# COMPUTER-BASED INTERACTIVE GAMES AS LEARNING AIDS

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## ABSTRACT

Children like games, whether in traditional formats or computer-based. Because of their intrinsic entertainment value, games constitute an effective tool for educators to engage students. Basically any game can be adapted to help teachers in what they are doing in the classroom. They do not just reinforce social skills but enable students to learn how to focus, put together strategies, and solve problems. As learning aids, games can play an important role to develop critical thinking skills in children. The integration of learning with games makes any subject more enjoyable and also motivates students to learn. This results in students becoming immersed in the learning material. This paper shows different applications which are available to help English teachers introduce games into their teaching methodology with a focus on content application. Teachers are provided guidelines to build an interactive game for teaching English; the requirements are to build an effective game to support teaching a lesson. The paper covers when to use games as a supporting learning aid and how teachers can edit and manipulate available games to support classroom instruction. The focus demonstrates how students learn the language in an attractive and fun way using the curriculum guideline and benchmarks provided by the Curriculum Development Department of the Ministry of Education Malaysia. This paper also acts as a plea for national school teachers to be supported and encouraged in the use of the Internet as educational tools to improve their creative skills in teaching.

## Introduction

The Internet is a vast library with information and tools to support and make education exciting in the classroom. Rapid developments in technology facilitate the application of new 'e-tools', from instructional to collaborative teaching and learning. The Internet provides students and teachers with information, images, software applications, and a multitude of other e-resources at their finger tips. Students and teachers can communicate with people around the world, exchanging and sharing information. Online collaboration between teachers around the world has not only become possible, it is an accepted modus operandi for many activities in the school. There is great potential for research and to apply Internet utilization in our national schools.

Just taking one such tool or resource, online libraries, show the immense scope of Internet's potential in education; teachers searching for information or journal articles will find a wealth of sources that are free and much more if they have access to paid sites such as Ebsco.

Any proposal or discussion on the use of Internet based resources would come against concerns over the digital divide, the divide between those who have access to and are literate in the use of the Internet and the still vast numbers who do not have access or are not educated in its use. Government plans in Malaysia to introduce IT into schools have seen a significant increase in the use of computers and the Internet in schools, but whether this has been satisfactorily applied to bridge the divide is still not certain. To bridge the huge and growing divide between non computer literate and computer literate learners, teachers should at least start to educate all students effectively with available teaching strategies using the technology that is available. Teachers should feel comfortable teaching students with the aid of the technology and the tools that are available. Student's natural curiosity should be encouraged and developed to better understand the technology they can harness to help in study and research. Integrating technology into their learning will allow students to push beyond their existing limits and help prepare them for their future (Prensky, 2007).

Once literate in the ways of the Internet, students will be able to access a huge amount of information to explore, whereas traditional methods allow only limited discovery channels, e.g., hard copy literature. Research has found that students spend more time on computers searching for information after school.

Given the high level of usage of IT in schools and government strategies to support this usage, it is not premature to discuss ways of using interactive e-games as a learning tool in the classroom. Games should be one of the approaches for helping teachers to integrate technology in their lesson plan and activities.

There are wide interpretations of what constitutes a game. The popular definition as contributed by users on Wikipedia captures the characteristics of games that contribute to education. After noting the key components of games are goals, rules, challenge, and interaction, the online encyclopedia adds that games generally involve both mental and physical stimulation, and help develop practical skills, serve as a form of exercise, or otherwise perform an educational, simulational or psychological role.

Asgari and Kaufman (2006) add another component to games that make it appealing to learners. They suggest games require individuals to solve a mystery that is encapsulated within the game. Anything mysterious stimulates curiosity, and if

included in a game, students will be compelled on their own volition to further explore the contents in order to solve the mystery.

These characteristics are found in games whether in traditional formats or in electronic form. In fact games such as Scrabble and Monopoly have electronic versions that were developed to cater to the increasing numbers of people who are computer users. Many games are also available on the Internet.

Another example of the success of games is real live simulation games in which participants are able to learn valuable lessons. Learning becomes more exciting as teachers engage students in real-time online communication with other educationalists and learners in different parts of the world. They are able to have a meaningful discussion on the lessons and content being taught. As Klaila (2001, p.1) says, "It's the experience of working through the issues that remains with learners, so they're better equipped to handle real-life situations."

