Applying digital storytelling technique to website navigation for improving emotional user experience

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Abstract: Th is stud y attemp ted t o find a m ethod of applying digital sto rytelling tech nique, recently bei ng studied active ly, to improve emotional use r experience in navigation of websites. Websites were an alyzed on digital sto rytelling elements to sug gest a mean s to u tilize d igital storytelling in existing we bsites. A website which applies each element by step was designed for an e xperiment o n 4 0 users o n t heir reac tions a nd ex periences. C VPA e valuation, em otional evaluation, usability test an d satisfaction evaluation were measured on each website. As a resu lt, better em otional u ser exp erience, usab ility and satisfacti on were observed from n avigation of website with digital sto rytelling. The authors anticipate helping designers make more emotional website navigations using digital storytelling technique.

Key words: Website navigation, emotional user experience, digital storytelling

1. Introduction

Cultural a nd industrial sect ors are recently in creasing their in terest on em otions. Websites are in creasingly focusing on understanding of user emotions and efficient application of such emotions in the design. However, most of studies on website design are merely concentrating on easy and efficient display of information based on user recognition. Accordingly, the purpose of this study is to analyze websites using digital storytelling elements and to pro pose a m ethod of utilizing digital storytelling technique in website n avigation based on the results of analysis. In addition, user reactions and experiences will be investigated on different versions of websites created from an exi sting si te using the p roposed method. Website navi gation will be t ested o n whether application o f digital storytelling technique increases emotional user experience and overall user satisfaction.

2. Website Navigation and Digital Storytelling

Navigation is a word referring to saili ng and air flight. It refers to a process in which users surf the space filled with inform ation by m oving fro m cu rrent position to t he n ext look ing for wan ted i nformation. [1] Types o f website navigation i nclude global na vigation which i s provided c ommonly i n al l page s of a si te an d l ocal navigation which allows movement from a specific region within a site to a sub page of that region.

Since conside ration of em otional e xperience is a n im portant elem ent of s uccessful design a nd t here is a n increasing i mportance o f e motional e xperience i n website navi gation desi gn, at tempts a re being m ade on

providing differentiated contents and user environments to offer enjoyable experiences. However, as of now, such methods are limited to one-time events applied to specific areas instead of forming a continued relation with users. Therefore, it is necessary to design a website so that users can have emotional experience in every part of the website. Many methods are available for making such design, and digital storytelling is one of these methods and considers movements of users according to the structure of global and local navigations.

Digital storytelling can be defined as 'a storytelling conducted using digital technology as the medium or method of expression'. [2] That is, digital storytelling is a storytelling done through digital media in a computer network environment, and storytelling which uses digital technology can be referred to as digital storytelling. [3] Characteristics of digital storytelling are summarized into four keywords: Flexibility, universality, interactivity and community formation. Flexibility in digital storytelling refers to making of a non-linear story using digital media technology. Universality means that anyone can become the producer of storytelling through popularization of computers and easily learned software. Also, interactivity refers to participation of users in development of stories using media characteristics that can be mutually exchanged. A community is formed according to the same purpose by creating a network of all computers around the world.

In this study, based on the characteristics of digital storytelling and related studies, 'space and environment, story, contents and interaction' were suggested as elements necessary for composing digital storytelling. Digital storytelling must allow diverse interactions and be flexible. It is thus important to consider in what form, space or environment digital storytelling is provided to users. In addition, the most important element of digital storytelling is the emotional content which contains epic aspect, or the story. Stories are processed in the form of contents in a digital environment and offered to users. Digital storytelling, mainly based on digital media on a computer network, presumes participation of users from the beginning.

3. Case Study and Utilization Method

50 domestic and international web sites were collected form the Website Design Awards site to analyze the elements of digital storytelling such as 'space, story, contents and interaction'. From the results of this analysis, website types that took up the greatest portion were used to select 'Busan City Tour, Tourism Course Guide' website already in operation. This website offers information on tourist courses of Busan in a 2D environment. Contents are composed dynamically in a tree structure. The reason for selecting a tourist site is because computer navigation space is particularly appropriate for traveling stories and tourism is the original form of epic stories universally applied to all cultures, artists and media. [4] Stepwise application of digital storytelling elements was proposed as a means to utilize digital storytelling in an existing website.

