

IS EXPERIENTIAL LEARNING AUTHENTIC?

Neil A. Knobloch, Assistant Professor
University of Illinois

Abstract

This interpretivist qualitative study used a life history method to analyze the foundational tenets of experiential learning in agricultural education and determine if the tenets are common to the components of authentic learning. The four tenets of experiential learning in agricultural education were: learning through real-life contexts (Dewey, 1938), learning by doing (Knapp, cited in Lever, 1952), learning through projects (Stimson, 1919), and learning through solving problems (Lancelot, 1944). The four tenets of experiential learning were conceptually aligned with the three criteria of authentic learning (Wehlage, Newmann, & Secada, 1996) because experiential learning engages students to solve problems inductively, actively use and explain knowledge through solving problems, and make connections and apply knowledge beyond the classroom and school, based on real-life problems. Teacher educators, preservice teachers, and in-service teachers of agriculture should base their instruction on an experiential learning model that is grounded on the philosophies of Dewey, Knapp, Stimson, and Lancelot, and aligned with Newmann and Associates (1996) authentic learning standards because it is likely to provide a sound psychological framework for learning.

Introduction

Learning experientially in authentic contexts has been a foundational model of teaching and learning in agricultural education. In discussions on reforming education, many educators and policymakers have called for models of teaching and learning that change the role of the teacher from being a deliverer of knowledge to one of being a facilitator of more active student learning (Padron & Waxman, 1999). Among these discussions about improving education, authentic learning has been found as a promising model of improving student achievement (Newmann & Associates, 1996). The agricultural education profession should reflect on its foundational principles of learning and analyze emerging theories of learning in contrast to the foundational principles of the discipline.

Purpose and Objectives

The purpose of this study was to understand the tenets of experiential learning and determine if those tenets were

closely related to the components of Newmann and Associates' (1996) authentic learning. The objectives were to: (a) identify the foundational tenets of experiential learning in agricultural education; and (b) determine what foundational tenets of experiential learning in agricultural education are conceptually aligned with the components of authentic learning.

Theoretical Framework

Literature was reviewed to define two learning theories that appear to be salient in agricultural education—authentic learning and experiential learning.

Authentic Learning

Authentic learning is a constructivist approach to learning based on some common assumptions of constructivism (Driscoll, 1994): (a) complex, challenging learning environments and authentic tasks; (b) learning through social negotiation and shared responsibility; (c) multiple representations of the content; (d) understanding that knowledge is

constructed; and (e) student-centered instruction. Authentic learning occurs through tasks, activities, and assessments that result in achievement that is significant and meaningful rather than that which is trivial or useless (Newmann & Wehlage, 1993). An authentic task has connection to the real-life problems and situations that students face outside of the classroom, both presently and in the future (Woolfolk, 2001). Ormrod (2000) stressed that authentic activities promote solving problems, thinking critically, synthesizing knowledge, and applying skills in real-life contexts.

Assessment is commonly discussed related to authentic learning. Authentic assessment, also described as performance assessment (Hambleton, 1996), measures student performance using procedures that simulate the application of real-life tasks (Ormrod, 2000; Woolfolk, 2001). Collins (1991) posited that students benefit from constructivist approaches such as authentic learning because: (a) they learn to apply knowledge; (b) the learning environment fosters invention and creativity; (c) they see the implications of the knowledge; and (d) they learn that knowledge is organized for appropriate uses in context. Authentic learning has an extensive empirical base (Newmann & Associates, 1996). Since 1990, Newmann and Associates' school restructuring study found that schools are capable of sophisticated teaching that produces high quality achievement across the differences in students' race, class, gender, or social background. Authentic

learning reflects the type of cognitive experiences that occur in real life. Authentic learning depends heavily on the cues and cognitive support inherent in the contexts and activities of the learning environment (Shuell, 1996). Furthermore, high quality achievement focuses learning around intellectual accomplishments that are worthwhile, significant, meaningful, and those done by successful adults (Wehlage, Newmann, & Secada, 1996).

Wehlage et al. (1996) found that three criteria determine authentic academic achievement: (a) construction of knowledge, (b) disciplined inquiry, and (c) value of learning beyond school (Table 1). First, students should be challenged, as if they were in adult roles, in constructing or producing knowledge in written or oral communications, by making and repairing things, and in performance for audiences. Second, students should engage in cognitive work that involves disciplined inquiry consisting of the use of a prior knowledge base, striving for in-depth understanding rather than superficial awareness, and expressing their ideas through elaborated communication. Third, students should strive for aesthetic, utilitarian, or personal value evident in significant intellectual accomplishments rather than contrived assessments of a simple demonstration of competence. The teacher directs the teaching and learning process around these three criteria through two primary processes: daily instruction and assessing student performance (Wehlage et al.).

