An Informal Analysis of Career and Technical Student Organization Competitive Event Competencies via Kolb's Experiential Learning Theory

Mark D. Threeton, Ph.D.
The Pennsylvania State University
mdt177@psu.edu

John C. Ewing, Ph.D.
The Pennsylvania State University
jce122@psu.edu

Robert W. Clark, Ph.D.
The Pennsylvania State University
rwc107@psu.edu

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Abstract

In an effort to provide Career and Technical Student Organization (CTSO) advisors with additional insight on enhancing the educational experience for students, this paper examined the national contest competencies of the Health Occupations Society of America (HOSA) Veterinary Assisting Career Development Event, the national FFA Organization Floriculture Career Development Event and the SkillsUSA Automotive Service Technology Career Development Event to determine if potential exists for a holistic approach to competition preparation via the alignment with the four modes of Kolb's Experiential Learning Cycle. The results indicated that preparation for competitive events in each of the respective CTSOs lend themselves to using Kolb's model as a method of preparing students for these competitions.

Introduction

Vocational Student Organizations (VSOs), now termed Career and Technical Student Organizations (CTSOs) have been an integral component of Career and Technical Education (CTE) since the passage of the Smith-Hughes Act of 1917 in which educators whose responsibilities included advising a CTSO could utilize funds (Alfeld et al., 2007; Threeton & Pellock, 2008). The George Barden Act of 1946 was the first legislation to specifically mention a vocational student organization, the vocational agriculture student organization that was founded in 1928. Four years later in 1950, another federal law, the Act to Incorporate the Future Farmers of America (PL 740) officially chartered the FFA. This established an integral relationship of the organization to the educational instruction program and directly involved the US Office of Education in supporting vocational student organizations. This act set the precedent for all VSOs to be recognized as essential components of a quality vocational education program (Vaughn, Vaughn, & Vaughn, 1993) CTSO's provide a unique mix of instructional programs and activities that provide middle and junior high, secondary, postsecondary, adult, and collegiate students with opportunities for leadership and career development, motivation to learn and achieve, and recognition for effort and progress. The mission of CTSO's is to provide the best learning environment so students can improve their leadership and technical skill abilities in their career and technical areas (Scott & Sarkees-Wircenski, 2008).

Over the last 92 years, a vast amount of CTSO activities have been developed in the areas of skills contests, leadership development and community service (Alfeld et al., 2007). CTSO's were identified as career and technical student organizations in the Carl D. Perkins Career and Technical Education Improvement Act of 2006. CTSOs were formed to serve students in a specific career and technical area and focus on: (a) developing leadership skills; (b) cultivating personal growth; (c) exploring careers; (d) improving home and family; (e) developing citizenship and patriotism; (f) improving scholarship and vocational preparation; (g) improving school and community; (h) developing respect for dignity and work; (i) developing high ethical and moral standards; (j) participating in cooperative efforts; (k) developing creativity; and (l) developing social skills (Perkins Act, 2006).

Through these components, CTSOs have been recognized for providing students the opportunity to acquire invaluable experience in leadership, teamwork, citizenship, problem-solving, communication and self-management skills for future success. CTSOs encourage student-directed learning and experimentation, Thereby requiring members to absorb, process, and apply new information quickly and effectively. Employers place great value in those whom are capable of learning on their own (Vaugh, 1999). Litowitz (1995) noted that a common element of these organizations are the competitions; thus, the events provide excitement and challenge within classrooms and conferences, which encourage students to design and or plan solutions to the best of their ability. In fact, the benefits of CTSOs are in alignment with the Goals for CTE in Reinventing the American High School for the 21st Century which includes:

(a) Preparing students for challenges in postsecondary education and in the high-skilled workplace by helping them learn basic skills, habits, and attitudes, as well as acquiring a core knowledge base

(b) Participate in focused learning activities that will assist them in making educated choices about future educational, training, and employment opportunities

(c) Ensure that students who decide to enter the workforce directly out of high school are prepared with marketable skills and knowledge for a given career area (ACTE, 2006).

The U.S. Department of Education presently recognizes eight CTSOs including: Business Professionals of America (BPA), Distributive Education Clubs of America (DECA), Future Business Leaders of America (FBLA), Family and Community Leaders of America (FCCLA), FFA (formerly Future Farmers of America), Health Occupations Students of America (HOSA), SkillsUSA (formerly Vocational Industrial Clubs of America) and Technology Students of America (TSA). While the scope of CTE has significantly changed over the last 92 years, an integral relationship between CTE and CTSOs continues to mean intra-curricular and not extra-curricular. Leadership and other CTSO content is embedded in CTE program curriculum with a focus on student participation and achievement.

