

Think-Pair-Share: An Active Learning Strategy for Apparel Pattern Drafting

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Many first year university fashion design students learning apparel pattern drafting (APD) endure a steep learning curve. These students, who are often untrained in APD, are tasked with learning the physical shape of basic pattern pieces, the way those patterns correspond to standard placement on the human body, and how to manipulate each basic pattern block to achieve various styles. APD teaching practice commonly employs assigned textbook readings accompanied by live, instructor-led demonstrations. Demonstrations typically require students to simultaneously manipulate their own quarter-scale pattern and take notes on pattern manipulation steps while observing the instructor's actions. This does not allow students to engage in higher-level learning, as it mostly focuses on remembering, the lowest-level of Anderson and Krathwol's (2001) taxonomy of cognitive learning objectives. Active learning, one of Chickering and Gamson's (1987) *Seven Principles for Good Practice* in teaching, is widely regarded as an effective technique to engage students with course material. Bonwell and Elson (1991, p. 2) note that, "in the context of the college classroom, active learning involves students in doing things and thinking about the things they are doing". Developed by Lyman (1981), Think-Pair-Share (TPS) is a popular active learning strategy that involves pairing students in teams of two, posing a challenge to them in the form of a question or activity, and having them think about it individually, discuss it together, and share their findings with the class. Whereas watching a demonstration and following along engages students with the lowest levels learning, TPS, when applied to APD, enables students to engage by creating, which is the highest level and encompasses all previous levels (Anderson & Krawthwol, 2001).

The fashion education sector has seen unprecedented growth in the last decade (Ahmed & Mellery-Pratt, 2017), which has caused increases in enrollment and class size. Large classes can negatively impact the learning experience (Monks & Schmidt, 2010). Active learning can engage students more meaningfully, even in larger classes (Nichol & Lou, 2012), which can help use class time more effectively. TPS has been applied in a wide variety of disciplines, including nursing (Fitzgerald, 2013; Kaddoura, 2013), mathematics (Lee et al, 2018), and economics (Roach, 2014). It promotes active engagement by providing students with adequate time to think about and discuss the problem being posed, resulting in overall increased student participation and higher levels of critical thinking (Kaddoura, 2013). While previous studies have evaluated active learning strategies in supply chain management (Shen, 2016) and merchandising (Paulins & Moeller, 2017), there is a lack of literature that investigates the application of active learning in fashion design education. This study examined whether TPS could successfully engage students, facilitate learning, and contribute to a positive classroom experience in a beginner-level APD course.

Method: This approach was adapted to a first-year university APD course to encourage increased participation and deeper engagement with the lesson. The activity was completed at the end of the lesson and required approximately 10-15 minutes in total. Students were divided in pairs and asked to draft a pattern design that incorporated pattern manipulations learned in that day's lesson. Each student in the pair was assigned a role as a pattern drafter or a writer/reporter. It was explained to them that the pattern drafter would physically manipulate the pattern pieces based on the pair's decisions of how to best achieve the assigned pattern design; the writer/reporter would record the step-by-step process and would report a portion of their process in front of the class. The pair was given two minutes to think about and discuss the appropriate pattern manipulations that would be required to achieve the assigned design. They were then given five to ten minutes to carry out their plan to manipulate the basic pattern blocks to achieve the assigned design; the length allocated to this was determined by the complexity of the pattern design. In the final five to ten minutes (time based on class size and design complexity) student pairs were called upon to share the steps in the pattern manipulation process. An expanded application of this activity taking place over two class periods included the pattern design for an entire dress, front and back, with collar, sleeves, skirt, facings, front button closure, and two pockets. Pattern designs provided to students for the activities were either instructor-created technical drawings of garment components (e.g. bodice, skirt, sleeves, collar) or fashion photographs from popular magazines and fashion blogs.

Results: Instructors observed increased student engagement during TPS activities compared to lessons where students were asked to individually complete a similar pattern drafting activity. Students were seen to be actively participating with their partners and contributing to class discussion during the 'share' component of the exercise. Assigning two students to work on a pattern design ensured that the step-by-step instructions were always recorded; the writer/reporter was also required to upload their notes for their partner's future study reference. Assigning pattern drafter and writer/reporter roles prior to the activity allowed students to focus on the exercise and eliminated the stress of having to choose which role to assume. Students self-reported an increased interest in participating in class and an increased confidence in pattern drafting concepts that were taught in the lesson. Students also commented that they found the paired sharing to be a safer learning environment, which contributed to a more positive learning experience than when they individually struggled through the activity in previous classes. When paired with students who had more firmly grasped the material, instructors observed increased engagement in students who had previously struggled with the concepts. Students with a deeper understanding of the concepts gained the opportunity to teach their partner and reaffirm their own understanding. Future directions include standardizing TPS activities for each new pattern drafting lesson to continue to engage students as active participants in their own learning.

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