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Analysis of Learners' Perception on the SPAT Format as a Delivery Method in Mobile Learning

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Introduction

Among various learning environments, the use of mobile devices is being proliferated to more and more learners; universities are also showing an increasing tendency in striving to establish an educational system and network that befits the new age of information technology (Lee, 2014). The importance of ubiquitous mobile learning and easily accessible courses is clear. As a part of an effort aimed at building a learning environment based on mobile devices, S university is offering learning materials through a new mobile learning system called 'GGLearn' which is a system utilizing the 'SPAT' format.

The SPAT format is one of the methods used in mobile learning, first put forward by Ilju Rha (2015). It is an abbreviation from the first letters of 'still picture,' 'audio' and 'text,' and refers to a way of offering audiovisual materials by bringing together in one 'scene' a related set of still picture, audio, and text. Through this format, the learners can access learning materials using significantly less data, compared to an equivalent video. Additionally, a learning environment differentiable from that created via video material (i.e. the addition of text) can be created.

Material channeled through mobile devices most often focus on audiovisual communication. For this to be effective, one should take into account various factors such as learner perception of media, pattern of usage, preference - cognitive, affective factors about the learner. As the SPAT format is also an audiovisual medium, the learners, when using SPAT format, are facing a situation where image, audio and text are being offered altogether. Accordingly, their perception will, more often than not, be closely related to their 'visualization tendency'. According to Rha et al. (2009), visualization is a unique mental faculty of human beings; and a visualization tendency is a degree of a mental processing ability for visually transforming, generating, manipulating, operating, recreating, or representing information in a meaningful way. Preceding studies show that the visualization tendency of learners can have an effect on learning attitude, concentration, persistence, satisfaction and effectiveness of learning (Rha, & Sung, 2007; Sung, Lim, & Kim, 2010; Rha, Sung, & Park, 2010; Yoo, & Rha, 2015; Lawless, Mills, & Brown, 2002).

It is worth investigating how learners accustomed to video material will react to still pictures, coupled with audio and text; another question would be how the learning environment with new features such as the low data volume enabling downloads, the separate but integrated mix of still picture, audio and text will be received by learners. The answers to these questions will provide clues not only as to how the SPAT format can be utilized in the future but also how audiovisual materials can be effectively developed and applied in mobile devices.

This paper aims to discover the multifaceted perception of learners regarding the SPAT format, a new method of offering learning material via mobile devices. The detailed purposes of this paper can be stated as follows:

First, what perception do learners have of SPAT format in mobile environments?
Second, how is this perception related to the visualization tendency of the learner?

Research Design and Methods

The research was conducted based on the data of 97 undergraduate students in the college of education of S university, with an active mobile learning environment. On November 10th, 2015, the learners were offered SPAT-based learning material on the topic of creativity. The lecture was divided into hour-long segments, and they were in total three hours. Figures 1 and 2 show the form of material that was utilized. After learning ended, a survey aiming to discover the learners' perception and their visualization tendency were distributed and collected. A total of 106 survey sets were given out, and excluding the six that were not returned, 97 sets were amassed for analysis. Additionally, a semi-structured interview was conducted on six learners who experienced SPAT format in a mobile learning environment.

Figure 1. Main page of GGlearn

Figure 2. Study mode of GGlearn

Results

Through the semi-structured interviews, we discovered that the advantages of the SPAT format were being perceived and utilized by learners, namely the ease of understanding core ideas, the effectiveness of learning, ease of navigation, and the possibility of self-directed learning, as suggested by Rha (2015). Analyzing the qualitative data on learner perception, we found that learners overall held a positive view of the SPAT-based learning materials. Additionally, learners displayed an understanding of the possibilities the SPAT format held and expressed anticipation that it could be offered in a still more improved manner. Lastly, the results of the semantic differential scale questions show that the learners' main impression of the SPAT format was that it is 'small', 'light', 'fast', and 'rigid.' Also the results of the multiple regression analysis revealed that the higher the tendency to use representative visualization, the more static perception learners have on the degree of activity found in the SPAT format.

