

Action Learning for Sustainable Agriculture: Transformation through Guided Reflection



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Abstract

The Action Learning form of Experiential Learning stipulates learning be achieved through actions oriented toward enabling individual or societal change. Here, we situate Action Learning within a larger exploration of Experiential Learning and argue that Sustainable Agriculture (SA) education aligns best with Action Learning. While more traditional experiential learning generally follows a pattern: an impulse to do/learn something, an experience, reflection on that experience, formation of cognitive generalizations, and repetition of the same or similar experience in light of one's newfound knowledge, Action Learning formalizes the reflection process by organizing learners into groups, or sets. Members of Action Learning sets challenge one another to question their assumptions as they reflect on their experiences. This critical self-reflection is essential to transform learning beyond what is already known. The prescribed nature of the reflection process means that individuals don't usually use Action Learning in their daily lives and that it is rarely used to teach college students despite being an ideal approach to teaching agricultural sustainability.

Introduction

Learning Sustainable Agriculture (SA) requires more than mastery of the technical agronomic knowledge and skills to grow crops (Parr et al., 2007, Francis et al., 2001). Students of SA study ways to create a food, fiber and fodder system that is environmentally safe, socially just and economically viable and does not limit the options of future generations (Lieblein et al., 2000). To think and act against the prevailing industrial paradigm of profits at any social or ecological cost, SA students find themselves questioning the attitudes and assumptions about agriculture with they were raised and which are still predominant (Bawden, 2000). For learners to question their own assumptions and world-views they must experience a change of heart (affective learning) in addition to developing

increased knowledge (cognitive learning) and skills (psychomotor learning) (Sipos, et al., 2008). Requisite for the affective dimension of learning is for learners to care about the world and their place in it (Dewey, 1997). Gruenewald argues, "places are fundamentally pedagogical because they are contexts for human perception and for participation with the phenomenal, ecological, and cultural world" (2003, p. 645). To achieve a place-based agricultural education, "it is not just the content of the [agriculture] curricula that needs to be changed, but also the way students are taught" (McRae, 1989 p. 200). Key SA education stakeholders agree that in addition to being place-based SA education needs to be interdisciplinary and experiential (Parr, et al, 2007, Karsten and Risius, 2006).

Engaging with the three domains of learning, including cognitive, affective and psychomotor – or head, heart and hands – may enable transformative experiences and learning (Sipos, et al., 2008). In particular, integrating these domains of learning may ultimately lead to perspective transformation: the process of questioning and adjusting one's world-view in light of newfound knowledge (Mezirow, 1995), and/or transformation of the behavioral domain: the interaction of cognitive, affective and psychomotor learning that shapes the way one behaves (Hauenstein, 1998). One learning model that holds promise for providing students with place-based, transformative, experiential learning in agriculture at the college level is Action Learning (McGill & Brockbank, 2004). The balance of this paper situates college-sponsored Action Learning historically and within related experiential learning theories by first exploring a general framework for understanding experiential learning and then taking a more specific look at Action Learning. Our central argument is that Action Learning is an ideal approach to SA education, but one that will require significant, although not unprecedented, changes to college curricula.

An Overview of Experiential Learning

Foundational to contemporary understandings of the process of experiential learning are Jean Piaget,

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John Dewey, and Kurt Lewin (Kolb, 1984). Piaget's theories of learning were based on his studies of the ways children's thinking patterns change and develop as they mature. His contributions to the field of experiential learning were his descriptions of how intelligence is shaped by experience where "intelligence is not an innate internal characteristic of the individual but arises as a product of the interaction between the person and his or her environment" through the dual processes of accommodation: fitting what one observes into what one already knows, and assimilation: changing what one thinks to fit what one observes (Kolb, 1984, pp. 12, 23). John Dewey's model for cyclical experiential learning began with impulse (a desire to learn something specific), which enabled observation, leading to knowledge, enabling judgment for use with the next impulse – and so on (Dewey, 1997). Lewin's model for experiential learning is borrowed from the concept of a feedback loop from electrical engineering. It is very similar to Dewey's model and involves four distinct phases: concrete experience, observations and reflections, formation of abstract concepts and generalizations, and the testing of concepts in new situations (Roberts, 2006). Roberts (2006) summarizes the process of experiential learning drawing on these and other writings into a proposed unified and simplified model of the experiential learning process (Figure 1). This model will serve as the jumping-off point for our discussion of experiential learning theory.