Students' engagement with games and technology applications is well known, and as Erk (2006) has demonstrated, it is because students view games as a fascinating medium that allows them more interaction with their teachers. Contrarily, some teachers feel this is hard to accept. The author feels that teachers should not take this as a menace but should manipulate this situation to their benefit. They should take this opportunity to develop creative and critical thinking skills among students. Through e-learning, teachers can achieve this and at the same time maintain the perimeter of understanding the objectives of learning. Furthermore providing students with the opportunity to be partners in developing games shows those teachers are taking wise steps and will be better respected for their actions. Students look at this learning as an opportunity for them to continue growing in their learning and are more motivated to archive a desired result.

Tim Rylands of Chew Magna primary school near Bristol in England used this method of creative use of technology with his students to great success (Twist, 2005). He motivated creative writing and descriptive writing in his students though the use of the Myst, Riven and Exile series of games. His approach was validated when he was cited by the British Educational Communications and Technology Agency (BECTA) for his achievement (Prensky, 2007).

## Using Interactive Games in the Classroom

A good place to examine the use of interactive games in the classroom is to consider its application in the teaching of English at Level 1 (Primary 1, Primary 2 and Primary 3) under the national curriculum.

The Curriculum Development Department of the Ministry of Education Malaysia has stipulated that the learning context should be in a manageable form for teaching to meet the English Language objectives for Level 1, which is as follows:

1) Listening
2) Speaking
3) Reading
4) Writing

The above objectives should be presented in a friendly manner that allows Level 1 students to find learning fun and exciting in the classroom. Since the Ministry of Education has provided adequate time for English lessons, the use of interactive games as a learning aid comes at the right time for Level 1 children.

Teaching English through games need not be complicated; simple-structured instruction based activities would suffice but these activities must be meaningful and involve enough for the students to be able to create strong association to the subject being taught. An interesting and repetitive activity but with new content can get the meaning of words across to children, thus they will be more likely to remember the lesson and will be happily using the new words learned, thus achieving the objective. An example that the author would suggest is using a simple word guessing game, enhanced with colourful pictures or drawings.

Planning and developing English lessons using interactive games require teachers to focus the centre of learning solely on the students' learning ability. Lesson content needs to be adjusted to capture the different learning needs of the students ranging from beginner to advanced learner within the classroom. With the national curriculum for Level 1 supporting student centered learning, interactive games also meet the requirement of providing students with the critical learning skills which teachers are required to do.

Ideally the underlying requirement of the key components needed to assure the success of the implementation of interactive games depends on the steps taken to use a game that matches with the content of the syllabus. This includes teachers acting as facilitators to guide and maximize the student learning experience through game learning in the classroom (Klaila, 2001). Therefore, teachers need to plan the steps to be taken at the beginning of the learning by structuring aims and objectives. This should be followed by students being given sufficient time to play the games. At the end of the class, the students should be led to discuss and reflect on what they have learnt from the games.

This method was used in some earlier games projects created using Adobe Director's Shockwave application by this author's students (ages ranging between 15 to 18 years old, Grade 9 to 12, in American School). The students demonstrated their game design through a thoughtful design process, problem solving skills and creativity. The games were then tested and presented to Grade 6 social studies students for feedback. The games have been analyzed from the point of learner-centeredness and critical learning skills. A presentation was shown on how to create a self-made PowerPoint game, self-made Flash game and readily-available internet games, all which have been identified to capture the dynamic of the emergent relationship between learning and teaching. Although the games chosen were to be an innovative learning tool, Malaysian teachers need to understand the context in which the tool is used. However the games have not been tested in the actual classroom setting in the Malaysian National Schools.

## Guidelines in Building an Interactive Game for Teaching English

Teachers have a choice of selecting existing games from the Internet or other electronic sources, modifying such games for their specific needs or creating a game all on their own. The advantage of the developing a new game is that the game can be made to respond more precisely to the teachers' needs. To build an effective and attractive interactive game requires teachers to have knowledge of game design or the basic skills in creating game activities in an electronic format. But thus said, teachers need not fret over the technical aspect too much. What is important is the content – the message imparted is worth more than the teacher's technical prowess. Gee (2003) says that games act as a catalyst for discussion on various topics. Therefore teachers need to understand when, with whom, and in what conditions games should be integrated into their lessons to maximize the students' learning potential (Erk, 2006).

