A CASE STUDY ON HABIT, MOTIVATION, AND PERCEPTION OF URBAN HIGH SCHOOL STUDENTS TOWARD COMPUTER GAME

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ABSTRACT

It has been widely accepted that people learn from playing computer games. The popularity of computer games has attracted a number of research initiatives on how computer games may be used for educational purposes. While there are a number of computer games widely available, computer games that incorporate education principles into its design are relatively rare. Therefore, developing computer games for educational settings is very challenging. Aside from complying with criteria which makes a computer game ‘good’, educational computer games should be educational and enjoyable.

In designing an educational computer game, it is important to know key behavioral aspects of game players as a targeted group. This information is valuable in order to develop suitable preproduction concepts for computer games. This paper presents preliminary finding on habit, motivation, and perception of urban high school students toward computer game. Students were selected for this purpose from two high schools in Jakarta and Bandung. The survey results are valuable not only as far as developing a preproduction concept of educational computer game for urban teens is concerned, but also to provide some insight for parents and educators: playing computer game has no impact to relationship with their family, relationship with their peers, teen’s school report, and daily activities.

Keywords: Education computer game, survey, game design

1 INTRODUCTION

It has been widely accepted that people learn from playing computer games [1, 2, 3, and 4]. The popularity of computer games has attracted much investigation into how computer games may be used for education goals [5, 6, and 7]. As a result, an increasing number of educators have turned to computer game as learning tools [8, 9, 10, 11, and 12]. The “educational computer game” is a class of computer games that incorporates education principles into its design. Despite the plethora of computer games, educational computer games are relatively rare compared to those designed for leisure activities. This condition suggests that designing educational computer game is very challenging as it should combine two often conflicting interests: entertainment purposes and education purposes.

There are many challenges in designing computer games for educational purposes. Malone [26] indicates four essential characteristics of good computer games: control, challenge, fantasy, and curiosity. On the other hand, educational computer games, in particular, should be educating and fun to play for both genders [13, 14]. In addition, these games should be capable of reducing the gender gap in computer game involvement [15]. These challenges imply that designing educational computer games requires a special approach.

One traditional method in designing such computer game involves the addition of an “education module plug-in” into a standard computer game. As a result of this addition, the computer game serves simply as a “wrapper” to instructional materials [16]. Unfortunately, as instructional objective is embedded rather than integrated into the initial game design, the computer game is not effective in immersing learners while learning the given subject area. In other words, this approach tends to be more product-oriented rather than computer game user need-oriented.

Another method in designing educational computer games takes a different approach. Contrary to the former approach, this approach tends to be user need-oriented. Computer game requirements are developed based on the assessment of needs of computer gamers [12]. That
said, the approach to designing products by studying its users is not new. This approach has been widely accepted in the field of consumer behavior [17]. Connolly, et.al. [18], among others, have conducted a survey on the computer game playing habits among university students. Moreover, some data collecting methods have been proposed including focus group discussions, retrospective survey, beta test, usability test, and play test [12, 19].

This paper presents preliminary finding on the behavior of certain urban high school students in Jakarta and Bandung in relation to computer games. The aim of this survey is to identify urban teen perspectives towards computer games for purposes of enhancing the educational aspects of computer game design. Specifically, the survey quantitatively measured 3 aspects of computer gaming namely: habit; motivation; and perception and the impact of computer games in relationships (family and friendship), school achievements, and daily activities.

According to Solomon [17], habitual decision making (habit, for short) can be defined as “choices made with little to no conscious effort.” Motivation is defined as “processes that lead people to behave as they do.” Perception is defined as “the process by which immediate response of sensory receptors to basic stimuli are selected, organized, and interpreted.”

In this survey, habit is measured by average playing duration, favorite gaming places, favorite game genre (type), and computer game equipment. Motivation is measured by one’s level of interest in computer games, initial motivation to play computer games, and current motivation to keep playing computer games. Finally, perception is measured by student perception towards relationship (family and friendship), parental support, school achievement, and daily activities.

The paper is expected not only to provide information for the education computer game designer in particular but also to identify the potential side effects (if any) in implementing computer game for education setting.

2 METHODOLOGY

The purpose of this survey was to find preliminary finding on habit, motivation, and perception of urban high school students in relation to computer games.

Jakarta and Bandung were purposely selected as survey locations. These two cities are selected mainly because these two locations provide relative easy access for data collection.

The sample consists of 214 students aged between 16-19, who were at their third year at SMA Bina Bakti-Bandung and SMAK 2 Penabur-Jakarta.

Data collection was conducted using structured self administered questionnaires consisting of 28 questions using two types of scale: nominal and ordinal. The questionnaires consists of: individual data (name, age, sex, telephone number, school address); and some questions related to habit, motivation, and perception related to playing computer game. The data were entered into the SPSS package and analyzed using statistical analysis. Nominal data are analyzed using descriptive analysis, and ordinal data are analyzed using Chi-square analysis [25].

The result of the survey are grouped into: (i) computer gaming habits, (ii) motivation towards computer games, and (iii) perception towards the impact of computer game.

3 RESULT

3.1 Computer Game Playing Habit

The survey found that majority of respondents enjoyed playing computer games. From all students initially selected as respondents, only 11 (5%) students did not like to play computer games, compared to 203 (95%) students who like to play computer games.

The proportion of male students and female students who like to play computer games were not significantly different (p-value=0.6). This finding supports Prensky’s [2] argument that computer games, regardless gender, have become an important part of a teenager’s daily life.