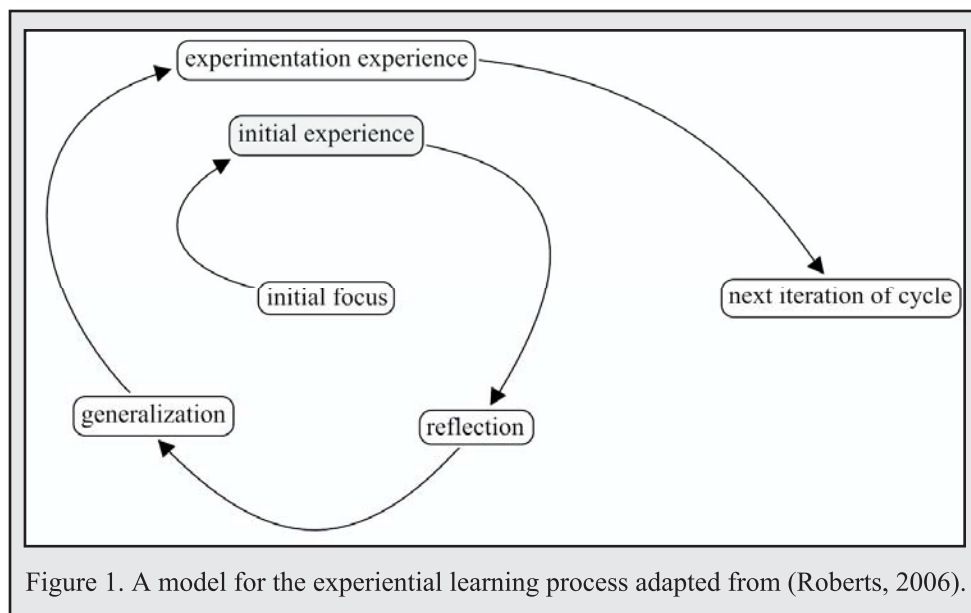


Figure 1. A model for the experiential learning process adapted from (Roberts, 2006).

Context of the Experience

When considering the planning of experiences for students' learning it is also important to question what constitutes an experience. Dewey emphasizes that not "all experiences are equally or genuinely educative" (1997, p. 25). For some, simply reading or listening to something is a powerful learning experience. Sometimes this happens in a

lecture, but more often from books or music or movies. Dale, in his Cone of Experience, established a hierarchy of ranking 11 types of experience from most to least abstract (1969). Dale ranked verbal and visual symbols as most abstract, then movies, exhibits and demonstrations, then workshops, role-plays and simulated experiences. He ranked direct purposeful experiences as the least abstract/most concrete, but emphasized that experiences at all levels of the cone should be used in teaching. If certain kinds of experiences are required for learning to take place then the role of the educator is to challenge students to avail themselves of opportunities to experience what they want to learn. The role of the SA educator is to "purposefully engage with learners in direct experience and focused reflection in order to increase knowledge, develop skills and clarify values" (About Experiential Education, 2006, Lieblein and Francis, 2007).

Another way to consider the context of learning is based on the place in which the learning occurs. If, as Kolb states, "learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984), how important is the context in which the learning is taking place? Students' localized places of work, study and recreation are the centers of their experience that help teach them how the world works and how they fit into that world (Gruenewald, 2003). Colleges and universities can thus take an active role "as centers for both inquiry and action in local, regional, and global space" (Gruenewald, 2003, p. 637). Ecologically, the structural foundations and goals of schooling are often at odds

with place-based experiential education because "modern economies function to damage and destroy the ecological systems that support human and non-human communities" and "the explicit mission of contemporary school reform is to prepare students to [perpetuate] these problematic economies" (Gruenewald, 2003, p. 633). Therefore if the context for experiential learning is both the students' local environment and the institution of higher education, then conflicts of interest are bound to arise (Wals and Bawden, 2005).

