

The study on Game Design for Deaf Children's Habit on Game Playing

Nuttapun Nakpong^{1*} and Sumalee Chanchalor²

¹ Ph.D. candidate, Division of Learning Innovation and Technology, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi.

² Associate Professor, Department of Electrical Technology Education, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi.

*Corresponding author, E-mail: nuttapun.n@mail.kmutt.ac.th¹, sumalee.cha@kmutt.ac.th²

Abstract

This research aims to study the behavior of playing games and the character of games that the deaf children wish to play. The survey questionnaires that the researcher has developed were applied in this research. The sampling groups are the hearing impaired children at the age during 13-15 years old in Bangkok area and the eastern of Thailand, 132 children. The statistic using to analyze the data is percentage.

The result reveals that almost all of the deaf children prefer to play games with mobile phone and using computer to play games (41.98%, 36.64% respectively). According to type of game, almost all of them prefer to race game (37.12%). However, it's found that before and after playing games, the disabled children feel pleasure when they are spending time with games. The deaf children require games with three dimension (3D) game and play with Thai menu. Moreover, they prefer cartoon characters to be important roles to present the story in games. Furthermore, the preview of storytelling by VDO before games shall provide the better feeling to the players. Besides, the music instruments that can be connected to the games is a kind of accessories kit which are demand.

Keywords: Game, Game Design, Game Habit, Deaf Children

Introduction

Thailand is one of the developing countries needed to prepare ourselves for world's changing. Youths will grow up to be the adults who develop our country in the future. Therefore, the youth needed to be educated and took care of their health and other aspects. One activity that the children like is playing game, because they're in the age of enjoyment. According to the research, we found that the children like to spend time playing game 1-2 hours each time on the average. Sometimes also 3-4 hours each time (Srivilai, 2006). Moreover, the game nowadays is effectively developed to have attractive graphic and 3D virtual effect.

Disabled children also have the basic needs as general children that they like to play game for enjoyment. There are 6 different types of disability as follows (Ministry of Public Health, 2012). In Thailand, there are 2.46% out of overall Thai and person who are disabled and tend to increase every year. From the largest amount of disabled, 1 of 3 are hearing disabled (Department of Empowerment of Person with Disabilities, 2015) which can be separated into 2 groups; unable to hear and hard to hear. In addition, these groups of hearing disabled students spend their life like a normal people but they cannot hear sounds used in communication. They use sign language and reading to communicate in their lives.

Games are technology for entertainment that use technology to make a simulation providing players to have fun, relate nervous system between eyes and hands, competition challenging, offer different difficult level to evaluate players' abilities. There are seven categories of games (Titimanakun, 2001). Device nowadays can be used to produce games, for example, mobile phone, computer, and tablet that are portable to play anywhere. However, spending much time on playing games can be disadvantage. The international research shows that (Orzack & Hecht, 1999) game addict may be insanity and the children who play games three hours a day for more than 15 weeks will cause Amphetamine to their body raise. This is an evidence to prove that playing games much can cause disadvantage.

Considering literature review and related research study, researcher's interested in studying demand of game and habit of game among hearing impaired students and highly hope that the result of this research will be useful for the target group by selecting the appropriate technology to serve the need of hearing impaired students.

Objectives

This research aims to study the demand of game design among hearing impaired children including the habit of them in order to gain the information to create the specific games that provide proper functions for this group of children.

Methods

This research has been done through quantitative method.

Research Area

General study in physical and sufficient the needed of technology using in handicapped children school during the period of age 13-15 years old in Bangkok area as followings; Thungmahamek School for the Deaf, Setsatian School for the Deaf and the Eastern of Thailand Prachinburi School for the Deaf Chonburi School for the Deaf.

Population and Sampling

The populations in this research are the impaired hearing children during the age of 13-15 years old from Bangkok Metropolitan area and the eastern of Thailand. One hundred and thirty two students who are impaired hearing were applied to be sampling group. The sample size is set by Krejcie and Morgan tables at 0.05 (Krejcie & Morgan, 1970).

Tool

Questionnaires were applied for data collection, the researcher built the survey. The scope of study is on general condition, the demand of impaired hearing children on computer device, type of game, special technic usage to introduce and construct games. The specialist proved the complete survey through the context that related to this research before using in the field. After that, the researcher applied these surveys to try out in order to find out the flaws of these questionnaires and improve it to the best before using at the real time when collecting data.

Statistics Analysis Using

The using of statistics in this research includes finding the percentage and applied descriptive statistics for analyzed the information.

Collecting data information

The researcher collected the data by using survey questionnaires and by using Sign language interpreter in order to assist and explain the questions to those who are hearing impaired for more understandable. This data were collected since November 2015 to December 2015.

