MOBILE APPLICATION DESIGN PROCESS TO ACHIEVE HEALTHY SKIN: A GUIDELINES AND FRAMEWORK

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Abstract
Skin is the largest organ of the body and its most important barrier against infections. Facial skin is the most delicate besides it should be acquire more attention than others. Most of young woman do not know specifically the benefit and specialization of the chemical ingredients in a skincare product. Wrong selection of ingredients can cause irritation and skin sensitivity that lead to low self-esteem. The objectives of this research are to identify the category of skincare ingredients for different skin types to get healthy skin and to develop a user friendly mobile application for young woman who concern about their skin health. ADDIE (Analysis, Design, Development, Implementation, Evaluation) model is used in this research as instructional design model to provide guidelines and frameworks to the research. This mobile application gives recommendation of ingredients or products based on user's skin types and problems. The right skincare routine needed by the skin will be listed and users will be achieved healthy skin assisted by the mobile application.

Keywords--mobile application, skincare, healthy skin, chemical ingredients

INTRODUCTION
Young women commonly have several concerns with their skin. Most of them are still unsure about their skin types and what ingredients they should look for to treat and gradually lessen their skin problems. Proper skincare is important because our skin is the largest barrier against infection. Keeping our skin healthy keep this barrier strong (Diana K.,2019).

The objectives of this research are to identify the category of skincare ingredients for different skin types to get healthy skin and to develop a user friendly mobile application for young woman who concern about their skin health. Furthermore, to evaluate the effectiveness of mobile application on user knowledge on ingredients that they used and improvement on their skin.

SIGNIFICANCE OF MOBILE APPLICATION
Mobile applications play an important role in users' mobile experience. Mobile applications are rapidly increase in number as it gives positive impact to the society. Mobile application is really easy to be used because it is running on the smart phones thus people can easily use it can be accessible anytime and anywhere.

Mobile application is undeniably important in our daily life and activities. This is mostly due to the rapid transformation in that mobile phones that are no longer the ordinary communication device it used to be.

Along with the betterment of mobile technologies the availability and access to high speed internet and the interactive interface in the devices produce an innovative development of applications.

Mobile applications are consisting of software or set of programs that runs on a mobile device and perform certain tasks for the user (Reshedul et al, 2010). Mobile application main goal is to have an interactive engagement with user. Mobile applications are available via distribution platforms such as App Store and Google Play Store but there free as well as paid apps.

Some apps are free at the beginning but later a minimum fee is required if users want to use the benefits. According to Ventaka et al., (2014), for app with a price, generally a percentage, 20 percent to 30 percent goes to the distribution provider and the rest goes to producer of the application.

Nowadays, mobile application has become part of so many individual lives because it can maintain organized life for examples, applications for contacts, personal information, alarms, reminders to-do-lists and all types of notification applications. These apps can assist in planning thus facilitating proper time management besides making life more comfortable, easier and productive.

Other than that mobile application playing vital role in business with bigger customer base. Business has to adapt to the latest technological developments as mobile application is the best way to increase corporate branding using digital marketing.

Nearly everyone who uses a smart phone uses an apps. Statistic shows more than 90 percent of smart phones users use apps (Celine et al.,2017). The most used smart phones to access mobile application are iPhone, Android phone and Windows phone.

Initially, mobile applications provided users with informational and productivity purposes for instance email, calendar, contacts, calculator and weather information. Later with the advance technology era also users' expectations the developer expands mobile application into varies categories such as mobile games, GPS, banking, ticket purchases, social media, video chat, fitness apps and recently medical apps.

MOBILE APPLICATION DESIGN PROCESS
The mobile application design process is important in a research to give guide to the researcher so that data can be easily collected, identified and analyzed. This chapter explains the Instructional System Design (ISD) framework that adopted as a research

methodology throughout this research which is ADDIE Model that consists of five phases as well as the process involved.

i. Mobile Apps Design Process: Analysis Phase

As shown in figure 1, the analyze phase is the first important phase of all phases in the ADDIE model instructional design. In this phase, data was gathered and analyzing the current situation such to identify problem statements, research objectives and research scope. Besides that, a few mobile applications that were already in the market were also analyzed to get the ideas and overview on what to be improved in this study.
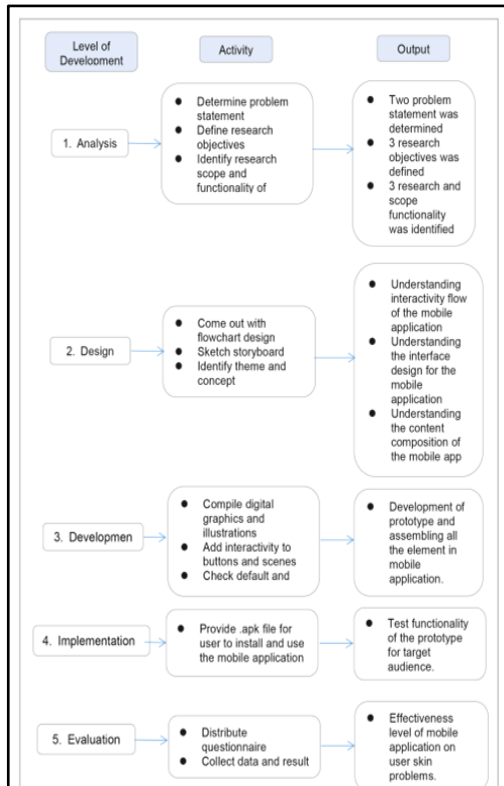

