

VIDEO GAMES IN LANGUAGE CLASS: WHY, WHEN AND HOW?

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Abstract

This paper concentrates on video games and their uses in language learning and teaching. It discusses language of video games and benefits of video games for language learning in general. It also explains what makes video games effective teaching tools. It stresses the kind of language that video games use and its implications. Finally, the paper made some suggestions for classroom teachers' effective application of video games for teaching and learning processes.

Keywords: foreign language learning, information and communication technologies, second language instruction, video-game based language instruction.

Introduction

Innovations and facilities that technology has added to our lives are at an undeniable level. Portable, wearable technologies, devices and products, social media applications like Facebook are in every aspect of our lives. Thus, technology-based education and training inevitably entered into our lives. Nowadays, Facebook is one of the largest social media applications with over 2 billion users. It is used as a part of education in areas such as Statistics, Language and Mathematics despite all the obstacles and difficulties (Manca and Ranieri, 2013). However, as a part of technology education, videogames and similar applications emerged as a popular topic in education today. In studies, the facilities and applications of games for learning as well as the key role of design are beginning to be used effectively (Clark, Tanner-Smith, and Killingsworth, 2016).

Interactive language environment using a game-based approach can help students have fun while learning as it can be used as a game-based approach. In some studies, it was observed that the students who had fun and learned at the same time performed considerable progress in their learning ability and the persistence of the learned information was found to be more successful than the traditional way of learning (Liu, Rosenblum, Horton, and Kang, 2014 and

Ke, 2016). It seems that videogames have great positive potential in addition to their entertainment value and there has been considerable success when games are designed to address a specific problem or to teach a certain skill (Griffiths, 2002 and Brooker & Stone, 2011).

Game-like applications provide training and supportive experiences in different topics. For example, game-like applications and foreign language learning activity were found in the studies of Berns, Gonzalez-Pardo, and Camacho, (2013) and others. According to the findings of the study, foreign language learning processes showed a positive correlation with graphic designs in video games (Berns et al., 2013 and Roth, 2000). In the 21st century, traditional education and teaching processes in the public, private and businesses have begun to disappear, as this type schooling is not sufficient for today's conditions and expectations. Teaching processes have changed in a positive way by graphic designs in video games and so technological innovations have taken a more important role in teaching process (Miller, 2015).

Language of Video Games

A factor of the benefits of video games for foreign language learning is the amount of variety that exists between different video games. Naturally, different kinds of games use varying amounts and kinds of language. A role-playing game, which relies strongly on the story it tells and the characters it features, will often make use of more language than a racing game, for instance. Also, the language that a role-playing game uses is often more complex than that of a racing game.

Another cause for variance in the language of video games is the young, yet fast-growing mobile gaming sector. Newzoo (2013) reports that as the global video games market is expected to keep expanding over the next years, most noticeable growth in the future is expected from smartphone and tablet gaming markets. Mobile and browser games tend to concentrate on quicker playing sessions and as a side result often do not use as much language as traditional computer and console games. Instead, mobile games often make use of short visual animations and simple icons in order to explain the mechanics of the game as opposed to the language-based text or audio solutions that are often used in more traditional computer and console games. Krashen's (1985) input hypothesis states that people acquire a second language by understanding language input that is just beyond their current level of competence. His idea of comprehensible input is often explained with the formula $i + 1$, where i stands for the learner's current level of competence and $i + 1$ stands for the level immediately after it. Therefore a learner of level i progresses by understanding language which contains language of level $i + 1$ (Krashen 1985). Even though Krashen's theory has been subject to a number of criticisms, it gives us an insight into possible benefits of video games from a language learning perspective. They can provide a player suitable foreign language input for long periods of time. As Gee (2003, 2007) argues, good video games keep players motivated to continue playing for a long period of time. Over a long period of time spent playing video games, a player is subjected to a sizeable amount of language input. If the language of the game is different from the player's first language, this input can be beneficial for the player's foreign language learning. However, different players have differing levels of language competence and different games provide different levels of language input. Consequently, it is possible that even if a student in secondary school can enjoy and play similar games as a

high school student, he or she will not understand enough of the language used by the game for his or her language competence to improve significantly.

