SECTION III:
HUMAN COMPUTER INTERFACE

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"With new mind set and widen horizon to catch the future: Physiology is the basic science for human life"

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International Joint Conference APCHI – Ergofuture – IAIFI

WELCOME FROM CONFERENCE CHAIR

Om Swastyastu,

Based on long experiences working in Human Computer Interface (HCI), Ergonomics (Erg), physiology, occupational safety and health (OSH), up to now we are practically still running at the same place. Accident or occupational diseases in fact still happening, even in the workplace equipped with up to date regulation and personal protected devices. Unsafe acts and unsafe behavior must be managed to develop safety behavior. Mindset changes become an important issue to be success. To solve that problem. Balinese Branch of Indonesia Ergonomics Society supported by APCHI, PEI, IEA, IAIFI, Center of Ergonomics Study of Udayana University and Bali Human Ecology Study Group (BaliHESG) organize the Joint International Conference APCHI-ERGOFUTURE-PEI-IAIFI 2014. The conference will be held at Udayana University at Jl. P.B Sudirman, Denpasar - Bali on 22 – 25 October 2014.

The goals are. 1. To provide guidance and direction for young ergonomists, 2. To show the unfit, improper, inappropriate research and application of ergonomics, physiology, computer interface, and OSH, 3. to convince that a total and a more strategic approach must be done in conducting research and application with aimto have maximum benefit.

The scientific program of APCHI-ERGOFUTURE-PEI-IAIFI 2014 including : 1) workshops and tutorials, 2) Keynotes address, 3) Free communication (parallel session) of various topics of physiology, human computer interface, ergonomy in small scale industries, children, women, cognitive ergonomy, MSDs, office, communities, agriculture, architecture, etc. and 4) Field Visit and Tour to Bali best tourism object (on request). To make the conference more successfully, the organizing committee invited overseas participants to participate in the conference. Bali is a paradise island with unique attraction culture shall becoming unforgettable experience to all participants.

Om Shantih, Shantih, Shantih Om,

Conference Chair
Dr. Ir. Putu Gde Ery Suardana, M.Erg

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GREETINGS AND BEST WISHES TO THIS CONFERENCE

Dear Hosts, Conference organizers, colleagues, and friends,

I would like to use this opportunity to express my congratulations to you for all your efforts and hard work to organize such an important event. Your dedication for promoting ergonomics discipline and profession as well as sharing and enlarging ergonomics knowledge has resulted in this well-organized conference with great contributions. I attended a previous APCHI-ErgoFuture Conference back to 2010, I was positively impressed with the work done by Indonesian scholars.

It is impressive to see how Indonesian researchers dedicate their work on solving local ergonomics needs while reaching out to the world. I truly support your efforts to apply ergonomics knowledge to the priority needs of the local and national community. I recognize clearly the great commitment of the organizers in continuing their efforts of hosting this conference again in four years short. It is equally important to satisfy local ergonomics needs and to network the international ergonomics community.

This conference held in Bali, Indonesia, has served as an important platform for local and foreign participants to communicate, exchange knowledge and experience, as well as discuss and realize new ideas and mutual cooperation. It is an important event for the big ergonomics family, and is shaping the future development of ergonomics not only in this region but also globally. I hope our efforts could continue and make this conference in a regular basis, so the experience of the pioneers and their contributions could be carried over from generation to generation. Let this event be a place where we will regularly see old friends and meet new friends. Please accept my congratulations and best wishes to the success of our hosts’ efforts and this conference!

Eric Min-yang Wang
President, International Ergonomics Association
Recently we are facing various complex development problems which should be anticipated, - within our limitation -, in attaining our goals to enhance the quality of life and working life of the people at large. Impacts of Globalization, Global Warming, Eruption, Earthquake, 24 hours society, flooded area, drinking water shortage, are some of the problems we have to face and to anticipate.

And for a small island with all its limitation, likes Bali, in anticipating all those problems should be able to carry out a smart and wise development policy, likes to conduct “Development for Bali” and not “Development in Bali”. There is no choice for Bali except to carry out sustainable development, using the three economic potentials: agriculture, tourism and small scale industry in synergist as means to attain the goals. To be different and winning the competition, cultural tourism must be utilized in developing tourism. Agriculture and small scale industry should be able to show its consistency as the backbone of Bali’s economy in crisis.

In all those activities ergonomists and ergonomics associations should be able to give their strong contribution and should be able to play a role as playmaker due to its position and strong role in human-machine-environment interface.

As the problems are so complex a Total Ergonomics Approach which consist of SHIP and Appropriate Technology approaches must be utilized. And to conduct such an approach, mind set change of the human resource must be developed. Holistic thinking and act must be empowered. Team approach must be conditioned. Egoism and arrogant attitude must be thrown away.

And through ergo future 2006, 2010 and 2014, we try to aware the problems, to empower the human resource and to enhance the capability of tools to support. Therefore we have to thank everybody who have already given their concerned and commitment to this efforts by supporting the conferences in various means.

We shall not stop the efforts only by organizing conferences, but beyond that. Fundamental efforts have been planted and time to grow it together by academicians, government and people at large, has already come.

Finally welcome to all participants in the conferences and let us make a jump in our endeavor to enhance the quality of life and working life of the people.

