Perceived Benefits Gained From Online Game Playing among University Students in Bangkok

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Abstract

Although presumed negative aspects of online game playing are widely disseminated in the media, the possible benefits that might be derived from this appear much less frequently. Possible benefits include the reduction of stress, promotion of analytical skills and team-work and the fostering of relationships with other people around the world. Using a specifically-designed questionnaire, the authors investigate the extent to which a sample of 610 Thai undergraduate students from a variety of universities in Bangkok feel that they have benefited from online game playing and which of the various benefits appear to them to be most relevant and most often achieved. The results are discussed and recommendations drawn to incorporate greater use of game-playing modalities into the classroom environment and to enhance the link between education and industry by fostering partnerships to create more location-specific Thai-language content for use in the education system.

Keywords: Online games, Online computer games, Computer game industry, Online education, Benefits of games

1. Introduction

People generally think of online games as an unproductive means of spending time and money prevalent among, principally, young adults. Coverage of such games in the mass media generally focuses on negative aspects of online play, such as crime and health issues. There are reports of thefts of valuable items and cases of murder caused by online games, among a small number of obsessive online game players. While virtual objects can become valuable commodities for other players [1], the games and game play does not necessarily cause these behaviors These news stories have many parents fearing that their children will become addicted to play, neglect their education, and led to poor health, and diminished future products. What is only rarely reported is the positive use of online game play and the many opportunities the online game industry has provided for everyone [2].

To help ease concerns, governments in many countries try to issue laws to protect game players from over-consumption. For example, KGDI (Korean Game Development and Promotion Institute) under the Ministry of Culture and Tourism has as one of its working objectives to reduce negative attitudes to play as well as assisting young adult problems in playing games [3]. In Thailand, the Ministry of Culture launched a law in 2009 to control internet café playing-time for young adults in different age groups. Young adults under 15

years old can use an internet café from Monday to Friday, 14:00-20:00 hours and official holidays including school breaks from 10:00-20:00 hours. Young adults from 15-18 years old can use an internet café Monday to Friday from 14:00-20:00 hours and official holidays as well as school breaks from 10:00-22:00 hours [4].

In spite of fears and restrictions, online game businesses have been rapidly growing every year. The market is very strong in Asia, having reached a value of US$3.4 billion in 2005 and is expected to be US$13 billion in 2011 [5]. The industry has also now created up to 100,000 jobs, which represents an increase of some 25% per year from a base of 34,000 jobs in Korea in 2002 [3]. The online game business has played an important role as one of the principal export products of Korea and has contributed strongly to overall economic growth. In Korea, online game professionals not only have as many fan clubs as movie stars, but also earn good income from salaries, prizes and sponsorship by playing games exclusively. There are many career opportunities for people who want to work in the game business, ranging from engineer, artist, producer, developer, sales and marketing staff to professional gamers. The development of this industry has resulted from deliberate policy decisions made by the Korean government and enacted by its agencies and the private sector [6]

In Thailand, there are not enough skilled people in the game business, especially developers and artists, to keep up with demand. Some universities offer degree courses on game design and development in order to produce qualified professionals for the market. So far, Thailand is a big consumer of online games but only a small producer of high quality games. It is more difficult to develop good games than to play them. Most online games are imported from overseas, mainly from Korea, China and Taiwan. The country also faces a problem with a lower education standard than many other countries in Asia. Thai students are better at memorizing than analyzing and being creative [7]. Can online games help students learn how to analyze and make themselves more creative?

It is not easy to control how gamers should play their games. The rules are created to protect people by setting boundaries, but rules and regulations are unlikely to stop them playing altogether. Very few researchers study the positive aspects of online game usage. Most research studies concern the technical and commercial aspects of gaming. This paper aims to investigate: 1) what are the positive usages of online games for consumers who are university undergraduate students, as representatives of future knowledge workers and qualified parents; 2) how important are they, with a view to identifying the extent of future utilization of games and what recommendations can be made to the relevant agencies to help improve the Thai education system.

2. The Games Market

Online games have become a universal feature of popular culture [8]. The market for games is competitive and growing around the globe. According to DFC, the worldwide interactive entertainment industry is poised to grow from approximately US$29 billion in 2005 to US$44 billion in 2011. Brightman [9] also found that DFC's forecast takes into account revenue from all areas of gaming, including console video games hardware and software, portable hardware and software, PC games and online PC gaming. DFC's President, David Cole, pointed out that by 2011 DFC forecast, that all console software combined will only account for about a third of worldwide sales.