The Purpose

In an effort to provide advisors with additional insight on educating students in preparation for CTSO national competitive events, this paper examines three competitive events from three different CTSOs through Kolb's Experiential Learning Theory. Specifically, this paper examined the national contest competencies of the Health Occupations Society of America (HOSA) Veterinary Assisting Career Development Event, The National FFA Organization Floriculture Career Development Event and the SkillsUSA Automotive Service Technology Career Development Event to examine the potential for alignment with the four modes of Kolb's Experiential Learning Cycle to determine the possibility of identifying a holistic approach to competition preparation. While this paper examined specific CTSO career development events for the purpose of providing insight on the competencies in which students needed preparation and experience prior to engaging in competitive event performance, it is appropriate to view these experiences thorough an experiential learning model to understand its potential application in career development events.

Overview of Experiential Learning

Over the years, the topic of learning has been examined extensively and has received a considerable amount of attention. A large portion of this research directly focused on experiential learning (Dewey, 1938; Kolb & Fry, 1975; Kolb, 1984; Knobloch, 2003; Roberts, 2006). According to Cheek, Arrington, Carter, and Randell (1994), experiential learning consists of practicing in real situations, modeling appropriate behaviors and procedures, and receiving appropriate feedback and reinforcement, and proving opportunities to apply knowledge in new situations. Other researchers (Boud, Cohen, & Walker, 1993) have proposed that learning from experience consists of five propositions: (a) experience is the foundation of and stimulus for learning; (b) learners actively construct their own experiences; (c) learning is a holistic process; (d) learning is socially and culturally constructed and (e) learning is influenced by the social-emotional context in which it occurs. Experiential learning as Smith (2001) described it is the "sort of learning undertaken by students who are given a chance to acquire and apply knowledge, skills and feelings in an immediate and relevant setting" (p. 1). This type of experiential learning as described by Smith could naturally align with a current day career and technical education program and/or the activities within a nationally recognized career and technical student organization. Career and technical education and related CTSOs are grounded in providing students with learning experiences that encourage competency, growth, and workplace literacy skills. According to Doolittle and Camp (1999), experiential learning aligns with constructivism, which posits that learners construct meaning from their experience. Regardless of the educational setting, a significant detail to remember with the concept of experiential learning is that it

involves a direct encounter rather than simply a thought process associated with the learning (Borzak, 1981).

Learning, Cognitive Science, and Understanding through Experience

In the late 1950s, the complexity of understanding humans and their environments became increasingly apparent and the field of cognitive science emerged. Cognitive science approached learning from a multidisciplinary perspective that included anthropology, linguistics, developmental psychology, and several branches of psychology. New experimental tools, methodologies and ways of analyzing theories have spurred the development of deep insights into the importance of the social and cultural contexts of learning (National Research Council, 2001).

One of the hallmarks of the new science of learning is its emphasis on learning with understanding. Intuitively, understanding is good but it has been difficult to study from a scientific perspective. At the same time, students often have limited opportunities to understand or make sense of topics because many curricula have emphasized memory than understanding. Textbooks are filled with facts that students are expected to memorize and most tests assess students' abilities to remember the facts. The new science of learning does not deny that facts are important for thinking and problem solving. Research in expertise in areas such as chess, history, science, and mathematics demonstrate that experts' abilities to think and solve programs depend strongly on a rich body of knowledge about the subject matter. Research shows clearly that usable knowledge is not the same as a mere list of disconnected facts. Experts' knowledge is connected and organized around important concepts; it is conditionalized to specify the contexts in which is it applicable; it supports understanding and transfer (to other contexts) than only the ability to remember (National Research Council, 2001).

Experiential learning and learning through CTSOs provide students with opportunities supported by the National Research Council that are in alignment with how students learn. CTE and CTSOs provide students a right body of subject matter that is not simply a list of connected facts. The knowledge and skills required for CTSO engagement into career development events represent "usable knowledge" that is organized around important concepts. Students learn and apply the knowledge in the contexts offered by CTE and specifically CTSOs, which support understanding, retention, and transfer of knowledge into other situations.

