



Product development competencies: Analysis of employer needs

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Keywords: Product development, employer needs, education

Introduction: Brand and product progressions are natural and expected cycles of fashion industries. At an ever-increasing rate, consumer and industry shifts are driving new developments of apparel products (Amed et al., 2018; Keiser, Garner, & Vandermar, 2017). To stay competitive in the marketplace, apparel businesses must rapidly evolve and adapt to meet expectations. As these changes are occurring in the apparel industry, academicians of apparel and textile (AT) programs are challenged with the task of preparing students to perform well in newly formed, multifaceted, product development (PD) positions. As the industry is unclear of what constitutes “product development” within the apparel field (based upon diverse career position descriptions), it was decided to conduct a PD career position analysis to identify knowledge and skills (i.e., competencies) needed for new and established positions to guide program curriculum direction. In fall 2018, a faculty team of a Midwestern public university was charged with re-envisioning the relatively new PD major option with special attention paid to the secondary focus on “product innovation.” The faculty team was comprised of individuals who teach courses related to the undergraduate apparel product development major option. The faculty are members of a department that offers one major in its apparel, merchandising, and design program, with students able to choose from three primary options: (1) creative and technical design, (2) merchandising, and (3) product development. The product development degree option is further subdivided into two secondary foci: (A) line development and sourcing, and (B) product innovation. Through continuing engagement with the program’s advisory board of industry executives, as well as regular interaction with other apparel industry professionals and program alumni, the necessity for a curriculum that was responsive to the changing requirements of the industry was evident. Therefore, one of the main charges to the faculty team was to propose ways to develop and align curriculum so that graduates would be optimally prepared with necessary competencies as they assumed industry positions after graduation. This study details the steps taken and rationale used to identify competencies for product developers in apparel-related fields to propose a revolutionized curriculum.

Literature Review: Several models of the apparel product development process have been developed (e.g. May-Plumlee & Little, 1998; Wickett, Gaskill, & Damhorst, 1999; and May-Plumlee & Little, 2006). Further, there has been research into apparel product development for specific segments (e.g. Armstrong & LeHew, 2011; Carroll, & Kincade, 2007; and Kincade, Regan, & Gibson, 2007). However, there has been a lack of research into the competencies needed by apparel product developers. Recent research has provided a comprehensive classification of all categories of competencies required for business, retail, and merchandising

professionals (Jacobs & Karpova, 2019). There has also been some research into the specific skill sets of apparel designers. For example, Romeo and Lee (2013) identified technology skills needed by creative and technical designers, and Workman, Caldwell, and Kallal (1999) sought to develop an instrument to measure spatial skills. However, there is no comprehensive list of competencies required for apparel product developers.

Method: To develop a list of the competencies necessary for contemporary careers in apparel product development and innovation, a job search was conducted on a sampling of online websites that included Google, Indeed, Monster, and the university's internal hiring website. Keyword search terms including "apparel product development" and "apparel innovation" were used in this exploratory stage. The position descriptions yielded by this search were then sorted by relevance and date of posting, after which qualitative content analysis was performed. Positions were organized into their distinct requirements and responsibilities, and individually analyzed and then grouped with similar units from other positions into broader themes (Creswell, 2007). This process was informed by the constant comparative method, so that coding categories were refined throughout the research (Glaser & Strauss, 1999). With the constant comparative method, sampling in qualitative research continues until no new information was found to "add to [the] understanding of the category" (Creswell, 2007, p. 240). Data saturation was reached in this case with the twenty-first position description.

Results and Implications: Position descriptions analyzed ranged from entry-level (e.g., assistant product developer and junior product development specialist) to those requiring ten or more years of experience in industry (e.g., senior director, apparel innovation concepts). In all, content analysis yielded 18 themes that contained data from more than one position description. The following list identifies the competencies in order of frequency, where 1 was cited the most (86%) and 18 was cited the least (10%) in PD position descriptions: 1) communication, 2) software tools/processes, 3) general product development, 4) calendar timeline and project management, 5) sourcing, supply chain and vendors, 6) prototypes/samples, 7) tech packs, line sheets, illustrations, boards, project sheets, 8) design (e.g., patterns, grading, technical design), 9) costing and financial, 10) manufacturing/production, 11) specifications, 12) merchandising and brand management, 13) leadership and supervision, 14) trend forecasting, 15) compliance, 16) quality control, 17) data analysis, and 18) marketing.