3. Online Games in South Korea

The predecessors of online games were video games, PC games and arcade games [10]. Online games were first developed in 1969 in USA with the emergence of the TCP/IP network communication agreement at that time. In the early 1990s, the computer multi-media functions and world-wide-web (www) brought online games to a newborn stage.

Korea was a net consumer of foreign packaged games prior to the year 2000 [11]. The game industry is the largest business sector within the set of cultural industries. The support of the government for the game industry is based on the concept of the "Law of Music, Video, and Games." The Korean games market is expanding internationally and it has become first in online gaming and third overall in mobile gaming worldwide [12].

In 1999, the Korean Games Development and Promotion Institute was founded and it has subsequently played a key role in developing game industry policy. According to [12], since 1998, the Ministry of Culture and Tourism has assumed responsibility as the competent ministry for the games industry. There has been an attempt to establish One-Stop support for the sector, including support for games industry infrastructure, promotion for game experts, human resource training specific to the game industry, information services, technology development and so forth.

The internet has driven many of the changes in the Korean game industry [8]. The size of the global online game market has increased by 44% from US$4.5 billion in 1999 to US$6.5 billion in 2000 (www.mct.go.kr). The Korean government's plan has been to become one of the world's top three gaming nations by 2010 [12]. The sales of online games became first in all five game platforms in 2002. The online games market has continued to increase its game portals and international expansion. Korean game companies have been able to expand their offices outside the country to help support growth and find local expertise to cover new territory, especially important in non-Korean contexts. However, market competition has become overheated and new companies have focused on distinct game contents and finding themselves a niche market, rather than competing on a mass marketing basis.

From Table 1, it can be seen that the growth of online games has been notable from 2004 to 2005, at 41.3% and, for the years 2005 to 2006, 2006 to 2007 and 2007 to 2008, growth forecasts were 26%, 21% and 17%, respectively. The growth of mobile games and console games has been positive too, but not the growth in the PC games sector. Although online games rely a great deal on the presence of internet cafes, the growth of internet cafes in Korea has declined over the years, perhaps because of the approach towards saturation. The global sales revenue of online games was estimated to have risen to second place in the world in 2003, while South Korea is the largest market and Taiwan is the second largest market worldwide overall [13]. By the end of 2009, the Korean market alone is estimated to reach US$1.7 billion [14].

Table 1 Sales Amount and Growth of Total Shipment (2004~2008)

Unit: hundred million Won

Year	Online games	Mobile games	Console games	PC games	Internet cafes
2004	10,186	1,617	1,866	534	16,772
2005	14,397	1,939	2,183	377	19,923
2006 (E)	18,140	2,385	2,576	320	22,712
2007 (E)	21,950	2,790	3,091	285	24,756
2008 (E)	25,681	3,209	3,555	271	25,994

Source: KDGI (2006)

Note 2004: 1USD = KRW 1,200

In 2005: US$1 = KRW 1,024 (the average currency exchange rate of 2005 is applied)

E = Estimate

4. Thailand Games Market

Game production in Thailand is not large in comparison with the demand for games consumption [15]. The number of game companies in Thailand at the first "Game Developers eXchange Conference" (GDXCON) in 2004 was more than 20. By the end of 2006, this number had increased to 31. The Association of Thai Software Industry reported that Thais consumed US$450 million worth of software in 2004 as compared to US$375 million in the preceding year (official sales only). The Association of Thai Software Industry [16] showed that this consumption is dominated by imported software. Data suggests that the proportion of software devoted to the games market is approximately 15% (US$70 million) of the overall market – which remains dominated by office productivity tools and operating systems. This represents 0.7% of the total expenditure in the Asia-Pacific on games. From interviews with game company executives, it became clear that the market size for legitimate computer games is around US$36 million. The remainder is made up of illegal copies for sale in the market. The related business created by computer games, such as mass media related to the game business, advertising in the mass media, internet subscriptions, hardware and so forth should be at least 2-3 times the revenue from computer games.

5. Thai Education System

The National Education Committee organized a seminar on "Thai Education Revolution: National Agenda" in 2001 concerning the crisis of the Thai education system with respect to the quality of students at grade 9 nationwide. They found that, in 1997, students scored lower than 50% in examinations in 4 out of 5 subjects, while students in grade 12 exceeded 50% in just one out of a total of 8 subjects. Vanichsuppawong [7] observed that education in Thailand is of a lower standard than many countries in Asia, e.g. Vietnam has become the fifth highest ranking country in the world for mathematics. While Thai students are good at memorizing material and with basic skills such as multiple choice questions, they tend to be weak in critical thinking, analysis and in written examinations. Rooncharoen [17] concluded that the problem of the Thai education system is too much focus on memorizing and that, therefore, students are weak in initiative and analytical thinking.