Results and Discussion

The Researcher analyzed the primary information from the questionnaire which was hand out 132 copies. This survey was divided into 3 section as a follow; the first, provide the general condition. The second, provide the information about behavior of the game players who are deaf children and the last one, provide the information about the game's categories which are the deaf children want to play. Descriptive statistics applied for this research through the operation of the statistic computer program.

Section 1 about the primary information about the sampling group of the deaf children at the area around Bangkok and the Eastern of Thailand as showing on the table below

Table 1 General condition of deaf children in percent

| General information of respondent | Number (n=132) | Percent (%) |
|--|-------------------|----------------|
| 1) Sex | | |
| Boys | 63 | 47.73 |
| Girls | 69 | 52.27 |
| 2) Age | | |
| 13 years old | 21 | 15.91 |
| 14 years old | 38 | 28.79 |
| 15 years old | 73 | 55.30 |
| 3) Characteristics of Hearing Impaired | | |
| Deaf (hard of hear) | 47 | 35.61 |
| Deaf (unable to hear) | 85 | 64.39 |
| 4) Cause of lost sense of hearing | | |
| Congenital | 117 | 88.60 |
| After congenital | 15 | 11.40 |

From the table 1 provides the result that the impaired hearing students during the age of 13-15 years old are 69 female or 52.27 in percentages and almost are 15 years old are 73 Children or 55.30 in percentage. The students who suffered the deafness (almost totally lost the sense of hearing more than 91 decibel) are 85 people or 64.39 in percentage and 117 people are Congenital or 87.60 in percentage. The researcher found out that almost of the impaired hearing children are Congenital more than the children who almost totally lost the sense of hearing more than 91decibel.

Section 2 the study on the demand of deaf children on the game playing. The results are as table 2 to table 5

Table 2 Device for play gaming

| Game Player | Percent (%) | Rank |
|---------------------------|-------------|------|
| Computer | 36.64 | 2 |
| PlayStation Portable Game | 5.34 | 5 |
| Sony PlayStation | 7.63 | 4 |
| Mobile Phone | 41.98 | 1 |
| Tablet | 8.40 | 3 |

From the table 2 the result shows the demand of deaf children on game playing about device to play game is mobile phones (41.98%) which almost of the student have. They can use this kind of device to play any time. The second order is computer (36.64%) and the least famous one is Sony Play Station (7.63%)

Table 3 The most famous type of games

| Game | Percent (%) | Rank |
|---------------|-------------|------|
| Racing Game | 37.12 | 1 |
| Sport Game | 34.09 | 2 |
| Fighting Game | 28.79 | 3 |
| Shooting Game | 22.73 | 4 |
| Music Game | 18.94 | 5 |
| Strategy Game | 15.91 | 6 |

From the table 3 the result shows the deaf children prefer the Racing game the most (37.12%) and the next below is Sport game. It can be seen that the both games are alike because the both are the kind of competitive games and must be follow by the rules. The least famous game is Strategy game which in need planning skill in order to defeat the rivals under the several conditions of this kind of game.

Table 4 The demand on using the internet for playing games

| Internet | Percent (%) |
|----------|-------------|
| Use | 91.60 |
| Not Use | 8.40 |

From the table 4 the result shows that almost of children (91.60%) to play game with internet access. The result conform to the behaviour result that were represented before regarding the deaf children use mobile phone for playing games the most. As a result, it can be sum up that the children play games with mobile phone through its internet connection.

Section 3 the study on game design. There are 8 items asking on this section. The results are on table 5 to 7 as showing below

Table 5 The demand on VDO to introduce game

| Demand | Percent (%) |
|--------|-------------|
| Yes | 78.63 |
| No | 21.37 |

From table 5 the result shows that they prefer VDO presentations available before the games start, the preview of storytelling by VDO shall provide the better feeling to the players (78.63%)

Table 6 Type of game

| Game | Percent (%) | Rank |
|-----------------|-------------|------|
| Sport Game | 20.45 | 1 |
| Shouting Game | 19.70 | 2 |
| Racing Game | 19.70 | 2 |
| Fighting Game | 15.91 | 3 |
| Music Game | 15.91 | 3 |
| Adventure Game | 13.64 | 4 |
| Simulation Game | 13.64 | 4 |
| Strategy Game | 6.06 | 5 |
| Puzzle Game | 5.30 | 6 |

From table 6 the result shows if the deaf children prefer Sport game (20.70%), Racing game (19.70%). This result conforms on the demand of playing games as showing in the former table in section 2.