Please enjoy your visit scientifically and culturally. Thank you.
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GEOmuseum: A Fun Interactive Guide to Enhance Museum Visiting Experience for Youngsters in Indonesia
Johanna Renny Octavia & Ghesa Wisesa Nalan

ABSTRACT:
A transportation mode that requires a change of flight time by 90-100%. Based on customer of flight booking is needed. One of the features in the transport reservation website is reservation. The increase in the number of booking ticket is the main factor of the reservation. The presence of travel helps the cost of accommodation.
**INTRODUCTION**

Every now and then, people need a recreational break from their routine activities. People can fill this break with recreational activities such as doing hobbies, travelling, sightseeing and so on. Visiting museums is an activity that can be considered both recreating and educating. Museums, where usually important and historical artefacts are publicly displayed, can be seen as a significant source of educational information for people including students.

Young students in Indonesia nowadays consider museum visits unappealing, dull and boring. They find museum visits to be more of an obligation to fulfill their school programmes, rather than a fun and educating experience. This is mainly due to the conventional way of displaying the information and the artefacts in the museum, which usually brings the visitors to approach an artefact, read the information displayed, go to the next artefact and so on. This way is not interactive, monotonous and may cause boredom to the visitors after a certain period of time spent.

Museum Geologi is a natural museum history museum in Bandung, Indonesia which some youngsters find not very enjoyable to visit. The artefacts and information are displayed in a conventional way as can be seen in Figure 1. The management of Museum Geologi is aware of the situation and has started to work towards a more interactive way of information display. Rosenzweig (2009) discussed the use of new media to display information in museums for the purpose of making effective visits and bringing more satisfaction to its visitors.
This paper describes a study to design a fun and interactive museum guide which aims to provide an enjoyable user experience for the youngsters in visiting Museum Geologi Indonesia. This study applied the participatory design and interaction design approach, and involved a number of Indonesian youngsters ranging from age of 12 to 16 years old.

2 RESEARCH APPROACH

2.1 Participatory Design

Participatory design was born in the late 1960s in Scandinavia. The participatory design approach is an antithesis of traditional design in which the designer’s expertise what defines the quality of the design.

The key attribute of participatory design is the involvement of end users in the design process, from defining user requirements to conducting prototype trials (Demirbilek, 1999).

2.2 Interaction Design

Interaction design is concerned with designing interactive products to support the way people communicate and interact in their everyday and working lives. The aim of interaction design is to create user experiences that enhance and augment the way people work, communicate and interact (Rogers et al., 2011).

Figure 2 depicts the interaction design lifecycle model, which involves four activities: establishing requirements, designing alternatives, prototyping and evaluating.

3 DESIGN PROCESS

3.1 Establishing user requirements

To establish the user requirements of a fun and interactive museum guide for youngsters, we carried out two activities: (1) interviews with 30 Indonesian youngsters and (2) field observation on young visitors’ behavior when visiting Museum Geologi Indonesia.

Forty two requirements were identified based on the analysis of the interview and observation results. Due to technical feasibility, three of these requirements were not accommodated. Based on the synthesis of the observed users’ characteristics, two personas were created to guide the design process and help the designer to further understand the users, as depicted in Figure 3.

3.2 Generating design concepts

After establishing requirements, the design process was continued to the process of designing alternatives. In this phase, several design concepts were generated based on the information of user requirements through a participatory design workshop.

Eight Indonesian youngsters (divided in 4 pairs) participated in the design workshop. Figure 4 describes the situation of the workshop. The participants were introduced to the list of user requirements and personas, and were asked to collaborate in developing their design concepts. After the presentation of all concepts, a focus group discussion was conducted to evaluate the design concepts and select one best concept.
3.3 Prototyping

The selected concept was further refined and developed into a high-fidelity prototype of an interactive museum guide, as depicted in Figure 5.

Figure 4. Participatory design workshop

Figure 5. Interactive museum guide prototype
3.4 Evaluating

The developed high-fidelity prototype of the interactive museum guide was integrated into a smartphone (7.5 x 5 cm display). To evaluate the prototype, we carried out field usability testing with 12 Indonesian youngsters who were visiting Museum Geologi at the time of the evaluation, as shown in Figure 6.

We asked the participants to perform 5 task scenarios with the help of the prototype. The task scenarios include the tasks of searching information of a specific artefact, writing a note about an artefact, posing a question, playing the games and so on. Quantitative measures (task completion times and number of errors made) and qualitative measures (type of errors and users’ comments) were collected to gain insights on the users’ experience in visiting the museum with the guide of the prototype.

![Figure 6. Field usability testing](image)

The analysis of the evaluation results showed that the interactive museum guide prototype still needs some improvement such as redesigning the icons, menu labels, and adding the ‘how to use’ information in the beginning (Figure 7). The average SUS (System Usability Scale) score is 71.67. Sauro (2011) stated that a SUS score above 68 is considered above average.

![Figure 7. Suggestion of prototype improvement](image)

4 CONCLUSIONS

As an effort to enhance the museum visiting experience for youngsters in Indonesia, we have designed an interactive museum guide prototype for Museum Geologi Indonesia through the participatory design approach. Four activities of the interaction design lifecycle model have been conducted with the help of a number of Indonesian youngsters ranging from age of 12 to 16 years old.

The prototype evaluation through a field usability testing at Museum Geologi has informed some suggestions of improvement. Nevertheless, the interactive museum guide prototype has provided a fun and educating way in enhancing the museum visiting experience for youngsters.

5 REFERENCES


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