In the context of this crisis of Thai education, the National Education Act of 1999 was launched with 9 sections, the most important of which is section 4, which concerns the organization of education and emphasizes the need for education to switch from rote learning towards critical thinking and practice.

Senge [18] found that a learning organization consists of a group of people who are continually enhancing their capabilities by creating what they want to create and this concept has been deeply influential. Learning began at the individual level and involved five disciplines: personal mastery, mental models, systematic thinking, sharing vision, and team learning. Most conceptualizations of learning organizations seem to work on the assumption that learning is valuable, continuous, and most effective when shared and when every experience is an opportunity to learn [19].

Although online games do not directly offer the kind of experience that supports the learning organization approach, there are some areas in which the two share common characteristics. Consequently, encouraging students to use online games within suitable parameters might help them to develop the kinds of skills that will be necessary, if they are to flourish in the envisaged new educational system to become entrenched in

Thailand. Playing online games allows social interaction in which players build both casual and meaningful relationships. Through time spent on playing games, students can strengthen their existing relationships and meet new people [20]. A study conducted at Brunei University concerning the effects and benefits of online games on young people found that gaming is far from being a frivolous diversion from homework. Instead, the online worlds that are partly created by the gamers to some extent represent a form of social reality that helps gamers to make the transition from study to work [21].

In order to achieve success in the game, students feel that they need to demonstrate enhanced analytical skills. Children also learn to cooperate as part of a team and appreciate the fact that, while working as part of a team, each individual has particular strengths and abilities and that it is the combination of all of these that leads to the achievement of goals. It is quite possible for the people concerned to transfer these skills and insights into real world situations.

Studies also show that children that play games on regular basis have better eye-hand coordination. Research found that playing online games can boost memory for adults and improve cognitive skills for children [20]. Playing games that focus on speed, logic, reasoning and memory, one can work out the lesser used part of the brain, which a benefit player now, and when the person grows older [22]. Some games reduce the risk of Alzheimer disease while watching television increases it [23].

6. Research Objectives

The objectives of this paper are as follows:

1) Study the positive use of online games among the future qualified and knowledgeable workforce as represented by a population of undergraduate university students;
2) Investigate demographic factors with respect to students and their use of and benefits from online games;
3) Identify the most important benefits from playing online games (i.e. stress management, creativity, analytical skill and so on) in rank order;
4) Provide recommendations to the Ministry of Education and teachers on these positive aspects of play that may be incorporated into the classroom and teaching objectives.

Review of relevant literature and ethnographic observation of Thai online game players led to the creation of a battery of ten different positive benefits that might arise from playing online games. These are: systematic thinking, stress reduction, time management, solving personal problems, stimulating creativity, supporting interpersonal skills, building self-esteem, identifying personal goals, understanding and sharing feelings with others, and improving analytical skills. The research asked respondents the extent to which they felt they had received these benefits from playing online games. This study reports, therefore, on impressions and perceptions, since it has not proved possible to triangulate the data through independent evaluation.

7. Research Methods

This research uses a quantitative survey method. The sample size is 610 undergraduate students in Thailand drawn from Bangkok University, Kasetsart University, Rangsit University, and Thammasat University, which means half the sample is from public universities (Kasetsart University and Thammasat University) and half from private universities (Bangkok University and Rangsit University).

The sample students are taking degree courses in Mass Communications, Business Administration and Accountancy, Science, and Engineering. Respondents were selected at random with respect to year of study and other demographic characteristics. This is, therefore, a convenience sample, since it depended on responses of those students who were willing and able to respond to the questionnaire. The achieved sample has been compared with the population overall, to determine the extent to which the two are similar and, hence, the data is considered to be reliable in terms of representing the population. The issue of non-response bias cannot be approached directly, but there is no reason to think that this issue has led to consistent, significant distortion to the data, or bias in the results.

The questionnaire is divided into 3 sections.

Section 1 concerns demographic factors and has 7 questions on student information and 9 questions on how respondents utilize computer and play online games. Students who do not play online games were not invited to complete the entire questionnaire.