Despite being labeled as the ‘net generation’ [2, 3], urban teens displayed diversity in the use of computer games. The survey indicated that time spent playing computer game is highly correlated with gender ($\chi^2(14) =34.97$, p-value < 0.05). While most students (77% of male students and 94% female students) only spend a range of 0-8 hours/week on average playing computer games, male students tend to spend more than 8 hours/week playing computer games. This finding is similar Anderson’s, et. al [20] and Walsh’s [21] reports which indicate gender disparity in time spent for game playing.
In addition, selecting a favorite place to play computer games is highly correlated with gender ($\chi^2(6) = 24.26$, p-value < 0.05). The survey found majority of female students and male students (89% of female students and 61% of male students) prefer to play computer game at home over any other place. In contrast to female students who tend to limit their choice for game playing, male students have more alternative playing places outside their homes. These alternative places include game rental places (14% of male students) and friends’ houses (13% of male students). This finding is encouraging as it gives more opportunity for parents to supervise their children in selecting appropriate computer games.

In terms of game genres, the survey indicated that some game genres such as action (Tomb Raider, Doom, etc), sport (EA Soccer, etc), flight simulator, and first person shooter (Call of Duty, etc) attracted more male students than female students. In contrast, role-playing games (Harvest Moon, Ragnarok, etc) and strategy attracted an equal number of boy and girl game players.

Finally, the more prevalent game equipment used for game playing were the Sony Playstation (PS1/PS2 (32%), Hand phone (27%), and PC (24%).

### 3.2 Motivation toward Computer Game

In terms of level of interest towards computer games, the survey found a significant difference in the level of interest towards computer game between genders ($\chi^2(2) = 32.41$, p < 0.05). The finding indicates male students tend to have stronger interest towards computer games than female students.

Motivation to play computer games (measured by initial motivation for playing computer games for the first time and current motivation for playing computer games) showed correlation with gender. Among several motivations questioned, the survey found four (4) main motivations namely: having fun, playing with friends, challenging computer, and admiring “eyecandy” game. It appears that having fun is not only the dominant motivation for both genders but also the only a sustainable motivation especially for male students.

### 3.3 Perception toward Impact of Computer Game

The findings can be summarized as follows: -

First, the survey found that playing computer games has no impact to the gamer’s relationship to his/her family. The survey found that perception toward the impact of computer game playing to family relationships depends on gender ($\chi^2(1) = 6.04$, p-value < 0.05 ). However, for both genders, the proportion of students who perceived that there is no impact of playing computer game to relationship with their family is bigger that the proportion of students who give the opposite perception.

Second, the survey found that there were more parents support their children to play computer game than those who oppose it. The survey found the proportion of students who perceived that their parents approve of their game playing (56%) is greater than those (41%) who perceived that their parents opposed it. These proportions are significantly different (p-value=0.046). Further analysis also found this perception is not correlated to gender. The survey result is encouraging as more parents in urban areas tend to support rather than to oppose their children playing computer games.

Third, the survey found that playing computer games has no impact to the gamer’s relationship with teen friends. Despite the preconception that the impact of computer games on friendship is highly correlated with gender ($\chi^2(1) = 25.84$, p-value < 0.05), further analysis indicates that the proportion of students who perceive that computer game playing has no impact on their friendship is bigger that those who claimed the opposite (p-value < 0.05). The survey found that about 90% of female students (compared to 60% of male students) claimed that playing computer games did not affect their relationships with their peers; while 9% of female students (compared to 40% of male students) claimed that computer games affected their relationships with their peers.

Fourth, the survey found that there is no impact of playing computer games to student’s school report. In this survey the student was asked his/her perception whether playing computer impacted their school reports, 2 semester in row before the survey was conducted. The survey found that 91% of the female students (compared to 81% of the male students) perceived that playing computer games had no impact on their last 2 semester school reports. The significance test confirms this proportion is significantly greater than those who have opposite perceptions (p-value > 0.05) and this perception is independent of gender ($\chi^2(1) = 3.5$, p-value > 0.05). This finding confirmed findings in earlier studies, i.e., there is no clear causal relationship between academic performance and computer gaming [22, 23].
Fifth, there is no evidence that playing computer games had negative impact on the students’ daily activities. Majority of students (60% of male students and 77% of female students) perceived that computer gaming had no impact on their daily activities. The significance test confirms this proportion is greater than those who held a contrasting perception ($\chi^2(1) = 3.5$, p-value $> 0.05$). Some students did admit that playing computer games reduced their time available for sleeping and doing homework, but the proportion of answers along this vein was not significant in number.

4 CONCLUSION.

The survey results in this paper on habit, motivation, and perception of urban teen holds value not only to the designer of educational computer games but to parents and teachers as well. This paper established the preference of urban teens for computer games in general, e.g. computer game genre, game platforms, and game playing venues. In addition, provided some evidence which somewhat reinforces the commonly held opinion that girls were not as keenly interested towards playing computer games in contrast to boys. It is important to note that this phenomenon needs to be investigated further as it might due to the lack of content in existing computer games as pointed out by Loton [24]. Some of the findings show that certain perspectives held by urban teens towards computer game are universal [2]. Contrary to the concerns of many parents and educators about the potential adverse impact of computer games, this case study shows there is not enough evidence to this effect, namely that playing computer games negatively impacts family relationships, teen friendships, and school performance.

Ultimately, it is hoped that these findings will contribute to a better understanding of variability among urban teen game players to further improve educational computer games, particularly in Indonesia.

REFERENCE