Table 1
Rubric for Authentic Learning

Authentic Learning Standards		
Criteria	Instruction	Assessment
Construction of Knowledge	<p>Standard 1: Higher-Order Thinking Are students engaged in manipulating information and ideas by synthesizing, generalizing, explaining, hypothesizing, or arriving at conclusions that produce new meaning and understanding for them?</p>	<p>Standard 1: Organization of Information Does the task ask students to organize, interpret, explain, or evaluate complex information in addressing a concept, problem, or issue?</p> <p>Standard 2: Consideration of Alternatives Does the task ask students to consider alternative solutions, strategies, perspectives, or points of view in addressing a concept, problem, or issue?</p>
Disciplined Inquiry	<p>Standard 2: Deep Knowledge Does the learning experience address central ideas of a topic or discipline with enough thoroughness to explore connections and relationships and to produce relatively complex understandings?</p> <p>Standard 3: Substantive Conversation Are students engaged in extended conversation exchanges with the teacher, adults, or their peers in subject matter in a way that builds an improved and shared understanding of ideas or topics?</p>	<p>Standard 3: Disciplinary Content Does the task ask students to show understanding and/or use ideas, theories, and perspectives considered central to an academic or professional discipline?</p> <p>Standard 4: Disciplinary Process Does the task ask students to use methods of inquiry, research, or communications characteristic of an academic or professional discipline?</p> <p>Standard 5: Elaborated Written Communication Does the task ask students to elaborate on their understanding, explanations, or conclusions through extended writing?</p>
Value Beyond School	<p>Standard 4: Connections to the World Beyond the Classroom Do students make connections between substantive knowledge and either public problems or personal experiences?</p>	<p>Standard 6: Problem Connected to the World Beyond the Classroom Does the task ask the students to address a concept, problem, or issue that is similar to one they have encountered in life beyond the classroom?</p> <p>Standard 7: Audience Beyond the School Does the task ask students to communicate their knowledge, present a product or performance, or take some action for an audience beyond the teacher, classroom, or school building?</p>

Experiential Learning

Experiential learning has been a valued landmark in agricultural education (Cheek, Arrington, Carter, & Randell, 1994; Hughes & Barrick, 1993; Randell, Arrington, & Cheek, 1993; Stewart & Birkenholz, 1991). Agricultural education (Barrick, 1989) developed during an era when the “doing to learn” and “education through experience” philosophies were prevalent in America. The study of experiential learning goes back to about one century ago when agricultural education in America was organized in both formal and non-formal settings. By 1890, agriculture was being studied in public schools, and by 1912, over 2,000 schools taught agriculture (Moore, 1987). During this time Seaman Knapp received financial support in 1903 to fund field agents to help farmers solve the boll weevil problem in Texas (Seevers, Graham, Gamon, & Conklin, 1997). During the early 20th century, the educational beliefs of academic philosophers helped shape the concept of experiential learning in agriculture. Agricultural educators in formal and non-formal settings tested and practiced the premise that learning is experienced in many different contexts. The educators in the Cooperative Extension Service practiced field demonstrations and 4-H projects. Agricultural educators utilized the Supervised Agricultural Experience (SAE) project, commonly associated as experiential learning, as one of the three intertwined components of the agricultural education program in public secondary schools. Demonstrations and projects were methods commonly used by Extension and agricultural educators and were an integral part of the educational experience of Extension clientele and students. Extension and agricultural educators built their entire educational programs on the philosophical foundation of experiential learning. Therefore, agricultural educators and Extension educators commonly describe their instruction as practical, applied, and hands-on (Mabie & Baker, 1996).

Experiential learning has various dimensions: real experience (Herbert, 1995); concrete experience (Kolb, 1984); reflective thinking (Winn, 1959); observational learning (Herbert, 1995; Kolb, 1984);

abstract conceptualization (Kolb, 1984); risk and responsibility (Herbert, 1995); active experimentation (Winn, 1959; Kolb); and, teacher-as-facilitator (Herbert). Cheek et al. (1994) described experiential learning as practicing in a real situation, modeling appropriate behaviors and procedures, receiving appropriate feedback and reinforcement, and providing opportunities to apply knowledge in new situations. Boud, Cohen, and Walker (1993) offered five propositions about learning from experience: (a) experience is the foundation of and stimulus for learning; (b) learners actively construct their experience; (c) learning is a holistic process; (d) learning is socially and culturally constructed; and, (e) learning is influenced by the socio-emotional context in which it occurs.

