

Knowledge Convergence and Co-Creation Learning:  
The Personal Customization System on Apparel Design

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**Introduction** Web 2.0 technologies with more support for convergence and networking have provided new opportunities for alternative consumers (Marshall et al., 2003). In addition, Web 2.0 technologies have created new consumer learning experiences in apparel marketplaces. In the advent of the fourth industrial revolution, the differences between producer and user are much more narrow and ambiguous, and both roles should be fully understood from the users' perspective. Hence, the personal Customization System encourages meaningful consumer co-creation learning by supporting the information search process based on a convergence of knowledge.

**Literature Review 1) Knowledge Convergence and Apparel Design** Recognizing that knowledge is complex in nature and that emergence and self-organization are effective ways to cope with complex systems, the solution is to let knowledge/learning environments develop and emerge naturally, in a freeform way. Information is explicit knowledge that is easily expressed, captured, stored, and reused (Chatti et al., 2012). Apparel design needs alternative knowledge; accordingly technology, science, and fine art by designers have applied the implicit integration method to the apparel design process to improve design efficiency.

**2) Co-creation Learning with the Personal Customization System** Personal customization is possible due to the capabilities of modern manufacturing technology, including flexible manufacturing systems and modular product structures, both of which reduce the trade-off between variety and productivity (Berger et al. 2005). Co-creation as consumer learning refers to any rich, interactive process that changes a user's memory and behavior as a result of information processing. In the personal customization system as a real-time application, virtual garment design and simulation computation of garment animations provide specific approximation and simplification methods allowing the computation of garment simulation in visual reality.

**Methods** This study examines individual learner as a consumer with alternative knowledge converging to shape their idea into their apparel design. An interview takes an average of one and a half hours per an interviewee, and in total five male participants were involved, who completed a two-part questionnaire: (1) individual clothing behavior in terms of shopping type and styling in their daily life; (2) design practice with basic T-shirt design on the personal customization service system. Participants had different majors: (1) computer science (C); (2) mathematics (M); (3) nature science (N), (4) human science (H); (5) art (A). They had at least 5

years of work experience and had a mean age of 31.6 years (age range: 30 to 33). The practice of apparel design with the personal customization system was recorded on the video between 10-30 min.

**Results and Discussion** In the first part of the questionnaire, (1) individual clothing behavior in terms of shopping type and styling in their daily life, the five interviewees indicated each different fashion involvement scale as a fashion trend follower on a 5-level Likert scale: N, 4; H, 3; A, 2; C, 2; M, 2, and they provided a self-evaluation of their own fashion style coordination: A, 4; N, 4; H, 3; C, 2; M, 1. Interviewee A specified his shopping pattern, and he had his own favorite style and recognized what kinds of items are a good fit for him. Interviewee A spent the longest time among the interviewees, taking almost 30 minutes for his T-shirt design development, and he has tried to combine initials or chords of music composition in many ways on his T-shirt front and back. Interviewee N, who has his own fashion style and enjoys shopping and his style coordination, made his favorite blue T-shirt. He also presented his design related to his favorite T-shirt neckline. Interviewee H mentioned “I never enjoyed wearing T-shirts”; however, he tried co-designing a T-shirt. He simply put color just once and the letters of his current favorite classic music composer “ANTON BRUCKNER” without any tries and errors. Interviewee C, who had a simple shopping pattern, designed a simple T-shirt within just 10 min, with a sign on the front side: “I WON’T FIX YOUR COMPUTER.” He tried to put several colors on the T-shirt and simply put his memorized letters on his T-shirt. Interviewee M, a fashion-indifferent person, tried to make a new T-shirt design with a symbol of social issues of his interest.

**Conclusion** This study has examined how alternative knowledge background affects users’ co-creation of their clothing behavior and apparel design with a personal customization system. Participants style coordination appeared to be related to their clothing behavior, and their co-created T-shirt design is related to their major and specialty in their knowledge and interest.

### Reference

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