The application of emotional design and 3D printing

C-K. LIM. ***The application of emotional design and 3D printing for interactive product design for use by the elderly: An interactive customized planter design.*** *Gerontechnology 2014; 13(2):246;* doi:10.4017/gt.2014.13.02.406.00 **Purpose** Taiwan is becoming an aging society. Aging is not only an issue that advanced countries are facing today, but is also a subject that humans will use future technology to address. In fact, each elderly person hopes to be cared for and respected, to enjoy the conveniences in life, and thus to live happily and with dignity. These are basic needs of the elderly. Therefore, a study of the welfare of the elderly needs to include humanistic concerns. Humanistic concerns are currently being addressed through technology. Research on emotion and cognition has shown that attractive and beautiful things really do work better, as Donald Norman amply demonstrates in his book: Emotional Design,[1] emphasizing that the design of most objects are perceived on three dimensions: a visceral, behavioral and a reflective level. This study explores concepts of product design for the elderly, based on the theory of Emotional Design that Donald Norman proposes. In addition, technological products are generally understood as the result of mass production that is designed to meet a certain standard; however, technology for the elderly is based on 'customization' because each elderly person has his/her own distinct needs. Therefore, this study aims at exploring solutions designed to meet the needs of the elderly through more humanistic aspects, specifically 'attractive' and 'customized' technology and products, and proposes producing 'customized' interactive products for the elderly through 3D Printing. **Method** The interactive device, WATERS, which is proposed in this study, takes its name from the saying, "Water your family relationships as you water your flowerpots". WATERS is a customized interactive product for the elderly, manufactured with 3D Printing technology, and is called a 'Customized Symbol Communication Planter'. The main design concept of WATERS uses a platform designed to create interaction between the elderly and planter in a way that nourishes the relationship between the elderly and their children. This relationship connecting feature is based on emotional design concepts, designed to make the elderly feel happy and warm while using the product. Furthermore, this daily use planter, as an interactive device, will have more intuitive and humanistic features. Chinese symbols and the Chinese zodiac inspired the shapes of these planters. An elderly person can choose his/her preferred Chinese symbol. A parametric tool then generates multiple shapes so the elderly person can select from multiple designs. The 3D Printer then 'prints' the main container of the 'customized' planter. This specific feature of customized pattern selection, and the user-created 3D planter printing process, can also meet the emotional needs of an elderly person. The base of the planter employs the design of modulated manufacturing with Arduino as an interactive mechanism set at the base. **Results & Discussion** This study completes the prototype of WATERS (*Figure 1*) and the interactive scenario as follows: every morning, the planter plays five notes of Chinese music after it detects the humidity in the room (*Figure 2*). The planter plays different music for five different levels of humidity. The elderly person will be guided to do various Chinese exercises with respect to differences in the weather and humidity. While the music is played, the planter will also swing, following the rhythm, as if it exercises with the elderly person. Once the planter's motion detector senses movement of the elderly person, it will activate a self-watering system. Later, the planter at the home of the elderly person sends information via a wireless network connection to a small planter owned by the children of the elderly. The small planter displays different lights or plays music, so that the children may know that the parents have already awakened for morning exercises and the children will also know what the weather is like at their parent's home.

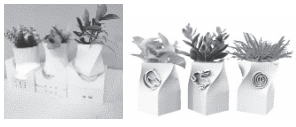

Figure 1. WATERS prototype

Figure 2. Interactive scenario

Reference

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