Students learn through real-life experiences (Cullingford, 1990; Mabie & Baker, 1996) and experience influences how they learn because experiences shape persons' schema by bundling knowledge and past experiences to influence future experiences (Buriak, McNurlen, & Harper, 1996). Moreover, experiences influence our perception (Cullingford) and serve as bridges between the school phenomena and the rest of the world (Horwood, 1995). Experiential learning increased critical thinking (Mabie & Baker) and empowered students with greater responsibility (Griffin, 1992). Supervised agricultural experiences, an example of experiential learning in agricultural education (Camp, Clarke, & Fallon, 2000; Dyer & Williams, 1997; Steele, 1997), was related to improved student achievement (Cheek et al., 1994; Dyer & Osborne, 1996) motivation (Camp et al.), work habits and responsibility (Stewart & Birkenholz, 1991). Experiential learning supports pedagogical principles of practice (Hammonds, 1950; Newcomb, McCracken, & Warmbrod, 1993) and student inquiry (Newcomb et al.) by applying knowledge and solving problems in real-life settings.

Experiential learning has been the theoretical framework underpinning of many studies (e.g., Cheek et al., 1994; Hughes & Barrick, 1993) and has also been studied empirically (e.g., Mabie & Baker, 1996; Wulff-Risner & Stewart, 1997). In

agricultural education, experiential learning has not been studied conceptually in comparison to authentic learning. Perhaps agricultural educators need a common language of current learning theory to communicate the pedagogical concepts of experiential learning. The researcher attempted to define the concept of experiential learning by revisiting the documents of some of the foundational leaders in agricultural education because “all social phenomena need to be studied in their historical contexts” (Denzin & Lincoln, 2000, p. 375). Moreover, Donmoyer (2001) purported that narrations of practical knowledge with the purpose of informing and enlightening others evolve out of the assumption that educational issues are as much conceptual as empirical. Steele (1997) recommended that experiential learning be broadly conceptualized. Therefore, this study was conducted to conceptually analyze the theories of experiential learning and authentic learning.

Methods and Procedures

This interpretivist qualitative study used a life history method (Schwandt, 1997; Tierney, 2000) to analyze documents (Hodder, 2000) of the major contributors to experiential learning in agricultural education. The terms agricultural education and experiential learning were operationally defined. “Agricultural education is the studying of the principles and methods of teaching and learning as they pertain to agriculture” (Barrick, 1989, p. 26), in both formal and non-formal educational settings. Dewey (1938) is credited for the term, experiential learning, based primarily on his book, *Experience and Education*.

Although experiential learning in agricultural education is associated with supervised agricultural experiences (SAE), experiential learning is more than SAE's. Experiential learning was operationally defined as learning in real-life contexts that involves learners in doing tasks, solving problems, or conducting projects. The four major contributors to the study of experiential learning were selected a priori based on the operational definition and the criteria of being foundational authors during

the time frame of the 1890s to 1940s. A panel of experts in agricultural education at a land-grant university confirmed that the four major people contributing to the construct of experiential learning were John Dewey (Dyer & Osborne, 1995, 1996; Stewart & Birkenholz, 1991), Seaman Knapp, Rufus Stimson (Dyer & Osborne, 1995, 1996; Stewart & Birkenholz), and William Lancelot (McCormick, 1994). The documents to be reviewed were obtained through a library search. Quotations were selected if they represented the elements and philosophical assumptions of the foundational leaders. Data were coded based on psychological principles and analyzed for common themes related to the components of authentic learning (Glesne, 1999).

The following steps were taken to maximize trustworthiness and believability, and minimize error and subjectivity of the conclusions (Glesne, 1999; Lincoln & Guba, 1985). Credibility was established through peer discussions with a panel of experts in the field of education and agricultural education. Transferability, dependability, and confirmability were established through direct quotations of text, peer data checks, and an audit trail. Although much care was taken to ensure accurate and reliable data, the findings of this study are limited due to the interpretation and subjectivity of the researcher (Denzin & Lincoln, 2000; Glesne; Lather, 2001). The conclusions of this study are not generalized to all educators who believe or practice the concept of experiential learning, rather provide greater hermeneutics to the pedagogical body of knowledge in agricultural education. Although the trustworthiness criteria were followed to ensure believability of the conclusions, the researcher acknowledges that the data were interpreted based on the knowledge and experiences of the researcher (Denzin & Lincoln). Further, history is someone's lived experiences and their stories that tell history are biased because no person can document the “truth” (Denzin & Lincoln).