Agricultural education inherently provides opportunities to identify and address such conflicts of interest, particularly through the lens of experiential and action-oriented SA education.

A History of Experience in the University

Origins of Experiential Learning

Education researchers have been exploring the concept of college-level experiential education for decades. The 1960s and 1970s was a time of great change in the American university system. Some of the changes proposed by students and others invested in higher education at that time were realized in increased paths to degree attainment, added degree types and entirely new types of universities. Some of these reforms in higher education persist today, for example many Land Grant Universities still have student farms where students can design and carry out their own agricultural research (Parr and van Horn, 2006). The vintage of the literature reviewed herein is intended to prompt an appraisal of current university degree paths, degrees and university structures in light of the historical context in which most of them were initiated.

Colleges and universities are places of learning and research, but these are not their only functions. In the United States, "the [academic] institution... carries out five formal procedures marking the progress of an individual from his [or her] point of entry into the system of higher education until he [or she] is fully entitled to practice a profession" (Houle, 1973, p. 19). Besides providing instruction (1), U.S. universities enforce admission requirements (2), evaluate students' competence in the content taught (3), award certificates or degrees (4), and, where necessary, license graduates to practice particular professions (5). In this way the entire process of higher education in the USA has traditionally been contained within the academic institution. This organization of higher education was designed to cater to young high school graduates studying in residence, full-time for the duration of their undergraduate degrees, which, as shall be shown hereafter, may limit the potential for Experiential Learning.

By the 1970's researchers were reporting that many college students did not fit this traditional mold (Nyquist, Arbolino, & Hawes, 1977; Williams, 1977). Some were older, some were more motivated to study independently and organize their own degree programs, some would rather have learned through field studies or home studies, and some just didn't want to sit through classroom-based lectures (Shay & Engdahl, 1976). In short, many of these students were looking for a more experiential type of college education than is possible within the traditional university structure. Indeed, some of these students went on to establish student farms where they could learn about agriculture through direct experience (Parr and van Horn, 2006).

Kolb said the purpose of his book on experiential learning was to persuade and convince college educators of the value of experiential learning for

making connections between personal development, education and work (1984). At least 20 years after the movement for alternative and more experiential forms of college education began, Kolb remarked:

Programs of sponsored experiential learning are on the increase in higher education. Internships, field placements, work/study assignments, structured exercises, and role-plays, gaming simulations and other forms of experience-based education are playing a larger role in the curriculum of undergraduate and professional programs. For many so-called non-traditional students – minorities, the poor, and mature adults – experiential learning has become the method of choice for learning and personal development. Experience-based education has become widely accepted as a method of instruction in colleges and universities across the nation (1984, p. 3).

Some writers hail experiential education as an example of democratic learning in which individuals get to choose their own learning instead of being told what to learn and how to learn it. It is a theory of learning which

"encourages students to take an active role in their own learning by giving them greater choices and more autonomy in their acquisition, production, and application of knowledge" (Glickman & Alridge, 2001, p. 16).

Others encourage educators to make their craft more student-centered by becoming a 'guide on the side' rather than a 'sage on the stage' (Fields, 2005; Jernstedt, 1980; Lieblein, Breland, Francis, & Ostergaard, 2003). Stepping aside and allowing students to direct their own learning is essential to experiential agricultural education (Parr, et al., 2007).

Agricultural Education's Long Tradition of Experiential Learning

Though Kolb fails to acknowledge it, agriculture education played an important role in pioneering the use of experiential learning (True, 1929). In the early 1900s an agricultural educator by the name of Stimson formalized what was later popularized by others as the Project Method (Kliebard, 2004). Stimson's method involved students doing practical work on their own farms instead of just reading about or even practicing farming at the school (Stimson, 1912). Students' work on their home farms was truly experiential because the growth of their crop or livestock had direct impact on the well being of the students and their families. Even though the schools themselves had farms, Stimson and others believed that these farms could not provide true experiential learning for their students for several reasons. First, most students had to take the role of observer when demonstrations were being made; second, when all students were able to get their hands dirty, it was usually just as laborers under the direction of the teacher; finally, students were paid – but the amount was so small that it could have offered no real incentive for the students to care about the outcome of their farming labors at the school (Monohan et al.,

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1912). University farm schools, most of which were Land Grant Colleges of Agriculture, also had to decide the role the farm would play in the experience of students (Bailey, 1905). These educational thinkers rejected the idea that education was a preparation for life and insisted that education be considered life itself (Kliebard, 2004). This is not to say though that all

of students' time in school should be spent learning how to do a job. Dewey argued that vocational education was much more than trade training (Dewey, 1914, 1915).