Before modifying an existing game or creating one from scratch it is best to identify the target audience, though many researchers' feel it is best to test games with Level 1 primary students as this group of learners can absorb new knowledge faster than their peers at high school level. Also, primary level students are not afraid to adapt to learning new information or new ideas. Therefore teachers should find computer resources and tools not just a set of technological skills but a methodology of learning that will attract interest from these groups of students (Loveless, 1995). Selecting an exercise or content to be converted into games as a learning activity is important for teachers to gain maximum benefit.

Teachers should identify the subject content that will be taught ahead of time. Even though they have selected the right games to be modified to serve the class needs, teachers must assure the interactive games and the content are parallel to

the curriculum. Prensky (2007) says that no matter what the changes of future technology are, good teachers should be able to help and add value to the learning of the content.

The author would like to suggest that teachers first identify the software application that they will be using to present the game lesson and to work to the application's advantage. For the early stage, the author would like to point out that common software such as PowerPoint is a good starting application. There are thousands of great PowerPoint games that are copyright free that may be found in the following sites –

- http://jc-schools.net/tutorials/PPT-games/
- http://www.murray.k12.ga.us/teacher/kara%20leonard/Mini%20T's/ Games/HomemadeGames.htm

Teachers need not limit themselves to just PowerPoint in creating the games. There are numerous game making tools out there on the Internet for teachers to download and use. Just google around, and applications such as GameMaker, Scratch, ToonTalk and JClic will surface. Teachers can find numerous forums and sites documenting the use of these applications, and chances are, there will also be free games downloads teachers can use. However, if teachers have knowledge of Flash or other authoring software, then it is highly recommended that they create their own games using such applications. Teachers can develop these technological skills by asking experienced colleagues, IT personnel or by attending short training programmes. It will enhance their skills to experience the learning themselves as well as the ability to engage in self-directed teaching to the students (Rea, Hoger & Rooney, 1999)

Teachers may also have an ice breaking session by providing familiar games to the students such as *www.clubpenguin.com* or *www.disney.com* which covers all activities, reading and games for young students with guidelines for the community and parents. As these games are familiar to most students, they will be more attracted when they are used as a teaching tool.

In developing games teachers should try to make them as attractive to students as possible, adding pictures and sounds. Pictures and images attract students to the monitor screen. Therefore it is ideal for teachers to change the images or pictures on the template to meet class needs. Teachers need to identify the pictures added to the games activities based on the content they are presenting. Identify the needs of the context of lesson, objectives and aims for this game. Teachers are advised to use available clip art from popular software such as Microsoft Word or other available copyright-free images from the Internet if they do not create their own pictures. The Internet contains vast amounts of pictures that may be used without copyright

infringement and using them would save time and effort in creating original pictures. However, teachers should also be aware of the attraction that familiar pictures have to children. If teachers would like to go beyond these images and add a little imagination, a creative way to obtain images is by using hand phones or digital cameras to capture some of the activities as a reflection when doing the interactive game.

Games will not be fun without adding in sound or sound effects. Add in sound effects and catchy phrases which encourage students to try again if they fail in early attempts as it also encourages self-evaluation. Besides, it will be a good reflection for class discussion on what they have learned and how they can use it in real situations. However, sound with high levels of background music can distract other students unless headphones are used (McFarlene et. al., 2002). This will help control the noise from all workstations which students will be using thus helping students to focus entirely on the task content.

## When to Use Games as a Supporting Learning Aid

In teaching English, games should be used to enhance the delivery of lessons. They can be used as aids in practicing, delivering, and assessing words meanings and structures. Thus, selection of games is essential. The right kind of game can spur students' interest, thus motivating them to develop their listening, speaking and reading skills more.