Results and Findings

Four influential leaders helped demark

and define experiential learning for agricultural educators in formal and non-formal settings during the 1890s through 1940s: John Dewey, Seaman Knapp, Rufus Stimson, and William Lancelot. The four philosophical voices were revisited through direct quotations, which established four “pillars” that support experiential learning (Figure 1).

philosophy of experience and education (Dewey, 1938), which has been conceptualized as experiential learning (Darling, 1994; Griffin, 1992). He connected with and expanded on the pragmatism philosophy of William James (Archambault, 1966), and illuminated the learning theory educators currently refer to

John Dewey is known for his

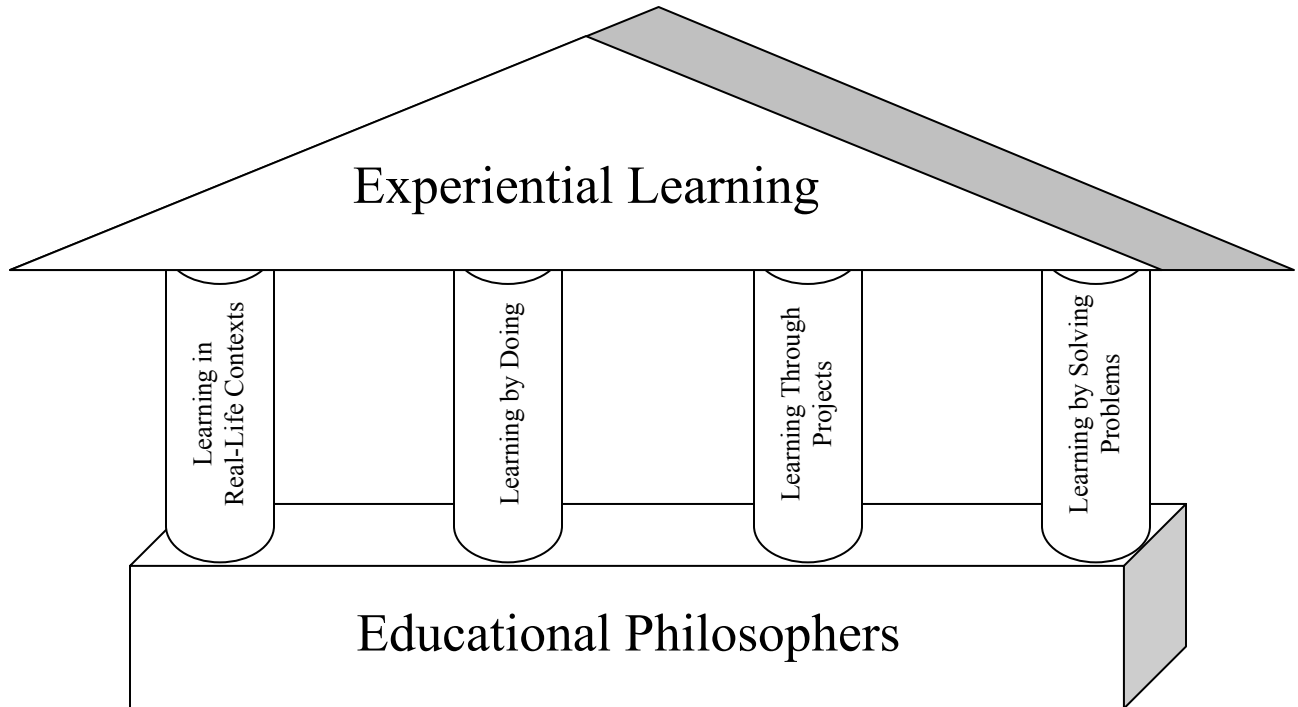


Figure 1. The Pillars of Experiential Learning in Agricultural Education

as “constructivism.” His “attempt to revive the principles of ancient Greece and of the middle ages” (Dewey, p. vi) was built on the child-centered educational philosophies of Rousseau, Pestalozzi, and Froebel (Darling). Dewey’s significant contribution to education was his belief that education should be contextualized and applied in real-life situations. “Continuity and interaction in their active union with each other provide the measure of the educative significance and value of an experience” (Dewey, 1938, p. 44-45). Dewey explained that the continuity of experience motivates the learner to form an attitude and desire for

continuous learning. Moreover, he explained that interaction is interplay between the objective and internal conditions representing what is called the situation. This recursive relationship between the learner’s perception and the actual environment refers to the terms “situated cognition” and “contextualized learning.” Further, Dewey professed that experience does not equate to education, but “everything depends upon the quality of the experience which is had. Hence the central problem of an education based upon experience is to select the kind of present experiences that live fruitfully and creatively

in subsequent experiences" (1938, p. 16-17) related to everyday social applications, economic and industrial problems in society. Dewey's pillar of experiential learning represents *learning in real-life contexts*.

Seaman A. Knapp is known as the "father" of Agricultural Extension Education. His philosophy, "what a man hears, he may doubt; what he sees, he may also doubt, but what he does, he cannot doubt" (Lever, 1952, p. 193) demarked the pillar based on the maxim "learn to do by doing." Learning by doing was a guiding principle Knapp used in solving agricultural problems through his demonstration work. The demonstration method had a major influence on the teaching methods in adult education, youth clubs, and rural education. In 1907, Knapp encouraged agriculture teachers that their instruction should be practical, of easy application, done in the local community, and "...create a love of investigation and give it [learning] direction" (Bliss, 1952, p. 43). Knapp's pillar of experiential learning represents *learning by doing*.