Benefits of Video Games for Language Learning

Contrary to conventional beliefs that playing video games is intellectually lazy and sedating, it turns out that playing these games promotes a wide range of cognitive skills. The following are some benefits

Learning

Students of the 'Net generation' live in media- saturated environments as they spend an average of 6.5 hr per day engaged with various media (Roberts, Foehr, & Rideout, 2005). Educators and scientists repeatedly return to the conclusion that one advantage of educational games is that games tend to generate a much higher level of students' positive emotional engagement, thus making the learning experience more motivating and appealing (Rieber, Smith, and Noah (1998), improving participation and achievement (Jayakanthan, 2002). Games can motivate passive students to contribute more than they would in a traditional learning environment (Tanner & Jones, 2000). Video games motivate learning by challenging and providing curiosity, beauty, fantasy, fun, and social recognition. They reach learners who do not do well in conventional settings (Dede, 2004).

By representing the simulations through gaming conventions, educators can potentially increase engagement while fostering deeper learning, as learners engage in critical and recursive game play whereby they generate hypotheses about the game, develop plans and strategies, observe their results, and readjust their hypotheses (Gee, 2003b). The stereotype that video games solely contribute to antisocial, obese children was debunked through research on the Computer Games in Education project of the United Kingdom. The motivating power of games and their ability to encourage cooperation were felt to support the work of schools in developing independent, but social individuals (Kirrirmuir, 2002). Simply put, students are more likely to achieve if attempts are made to make the learning environment more congruent with that preferred by students (Faser & Walberg, 1991). Designing human-centered educational games that have rich storylines is not a magic bullet, nor is it an easy undertaking. The implications for designing educational games include blended motivation and self-regulated learning (Rieber et al., 1998).

Today's gamers learn differently within the context of virtual worlds. How they learn and what they learn is often mutually exclusive. Gee (2003a) stated that the practice of learning a video game is an enculturation practice that involves not only learning the mechanics of game play, but learning how to negotiate the context of play, the terms and practices of a game's players, and the design choices of its developers. These levels of engagement are what Gee called internal and external '*design grammars*' for a given domain. These design grammars are consistent in any competitive or collaborative play environment.

A player learns to think critically about the simulation while at the same time gaining embedded knowledge through interacting with the environment. By allowing the player to take on new identities, solve problems through trial and error, and gain expertise or literacy, video games have potential for nonself-referential disciplines, particularly science (Craft, 2004). Games provide learners the opportunity to learn by doing, experience situations first-hand,

and role-play. This establishes the proliferation of gaming in today's learners (Rickard & Oblinger, 2003).

Practice (How)

The power of video game technology can be embraced in many ways. In this paper, two such applications will be described. The first use of video games is as a platform for distance learning. The second application is as an instrument for teaching and learning course material. At North Carolina State University's College of Education, a virtual world was created as a platform for distance learning and video game creation for practicing teachers. 'The Wolf Den', as it is called, is a virtual leaning environment where synchronous (real-time communication and interaction), online courses are taught and where students engage in the design and creation of role-play games. Specifically, a course entitled Introduction to 3D Multiuser Online Role-Play Games introduces in-service science teachers to the game creation process. A driving force of the pervasiveness of the Internet is the convergence of voice, data, and video networks and the deployment of converged services (Lazar, 2004). Katz (2005) argued that convergence is less a technical exercise than a social one. It promises technology-mediated collaboration and community. As high-speed connectivity becomes more pervasive and service increases, students enrolled in distance courses desire synchronous interaction without leaving the comfort of their home. Synchronicity can be valuable for virtual communities, provided that members actually take advantage of the synchronous technology design by interacting (Blanchard, 2004). 'Wolf Den' not only provided a quality distance-learning platform, but also through the inclusion of a Voice over Internet Protocol solution, real-time conversations were exchanged and both the instructor and student were visually captivated in the 3D world.