Section 2 concerns the benefits and positive impacts arising from playing online games, which are composed of 10 5-point Likert scale questions.

Section 3 is aimed at identifying the most important factors according to their relative ranking.

Reliability and validity considerations have been dealt with by consulting with two academic experts for content validity checking. The content was then adjusted according to their advice. Then, these instruments were tried out with 30 students at 2 faculties: Mass Communications, and Engineering at Bangkok University, who were selected as the population of the study for validity checking. No major changes were found to be necessary as a result of this process, as wording, clarity and question ordering were investigated. Cronbach's Alpha was also calculated for this test and this resulted in a value of 0.8222, which is considered acceptable for research of this sort. Completed questionnaires were entered into a spreadsheet using SPSS and subsequently analysed using various statistical techniques as appropriate.

8. Findings

The students in the sample comprised of 50.2% males and 49.8% females. A summary of demographic details of the sample is shown in Table 2.

Male online game players outnumbered female players by 64.1% to 35.9%. There are variations in prevalence of play with respect to year of study, major and university. It is also apparent that there is no meaningful difference between prevalence of play and GPA achieved. Students who play online games utilize a computer for communication, e.g. e-mail, and instant messaging (28.8%), more than they do for playing games, which in turn occupies more of their time than searching for information. While 23.0 % of students utilize a computer for playing online games more than communications and information searching, 34.8 % of online game players spend 1-2 hours per day playing games and 26.2 % play games, for 2-4 hours.

Game players (35.1 %) play massively multiplayer online role playing games [MMORPG]. In MMORPG games, online game players are represented as avatars, which are representation of numerically-defined characters are Ragnarok, EVE online, Aion, and Anarchy Online. Some online game players (23.6 %) playthat the player operates as a means of interacting with the gameworld. Examples of MMORPG casual games and sport games. Casual games represent easy games for leisure purposes, e.g., Gunbound, Seal,

Table 2 Number, percentage, and demography of university students

Demographic feature	Number of students	Percentage (%)
1 Gender		
Male	306	50.2
Female	304	49.8
2 School year		
Freshman	108	17.7
Sophomore	199	32.6
Junior	153	25.1
Senior	111	18.2
Fifth Year and Above	39	6.4
3 Faculty		
Mass Communications	133	21.8
Business Administration	135	22.1
Engineering Sciences	132	21.6
	210	34.4
4 University		
Bangkok	192	31.5
Rangsit	158	25.9
Thammasat	144	23.6
Kasetsart	116	19.0
5 Reside with		
Family	248	40.7
Relatives	31	5.1
Dormitory alone	153	25.1
Dormitory with friends	178	29.2
6 Parental status		
Together	493	80.8
Deceased	47	7.7
Separated	68	11.1
7 GPA		
1.0-1.99	46	7.5
2.0-2.99	408	66.9
3.0-4.0	154	25.3
8 Average time using computer per day		
less than 1 hour	55	9.0
1-2 hours	159	26.1
2-4 hours	183	30.0
4-6 hours	127	20.9
> 6 hours	85	14.0
9 Play online games		
Play	315	51.6
Do not play	295	48.4

and Maple Story. FPS represents first person shooter games, which involve an avatar, one or more ranged weapons, and a varying include Special Forces and S.T.A.L.K.E.R.

Some online game players (41.4 %) have been playing games for more than 4 years. Some (38.5 %) pay no money to play games. Some students (80.3 %) play online games at home. Only 14.6% play at internet cafés.

Students think that there are benefits from their game playing. Nine out of 10 benefits have strong support in the questionnaires. Such personal benefits from playing online games are: supporting systematic thinking, reducing stress, time management, solving personal problems, stimulating creativity, supporting interpersonal skill, building self-esteem, understanding and sharing feeling with others, and improving analytical skills. Many agree that online games help them with knowing personal goals.

Table 3 indicates the degree to which respondents felt that they had obtained benefits from online game playing. It is notable that nearly all students felt that they had obtained benefits to at least some extent. One means of identifying the benefits most commonly perceived to have been received by respondents is to create a mean score denominated in points (i.e. 5 points for a strongly agree response, 4 points for an agree response and so forth). This is shown in the table below:

This section details the exploration of the demographic features of individual games players concerning the level and type of positive benefits that they believe they receive. An initial T-test indicated that there was no significant distribution with respect to gender ($n = 312$, $P = 0.555$). Subsequently, ANOVA tests were used to evaluate the research hypotheses concerning other demographic variables.