Theoretical Foundation

When examining the concept of experiential learning found within the related literature, David Kolb's work (i.e., Experiential Learning Theory) appears to have the greatest potential within an educational setting and ability to enhance the education process. Kolb's Experiential Learning Theory (ELT) draws upon the works of Dewey, which stressed the role of experience in the learning process (Rudowski, 1996). Thus, his learning model is grounded in the theoretical framework of personal experience (Ausburn & Brown, 2006). Kolb's ELT is built on six propositions (Kolb & Kolb, 2005) that include:

> (a) Learning is best conceived as a process, not in terms of outcomes. To improve learning in higher education, the primary focus should be on engaging students in a process that best enhances their learning a process that includes feedback on the effectiveness of their learning efforts. (b) All learning is relearning. Learning is best facilitated by a process that draws out the students' beliefs and ideas about a topic so that they can be examined, tested, and integrated with new, more refined

> ideas. (c) Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. Conflict, differences, and disagreement are what drive the learning process. In the process of learning one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking. (d) Learning is a holistic process of adaptation to the world. Not just the result of cognition, learning involves the experiential integrated functioning of the total person thinking, feeling, perceiving, and behaving. (e) Learning results from synergetic transactions between the person and the environment. (f) Learning is the process of creating knowledge. (p. 194)

Kolb's ELT identifies four modes of grasping/transforming experience within his model that include: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. These four modes are represented in his experiential learning cycle. While educators might have a specific delivery preference for which of Kolb's modes to introduce students to first, Kolb and Fry (1975) identified that the learning process can begin at any one of the four modes and should be viewed as a continuous cycle (see Figure 1). An educator often uses their best professional judgment given the situation on how to cycle through the four modes of experiential learning. However, the transfer of learning via the four modes of experience within the cycle is of the greatest importance with experiential learning.

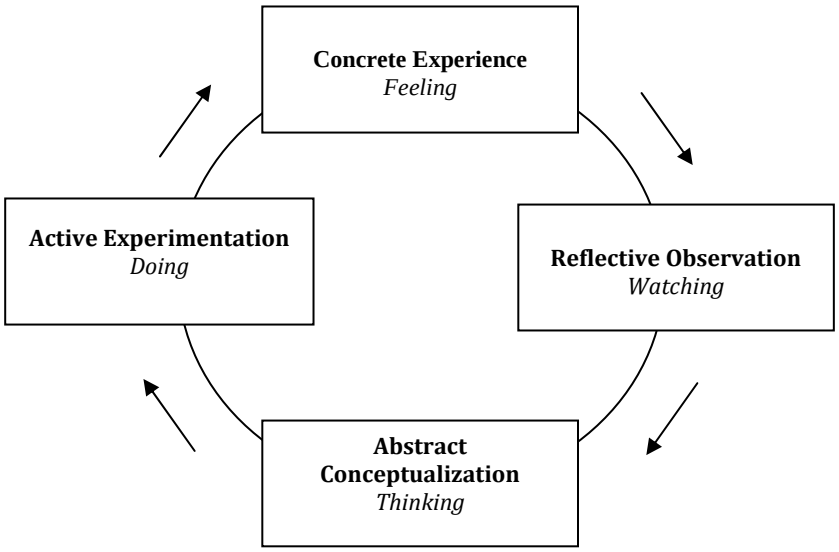

Figure 1. The four modes of Kolb's Experiential Learning Cycle

The Problem

Deeply seated in the roots of CTE is a philosophical belief in the process of learning by doing. While this approach appears to have shown success over the years, further exploration into what enhances student learning must occur in context with CTE and CTSOs. Research needs to explore the factors involved in student learning, as well as, how these factors interact with components of experiential learning models, such as those posited by Kolb (1984). That which the brain is thinking, while the body is engaged impacts overall learning; therefore, opportunities

for reflection, as well as the opportunity for hands-on learning, must be provided. Thus, the connection of reflection and activity must be explored more fully. All students need to be afforded an opportunity to learn new skills and develop abilities that will provide them with labor market advantage. Students whom participate in CTSOs derive many benefits from that experience including the opportunities to develop positive self-concepts, social skills, problem-solving skills, communication skills, leadership skills, and occupational skills, all of which are valued universally by employers (Scott & Sarkees-Wircenski, 2008). While these benefits are commonly associated with CTSO participation, it is important to consider the relationship between learning theory and CTSO programming within the perspective of enhancing learning opportunities. A student that is prepared through CTSO competitive events in which he/she must "reflect", "think", "feel" and "do", (in an experiential learning context) could be better prepared to enter the workforce and solve the problems encountered on the job. By implementing pedagogy aligned with Kolb's experiential learning theory and CTSO competitive event preparation, students could prepare not only for the "do" portion of the event, but also the areas of reflecting, conceptualizing, and taking part in concrete experience that will allow for an enhanced learning experience that is retained and transferred for future use beyond the actual competitive event itself.