Garrison and Anderson (2003) defined social presence as the ability of participants in a community of inquiry to project themselves socially and emotionally as real people through communication. Online learning environments that feature mainly asynchronous text-based computer-mediated communication have been criticized for their lack of support for social presence, and this lack of support for social presence may impact the sense of belonging and acceptance in a group (Rovai, 2002). 'Wolf Den' provided a rich setting for online social presence. The ability to work collaboratively is at the heart of social presence theory (Garrison, Anderson, & Archer, 2000). Social presence is a strong predictor of satisfaction with computer-mediated communications (Gunawardena & Zittle, 1997).

Haptics

Using the five senses behaviorally impacts working memory. Video games generally incorporate only sight and sound. However, with such hardware devices as the Novint Falcon, the ability to integrate force feedback into virtual environments is not only becoming more possible, but also more cost-effective. Research done on haptic (embracing the sense of touch) feedback can serve as a framework for work on how touch enables memory from a video game narrative.

Textbook Replacement

For various reasons, such as cost and student health, in the form of documented back problems from carrying large quantities of books, school systems are moving away from using textbooks. Textbooks are being replaced by photocopies and in some cases, Podcasts,

wikis, blogs, Websites, and audio books. Text in video games is what often drives the narrative within the game. If expository text, graphics, and video could be embedded within an environment of virtual missions, then students and teachers would have a virtual one-stop shop.

Distance Education

Although 'Wolf Den' shed light on the potential of using video game environments for distance learning, the research thus far is just the tip of the iceberg. Although massively multiplayer online (MMO) games are the most played computer games, large lecture classes lend themselves to be replaced by these worlds and delivered from a distance. As large courses are often just lecture, virtual environments can place hundreds of students and an instructor in a virtual environment where classes can be taught in a synchronous learning environment. Also, rather than giving students an avatar from which to choose, creating one's own avatar might allow for more individuality and great social presence.

Home School/Virtual School

The home school and virtual school market is growing exponentially in Nigeria. As parents and virtual school administrators look for strategies to help students learn, video games in the form of a distance learning platform and mission-based content can be the vehicle that engages and creates a social atmosphere.

Video games can be an excellent source of English language input for people in Nigeria, including students

This is due to the fact that much of foreign media, including video games, is not dubbed in English. Instead, most of foreign media is subtitled into English with the original language audio still retained. Furthermore, often in the case of video games the subtitles themselves are also in the original language of the game and not in English. In Nigeria, the language of most foreign entertainment releases, video games included, is English. A noticeably smaller number of video games are available also in other local languages such as Hausa, Ibo or Yoruba. A number of games, often aimed at children, may feature English subtitles or even dubbed audio. Also, Crystal (2001) shows that English is the dominant language on the global Internet. As such, the English language is also used as a lingua franca for communicating in online games between players of multiple nationalities. Therefore, for a Nigeria person video games as a hobby are not only a good source for language input but also a possibility for language output in English. Even if a video game itself does not offer the player a chance to produce language, the broader culture surrounding video games certainly does.

Video Games as a Cultural Phenomenon

Video Games have been a part of the human culture for centuries. In the last couple of decades video games have become an increasingly important type of play alongside traditional forms, such as sports and board games. The video games industry itself has grown over time to challenge the older film and music industries. According to Bronkhorst (2013), the film industry still generates more annual revenue than the games industry does. Video games are also increasingly popular as observed activities where the viewer does not actively take part in the gameplay. Online, the growth of online video streaming services such as YouTube, has led to growing interest in both producing and watching video game related videos. In fact, some of the most popular YouTube channels today are primarily video game related.

Video Games as Tools for Foreign Language Learning and Teaching

As video games are such a large phenomenon and a common hobby among many, the potential and possible benefits for language learning and teaching should be assessed. In fact, recent years have seen a growing interest in video games as tools for teaching and learning in general. This can mean both using games as they are as a part of teaching and making use of different ideas related to game development in teaching. An excellent review of research, ideas and studies on the subject by Mitchell and Savill-Smith (2004) goes through various topics, including the possible benefits of video games and their existing uses in teaching. Some of the benefits they mention are the motivating nature of games and the fact that they can reduce the load on the human instructor. As for existing uses of games in teaching, they mention simulation games used for enhancing children's spatial abilities and administration skills for businessmen and strategy games for language teaching (Mitchell and Savill-Smith 2004). Making hobbies viable language learning tools would be a great help in the concept of lifelong learning, as hobbies take place mostly outside the school. Through hobbies, learning can continue even after a person's school education has ended. Hobbies are also good for implicit learning due to the fact that they are most often taken part in for reasons other than learning. Nevertheless, hobbies which provide significant language input can also benefit language learning while mainly providing entertainment and a sense of accomplishment.