The four factors in which a statistically significant distribution was observed were university choice, time spent per day, genre, and length of playing games. Three of these variables, time spent playing per day, genre, and length of playing games

Table 3 Benefit of Playing Online games

BENEFIT	% STRONGLY AGREE	% AGREE	% NEUTRAL	% DISAGREE	% STRONGLY DISAGREE	N
systematic thinking	13.1	35.1	40.6	8.0	3.2	313
reducing stress	41.2	37.7	19.2	1.9	0	313
time management	5.1	22.7	45.7	18.8	7.7	313
solving personal problems	24.6	33.9	29.7	9.6	2.2	313
stimulating creativity	14.7	36.7	36.7	10.5	1.3	313
supporting interpersonal skills	13.8	38.5	34.3	10.9	2.6	312
building self-esteem	10.8	26.5	36.1	20.4	6.1	313
identifying personal goals	5.1	16.3	40.3	25.6	12.8	313
understanding and sharing feelings with others	4.5	26.5	43.1	16.6	9.3	313
improving analytical skills	22.7	42.2	25.2	7.0	2.9	313

may be interrelated: it may be that certain types (genres) of games appeal more topeople of a certain age and that playing these games has certain implications for the length of time required to enact a discrete portion of play. It may also be that different universities have a different type of culture promoting online play (or discouraging it) and that this has been captured by these results. It is certainly noticeable that there is no discernible relationship between the perception of positive benefits and GPA.

Table 4 Ranking of Perceived Benefits of Online Play

BENEFIT	MEAN SCORE	RANKING
Reducing Stress	4.18	1
Improving Analytical Skills	3.75	2
Solving Personal Problems	3.69	3
Stimulating Creativity	3.53	4
Supporting Interpersonal Skills	3.50	5
Systematic Thinking	3.47	6
Building Self-Esteem	3.15	7
Understanding and Sharing Feelings with Others	3.00	8
Time Management	2.99	9
Identifying Personal Goals	2.76	10

Table 5 ANOVA Test Results Concerning Demographic Factors and Positive Usage

VARIABLE	N	F	SIG
Faculty	311	1.905	0.129
University	311	4.897	0.002**
Residency	311	1.634	0.182
GPA	310	1.008	0.366
Time spent playing per day	310	3.752	0.005**
Genre	310	3.896	0.004**
Length of playing games	311	3.172	0.025*

9. Explanation of Results

9.1 Demographic Factors

Most online game playing students are men. Five out of every ten students play online games on a regular basis and seven out of ten game players are men. Students in their 2nd and 3rd years play more games than students from 1st and 4th. This can be explained in that students in their 1st year are still busy adjusting to their new university life and the higher demands of education at that level. Meanwhile, 4th year university students have to get ready to graduate and prepare for full-time employment or else continue their studies at the graduate level.

There are more students from science and engineering playing games than from business administration and mass communications. In general, the study of science and engineering requires more technical use of the computer and has a reputation for attracting people who enjoy computer-mediated communications. More complex software such as development and language tools are used by these groups of students. Consequently, they are more likely to spend more time on a computer and have more opportunity to play online games for personal benefits than students from the other two faculties.

More students in private universities play online games than public universities. They play at home the most. They also go to internet cafés more than using computers at their universities. In most universities, computer facilities are limited and operating hours are based on normal working hours. Most students who play online games reside in dormitories, either living alone or with friends. Out of every ten students surveyed who study in Bangkok, 6 live in dormitories and 4 live with their families. Most university campuses are far away from student homes; therefore, students rent a place to live near the campus to avoid commuting times and traffic on weekdays, and go back home for weekends. This weekend-only commuting includes both students whose houses are in Bangkok and those whose houses are in other provinces. Sharing the dormitory is a good way to save money and have friends.

Most students' parents live together and most students seem to have acceptable grades even though they may spend more than two hours a day using the computer. This may suggest that playing online games is not antithetical to academic achievement and it may be that it stimulates learning just as general computer usage does.

9.2 Gamers' Behaviour

Students utilize the internet most for communicating with others, using chat and email. Playing online games ranks second and browsing for information ranks last. MMORPG games are the most popular among game players. The popular games in this genre include World of Warcraft - the most played MMORPG of all time, Entropia Universe, Gunbound, Guild Wars, Maple Story, and Lineage (Sharif, 2009). Game players can play with one another from around the globe at the same time and be any character they choose. Most students have played online games continuously for many years and spent many hours playing games. Most of them invest between US$0-3 per month on this activity.