Examination Framework

Is there potential for Kolb's Experiential Learning Cycle to align with CTSO career development competitive event preparation? Given that competency is defined as "an area of knowledge or skill that is critical for producing a key output" (McLagan, 1989, p.77) and since successful preparation for CTSO competitive events requires student participants to master contest competencies by thoroughly experiencing them, the decision was made to examine one category of national contest competencies within the Health Occupations Students of America (HOSA), the National FFA Organization and the SkillsUSA CTSO to determine if there was potential for alignment with the four modes of Kolb's Experiential Learning Cycle (i.e.**,** Figure 1). For HOSA, examination of the Veterinary Assisting competitive career event was selected. For FFA, examination of the Floriculture career development event was selected and for SkillsUSA, the Electronic Systems component of the Automotive Service Technology career development event was identified. Each of these contests was specifically selected for informal examination because the researchers had a professional background in the designated subject areas. Note, only one category of the Automotive Service Technology career development event was selected as the contest deals with every operating system of the automobile and was so in-depth that it would be difficult to compare findings with the other two competitions and realistically accommodate the page length requirement for publication.

The researchers involved with the study were charged with informally analyzing the demands of their designated career development event. First the researchers were given a copy of their designated CTSO contest guidelines and were asked to read and examine the competition competencies. The researchers then individually analyzed the demands of the contest competencies to determine what, if any, of the competencies could potentially align with the four modes of Kolb's Experiential Learning Cycle. Next the researchers examined each other's findings and were asked to come to a consensus on which, if any, of the contest competencies could potentially align with the four modes of Kolb's Experiential Learning Cycle. Finally the crosschecked findings were recorded on a rubric for presentation within this paper.

Findings

After performing the informal analysis described in the examination framework section, the results demonstrate that the competitive event competencies may align with one or more of the four modes of Kolb's Experiential Learning Cycle. Figure 2 summarizes the proposed alignment of the SkillsUSA automotive service technology electronic systems contest competencies via the four modes of Kolb's Experiential Learning Cycle. Figure 3 summarizes the proposed alignment of the National FFA Floriculture competitive event via the four modes of Kolb's Experiential Learning Cycle. Of the 11 objectives in the FFA contest, five or more are evident in each of Kolb's modes for experiential learning.

Active Experimentation (Doing)	**Reflective Observation (Watching)**
• Construct an electrical circuit from supplied material and wiring diagram • Check electrical circuit operation • Take electrical readings on the circuit with a DVOM • Confirm the repair of circuit • Diagnose electrical/electronic integrity of circuits • Check electrical circuits with a test light and determine necessary action • Repair connectors and terminal ends • Repair wiring harness • Perform solder repair	• Check electrical circuit operation • Take electrical readings on the circuit with a DVOM • Confirm the repair of circuit • Diagnose electrical/electronic integrity of circuits • Check electrical circuits with a test light and determine necessary action
Concrete Experience (Feeling)	**Abstract Conceptualization (Thinking)**
• Construct an electrical circuit from supplied material and wiring diagram • Take electrical readings on the circuit with a DVOM • Diagnose and repair circuit • Check electrical circuits with a test light and determine necessary action • Repair connectors and terminal ends • Repair wiring harness • Perform solder repair	• Construct an electrical circuit from supplied material and wiring diagram • Diagnose and repair circuit • Diagnose electrical/electronic integrity of circuits • Check electrical circuits with a test light and determine necessary action

Figure 2. Proposed alignment of the SkillsUSA automotive service technology electronic systems competitive event competencies via the four modes of Kolb's Experiential Learning Cycle