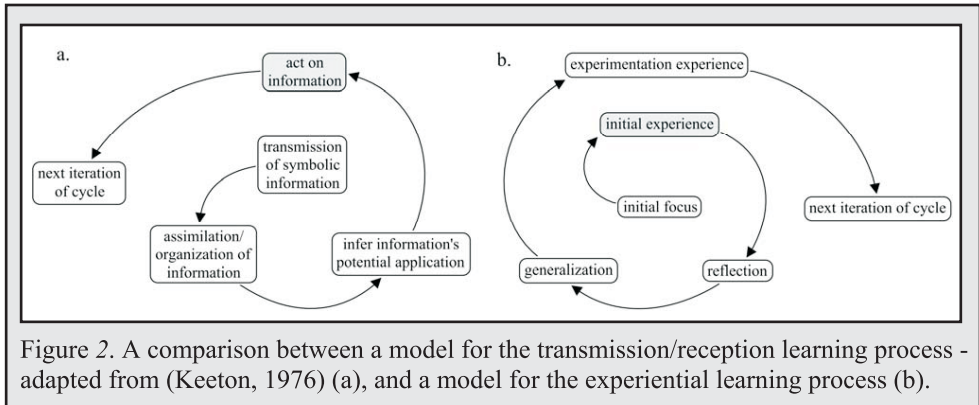
Many modern colleges of agriculture are exploring the creation of interdisciplinary majors that integrate learning from several disciplines in order to tackle complex real-world problems. Surveys of students and faculty as to what these degree programs should include consistently report that experiential learning is essential (Karsten & Risius, 2004; Parr, et al., 2007). However, despite moves toward more experiential learning in the past four decades, it is not the priority of many educators or universities. Rising enrollments, shrinking budgets, and the rising cost of higher education mean that class sizes are growing and many college students who are going heavily in debt for an education want their educational process to be as efficient as possible. These factors decrease the focus on learning, experientially or otherwise, and allow more and more emphasis to be put on the accumulation of units of credit in order to get a degree that can help a person get a job to earn money to begin paying back the student loans (Brookfield, 1984).

These generalizations may not hold true for those few attending progressive liberal arts schools that focus on experiential learning such as Prescott College, Evergreen State College and others affiliated with The Consortium for Innovative Environments in Learning (CIEL). Keeton (1976) suggests that the reason colleges espousing experiential learning are so different from traditional colleges is because experiential learning follows an almost opposite cycle when compared to traditional transmission-reception style learning (Figure 2).

Not All Experiential Learning is Created Equal

What is Experiential Learning?

With regard to experiential learning, one way in which the current system of university education in the U.S. falls short is that it gives students too little opportunity and responsibility for initiating and directing their own learning. If learning is to be



more than an accumulation of knowledge, if it is to be truly transformative, then it must begin with an educative experience (Moore, 2005). It is not enough to require crop production students to raise their own corn, for example. Students must be expected to contemplate and explore what it is they really want to learn. In addition to being offered a plethora of courses from which to choose to complete a discipline-specific degree, students must then be invited to figure out how they are going to go about learning what they want to know in a manner that has real-world implications for themselves and their community and their future employment (Reid & Petocz, 2006). There is perhaps no field in which this is truer than for educating individuals about agricultural sustainability (Schneider, et al., 2005).

A Phylogeny of Experiential Learning

Having discussed the context of experiential learning, and the history of its application in agricultural education, it is informative now to organize various types of college-level experiential learning by similarity to each other. Figure 3 illustrates one way in which various types of experiential learning may be arranged on a phylogeny, or family tree. This particular arrangement was adapted from Keeton and Tate (1978).