What Makes Video Games Effective Teaching Tools?

Whether by careful design or simple trial-and-error, modern video games have come to incorporate many of the best practices known to those interested in learning. This starts with creating an environment that encourages users to invest substantial amounts of time in learning. As every educator knows full well, one of the best predictors of learning is time on task (Greenwood, Horton, and Utley 2002). With all other things being held equal, more hours spent on a task means more learning, and, clearly, video games excel at encouraging players to put time on task. Recent surveys suggest that the average player voluntarily spends between ten and fifteen hours a week gaming (Rideout, Foehr, and Roberts 2010). If only high school students could be convinced to voluntarily spend that amount of time on their studies! Although the reasons games produce such dedication are myriad, many—at their root—relate to reinforcement. Like all animals, humans are wired to perform those actions that result in some reward or fulfill some basic need. Indeed, behavioral research shows that games are capable of providing a variety of basic psychological needs. These include autonomy (the belief that one has control over his or her own actions and decisions), competence (the belief that one has the level of skill necessary to achieve goals), and relatedness (the feeling that one is socially connected with other human beings (Przybylski, Rigby, and Ryan 2010)).

Research shows that our brains release in abundance neurochemicals related to reward processing—for example, dopamine—when individuals play video games. These are the same chemicals the brain releases when a hungry or thirsty person receives food or water, as well as when someone takes one of the many commonly abused drugs. In fact, the magnitude of the dopamine release related to playing electronic games resembles that related to some recreational drug use (Koepp et al. 1998). Critically, these same brain chemicals prove essential in permitting brain plasticity and thus learning (Bao, Shaowen, Vincent, Chan, Michael and Merzenich. (2001). To some extent, we could consider the release of these reward

chemicals as a signal to other parts of the brain that an important event has occurred, one that necessitates reorganization to increase the likelihood that the future rewards of the event will also be received.

However, reinforcement alone may not be sufficient to explain the extreme levels of time on task that games produce. Timing, too, is crucial: reinforcement must come at proper intervals and in proper relationship to in-game events. Well over half a century ago, psychologists demonstrated that animals work hardest and longest when they are rewarded in a way that makes them believe there is always a chance their next action will reward them (i.e., a variable ratio-reward schedule). Because the individual never knows exactly when the next reward will come, he or she is strongly motivated to keep at the task. Many video games enhance this effect by layering multiple reward schedules. Therefore, even if one reward is far away, another is almost certainly approaching. The amount of time on task that playing games encourages will ensure ample opportunity to learn the game skills needed for mastery. Good video games make certain that the player has acquired a sufficient level of expertise in each and every element before administering any cohesive assessment, such as a final boss encounter—similar to the concept of the spiral curriculum in educational psychology (Bruner 1960). Reaching this point of practice beyond perfection (or over learning) is highly linked to overall retention levels and the ability to access information at a later time (Ke, 2016).

However, time on task can only go so far in stimulating learning if the tasks themselves are poorly structured. All good video games incorporate one crucial learning principle: a proper level of difficulty. If individuals find a learning task too easy, they will not make enough errors to necessitate improvements (i.e., if you make no mistakes, you have nothing to learn). Conversely, if they find a learning task too difficult, the error signals can be uninformative and thus again, they will not learn anything (e.g., a first-grade student would learn very little about quantum physics by receiving graduate-level feedback on exams). Educational psychologists have long believed that the most effective learning paradigms keep individuals right at the edge of their ability in something they call the "zone of proximal development" (Vygotsky 1978). In this dynamic process, the game designer carefully determines the initial level of difficulty of the game and increases it as the individual player improves.