Rufus W. Stimson was a leader in shaping agricultural education at the high school level. He was the "father" of the project method of teaching, which is currently known as SAE projects in agricultural education (Moore, 1988). His idea of the project method tenably grew out of the influence of his pragmatist mentor, William James, and through the readings of Pestalozzi, Rousseau, Froebel, and Herbart (Moore). "Neither skill nor business ability can be learned from books alone, nor merely from observation of the work and management of others. Both require active participation, during the learning period, in productive farming operations of real economic or commercial importance" (Stimson, 1919, p. 32). Stimson purported,

No more diligent or effective application of the inductive method in education has ever been witnessed than...by the project study of agriculture. The education cycle is not left open, but is here completed. The movement, from observed data

of agricultural production to general laws and principles, is followed by the reverse movement, which is embodied in the application of the laws and principles of science, embodied, that is to say, in economic agricultural enterprises conducted by the pupils on their home farms under competent supervision (p. 93).

Stimson further acclaimed, "the primary pursuit of project study as the accompaniment of project work is the organization of definite and coherent bodies of knowledge which the recurrent seasons will naturally and of necessity call into use. The organization of common sense by the project study method is not education in forgetting; it is education in remembering." (p. 96). Stimson's student-centered philosophy was based on "the actual organization anew of the common sense required for successfully controlling the personal affairs and economic fortunes of the pupils. The 'career motive' here is dominant, inspiring, [and] compelling" (p. 94). He believed that active learning motivated students because "this method immediately appeals to the motor instincts and activities of boys [and girls] of secondary school age," (p. 54) and most students "learn best by being told and shown on the field of action" (p. 55). Furthermore, "the pupil must then be trusted to develop efficiency on his [or her] own account in one or another field of applied knowledge" (p. 89). Stimson prophesied the effectiveness of agri-science fair projects because the "project study...will probably prove to be one of the most effective means of accumulating first-hand data for the successful study of science..." (Stimson, p. 96). Therefore, Stimson's pillar of experiential learning represents *learning through projects*.

William H. Lancelot's work as a Professor of Vocational Education at Iowa State University conceptualized Dewey's concept of contextual learning and created the problem solving method of instruction in agricultural education. His notable book, *Permanent Learning*, was "designed to produce teachers who are concerned with

making knowledge function in the lives of their pupils—teachers whose eyes are fixed upon knowledge in action, which is life” (Lancelot, 1944, p. v). He advocated that essential knowledge is “knowledge that is most useful in life”, and that “it should be taught [so] that it will be retained as long as needed, and so it can be used effectively in meeting life situations and problems” (p. 17). The three chief requirements to help students retain knowledge long-term and be able to use it effectively in the future are: “(1) they must be strongly interested in it; (2) they must understand it; and, (3) they must use it frequently in their subsequent thinking” (p. 18). Furthermore, Lancelot noted, “that understanding of knowledge does not come through using or applying it. By using knowledge we see how it operates—which is helpful in many ways but still does not enter into true understanding. Instead, an understanding of any given truth comes not from seeing how it works in practice but from seeing its relations to other truths—particularly those which explain it” (p. 77). Moreover, he believed that students improved their understanding by communicating their explanations orally or in writing to someone because “they will improve their own

understandings; and if they can make them well, the teacher may feel certain that they really understand what they have learned” (p. 75). Lancelot believed that good teachers were the ones who “seemed to be alike in one respect...they managed to keep before the minds of their pupils, either by direct questioning or by indirect suggestion, some problem or question to which the pupils wish to know the answer” (p. 143). He defined a problem as “a question whose answer can be found only through thinking” (p. 144) and can be stated in words or created out of a situation. Lancelot’s criteria for good problems were: (1) clearly stated; (2) interesting; (3) an impetus for thinking of superior quality; (4) carefully adjusted to match the scope and difficulty for the students; (5) true to life; and (6) related to a specific teaching objective. Lancelot’s experiential learning pillar represents *learning by solving problems*. Table 2 compares the common themes of Dewey, Knapp, Stimson, and Lancelot’s philosophical views of experiential learning to the three components of authentic learning: construction of knowledge, disciplined inquiry, and value beyond the school.

