

Smart Device Design Education Contents for Non-art Design Majors

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Smart devices attached to our body, such as smart watches, smart glasses, smart jackets, smart bags, and smart shirts, are succeeding in commercialization while harmonizing the innovative development of the IT industry and the external design for realizing device functions. Aesthetics is a major factor that stimulates emotion when purchasing a wearable computer product and there is a tendency to prefer products that can satisfy aesthetic sensibility along with the intrinsic utility of the product (Park, K. 2019). General Director of Military Nanotechnology Research Institute at MIT Franklin E.W. Hadley said that the current development of smart military uniforms related to military uniforms as an early stage even though there has been equipped with technology and systems as protective clothing for soldiers since there are no qualified fashion designers who can be involved in the fit and size of military uniforms (Dara Roisin, F. 2012). Smart device is a type of wearable device as an electronic device having a sensor that can receive data on a wearer or its surroundings in other words (Naan, J.& Lee, K. 2020). Thus it is a device that combines cutting-edge technology and the exterior design that mounts it. It is a device that combines technology and art. Smart device education is a convergence education that combines IOT technology and product design, and there are cases where participating students have various majors, so smart device education is required according to the student's major. Therefore, smart device design education content for non-art majors is needed.

Grace N & Stephen C.F. (2009) studied a computer science program with a potential computer science population of middle school students and Jang, H. (2015) studied about a case study of UX design education method for wearable design was conducted. Also there is a study on wearable computer design education course that integrates research and education through industrially sponsored design projects (Amon, C., Finger, S., Siexiorek. D. & Smailagic. A (1995). However, there are insufficient papers on the wearable computer design content curriculum for non-art students. Educational content for non-art major is needed since there are many non-art major students who study wearable computer design. The purpose of this thesis is to develop wearable computer educational contents for non-art design major students.

The smart device design education content developed in this study is a case study that derives the research results by applying it to the class in the spring semester of 2021. A 15-week class had been conducted with 10 non-art design major students who have received basic Arduino coding education. The 15-week curriculum consists of 8 weeks based on the theory of wearable computer

concepts, principles, products, and wearable computer design considering users, so that learners can design wearable computers. From the 8th week to the 10th week, users are segmented and wearable computer design considering them is planned, and in the 11th week, classes on artistic elements that can complement the formative aspects of the designed wearable computer exterior design are conducted. As art elements, education on design form, material, and color can be provided to enhance the planned wearable computer design.

The smart device design should be designed in the aesthetic aspect of the exterior design considering the user in order to apply the advanced technology based on IOT. Therefore, artistic formative elements should be included in the curriculum in wearable computer design education. As the wearable computer design education content proposed in this study, a class was conducted for 10 non-art students, and as a result of the class, As the smart device design education content proposed in this study, a class was conducted for 10 non-art students, and as a result of the class, a smart bag for preventing dog loss was produced considering visual attention by contrasting complementary colors. Color block design applied to smart devices that measure the contamination level of masks. The smart goggles design for collision risk prevention is made as a streamlined device that can be worn on the head and stand out with a futuristic design. Smart devices made by 7 other students also reflected artistic modeling elements in the exterior design. Through this thesis on smart device education contents, it is expected that the aesthetic aspect of the wearable computer design planned for non-art students can be considered and reflected in the design.

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