The first distinction to be made is whether the experiential learning takes place in a college setting. Next it must be determined whether the experience occurs out-of-class or in-class. Finally, for those experiences that occur outside of class it is important to determine whether they were sponsored by the learning institution (whether collegiate or non-collegiate) or initiated and carried out by the individual.

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There is a wide variety in the types of learning – even within each of the six categories in experiential learning phylogeny. Table 1 includes examples of various experiential learning pedagogies. All of the experiential learning pedagogies in Table 1 seek to link education with personal development and work (Kolb, 1984), but those pedagogies nearer the right hand end of the continuum can be considered to be more

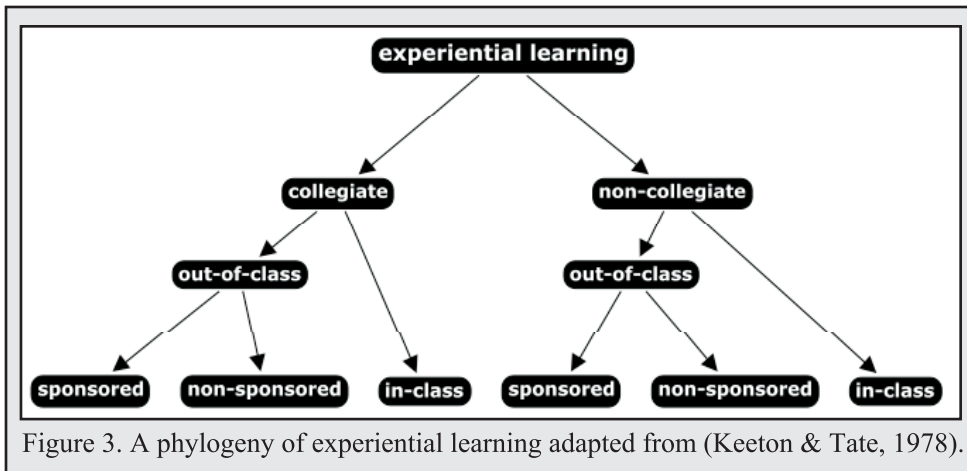


Figure 3. A phylogeny of experiential learning adapted from (Keeton & Tate, 1978).

transformative than those nearer the left (McGill & Brockbank, 2004). The effect is an approximate ordering of some experiential learning pedagogies by the degree of transformation (including personal and societal change) they require: more traditional, experiential, or more transformational.

Traditional

Traditional experiential learning is seen as a cycle of experience, reflection, generalization and experimentation, but it does not necessarily place much emphasis on the requirement that the students' interest motivate the experience or on the need for careful reflection (Figure 4). This is also referred to as single loop learning (McGill & Brockbank, 2004).

Traditional collegiate experiential learning pedagogies in the classroom include traditional degree programs (in which students are generally expected to be information receptacles), and simulations (in which students are exposed to the subject matter via a simulation). Outside the classroom, but still under the auspices of the college are capstone courses (in which students are invited to synthesize the coursework from their degree

program into a final project, usually practical in nature).

Experiential

Truly experiential learning requires: the learner to initiate the learning process, the experience to be genuine, the reflection to lead to new ideas that can be tried in a new situation (Figure 1). True collegiate experiential learning pedagogies in the classroom include: project-based learning (in which

students are presented with a real-world issue and challenged to work as a team to come up with a solution), coordinated studies (in which interdisciplinarity is emphasized), and independent majors (in which students formulate, propose and pursue a unique major that fits their unique educational interests). True collegiate experiential learning pedagogies outside the classroom, but still under the auspices of the college include: field studies (in which students opt to get out of the classroom and into the field to get first-hand experience with their subject matter), cooperative education (in which students are paired with business, government, or non-profit organizations to gain experience working in their field while they study), and Environmental Education (in which individuals may participate in environmental restoration projects and reflect on their place in the environment).