Table 2
A Comparison of Authentic Learning and Experiential Learning

		Tenets of Experiential Learning				
Authentic Learning (Newmann et al., 1996)		Dewey (1938)	Knapp (Bliss, 1952)	Stimson (1919)	Lancelot (1944)	
Components	Construction of Knowledge <ul style="list-style-type: none"> Challenging adult-like roles that require higher-order thinking, consideration of alternatives, and organizing information. 	Experimentation and reflective thinking.	Experimentation and the field demonstration method.	The inductive method.	The problem solving method.	
	Disciplined Inquiry <ul style="list-style-type: none"> Engagement in cognitive work that involves inquiry into an in-depth understanding of a prior knowledge base through substantive conversation. 	Learning of theory/intellectual and practice/active should be done together in a real-life context.	Instruction should create a love of investigation and direction for learning by doing.	Project work organizes definite and coherent bodies of knowledge which recurrent seasons will naturally and of necessity call into use.	Understanding knowledge by using it, seeing it in relationship to other knowledge, and by explaining it orally or in writing.	
	Value Beyond School <ul style="list-style-type: none"> Knowledge and problem task are communicated, performed, or acted on for an audience beyond the school. 	Learning should involve everyday social applications, economic and industrial problems.	Instruction should be practical, of easy application, in solving agricultural problems done in the local community.	Active participation in agricultural operations of real economic or commercial importance.	Good teachers keep good problems created out of situations before the minds of their students.	

Conclusions, Implications, and Recommendations

The construction of knowledge component for authentic learning relates to the reflective thinking, demonstration method, inductive method, and problem-solving method. All four of these examples involve solving real-life problems

inductively. Second, the disciplined inquiry component for authentic learning relates to learning in context, learning by doing, learning through projects, and learning by using knowledge through solving problems and explaining the knowledge. Although Dewey, Knapp, Stimson, and Lancelot varied in their descriptions related to disciplined inquiry, they all described

learning as “active learning.” Lancelot was the most closely aligned to disciplined inquiry because he stressed the importance of the communications and explanations of the knowledge. Third, the component of value beyond the school was related to Dewey’s everyday social application, economic and industrial problems, Knapp’s agricultural problems in the local community, Stimson’s agricultural operations of real economic or commercial importance, and Lancelot’s good problems created out of situations. All four experiential learning contributors were aligned with value beyond school because of real-life problems that help students make connections and apply knowledge. Dewey pointed to social problems, Knapp and Stimson pointed to agricultural production problems, and Lancelot focused on true to life problems that related to students.

Although social, economic, political, and agricultural systems have changed drastically since the days of Dewey, Knapp, Stimson, and Lancelot, experiential learning is likely to still be relevant to the needs of teachers and students in the 21st century because it is aligned with the psychological principles that result in significant and meaningful learning. Moreover, which students, parents, school administrators, or policymakers would argue with teacher educators who prepared agricultural educators who had students engaged in solving problems that were relevant to their lives, communicated their thoughts connecting knowledge in action, discovered the concepts of science through investigations, or applied their knowledge many years after they graduated?

Experiential learning was conceptually aligned with authentic learning. However, many agricultural educators are familiar with “hands-on” learning, but does this popular approach to teaching and learning always constitute the principles of “experiential learning?” One of the greatest challenges for today’s teachers and students of agriculture is to move beyond the “doing” and ensure that all learning is connected to thinking and knowledge that will be easily remembered and applied later in life. Every learning opportunity should begin with the question, “How will this help me as a

successful adult?” Linking experience-based agricultural education to the current education learning theories can be described in different terms, but Wehlage et al.’s (1996) authentic learning appears to capture the essence of the philosophical spirit of experiential learning in agricultural education for the 21st century.

Teacher educators, preservice teachers, and teachers of agriculture who teach using the experiential learning model that is grounded on the philosophies of Dewey, Knapp, Stimson, and Lancelot, and aligned with Newmann and Associates’ (1996) authentic learning standards are likely to provide a sound psychological framework for learning (Alexander & Murphy, 1998). It is recommended that teacher educators and teachers of agriculture measure the degree of authentic instruction based on four standards and the degree of authentic assessment based on seven standards using the authentic learning rubric (Table 1). The questions for each standard are organized into two columns—instruction and assessment—along the three criteria of authentic achievement. The rubric should be particularly useful for agricultural educators who wish to evaluate their assignments, laboratory activities, or projects for authenticity, significance, meaningfulness, or achievements. Further, the rubric may help researchers investigate how agricultural educators develop experiential learning activities and authentic instruction. The current pedagogy of agricultural educators should be assessed, analyzed, and compared to the foundational principles of the discipline.

The voices of Dewey, Knapp, Stimson, and Lancelot have been studied and experiential learning has been authenticated as being a relevant and effective framework for today’s teacher preparation programs, agricultural education programs, teachers, and students. Although talk can address the concerns of educational reform, the real answer lies in the actions and behaviors of the teacher educators and future agricultural educators. Preservice teachers who see teacher educators and agricultural educators planning, implementing, and evaluating their instruction based on criteria and standards for authentic achievement will likely be

engaged in constructing knowledge through disciplined inquiry with value beyond the classroom and school. Agricultural educators who engage students to learn by experience through authentic pedagogy will most likely see the fruits of higher intellectual achievements, not only in classrooms and schools, but more importantly, in their roles as adults as contributing citizens of society.