Figure 1. Framework of ADDIE Model

Research found that, there are two problem statements about skincare mobile application. It's consist of i) Young woman specifically facing the problems when they are not sure about their skin what kind of product they should use and ii) lack of platform to provide them with the knowledge regarding skin and skincare ingredients. The research objectives are i) to identify the category of skincare ingredients for different skin types to get healthy skin and ii) To develop a user friendly mobile application for young woman who concern about their skin health.

This application provides users with a skin care tips that suitable with the skin. In this application, users can learn all the tips for the skin in order to know deeply about the skin care besides it was sorted out based on skin concern such as sensitive skin, anti-aging skin, acne, organic skin care and dry skin. Moreover, this application compiled useful tips that allow user to do it at home. All the content is catering to solve user skin problems that can makes the user experienced it.

Skincare mobile apps is mainly focusing on the specific target audience which are young women especially students and career women that age between 18 years old to 30 years old. The content of the research that are included in the prototype is revised and corrected by skin expert who are dermatologist, aesthetician and beautician.

The multimedia elements incorporated in this application were text and images. This application gives an analysis using graphics and symbols. In addition, this application uses symbol button to navigate to each of the subsection menu. It is more organized to use button to represent sub-menu as it looks more organized and easy for user to understand the content.

The buttons and illustration are the same in design it looks confusing to differentiate between a button and an illustration. User need to know what is clickable and what is not. If user struggle with the button they will find it not usable. The place where the button is placed not clear because the arrangement is bit different from standard layout. Based on Babich (2018), developer ability to interpret click-ability elements are not the same as the users' because developer know what each element in his or her own design intended to do.

ii. Mobile Apps Design Process: Design Phase

The output from analysis phase was used to plan the next strategy in design phase. In this phase, researcher starts to gather the data that was collected from the previous phase and use the information to determine the needs in the project that relevant to the users. Moreover, discussion on how to make the project more interactive for user to have interaction with the content. In the prototype that need to be develop, it will apply several of the element in multimedia includes text, graphic, animation as well as the appropriate theme and concept for the interface of the project was chosen.

Researcher also identify the user interaction in an application. User expected in mobile application is to save their times. For example, application for time management, ticket purchases and online banking. Interaction in mobile application allow users to have an engagement with the application. Furthermore, by doing the literature review of existing works the scope of research which consists of the content and functionality of the project were obtained. There were some limitations factors faced acquired from analysis phase.
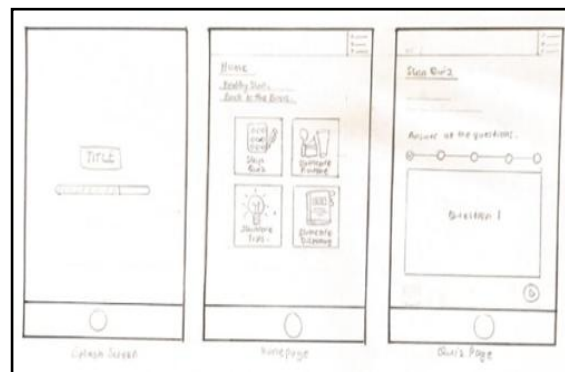

Figure 2. Skincare mobile apps storyboard

Figure 2 shows the process of creating storyboards with all the graphic outlines and descriptions in details regarding the mobile application prototype. It was sketched to get the idea of the whole project by composing the user interface elements such as buttons, content, illustrations and color scheme. The suitable navigation structure was design in order to give user great experience while using the application. After all the design and composition on the story board are finalized and confirmed, the data of this design phase are being used to the development phase.

iii. Mobile Apps Design Process: Development Phase

The development phase tasks were depending on the analysis and design phases. If the first two phases were done accurately hence development phase will be much easier. In this phase the

researcher integrates the technology to develop the prototype based on objectives and structure that was determined in analysis and design phases. The development phase is where the prototype as well as the content was assembled by the researcher. In addition, the prototype that assembled need to be matched with the content and material that have been decided in design phase.