Community Service-Learning (in which students provide community service for academic credit), nears the transformational, particularly with its emphasis on reflection and creating direct connections back to participants' own assumptions, values, education, and community (Hayes, 2006)

Prior Learning Assessment (in which college credit is awarded on the merits of life experience) is an example of college credit being granted for experiential learning that took place prior to enrolling in college – working on a farm, for example. This everyday learning is included as a point of reference in this discussion as a reminder that we all learn every day from the experiences in our lives – and that this learning can be truly experiential when we take time to purposefully reflect on our experiences.

Table 1. Continuum of Experiential Learning Pedagogies

	Traditional	Experiential	Transformational
In-class			
<i>College sponsored:</i>	Traditional degrees Simulations	Project-Based Learning Coordinated Studies Independent Majors	
Out-of-class			
<i>College-sponsored:</i>	Capstone Courses Field Studies	Cooperative Education Environmental Education Community Service-Learning	Action Learning
<i>Not college-sponsored:</i>		Prior-learning assessment	

Table 1. Collegiate experiential learning pedagogies arranged by phylogeny on a continuum indicating their potential for actualizing transformational learning. Non-collegiate learning designations have not been included here as they are outside the scope of this publication.

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Transformational

Action Learning is a process of devoting deliberate attention to the relationship between reflection and action in the cycle of experiential learning (McGill & Brockbank, 2004). Reg Revans, who coined the term 'Action Learning' has defined it as "a means of development, intellectual, emotional or physical, that requires its subject, through responsible involvement in some real, complex and stressful problem, to achieve intended change sufficient to improve his observable behavior henceforth in the

process, the double loop Action Learning model requires learners to question their assumptions and (optimally) experience a paradigm shift (Mezirow, 1995). When a person's learning process passes through this second loop he or she is more likely to learn new things from new experiences rather than repeating the experiences with the same results (Percy, 2005).

Action Learning can be achieved in or out of class in collegiate or non-collegiate settings, but is not likely to occur in everyday life because it requires participating in dialogue with a group of peers, called an Action Learning 'set'. As stated by McGill and Brockbank, "action learning sets formalize group reflective learning and legitimize the allocation of time and space to it, with consistent voluntary group membership over an extended period of time" (2004, p. 14). This is why prior learning assessment and life-long learning do not extend into the realm of Action Learning. This is also why Action Learning is particularly challenging in traditional college sustainable agricultural education.

To further explore the location of Action Learning

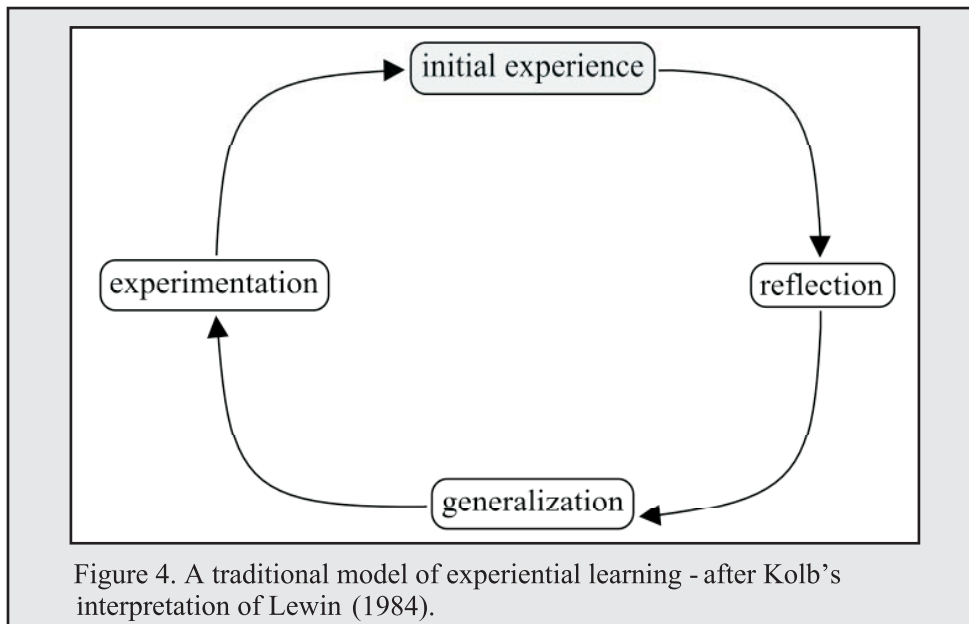


Figure 4. A traditional model of experiential learning - after Kolb's interpretation of Lewin (1984).

problem field" (1981, p. 9). With regards to the experiential learning cycle, it is distinguished by critical reflection, and can also be referred to as double loop learning (Figure 5).