A literature review of interactive game based learning agreed that if educators would like students to develop problem solving skills, the students should be allowed to build their games from scratch (Eck, 2006). This is more apparent in the learning of languages. Teachers could facilitate the process and students take the approach to be the designers which will result in students learning the content simultaneously. This implementation could be best applied during introduction to a new lesson as interactive games could address equally educational and entertainment content, thus providing greater potential for students to achieve a greater understanding of the lesson taught.

Interactive games could also be used when the teachers are away from their classroom for emergency purposes, meetings and other administrative duties. It is not necessary to create new games but use existing copyright free games which can be downloaded from the Internet. They can forward these downloadable games to the class as a substitute to support the delivery of the lesson as well as assessing the learning of students.

In addition, teachers could use these downloadable copyrighted free games as a starting point and link to specific teaching points they want to address in the classroom

(McFarlene et al., 2002). This approach is known as integrating commercial off-the-shelf games base learning for use in the classroom. Research has suggested that available educational games not only extend a challenge to ensure critical thinking and problem solving but most importantly provide a cost effective learning experience (Klaila, 2001). Moreover interactive games provide challenges which are useful in preparing students for tests or quizzes. Students will make mistakes when playing the games, but they will not be afraid to keep trying again. They will try using multiple plans to assure the next round will give a better result. This will help students to overcome the anxiety of facing tests or quizzes knowing well they can plan better for the next round.

## How Teachers Can Edit and Manipulate Available Games to Support Classroom Instruction

There are a good numbers of available games which can support classroom instruction. Prensky's books and internet site *http://www.gamesparentsteachers.com* and *http://socialimpactgames.com* list hundreds of different games for different classroom teaching content. Prensky (2007) (as cited in Erk, 2006) says the games listed provide parents and teachers with ideas of how to choose the right games with the right content to match classroom content.

It is also important for students to be motivated and have a desire for repeatedly apply the teaching using the available games (Smith & Mann, 2002). When interactive games are involved in the learning context it is important to identify the accuracy of the information provided in the games. There should be appropriate levels of English titles, any simulations added, rules of the games, and clear instructions. There should also be an appropriate title given for the game. A title is important but must take into consideration sensitivity of issues of race, gender, disability. (McFarlene et al., 2002).

All interactive games should have a means of being saved once the lesson is finished for the day. Saving the games that have been is vital for the teachers in order to recycle or continue the activity in the next class or next lesson. It is also critical for teachers to remind students to save their games as this will allow students to come back in next class and continue where they have stopped. Moreover this will also allow students to be able to continue the games or pair up with new partners to play the games (McFarlene et al., 2002).

## Examples of Site that Teachers Can Use

Among the popular online games creation tools:

http://www.toolsforeducators.com/

http://www.esl-kids.com/

http://www.eslhq.com/

http://classtools.net

http://www.funbrain.com/

Popular online English learning games:

http://www.mes-english.com/flashcards.php

http://www.esl4kids.net/games.html

http://iteslj.org/c/games.html

http://www.esljunction.com/esl_games/

## Conclusion

The 21st century level of teaching in Malaysia should be on par with that of developed countries. Teachers in National schools should be encouraged to use e-learning tools such as interactive games to help and facilitate children in learning English. These e-learning tools should be accepted as a powerful learning aid for teachers to upgrade their teaching and knowledge skills to meet the demands of current teaching methods. Interactive games as an e-learning tool can strongly enhance the teaching and learning of English.

Interactive games allow integration of the skills of listening, speaking, reading and writing English. In the long term interactive games reduce the workload of English teachers. Thus teachers will be able to focus on development of the overall student performance. They will find there is less preparation to make compared to the traditional method of teaching. Furthermore teachers can easily make multiple files of the same content of the interactive games to the different levels of understanding of all their students. Thus they provide a friendly environment for all students regardless of their ability and proficiency in the English language.

Prensky advises that if we do not heed the kids we serve, value their opinions, and change according to their needs, we will then have only the school buildings to administer with students who are physically or mentally somewhere else (Prensky, 2005). However, online information and interactive games can only be possible if broadband services to national schools under the SchoolNet are upgraded. These services will allow internet resources to be easily accessible to teachers and students all day long. As the value of the internet becomes more evident, schools could build interesting lessons and activities thus enhance the knowledge and competency in ICT and other academic studies.

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