Active Experimentation (Doing)	**Reflective Observation (Watching)**
• Identify floriculture and bedding plant materials. • Identify and treat unhealthy plants due to pest, nutritional, mechanical or chemical injury. • Identify and select appropriate supplies and equipment for the flower shop and greenhouse. • Understand and demonstrate the use of safety procedures and practices in floriculture operations. • Operate and maintain appropriate equipment for floriculture operations. • Understand and demonstrate interpersonal skills prerequisite to successful employment in the floriculture industry. • Understand and demonstrate proper sales and service skills. • Maintain records and proper reports that are accurate and legible.	• Understand the biological and scientific principles and develop the skills underlying propagation, growth requirements, growing techniques, harvesting, marketing and maintenance of established floriculture plants. • Understand principles and develop skills of floral design. • Understand and demonstrate interpersonal skills prerequisite to successful employment in the floriculture industry. • Understand and demonstrate proper sales and service skills. • Develop those interpersonal skills prerequisite to effective participation in the floriculture industry.
Concrete Experience (Feeling)	**Abstract Conceptualization (Thinking)**
• Identify and select appropriate supplies and equipment for the flower shop and greenhouse. • Understand and demonstrate the use of safety procedures and practices in floriculture operations. • Operate and maintain appropriate equipment for floriculture operations. • Understand and demonstrate interpersonal skills prerequisite to successful employment in the floriculture industry. • Understand and demonstrate proper sales and service skills. • Maintain records and proper reports that are accurate and legible. • Develop those interpersonal skills prerequisite to effective participation in the floriculture industry.	• Identify and treat unhealthy plants due to pest, nutritional, mechanical or chemical injury. • Understand the biological and scientific principles and develop the skills underlying propagation, growth requirements, growing techniques, harvesting, marketing and maintenance of established floriculture plants. • Understand principles and develop skills of floral design. • Identify and select appropriate supplies and equipment for the flower shop and greenhouse. • Understand and demonstrate the use of safety procedures and practices in floriculture operations.

Figure 3. Proposed alignment of the FFA Floriculture CDE competencies via the four modes of Kolb's Experiential Learning Cycle

Figure 4 summarizes the proposed alignment of the HOSA Veterinary Assisting competitive event via the four modes of Kolb's Experiential Learning Cycle. Of the eight competency or performance areas, all eight were evident in one or more of Kolb's modes of experiential learning. Thus, the opportunity for engaging students through the use of Kolb's model is possible during the preparation of students for competitive events in their respective CTSO. The opportunity for students to utilize Kolb's model can thus be transferred to the actual event, in situations where the student was prepared in such a manner. Thus, transfer of learning from preparation to the actual event may allow students to not only complete the task at hand, but also reflect on the skill that is being assessed.

Active Experimentation (Doing)	**Reflective Observation (Watching)**
• Preparation of the Operative Site • Lifting and Restraining a Dog • Simple Fecal Flotation • Canine Cardiopulmonary Resuscitation	• Lifting and Restraining a Dog • Preparation of the Operative Site • Simple Fecal Flotation • Canine Cardiopulmonary Resuscitation
Concrete Experience (Feeling)	**Abstract Conceptualization (Thinking)**
• Lifting and Restraining a Dog • Canine Cardiopulmonary Resuscitation	• Identification of Parasites • Identification of Companion Animal Breeds and Species

Figure 4. Proposed alignment of the HOSA Veterinary Assisting competitive event competencies via the four modes of Kolb's Experiential Learning Cycle

Conclusions and Recommendations

The results indicate that preparation for competitive events in each of the respective CTSOs lend themselves to using Kolb's model as a method of preparing students for these competitions. While preparation for competitive events occupies a significant priority in career and technical education, little is known about the ways teachers prepare students for the performance requirements of the competitive event. Consequently, student learning maybe enhanced through pedagogical practice aligned with all four modes of Kolb's experiential learning theory. Multiple competencies in each of the events assessed were evidenced across modes of Kolb's learning cycle. Advisors that prepare students in various events may be able to better prepare students by allowing the students to "practice" the competencies in various ways (i.e. Abstract Conceptualization - thinking, Reflective Observation - watching, Concrete Experience - feeling, Active Experimentation - doing). Learners may be better able to retain information and skills learned during preparation for the event, if they are afforded the opportunity to learn the requisite material through various avenues.

While there is evidence, provided through the current examination of three competitive CTSO events, that opportunities exist for incorporating each of the four components of Kolb's Experiential Learning Model (1984), further study needs to be conducted to explore preparation of the individuals or teams that compete in these events. Also, CTSO events should be explored further to see whether authentic learning experiences (Knobloch, 2003) are being provided during preparation, as well as the actual competitive event. Students learn differently and by

providing multiple occasions for learning information and building skills (i.e. using all four components of Kolb's Experiential Learning Model) student learning could be enhanced.

As Kolb's model of experiential learning can be seen in each of the competencies of the examined competitive events, preparation for these events could follow Kolb's learning theory. Each competency in a given event should be aligned with one or more of Kolb's modes along with a specialized pedagogical approach to teaching the competency area. Then each of the modes could be used in the instruction of the student participants, thus allowing for reflection and application of the preparation, during the actual event. Future study should include a more detailed exploration of contest competencies by CTSO advisors. This examination should include further alignment of Kolb's experiential learning model to each competency, thus providing a framework for preparing for CTSO competitive events.

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