The most-requested category was communication skills, which was found in 86% of the job descriptions. Some specific requirements in this category included "communicate with pattern makers" for an apparel production manager position, "develops persuasive presentations" for a digital innovation product manager, and "builds collaborative partnerships" for a product developer II position. Two categories, one focused on software and technical tools and one on general product development, were both represented in 71% of the job descriptions analyzed. Software and tools requirements ranged from "Microsoft Office" for a junior product development specialist to "3D modeling/design/printing; 3D apparel design/3D footwear design" for a digital innovation product manager. The general product development category was found in such written descriptions as "manage all aspects of the product development process" for a product development lead-apparel and "develop and bring to market the most well executed,

innovative, and profitable ranges in the industry” for a senior product development apparel-shoes position. Three categories, one related to prototypes and samples, one focused on sourcing and supply chain, and one having to do with timelines and project management, were each found in 62% of all job listings. “Maintain a running log of all samples” (product development lead-apparel) was one description for the prototypes and samples category. “Participate in vendor selection” was found in the job description for a product development specialist and fit into the sourcing and supply chain category. The timeline and sourcing category included such descriptions as “Manages innovation timeline” for a sustainability and innovation manager.

The next step assessed content of currently required courses of the product development - innovation major. Courses were reviewed as to how intensively they embodied the 18 competency themes identified from career position content analysis. Continuing efforts to revise and expand the PD-innovation curriculum are currently underway.

As a gap in the literature exists related to the skills and competencies required for apparel product developers, this research project served as an initial step in addressing this deficiency. Findings of this study also serve as a potential guide for other programs offering an apparel product development degree or concentration.

References

- Amed, I., Balchandani, A., Beltrami, M., Berg, A., Hedrich, S., & Rolkens, F. (2018). *The state of fashion 2019: A year of awakening*. London, United Kingdom. Retrieved from <https://www.mckinsey.com/industries/retail/our-insights/the-state-of-fashion-2019-a-year-of-awakening>
- Anderson, L., Krathwohl, D., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., ... Wittrock, M. (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives*. New York: Longman. Retrieved from <https://mqjnxnfckd08.storage.googleapis.com/EfCFHBjaq8n37Vzf8W08.pdf>.
- Armstrong, C. M., & LeHew, M. L. (2011). Sustainable apparel product development: In search of a new dominant social paradigm for the field using sustainable approaches. *Fashion Practice*, 3(1), 29-62.
- Carroll, K. E., & Kincade, D. H. (2007). Inclusive design in apparel product development for working women with physical disabilities. *Family and Consumer Sciences Research Journal*, 35(4), 289-315.
- Creswell, J. W. (2007). *Qualitative inquire and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Glaser, B. G., & Strauss, A. L. (1999). *The discovery of grounded theory: Strategies for qualitative research*. New Brunswick, NJ: Aldine Transaction.
- Jacobs, B., & Karpova, E. (2019). What do merchandisers need to succeed? Development of an apparel merchandising competency framework. *International Journal of Fashion Design, Technology and Education*. DOI: 10.1080/17543266.2019.1587791
- Keiser, S., Garner, M., & Vandermar, D. (2017). *Beyond design: The synergy of apparel product development* (Fourth). New York, N.Y: Fairchild Books.

- Kincade, D. H., Regan, C., & Gibson, F. Y. (2007). Concurrent engineering for product development in mass customization for the apparel industry. *International Journal of Operations & Production Management*, 27(6), 627-649.
- May-Plumlee, T., & Little, T. J. (1998). No-interval coherently phased product development model for apparel. *International Journal of Clothing Science and Technology*, 10(5), 342-364.
- May-Plumlee, T., & Little, T. J. (2006). Proactive product development integrating consumer requirements. *International Journal of Clothing Science and Technology*, 18(1), 53-66.
- Romeo, L. D. & Lee, Y. (2013) Creative and technical design skills: Are college apparel curriculums meeting industry needs? *International Journal of Fashion Design, Technology and Education*, 6(3), 132-140. DOI: 10.1080/17543266.2013.783629
- Wickett, J. L., Gaskill, L. R., & Damhorst, M. L. (1999). Apparel retail product development: Model testing and expansion. *Clothing and Textiles Research Journal*, 17(1), 21-35.
- Workman, J. E., Caldwell, L. F., & Kallal, M. J. (1999). Development of a test to measure spatial abilities associated with apparel design and product development. *Clothing and Textiles Research Journal*, 17(3), 128-133. DOI:10.1177/0887302x9901700303