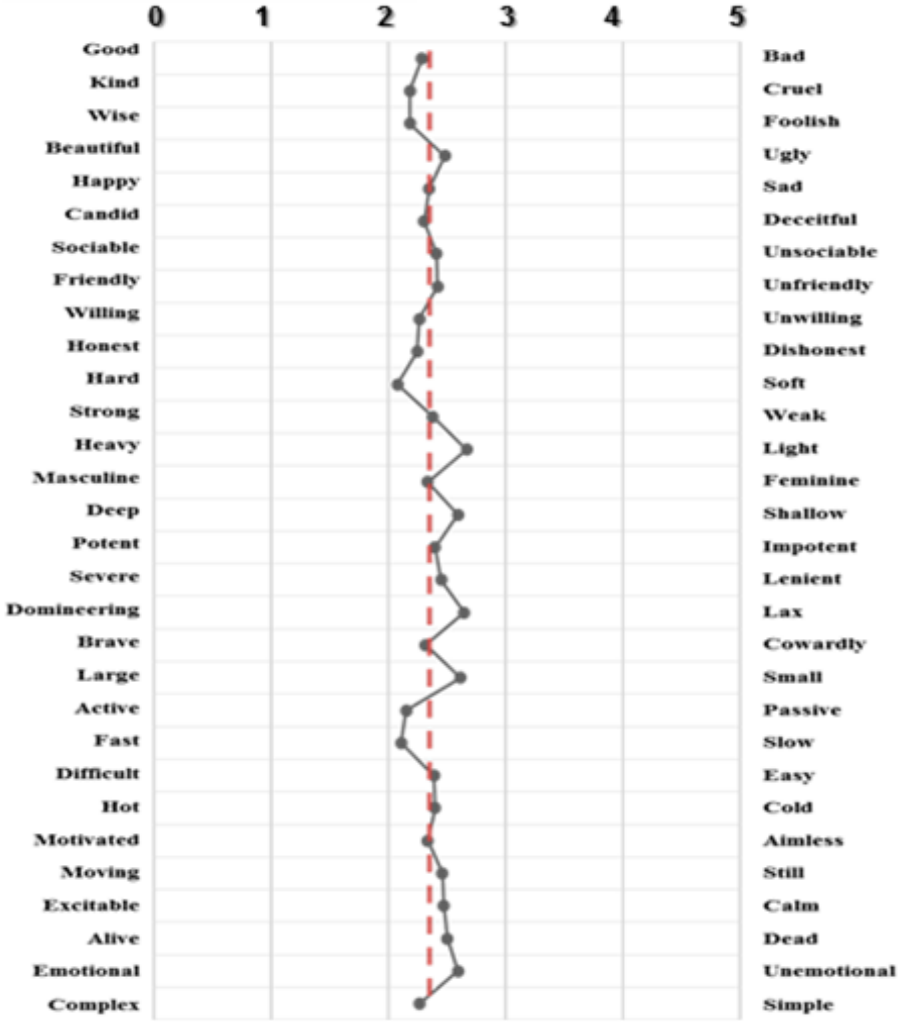

Figure 3. Semantic Differential Scale profile

Looking at the relationship between visualization tendency and the semantic differential scale, analysis shows that learners with strong representative visualization tendency which refers to the reproduction of a single non-visual sense modality to a visual format viewed an active aspect of the SPAT format adversely. This may be because these learners are adept at visualizing information from different senses and thus feel that the fixed set of still picture, text and audio utilized by the SPAT format limits activeness.