Video games typically force the player to learn a task in many different ways. Take, for instance, a race-car game. The player may be asked to drive several different race cars, varying slightly in their dynamics, on a series of different courses, and in the presence of a diverse set of computer opponents. Even a "simple" game like *Super Mario Bros.* requires players to use a small set of actions in a wide variety of contexts (jump over a pit, up a set of blocks, and onto a goomba, for example).

Game Components

What is it about these games that excites and engages students? Although most agree that games can be both engaging and instructive, there is little consensus regarding the essential characteristics of instructional games. Implicit in the research literature is the notion that if one pairs instructional content with certain game features, one can harness the power of games to engage users and achieve desired instructional goals. Using the framework set forth by Garris, Ahlers, and Driskell (2002), these questions can start to be answered. Arnab, Lim, Carvalho, Bellotti, Freitas, Louchart, and De Gloria (2015) presented an input-process-output

model of instructional games and learning that elaborates (a) the key features of games that are of interest from an instructional perspective; (b) the game cycle of user judgments, behavior, and feedback that is a hallmark of engagement in game play; and (c) the types of learning outcomes that can be achieved.

As video games in education are gaining attention, it becomes more and more critical that empirical research be done on why and how games can impact students. There is much to be learned and it is crucial that anyone interested in making games for educational purposes band together to answer these questions. There is a sense of urgency for immediate action to secure a prosperous future for this country and its children. Video games might be the call to action.

Conclusion

Over the past half-century, video games have evolved into effective learning tools. Not only do they promote an astounding amount of time on task, the games also use a number of techniques known to promote efficient and transferable learning. Although some researchers express concern about the potential negative outcomes of gaming, others see quite clearly that video game training creates a great number of positive outcomes. A growing body of research demonstrates that some types of games in particular action video games, promote improvements in a wide variety of perceptual, attentional, and cognitive abilities. These enhancements are of a scope and scale that such games are being used, off the shelf, for a variety of practical purposes. Today's video games are much more than entertainment. They are also weapons in the fight against declining mental capacities in old age. They promote job-related skills. And they are a model of how to teach children complex and difficult tasks and abilities. As with any technology, video games are neither intrinsically good nor intrinsically bad. Instead, the nature of their impact depends upon what users make of them.

Recommendations

Videogame technology brings new challenges to the field of education. Video games are a technique that a classroom teacher can use. However, care must be taken that the use of enthusiastic in this technique does not replace other more effective techniques. Video and computer based games may have advantages not found in other learning strategies. For example, finding different solutions to a difficult problem and seeing those decisions in an imaginary cast will ensure that students have a problem-solving ability in a relatively safe environment (Flood, Heath, and Lapp, (2015).

Assassin's Creed Unity (ACU) and Third Person Shooter (TPS), Minecraft and similar games are thought to be user-friendly in classroom educational activities and to provide information flow through visual learning. For this reason, a video game should be used very easily in art curricula and for graphic design lessons (Overby & Jones, 2015).

"The CHERMUG quantitative and qualitative games (www.chemug.eu) are digital games designed to support students as they learn..." (Boyle et al., 2014). It is believed that Chimug-like graphic design messaging videogames should be enabled and disseminated. Thus, it can be possible for teachers and lecturers to use them in their classes. For this, language teachers who are active in technology education have great responsibilities too.

Researchers argue that teachers and parents should make an effort to increase their awareness of the potential positive educational benefits of playing video games. What factors hamper teachers' use of computer and video games in the school should be researched and possible solutions should be proposed. The reasons preventing the purchase of computers and video games should also be researched. In service training should be available to increase the awareness that how video games meet teachers' present goals and their place in learning and teaching knowledge. On the other hand, relatively few researches in the field of game-based learning included teachers (Overby & Jones, 2015). Even this number is increasing which shows that game based learning has an increasing momentum and has a great place in education; more researches should be done including teachers and lecturers.

For many, researchers and policy makers lack in policy-making according to the potential of educational games. In addition, the practical skills of selecting and implementing video games in the classroom environment need to be improved. Video games for education should be designed and continuous renewal should be provided.

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