In this model (Figure 5), as in previously mentioned models for experiential learning, a person's initial focus leads them to an initial experience that they then reflect on. The difference with this Action Learning model is that the learning process should not progress from reflection to generalization to experimentation without a transformational change on the part of the learner (Percy, 2005). In contrast to a circular feedback loop in which primarily incremental and instrumental changes are made in pursuit of repetition of the same learning

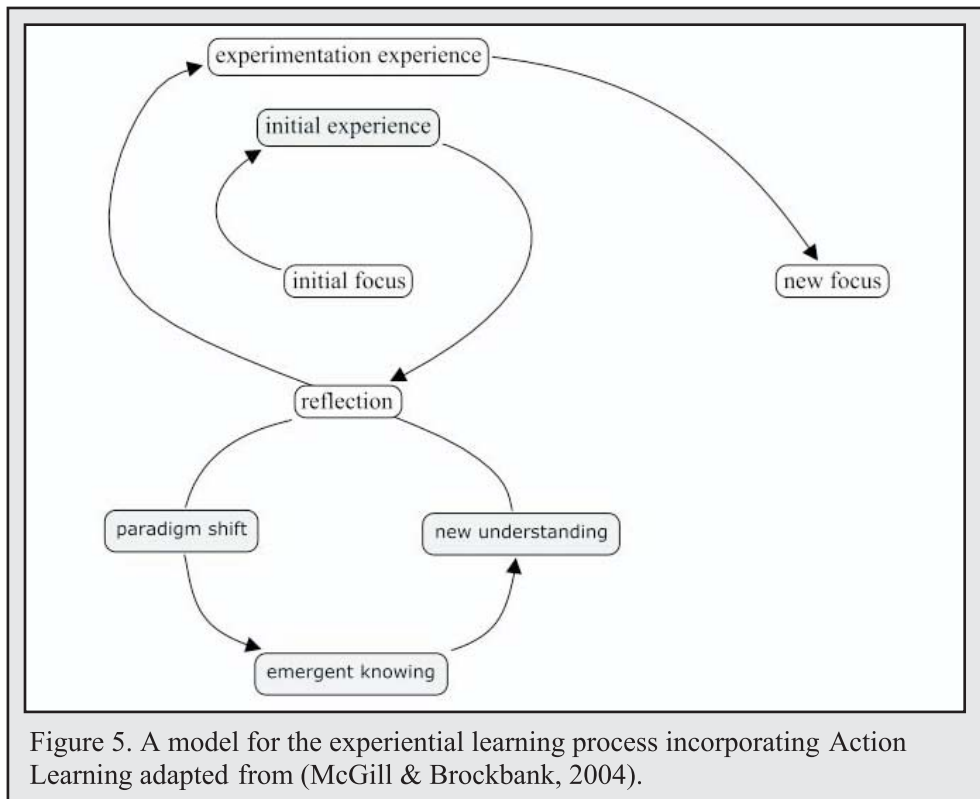


Figure 5. A model for the experiential learning process incorporating Action Learning adapted from (McGill & Brockbank, 2004).

in the wide scope of learning experiences we return to a simple distinction between experiential learning that is initiated by the learner and that which is initiated by the institution (Brookfield, 1984). Action Learning usually exists somewhere between institution-initiated (direct encounters with phenomena being studied), and learner-initiated (direct participation in the events of everyday life) (Smith, 2005). Action Learning exists in an in-between place: one in which the learner, in consultation with the institution, chooses to participate in experiences that will lead to an accredited degree and reflect on those experiences in purposeful and perpetuating groups. It's not just doing what you would normally do in your life and learning whatever you happen to learn, nor is it just enrolling in school and letting them decide what you should experience to truly learn.