Table 1.
Regression Analysis of Visualization Tendency and Semantic Differential Scale

Dependent Variable	Independent Variable	Unstandardized Coefficients		Standardized Coefficients	t		F
		B	Std. Error	β			
Evaluation	Generative**	0.32	0.23	0.62	1.37	0.38	1.89
	Representative	0.17	0.51	0.32	0.34	0.10	0.12
Potency	Generative	-0.30	0.53	-0.30	-0.56	0.09	0.31
	Representative	-2.01	1.78	-0.74	-1.13	0.56	1.28
Activity	Generative	0.20	0.31	0.35	0.66	0.12	0.44
	Representative	-1.37	0.07	-0.99	-19.05*	0.99	363

*p<.05 **Type of visualization tendency

Conclusion and Discussion

This study aimed to explore learners' perception and possibility of development about the SPAT format as a suitable media type in mobile learning environment. Through qualitative message and analysis between semantic differential scale and visualization tendency, the result showed that learners mostly had a positive view on the SPAT format as it is 'small', 'light', 'fast', and 'rigid'. Also, the relationship between semantic differences on SPAT and visual tendency score was that learners with strong representative visualization tendency viewed an active aspect of the SPAT format adversely. Based on the research results some implications could be drawn as follows.

First, as a result of analyzing qualitative messages about how learners perceive SPAT in mobile learning environment, it is found that learners have a positive perception about SPAT format. Mobile contents should be developed as small units and learning objects so that they can be learned anytime and anywhere (Kim, & Shon, 2011). The SPAT format is also developed and provided in this way, and the learners were aware of the effectiveness of learning in that they could download the contents with small size and learn quickly. This implies that the SPAT format in mobile learning environment can be applied as a tool to positively affect learning.

Secondly, most learners were using navigation function and self-directed learning strategies, still, more supports are required for learners' self-directed learning. Unlike the traditional learning environment controlled by teachers, learners should manage and regulate their learning by themselves in mobile learning environment. If learner fails to self-regulate their learning, it can go to interruption of learning. Thus, in mobile learning environment held by individual learner, using self-directed learning strategy is more emphasizing (Wolters, 2003). Despite of several learning functions that support self-directed learning, it is required more to support such as temporary pause function, feedback from teacher, and interaction between learners along with further detailed segmentation which considered the characteristic of SPAT format. To help learners who use mobile devices as a learning tool to improve learning achievement, a strategy that can stimulate meta-cognition should be considered (Joo, Jung, & Ham, 2014).

The results of the semantic differential scale questions show that the learners' perception of SPAT format in the mobile learning environment is largely perceived as 'small', 'light', and 'fast'. However, they also recognize the feeling of 'hard'. This means that learners are relatively aware of satisfaction and speediness among various characteristics of mobile learning (Kang, 2014; Kim, 2005; Jang, Han, & Kim, 2003; Leem, 2009). On the other hand, the reason some learners felt that the SPAT format was 'hard' might be because they found it was difficult to proficiently use the SPAT format in mobile learning environment, or maybe they felt isolated due to a lack of interaction with peer learners. Based on learners' understanding of the possibilities of the SPAT format, it could be designed in still more improved affective learner elements, such as dexterity in using mobile devices, preferred interface, and communication activities (Chung, & Cho, 2004; Jang, Park, & Lim, 2012).

Lastly, it is required to produce the SPAT format considered learners' visualization tendency in mobile learning environment. We could find that learners with strong representative visualization tendency which refers to the reproduction of a single non-visual sense modality to a visual format viewed an active aspect of the SPAT format negatively. Activity is how fast and slow is it in semantic differential scale (Osgood, Suci, & Tannenbaum, 1964) and the learners who have strong representative visualization tendency would be good at visualization by other senses synthetically. That is, the results means that the learners who visualize with other senses could feel the SPAT format composed of still picture, audio, and text are less active. Meanwhile, when visual materials which can support understanding are provided to the learners with high visualization tendency, it would be meaningful (Owens, Bower, & Black, 1979; Yoo, & Rha, 2015). Accordingly, it is essential to organize SPAT format considered the factors to affect learning attitude and satisfaction by visualization tendency.

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