Benefits of Playing Online Games

Online game players agree that there are different benefits from playing, although the benefits vary from person to person. There are six principal benefits to be considered: 1) reducing stress; 2) improving analytical skill; 3) promoting systematic thinking; 4) solving personal problems; 5) stimulating creativity and 6) supporting interpersonal skills. Respondents attached a lower level of importance to the remaining four benefits listed in the survey: 1) improved time management; 2) building self-esteem; 3) identifying personal goals and 4) understanding and sharing feelings with others.

Overall, it was found that respondents placed benefits in this order: 1) reducing stress; 2) solving personal problems; 3) supporting interpersonal skills and 4) improving analytical skill. Almost all students agree that reducing stress is a key benefit of game playing. Online games allow game players to meet new friends from around the world according to whatever schedule of style of play they prefer. Students may have personal problems related to their studies or their family or for other reasons and they seem to think that

online games make them feel better or enable them to forget those problems.

10. Conclusion

The study shows that time spent per day on the computer, genre of game, length of time spent playing games, and the university attended effect the positive usage of online games. The internet is like a classroom where students can learn different subjects from around the world, enjoy different kinds of games, communicate, and share with one another. The possibilities are endless as to what can be done. Consequently, spending more time on a computer can benefit students. Wongsawan (2001) concluded that a learning institution should have a friendly environment for learning, clean classrooms, and a camaraderie between teachers and students. The learning institution should support useful, creative, physical and intellectual development, emotional and social activities, which lead to discipline and personality development. The internet is an ideal learning place where students can set up their own environment to make it as friendly as they wish and in whatever environment they want. The longer they enjoy learning, the more benefits there are to them.

Games have many different genres, each of them unique and having their own niche. MMORPG are very popular around the world and the majority of our study group also plays MMORPG games. Players interact with one another within a virtual game world. The most popular in the MMORPG genre is a fantasy based game, World of Warcraft. ("World", 2008). Because games are aimed to make playing enjoyable and online games are created for interaction, the benefits for players combine fun and social interaction. Not only do they interact with local friends but with people from around the world. The interactive and fun aspects of the game reduce stress, solve personal problems, and support development of interpersonal skills. It also makes sense and follows that the games help with analytical and problem solving skills.

In Thailand, there are annual entrance examinations to public universities. Students must select their own faculties and universities according to their performance in school, and based on the entrance examination scores. Most leading public universities and certain faculties need higher scores in order for students to enter. Private universities are more flexible. The admissions are done more than once per year and also have private entrance exams for admission to attract more students. Most higher scoring students join public universities because of the higher standard in admission and the perception of better quality. However, the private universities have been catching up in the long-term with public universities. Investment power in advertising, teaching equipment, instructors' compensations and faster decision making for curriculum advancement have led the private sector to catch up faster with new trends and new technology. Consequently, students from different universities utilize the benefits of that technology differently.

11. Recommendations

The result of research shows that online games have been and will be a part of student life. However, the games they play are mostly from overseas. There is a need to focus on developing the industry locally, to nurture future developers here in Thailand. Recommendations to the Ministry of Education (MOE) would, therefore, include:

- Educational institutions should enhance the use of new technology as learning tools as well as employing online games within student learning where appropriate. Complex issues in mathematics and chemistry, for example, might

be represented advantageously within a virtual world.

- The MOE can help build local online games content by supporting developers using government funds so as to encourage the production of local content in education.
- The MOE can also work with developers from overseas in order to improve areas of knowledge and skill that Thai developers lack. For example, they could work jointly with local Thai companies and train Thai developers on specific projects that will result in Thai language content that belongs to the MOE.
- The MOE should have regular study groups to exchange ideas on selected subjects for online game content and look to receive feedback from players and the industry.
- The MOE should educate teachers, parents and society to understand how and why online games could be used to promote learning.
- The MOE should arrange regular training on new learning tools and new technology to make learning more enjoyable and maximize the students' learning potential.

For teachers:

- Teachers should update their knowledge of technology trends to identify potential learning tools and how to utilize them in support of their teaching.
- Teachers should combine new technology learning tools with traditional ways of teaching to make it more fun and enjoyable for students.
- Instructors should also keep in mind the pros and cons of online games when introducing them as tools to students and how efficiently to utilize them.
- Teachers should regularly seek feedback and a continuous exchange of ideas with students and other instructors concerning student learning strategies.

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