References

- Alexander, P. A., & Murphy, P. K. (1998). The research base for APA's learner-centered psychological principles. In N. L. Lambert & B. L. McCombs (Eds.), *How students learn: Reforming schools through learner-centered education* (pp. 25-60). Washington, DC: American Psychological Association.
- Archambault, R. D. (1966). *Lectures in the philosophy of education: 1899 by John Dewey*. New York, NY: Random House.
- Barrick, R. K. (1989). Agricultural education: Building upon our roots. *The Journal of Agricultural Education*, 30(4), 24-29.
- Bliss, R. K. (1952). Seaman A. Knapp, his philosophy, objectives, and methods. In R. K. Bliss (Ed.), *The spirit and philosophy of Extension work* (pp. 36-45). Washington, DC: USDA Graduate School and Epsilon Sigma Phi, National Honorary Extension Fraternity.
- Boud, D., Cohen, R., & Walker, D. (1993). Introduction: Understanding learning from experience. In D. Boud, R. Cohen, & D. Walker (Eds.), *Using experience for learning* (pp. 19-59). Buckingham, Great Britain: SRHE and Open University Press.
- Buriak, P., McNurlen, B., & Harper, J. G. (1996). For the scientific basis for the craft of teaching. *Journal of Agricultural Education*, 37(4), 25-37.
- Camp, W. G., Clarke, A., & Fallon, M. (2000). Revisiting supervised agricultural experience. *Journal of Agricultural Education*, 31(3), 13-22.
- Cheek, J. G., Arrington, L. R., Carter, S., & Randell, R. S. (1994). Relationship of supervised agricultural experience program participation and student achievement in agriculture. *Journal of Agricultural Education*, 35(2), 1-5.
- Collins, A. (1991). Cognitive apprenticeship and instructional technology. In L. Idol & B. F. Jones (Eds.), *Educational values and cognitive instruction: Implications for education* (pp. 121-138). Hillsdale, NJ: Lawrence Earlbaum Associates.
- Cullingford, C. (1990). *The nature of learning: Children, teachers, and curriculum*. London: Cassell.
- Darling, J. (1994). *Child-centered education and its critics*. London: Paul Chapman.
- Denzin, N. K., & Lincoln, Y. S. (2000). Strategies of inquiry. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed.) (pp. 375-378). Thousand Oaks, CA: Sage Publications.
- Dewey, J. (1938). *Experience and education*. New York, NY: The Macmillan Company.
- Donmoyer, R. (2001). Paradigm talk reconsidered. In V. Richardson (Ed.), *Handbook of research on teaching* (4th ed.) (pp. 174-197). Washington, DC: American Educational Research Association.
- Driscoll, M. P. (1994). *Psychology of learning for instruction*. Boston, MA: Allyn and Bacon.
- Dyer, J. E., & Osborne, E. W. (1995). Participation in supervised agricultural experience programs: A synthesis of research. *Journal of Agricultural Education*, 36(1), 6-14.
- Dyer, J. E., & Osborne, E. W. (1996). Developing a model for supervised

agricultural experience program quality: A synthesis of research. *Journal of Agricultural Education*, 37(2), 24-33.

Dyer, J. D., & Williams, D. L. (1997). Supervision of supervised agricultural experience programs: A synthesis of research. *Journal of Agricultural Education*, 38(4), 59-67.

Glesne, C. (1999). *Becoming qualitative researchers: An introduction*. New York, NY: Longman.

Griffin, C. (1992). Absorbing experiential learning. In J. Mulligan & C. Griffin (Eds.), *Empowerment through experiential learning* (pp. 31-36). London: Kogan Page.

Hambleton, R. K. (1996). Advances in assessment models, methods, and practices. In Berlinger, D. C., & Calfee, R. C. (Eds.), *Handbook of educational psychology* (pp. 899-903). New York, NY: Simon & Schuster Macmillan.

Hammonds, C. (1950). *Teaching agriculture*. New York, NY: Author.

Herbert, T. (1995). Experiential learning: A teacher's perspective. In B. Horwood (Ed.), *Experience and the curriculum* (pp. 19-35). Dubuque, IA: Kendall/Hunt.

Hodder, I. (2000). The interpretation of documents and material culture. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed.) (pp. 703-715). Thousand Oaks, CA: Sage Publications.

Horwood, B. (1995). Of stones and strands: An introduction. In B. Horwood (Ed.), *Experience and the curriculum* (pp. 1-7). Dubuque, IA: Kendall/Hunt.