Table 1. Utilization method of digital storytelling

Existing website	Tourist course guide on Busan
Story-focused website	Tourist course guide on Busan + story (film "Friends")
Contents-focused website	Tourist course guide on Busan + story (film "Friends") + contents (movie clips and traveling information)
Interaction-focused website	Tourist course guide on Busan + story (film "Friends") + interaction (user experiences)

Story-focused website applied the story of a Korean film called "Friends" in its navigation design. Since "Friends" was filmed as all location in Busan, it was appropriate to include the story of the film in an existing website on tourist courses of Busan. In fact in 2001 at the time of release of this film, the film renewed domestic

record at t he box office of 8.18 m illion audiences. Film ing place became a fa mous tourist spot. The story of "Friends" is ab out fou r friends who sh are deep friendship fo r 17 years fro m 1 976 until 1 993 an d en counter a catastrophic e nd d ue t o t he irony o f f ate. Global na vigation was c omposed by cl assifying t his st ory of four friends into times when they were 13, 18~21 and 27~30 years old. Contents-focused website provided a m ovie clip which contains the story of "Friends" , detailed explanation on names of 8 filming places that corre spond to local n avigation, satellite map im ages o n t hese lo cations, travel informatio n on festivals, and tran sportations. Interaction-focused website added a f orum for use rs t o create a com munity of leaving t heir personal tra vel stories online. A separate space was prep ared to allo w users to view popular travel sites among posts registered in the forum. The forum was added as a method of interaction because stories and contents provided unilaterally by we bsite ad ministrator m erely i nduces passive participation of a ppreciating t he e xperience. However, t he forum for tra vel experiences by user s allows i ndividual users to make t heir own t ravel stories and share t hem with others, thereby providing broad and diverse stories to all users.

Figure 1. Existing website / story-focused website
contents-focused website / interaction-focused website

4. Digital Storytelling Effects in Website Navigation

An experiment was c onducted to test whether stepwise application of digital storytelling elements in an existing website improved emotional user experience and overall user satisfaction. 40 university students living in Busan between 20 and 30 years of age were selected as subjects of the experiment. The experiment was done for 7 days since May 16 until May 21 of 2009.

Prior to exp eriencing th e web site, CVPA (Centrality o f Visual Product Aesthetic) evalu ation was performed t o examine the e ffect of aesthe tic senses of p articipants o n the resu lts. As a result, CPVA val ues of users are correlated to emotion ev aluation, usability ev aluation and satisfaction ev aluation i n web sites wi th d igital

storytelling. In particular, looking at the fact that the degree of correlation was found in the sequence of story-focused website < contents-focused website < interaction-focused website, users with high CVPA values can be said to show more positive reaction to better application of digital storytelling in websites.

Table 2. Correlation analysis on CVPA and emotion/usability/satisfaction evaluations

		Existing website			Story			Contents			Interaction		
		Emotion	Usability	Satisfaction	E	U	S	E	U	S	E	U	S
CVPA	Pearson Correlation	0.2988	0.383*	0.471**	0.537**	0.523**	0.538**	0.540**	0.476**	0.586**	0.547*	0.592*	0.661**
	Sig. (2-tailed)	0.061	0.015	0.002	0.000	0.001	0.000	0.000	0.002	0.000	0.027	0.015	0.003

Emotion, usability and satisfaction evaluations were conducted every time subjects experienced the website. ANOVA was used to comprehensively analyze the difference in average values of emotion, usability and satisfaction evaluations of existing website and three websites created using stepwise application of digital storytelling elements. Evaluation results from ANOVA showed differences between two groups, and emotion and usability evaluations showed statistically significant results.

Table 3. Emotion/Usability/Satisfaction results by ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Emotion	Between Groups	6.725	3	2.242	2.714	0.047
	Within Groups	128.854	156	0.826		
	Total	135.579	159			
Usability	Between Groups	11.205	3	3.735	3.477	0.018
	Within Groups	167.594	156	1.074		
	Total	178.798	159			
Satisfaction	Between Groups	12.031	3	4.010	2.549	0.058
	Within Groups	245.463	156	1.573		
	Total	257.494	159			

5. Conclusion

This study was conducted to find the method of utilizing digital storytelling technique, which is recently being studied intensely, as a means to improve emotional user experience in website navigation design. The experiment on emotion, usability and satisfaction evaluations showed improvement in emotional user experience and higher degree of satisfaction in digital storytelling websites compared to existing site without digital storytelling elements. Therefore, in order to design more emotional website navigation, it is effective to create a website based on digital storytelling elements. Authors of this study anticipate helping web designers to create emotional website navigations.

6. Bibliography

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