In summary, Action Learning is a special case of experiential learning – which itself exists within the greater realm of more traditional learning. To be more specific, traditional learning in our colleges and universities favors cognition; experiential learning builds on cognitive knowledge through behavioral or psychomotor engagement of the students with the subject matter; Action Learning requires the cognitive and behavioral engagement with the subject matter to be initiated by the students and reflected on in a way that transforms students' original conceptions.

The transformational qualities of Action Learning are born of critical self-reflection. A single loop experiential learning process (Figure 4) may be sufficient for mastering the technical knowledge of agriculture, but the second loop (Figure 5) must be added to the cycle to challenge learners to reflect critically on the state of agriculture. Then, through participation in the social discourse of action learning sets, agriculture students are challenged to critically self-reflect – to question their own assumptions and values as participants in the agricultural system. In this way students can learn how to improve the practice of agriculture, improve themselves as agricultural practitioners, and ultimately improve society – the setting in which agriculture takes place. More sustainable agricultural systems are possible as students (future agricultural practitioners) reassess the current system and their place in it through processes of structured reflection on practical application of theoretical knowledge.

An Action Learning Example

Given the constraints of the system of post-secondary education in the U.S., one might wonder if it is even possible to attain true Action Learning in the university context. We know of at least one example where Action Learning forms the foundation of the pedagogical and curricular approach. Gaia University's system for awarding academic

degrees is designed to facilitate action learning. Their UK-accredited Bachelors Degree in Integrative Eco-Social Design exemplifies Action Learning in the college setting. Gaia University students (Associates) attend short annual residential intensive workshops but are not required to take classes, buy textbooks or learn in buildings. Associates agree to the general principles and purposes of the university: care of people, care of the earth, and an equitable distribution of resources as they initiate projects to pursue their own learning interests. The University faculty organizes Associates into action learning sets and encourages them to meet often to reflect on their own, and support one-another's, learning processes. Associates establish learning objectives in discussion with advisors inside and outside the university. An external accreditation agency certifies the quantity and quality of the Associates' reports of their action learning (called Outputs) and award internationally recognized credits and degrees.

For example, one of the Gaia University Associates manages a restaurant. He realized he could offer more hours to his workers and help them learn gardening skills by working with them to create a rooftop garden to grow food for the restaurant. He met with his Action Learning guild and got feedback from them, which helped him further define the goals for his project. His advisor then helped him come up with a plan of action to hold meetings with his employees to get their input. Over the next couple of months he and his employees began their roof-top garden and the associate continued to meet with his Action Learning guild to discuss his progress and get feedback. He documented the whole process and wrote a report and what he had learned from it.

This is perhaps an extreme example of how Action Learning can be brought into the University setting given that it drives all learning at Gaia. However, it is possible to imagine implementation on a smaller, less ambitious, scale within existing degree programs. As more programs like the one at Gaia are developed, the range of possibilities using an Action Learning approach to SA will broaden providing more examples of Action Learning in practice to supplement the theoretical discussion.

Conclusion

Action learning exists as a tool for college agriculture educators to support their students through transformative learning experiences that lead to an understanding of and appreciation for a more SA. Experiential learning has been used in agricultural education for at least a century to give students hands-on experience with farming. Though a great improvement over transmission-reception lecture-based models for teaching practical skills and techniques, practical experience alone may be little more than skill training. The challenges that lie ahead in creating a sustainable agricultural system require something different and since Action Learning is inherently more

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holistic, addressing learning on both the cognitive and affective levels simultaneously, it holds potential as a method. However, what it means in the particulars of implementation and how it might play out for learning in different contexts is ultimately an empirical question. One way to gather empirical data is to rate courses and programs using a detailed rubric of learning objective such as the Head, Heart and Hands rubric (Sipos, et al., 2008). As more and more experiments in Action Learning occur in higher education it is important that learning research be initiated as well so that as a field we can come to a better understanding of the role Action Learning might play in transforming individual and group thinking and behavior.

We've suggested that the real value of Action Learning lies in its power to transform thinking beyond assumptions about the world in which we live. In the college setting it is possible not only to allow students the freedom to initiate their own learning and augment that learning with current literature and best practices but to help them critically reflect on what they have learned in small peer groups. By this process agriculture students may transform into practitioners of SA.

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