Hughes, M., & Barrick, R. K. (1993). A model for agricultural education in public schools. *Journal of Agricultural Education*, 34(3), 59-67.

Kolb, D. A. (1984). *Experiential*

learning. Englewood Cliffs, NJ: Prentice-Hall.

Lancelot, W. H. (1944). *Permanent learning: A study of educational techniques*. New York, NY: John Wiley & Sons.

Lather, P. (2001). Validity as an incitement to discourse: Qualitative research and the crisis of legitimation. In V. Richardson (Ed.), *Handbook of research on teaching* (4th ed.) (pp. 241-250). Washington, DC: American Educational Research Association.

Lever, A. F. (1952). Address and dedicating the Wilson-Knapp Memorial. In R. K. Bliss (Ed.), *The spirit and philosophy of Extension work* (pp. 189-195). Washington, DC: USDA Graduate School and Epsilon Sigma Phi, National Honorary Extension Fraternity.

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

Mabie, R., & Baker, M. (1996). A comparison of experiential instructional strategies upon the science process skills of urban elementary youth. *Journal of Agricultural Education*, 37(2), 1-7.

McCormick, F. G., Jr. (1994). *The power of positive teaching*. Malabar, FL: Krieger Publishing Company.

Moore, G. E. (1987). The status of agricultural education prior to the Smith-Hughes Act. *The Agricultural Education Magazine*, 59(8), 8-10.

Moore, G. E. (1988). The forgotten leader in agricultural education: Rufus W. Stimson. *The Journal of the American Association of Teacher Educators in Agriculture*, 29(3), 50-60.

Newcomb, L. H., McCracken, J. D., & Warmbrod, J. R. (1993). *Methods of teaching agriculture*. Danville, IL: Interstate Printers and Publishers.

- Newmann, F. M., & Associates. (1996). In F. M. Newmann (Ed.), *Authentic achievement: Restructuring schools for intellectual quality*, (pp. 1-16). San Francisco, CA: Jossey-Bass.
- Newmann, F. M., & Wehlage, G. G. (1993). Five standards of authentic instruction. *Educational Leadership*, 50(7), 8-12.
- Ormrod, J. E. (2000). *Educational psychology: Developing learners*. Upper Saddle River, NJ: Merrill.
- Padron, Y. N., & Waxman, H. C. (1999). Effective instructional practices for English language learners. In H. C. Waxman & H. J. Walberg (Eds.), *New directions for teaching practice and research* (pp. 171-204). Berkeley, CA: McCutchan Publishing.
- Randell, R. S., Arrington, L. R., & Cheek, J. G. (1993). The relationship of supervised agricultural experience program participation and student achievement in practical skills in agricultural science. *Journal of Agricultural Education*, 34(1), 26-32.
- Schwandt, T. A. (1997). *Qualitative inquiry: A dictionary of terms*. Thousand Oaks, CA: Sage.
- Seevers, B., Graham, D., Gamon, J., & Conklin, N. (1997). *Education through Cooperative Extension*. Albany, NY: Delmar.
- Shuell, T. J. (1996). Teaching and learning in a classroom context. In Berlinger, D. C., & Calfee, R. C. (Eds.), *Handbook of educational psychology* (pp. 748-752). New York, NY: Simon & Schuster Macmillan.
- Steele, R. (1997). Analysis of the continuing decline in use of supervised agricultural experience (SAE) in New York State. *Journal of Agricultural Education*, 38(2), 49-58.
- Stewart, B. R., & Birkenholz, R. J. (1991). Outcomes of changing supervised agricultural education programs. *Journal of Agricultural Education*, 32(3), 35-41.
- Stimson, R. W. (1919). *Vocational agricultural education by home projects*. New York, NY: Macmillan.
- Tierney, W. G. (2000). Undaunted courage: Life history and the postmodern challenge. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed.) (pp. 537-553). Thousand Oaks, CA: Sage Publications.
- Wehlage, G. G., Newmann, F. M., & Secada, W. G. (1996). In F. M. Newmann (Ed.), *Authentic achievement: Restructuring schools for intellectual quality*, (pp. 21-48). San Francisco, CA: Jossey-Bass.
- Winn, R. B. (Ed.). (1959). *John Dewey: Dictionary of education*. Westport, CT: Greenwood Press.
- Woolfolk, A. (2001). *Educational psychology* (8th ed.). Boston, MA: Allyn & Bacon.
- Wulff-Risner, L., & Stewart, B. (1997). Using experiential learning to teach evaluation skills. *Journal of Agricultural Education*, 38(3), 43-50.

NEIL A. KNOBLOCH is an Assistant Professor in the Department of Human and Community Development at the University of Illinois at Urbana-Champaign, 139 Bevier Hall, MC-180, 905 S. Goodwin Street, Urbana, IL 61801. E-mail: nknobloc@uiuc.edu.