Teaching and learning effectiveness for producing knowledge in college courses is influenced by many variables, which explains the varying results and conclusions in the literature. McLoughlin (1999) reported that quality of learning materials are enhanced when designed to take into account learners’ individual styles. Small class sizes allow teachers an opportunity to poll their students at the beginning of the course and tweak the course content, assignments, and method of presentation to fit most student needs. When students feel that they have taken an active part in course planning (student-centered learning), they have aided understanding (McLoughlin, 1999) and also most likely have greater buy-in (Quesada-Pineda et al., 2011). Hofstein and Rosenfeld (1996) stated that an objective of teachers should be to create environments where students can interact intellectually with instructional materials through active experimentation and reflection, also advocated by Quesada-Pineda et al. (2011). Besides using a wide variety of instructional strategies, teachers should also use a wide range of out-of-school environments to foster learning (McLoughlin, 1999).

Keeping students involved, motivated, and actively learning is challenging for educators. Teachers and pedagogical researchers have reported that field trip experiences and example-based assignments are advantageous as a way to implement Kolb’s (1984) experiential learning cycle, and increase student motivation and learning retention (Healey and Jenkins, 2000; DeGiacomo, 2002). Learning environments such as outdoor field trips also make the learning process more enjoyable (Jones, 1989). Students become actively engaged in learning though performing activities that professionals in their field may perform (Ponte and Carter, 2000; Cavinder et al., 2011). A survey conducted by Cavinder et al. (2011) found that participation on a judging team increased interpersonal skills including communication, critical thinking, and information management, and that these skills provided an advantage in job placement and success in the chosen profession. However, motivation or activity alone is not as effective for producing student engagement as is the product (not summation) of the two (Barkley, 2010).

Field trips and judging contests involve multiple senses and both mental and physical activities, which should result in a more active form of involvement and learning and higher retention rates for most students. Dale (1969) produced an intuitive model of the concreteness of various audio-visual media. Based on Dale’s “Cone of Experience,” most lectures and class activities are at the top of the cone, field trips are in the center, and direct purposeful experiences that simulate realistic activities occur at the base of the cone. It has been presumed that media at the base of the cone translates into a higher retention rate for students, although the cone is conceptual and not based on research. However, high memory retention for students who participated in a museum trip, as reported by Falk and Dierking (1997), on a botanical garden field trip, as reported by Stewart (2011), and the concepts presented in the cone make sense.