The main focus in this phase was navigation hence the development process should be iterative by testing the prototype to ensure there were no basic errors including grammar, spelling and syntax. Developing a mobile application requires hardware and software besides the selection of the right authoring tool. After the final sketch of storyboards was selected by the researcher, the project started to be developed by designing the digital contents and illustrations.
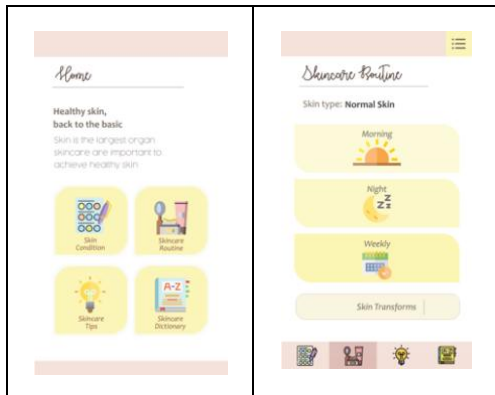

Figure 3. Skincare mobile apps interface

Figure 3 shows the skincare mobile apps interface output was assembled using an Adobe Animate CC meanwhile illustration material was designed and produced using Adobe Illustrator CC. As for the interactivity of the mobile application was scripted using scripting language Action Script 3.0.Researcher should be really meticulous in selection of elements because this allows the application to appear presentable to the target users. Pre-evaluation also conducted in this phase by an expert to test and check on any error that occur throughout development phase.

iv. Mobile Apps Design Process: Implementation Phase
Implementation are considered the real use of the learning experience. The main purpose of this phase is to make sure that the effectiveness of the instructional structure of the mobile application. This phase needs to gain users' understanding of materials and aware of objectives of the study. So that the user experience would be efficient as the information being transferred to the user effectively.

During the implementation procedures occurs, the facilitators training explains the learning outcomes and briefly explain the research prototype details to the user. It is really important to test out the prototype design with actual targeted user in order to get effective and efficient result of the design instruction. This project prototype of mobile application will be exported in form of .apk. The file will be used in the android smart phone.

v. Mobile Apps Design Process: Evaluation Phase
Prototype of the mobile application will be downloaded in the android phone to check the functionality of the application on different devices. The testing will be done on android platform smartphone. After it was tested by the researcher then it was ready to be tested on the actual target user by giving them through the installed application on the smart phone for them to experience the interface and the application by themselves.

During evaluation phase, it measures the effectiveness and the efficiency of the instruction to ensure that developer as achieve the goals by using the instructional design and materials to fulfill the user needs (Nada, 2015). The evaluation consists of two different types of evaluation which are formative evaluation and summative evaluation.

Firstly, the formative evaluation where the evaluation is continuing process that occur within the process, between phases and after implementation of the instructional design materials in each phase on ADDIE model. Formative evaluation was done in development phase.

Meanwhile, the summative evaluation occurs after the finalized prototype version is implemented usually used to access the effectiveness of the learning, cost effectiveness, attitudes and reaction towards the learning. Therefore, summative evaluation will be conducted by distributing a survey. The application was tested by the users and 30 set of questionnaires will be distributed to the selected target user to allow them to give feedback of their experience while using the application. The feedback will assist developer to improve the weaknesses of the application in the future.

CONCLUSION
Figure 4 shows the development of the skincare mobile application start from the analysis phase until the Evaluation phase. It will take around eight to nine months to finish the whole design process for skin care mobile apps development.

PHASE	2019				2020		
	AUG	SEPT	OCT	NOV	FEB	MAC	APR
ANALYSIS	14 days (12/8-29/8)						
Statement of problem	3 days						
Define objectives	4 days						
Define scope	2 days						
Define functionality	5 days						
DESIGN	15 days (26/8-36/9)						
Sketch and mind map	4 days						
Design flowchart	5 days						
Select theme & concept	2 days						
Sketch storyboard	7 days						
DEVELOPMENT	46 days (13/9-15/11)						
Create digital images	8 days						
Create digital animation	8 days						
Compile graphics	10 days						
Add interactivity	16days						
Check defect and error	4 days						
IMPLEMENTATION	20 days (3/2-28/2)						
provide .apk file	6 days						
test functionality	10 days						
EVALUATION	30 days (2/3-10/4)						
Prepare questionnaire	6 days						
Distribute questionnaire	10 days						
Collect data results	17 days						

Figure 4. Development process for skincare mobile apps

Therefore, this research project help user identifies skin types and have a guideline for their skin routine. It is important for users to know the ingredients' function and benefits in skincare products based on their varies skin type. In order to have healthy skin the right selection of ingredients is important before incorporating chemicals into skincare routine.

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