Table 7 The demand on special technic to play with game

| Game Accessories | Percent (%) | Rank |
|---------------------|-------------|------|
| Musical Instrument | 21.97 | 1 |
| Touch Screen | 18.18 | 2 |
| Sport Equipment | 17.42 | 3 |
| Single handed slide | 13.64 | 4 |
| Leap Motion | 12.12 | 5 |
| Joystick | 11.36 | 6 |

From table 7 the result shows that the tools in need to use with the games for more complacent of the players is Musical Instrument (21.97%). Although the deaf children are not heard the voice but they still need the musical instruments to fulfil their happiness. The second is Touch Screen (18.18%) in order to make the children feel more comfortable and funnier. And the last one is Joystick that conforms to the result shows on Table 2 of section 2 regarding the Sony Play Station that is the device of the children using at the least number because the Joystick is one of the input accessory for this kind of game.

Table 8 Type of dimension

| Dimension | Percent (%) |
|-----------|-------------|
| 2D | 32.06 |
| 3D | 67.94 |

From table 8 the result shows the deaf children required games with three dimension of game (67.94%) for more satisfied feeling in playing games.

Table 9 The size of computer monitor for playing games

| Monitor Size | Percent (%) |
|--------------|-------------|
| Small | 11.45 |
| Medium | 22.14 |
| Large | 66.41 |

From table 9 the result shows that the deaf children need the large monitor screen (66.41%) as it can clearly be seen from the result of survey questionnaires that asking about the size of monitor screen.

Table 10 The languages in need for playing games

| Language | Percent (%) |
|----------|-------------|
| Thai | 40.45 |
| English | 29.01 |
| Finger | 30.53 |

From table 10 the result shows that the language for using in games is Thai (40.45%) and the second is Finger Language (30.53%). As a result, Thai is the language in need for the deaf children in order to play games.

Table 11 The characteristics of the agent in games

| Characteristics of agent | Percent (%) | Rank |
|--------------------------|-------------|------|
| Cartoon Characters | 38.17 | 1 |
| Boy | 31.30 | 2 |
| Girl | 22.90 | 3 |
| Animal | 7.63 | 4 |

From table 11 the result shows that the deaf children need some kind of cartoon characters to represent themselves in games (38.17%)

Table 12 The setting of button on key on keyboard

| Requirement | Percent (%) |
|-------------|-------------|
| Yes | 69.47 |
| No | 10.69 |
| Not Sure | 19.85 |

From table 12 the result shows that if the deaf children can control the button on keyboard by themselves in order to control the games. As a result, they will be able to play the games better. (69.47%)

Conclusions

The hearing impaired students are average age around 15 years old, almost totally lost the sense of hearing more than 91 decibel and Congenital. In the part of Game Habit Devices for the Deaf Children, the research shows that Mobile Phone is the most famous device for playing through the internet access. The most popular games are the kind of sport games such as racing game, fighting game. This type of game can be finished in short time and the children can play with so many friends. As a result, the children will be happier for playing with the preferable game. For game design, sport games are seemed to be the most interesting game of the deaf children. Moreover, the VDO presentation before the games begin is seemed to play important roles as well because it makes the players have emotions involved and understand more about the story of games. The large size of the monitor is preferable. In addition, the Thai language is needed for menu using or communicates and operates while playing games. Also furthermore, the cartoon characters in games are the kind of special things to make the games more amusing. Besides, the children need to control the button on keyboard by create the several functions by

themselves. Ultimately, the researcher hope that the outcomes of the research will be useful for the deaf children regarding the game producers can provide the preferable games for this group of children. As a result, it will make the deaf children feel happier and finally it can be developed the skill of them for further improvement.

References

- Department for Empowerment of Persons with Disabilities. *Statistics disabled*.
Retrieved August 5, 2015, from http://ecard.nep.go.th/nep_all/file/Stat_Dec57.pdf.
- Krijcie, R. V. & Morgan, D. W. (1970). Determining Sample Size Research Activities.
Education and Psychological Measurement, 30(3), pp. 607-610.
- Ministry of Public Health. (2012). *International Classification of Functioning, Disability and Health*. Bangkok: Ministry of Public Health.
- Orzack, H. M. (January 1999). Computer Addiction: Is it Real or Virtual?. *Harvard Medical School*, 15(7), p.17.
- Srivilai, S. (2006). *The Study on Behaviors and Factors Related to On-Line Game Playing of Industrial Engineering Students at Nakhonrachasima*.
Bangkok: King Mongkut's University of Technology Thonburi.
- Thai National Legislative Assembly. (2007). *Federal empowerment for disabilities people 2550*. Bangkok: Office of the Council of State.