

Usability and Player Experience of Input Device for Mobile Gaming

Chu Kimberly, Multimedia University, Cyberjaya, Malaysia

Tek Yong Lim, Multimedia University, Cyberjaya, Malaysia

Chee Weng Khong, Multimedia University, Cyberjaya, Malaysia

Chui Yin Wong, Multimedia University, Cyberjaya, Malaysia

ABSTRACT

Input devices for mobile gaming consist of hard keypad (HK) and soft keypad (SK). Different interaction for both input devices have an impact on usability and player experience. Although there are publications that evaluate on input devices and game, little is known on how HK and SK affect mobile gaming. The implication to usability aspect is not fully understood and the list of recommendation on player experience is limited. The aim of this paper is to examine usability and construct recommendation list for player experience by comparing two different types of mobile devices, namely HK and SK. For usability, an experiment was employed to measure effectiveness, efficiency and satisfaction. The studies conducted an interview after the experiment. From the interview, a list of recommendation was constructed to identify player experience of input devices for mobile games. Results of the experiment were significant for effectiveness and satisfaction measures where HK performed better than SK. The recommendation list revealed both devices most mentioned positive and negative comments.

KEYWORDS

Effectiveness, Efficiency, Hard Keypad, Positive and Negative Comments, Satisfaction, Soft Keypad

INTRODUCTION

This paper attempts to position usability (effectiveness, efficiency and satisfaction) and player experience as input device evaluation dimensions for mobile game based on McNamara & Kirakowski (2006) theoretical framework of interaction. System acceptability drives usability while player experience is driven by human cognition and emotion. By exploring each of this aspects namely usability and player experience, this paper aims to further understand the relationship between the devices and the game interaction with technology. Software and web usability literature has grown exponentially but little research were conducted from the perspective of mobile gaming and input device usability (Federoff, 2006). To identify if the input devices achieve its intended gaming purpose, significant issues that arise need to be addressed and reported. By conducting a usability test, player performance and satisfaction with input device could be determined.

DOI: 10.4018/IJMHCI.2016070104

Copyright © 2016, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

In mobile gaming, previous literature on player experience focused on gameplay and mechanics (Bernhaupt, Eckschlager, & Tscheligi, 2007; Desurvire, Caplan, & Toth, 2004) instead of game interface. Game interface consists of input devices (hardware) and in-game menu (software). However, little research has been done on mobile input devices influence under the game interface in relation to player experience except for Chu, Lim, Khong & Wong (2013) and Duh, Hsueh, & Chee (2008). Similar games played on different mobile input devices lead to a different player experience. Therefore, types of mobile input devices used during game play are crucial factors that encourage or discourage player experience. However, there is no list of recommendation for input devices on mobile gaming with focus specifically on HK and SK. The list could be a reference for interaction designers, game developers and designers to discern the differences in input devices, especially factors that encourage better player experience.

INPUT DEVICES ON MOBILE

In Human Computer Interaction (HCI), input devices are categorized into switch based and pointing devices (Greenstein, 1997). The most common input device on mobile keypad consists of HK and SK. HK belongs to switch based input that uses numeric or navigational keypad buttons to relay information. SK belongs to the pointing based input, which allows users to input spatial data through direct manipulation on the virtual keys. Both switch based and pointing input include letters, numbers or symbols, and directional key presses to actuate users computing commands. Mobile phone has diverse input methods such as HK and SK combined into one device. Therefore, it is necessary to take the input characteristics into consideration. This paper provides a summary of available mobile input devices in Table 1.

One similarity between both input methods is the navigational keypad. Shiratuddin & Zaibon (2011) reported that navigation keypad is the natural choice for mobile phone control because all mobile phones have the navigation capabilities. Hence, navigational keypad is used to communicate previous, next page or menu scrolling. Navigational keys are widely used as gaming control for up, down, left and right character movements. Balakrishnan, Yeow, & Loo (2011) reported important keypad aspects are related to key size, shape, space between keys, tactile feedback and texture. Their findings correlate with other literature that highlights similar aspects such as size, shape, texture, tactile feedback, sensitivity and spacing contributed to the typing performance and usability of keyboards (Cakir, Hart & Stewart, 1980; Kinkead & Gonzales, 1969; Klemmer, 1971; Lee & Zhai,

Table 1. Comparison between HK and SK

Category – Mobile Input (Input Device)	Input Characteristics
Hard keypad	<ul style="list-style-type: none"> • Indirect input interaction • Physical keys similar to game controllers used with gaming consoles • Kinaesthetic feedback give players a physical clicking feel • Appear physically all the time • Smaller in size because it shares space with other numeric and alphabetical keys
Soft keypad	<ul style="list-style-type: none"> • Direct input interaction • Virtual key • Visual recognition is required as players will not be able to feel the buttons or keys texture • Vibration feedback is available • Keypad can hide from view when not in used and displayed when required thus is less cramped • Available in larger size as it is not restricted by physical numeric and alphabetical keypads

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the product's webpage:

www.igi-global.com/article/usability-and-player-experience-of-input-device-for-mobile-gaming/154076?camid=4v1

This title is available in InfoSci-Journals, InfoSci-Journal Disciplines Communications and Social Science, InfoSci-Select, InfoSci-Select, InfoSci-Select, InfoSci-Technology Adoption, Ethics, and Human Computer Interaction eJournal Collection, InfoSci-Networking, Mobile Applications, and Web Technologies eJournal Collection, InfoSci-Journal Disciplines Computer Science, Security, and Information Technology, InfoSci-Journal Disciplines Engineering, Natural, and Physical Science. Recommend this product to your librarian:

www.igi-global.com/e-resources/library-recommendation/?id=2

Related Content

The Digital Soul

Daniel Black (2013). *Handbook of Research on Technoself: Identity in a Technological Society* (pp. 157-174).

www.igi-global.com/chapter/digital-soul/70353?camid=4v1a

Domestication of Telecentres by Malawian Rural Women

Sellina Khumbo Kapondera and Wallace Chigona (2018). *International Journal of Information Communication Technologies and Human Development* (pp. 51-64).

www.igi-global.com/article/domestication-of-telecentres-by-malawian-rural-women/197882?camid=4v1a

Evaluating the Effectiveness of a Mobile Location-Based Intervention for Improving Human-Computer Interaction Students' Understanding of Context for Design

Abeer Alnuaim, Praminda Caleb-Solly and Christine Perry (2014). *International Journal of Mobile Human Computer Interaction* (pp. 16-31).

www.igi-global.com/article/evaluating-the-effectiveness-of-a-mobile-location-based-intervention-for-improving-human-computer-interaction-students-understanding-of-context-for-design/116483?camid=4v1a

Human Rights and Technology: Lessons from Alice in Wonderland

Judith Dueck and Michael Rempel (2013). *Human Rights and Information Communication Technologies: Trends and Consequences of Use* (pp. 1-20).

www.igi-global.com/chapter/human-rights-technology/67744?camid=4v1a