What are the strategies that players can adopt to complete the scenario? Are there multiple strategies and where can they implemented?
- What actions will the students have to perform in order to accomplish the goal and how does this link to the learning outcomes?
- What are the links to other activities and areas of the curriculum? What other tools can be used to complement the game play?
- What constitutes success in the game? What are the assessment criteria?
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I have mentioned incorporating other tools alongside the game and an example could be to create somewhere for the class to log their game data which could become a shared record, perhaps a spreadsheet with sharing enabled, to which they all have access and can track their scores.

A recent pilot I was involved with introduced pod casting and blogging as part of an overall games-based learning centered course. The course aimed to introduce games-based learning into everyday workings of the school and closely tie the results to the curriculum. The kids recorded their experiences with the games, their successes, and failures and what they hoped to improve on next time to get a better score. This enabled the students to express themselves in yet another dimension. The information captured enabled the students to create a more formal report, which focused on what they had learned, which was presented back to the teacher. The students I must add were disengaged; they were in a group known as ‘Support for Learning’ made up of those with learning difficulties and behavioral problems. Not usually known for enjoying their work or their time in school, so what’s more encouraging is that they relished the chance to use new technologies in school. The course allowed them to experience a level of ownership over the records and ultimately the final piece of work.

If blogging and pod casting send shivers down your spine, how about PowerPoint or Word, tools that you are probably familiar with, can be used in some of the ways as described above to produce evidence of learning. As mentioned, some games actually produce logs of the play activity, and this information can be very useful as a report on their progress.

Other examples could include creative writing, or getting students to design a game to highlight an important era in history, for example about life in ancient Rome, where they will have to research the topic to uncover the facts and weave them into an engaging and educational experience. Students will probably find this more interesting and creative than writing an essay for example.

Assessments can also benefit from writing structures, such as, “during the first level I did…” and “a more effective strategy would be…” to help solidify the activities in the students’ minds.

Peer review is another valuable tool and something which young people are likely to be familiar with. Games have large communities around them; young people are used to discussing progress, tactics and strategies, and therefore should enjoy the opportunity to discuss this in the classroom.

HOW TO CHOOSE A GOOD GAMES-BASED LEARNING APPLICATION

Now that you have gleaned all this knowledge about games-based learning and how great it can be, it’s time to understand what makes a good application so you can make a more informed choice.

A good application will allow the player a level of self-exploration, as that is what it’s all about. If you can’t immediately see the educational content, don’t worry, it may be delivered more subtly than in traditional educational methodologies.

Many applications also forget that teachers are under pressure to deliver knowledge in very limited periods. A good design will allow for the game to fit easily into class time. Vital supporting material is often missing from products. Many designers make the mistake of thinking the game is all the teacher needs. Lesson plans, instructions, even a walk through are often needed to ensure a teacher can get to grips with the game quickly. Teachers will also need some sort of assessment framework, either built into the game or provided as part of the surround supporting materials.

Look for something that comes with training or that is easy to use, but not to the detriment of the audience. Games-based learning applications sometimes miss out the most important element of all in their design, namely the teacher and the
teacher’s ability to use the game and facilitate their classes. After all if you, the teacher cannot use the software, or need to spend hours trying to understand it, you are less likely to adopt it into your teaching regime.

Facilitation of the game is extremely important. This ensures that exploration and experimentation is not endless and actually leads somewhere. This could take the form of an extra character in the game, access to the saved files of the students, recorded scores, or in the form of a surround accompanying the game such as lesson plans.

Pick something that will appeal to your pupils. They will probably have a different taste to you, something you think looks fun, might not appeal to them. Don’t always go for the most educational looking, as this may in fact be quite uninspiring. Think about what your audience will find appealing in the game and you could even have session thinking about what they like and why.

Use these simple guidelines to help choose an application and your job should be a lot easier.

**IMPLICATIONS AND FUTURE RESEARCH**

This chapter began life as a practical guide for the implementation of games in the classroom. There are, therefore several levels of implications to which I would like to draw attention. Firstly we will start with the learners. Incorporating games-based learning into students’ educational career can lead to higher levels of engagement with school as well as with subject matter. This has been reported in many papers such as the Federation of American Scientists (2005) report and I personally have seen this engagement first hand. This is a real result of using games as teaching tools seen time and time again from my experience. This increased engagement in turn, will likely lead to many positive outcomes such as higher attainment levels in school and more interest in lifelong learning. This implication is resonant for teachers also, as they will begin to see more engaged students. However we must remember that facilitation is the key to using games-based learning effectively and that the role of the teacher is moving more towards a guide or coach and therefore a shift in teacher training methodologies would be beneficial moving forward.

The benefits that games can bring will only be realized with well thought out design and support material and therefore designers must continually familiarize themselves with educational theory and work more closely with teachers, students and educationalists, thereby making the integration of games into schools smoother. One critical barrier to games being used effectively is the lack of out of the box thinking on behalf of designers. In a world where young people go home and play their Xbox or PlayStation we must ensure the games being designed for the classroom move beyond multiple choice tests with game play tagged on, or reams of text in a virtual world. Games must be engaging so that young people actually want to play them. However these aspirations must be realized in the limitations of the classroom environment and the technology available.

Continued research is required with different user groups and subject areas to investigate the sustained impact these tools have both on the learner, teacher and society as a whole. Further research can also benefit the design of future applications where the need to engage, is pitted against the limitations of the classroom environment.

**CONCLUSION**

Video games can have a very positive impact upon young people, and if we could harness these benefits and apply them effectively to education, imagine what could be achieved: curious learners, critically analysing actions and reactions, expanding their existing cognitive structures, formalizing their own conclusions, comfortable in a familiar environment. Pupils who want to
spend time learning new skills and applying them just to see what happens.

Integrating games into the classroom won’t happen overnight, as there are significant changes to the infrastructure which must take place to produce a more flexible learning environment for our young people. However as we have discussed there are certain things that can be done today and the lessons learned about Games Based Learning within this chapter should help progress the use of games in the classroom.

Games are meant to be enjoyable, that’s why people play them, and that’s why they are so successful. Don’t view the fact that your students are having fun while at school as a bad thing; you will have more motivated students and it is likely that their knowledge will be more heavily grounded as a result of the enjoyment they receive for their achievements.

Actual implementation of games in the classroom should follow the recommended cycle outlined in this chapter and only when each of the steps is used effectively will the true power of games-based learning be accomplished. Remember to set the scene for the students, as providing them with a context of the activity is absolutely essential. The debrief and reflection is arguably the most important aspect of the cycle, this is where the learning is drawn out and grounded. Also encourage students to continually debrief about the experience as this is the key to improvement.

An important lesson to remember is that it’s not all about the game; it does not and should not replace the teacher. A structured learning environment is still required where the teacher guides the student through the experience. Integrating other tools alongside the game is also recommended. Also be creative in how you apply them. Therefore, in order to realize the use of games as teaching tools it is important to do the preparation, including familiarizing yourself with the game, rules and characters, as well as becoming familiar with this new form of learning.

Games can and are being integrated into classrooms. It is happening little by little throughout many schools in many countries. To facilitate this process we will need to continually share the lessons learned, as has been done in this chapter, and encourage the use of people’s imaginations on how to use these engaging and motivating tools for the benefit of each new generation.

Mission Impossible Accomplished!

REFERENCES


