

A Model for Implementing a College-wide Experiential Learning Program in Higher Education

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Abstract

Science With Practice (SWP) was conceptualized to provide opportunities for agriculture students to develop a planned learning component as part of their work experiences with faculty and staff in university research laboratories, farms, greenhouses, and other units. This college-wide program was designed and implemented using adult learning theory and best practices found in the literature. Activities included development of learning agreements, individual progress visits, regular student seminars, an end-of-experience symposium, a recognition banquet, and a formal evaluation. Students had opportunities to acquire technical agriculture skills; explore linkages between upper-level coursework, research, and the world of work; develop skills related to organizing, planning, and conducting research; and consider graduate education and research as a potential career. Students earned academic credit for articulating their personal growth and what was learned. Student expectations included: 1) participation and communication; 2) a journal of activities and experiences; 3) a final report and reflection; 4) a formal 20-minute presentation; and 5) a comprehensive portfolio. Science With Practice developed into a program in which students took more responsibility for their work and connected their learning and work experiences and faculty transitioned from employers to mentors.

Introduction

Many forces affected higher education in the late 1900s and early 2000s. Organizations like the National Association of State Universities and Land-Grant Colleges (NASULGC) and the Association of American Colleges and Universities (AAC&U) endorsed student-centered approaches to learning. For example, the Kellogg Commission on the Future of State and Land-Grant Universities (2001) promoted using learning communities, establishing lifelong learning as part of the academic mission, and creating new kinds of learning environments. The AAC & U's Greater Expectations National Panel (2002) promoted intentional learning through

empowerment of intellectual and practical skills and development of an informed learner. According to the Boyer Commission on Educating Undergraduates in the Research University (1998), all these learning approaches can be accomplished by inquiry- and research-based learning through use of the research process, mentoring, and internships.

Researchers and authors also influenced the transformation of higher education with a focus on student-centered learning. Fink (2003) espoused engagement and promotion of active learning as a context for significant learning and called for new forms of teaching as a means of creating learning that lasts, which results in critically reflective practice (Brookfield, 1995; Silverman and Casazza, 2000). Two keys to successful student engagement are: 1) the amount of time and effort of students that lead to the outcomes associated with student success and 2) an institution's ability to allocate resources, create an environment, and develop learning opportunities that students participate in and benefit from (Kuh et al., 2005). Mentkoski and Associates (2000) described six key features of student-centered learning: 1) developing conceptual ability; 2) developing interpersonal ability; 3) experiential validation of curriculum and experiential learning; 4) developing skills for independent and social learning; 5) developing identity as a learner; and 6) professional perspectives on the college as a social environment. Transformational change has occurred in colleges of agriculture in the United States and is resulting in greater student-centered forms of instruction, utilization of competency-based instruction, and creation of multidisciplinary academic programs (Byrne, 2006; Fields, 2005).

Concurrently with these national and campus reform movements, Iowa State University was dealing with financial and enrollment issues. The College of Agriculture and Life Sciences (CALS) and Agricultural Experiment Station were faced with historic budget reversions and narrowing margins for agricultural commodities that resulted in closing three university livestock farms, reorganizing departmental farms, and laying off several university farm employees. University tuition rates were

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increasing rapidly, students were working more, availability of student grants was declining, and student debt was on the rise. Demographics of students enrolling in the CALS were changing rapidly; fewer but larger farms resulted in fewer rural youth, the traditional source of students. Additionally, many rural youth from acreages or large specialized farms came with narrow agricultural backgrounds. The university as a whole was enduring declining enrollment, and there was increased emphasis on recruiting and retaining students. These forces all came together in 2002 and 2003.

In an effort to respond in a positive and innovative way, an ad hoc group consisting of four CALS faculty members was formed during January 2004. Their discussions generated the concept of a meaningful on-campus, paid internship for agriculture students called Science With Practice (SWP). The Agriculture Endowment Board (AEB) of Trustees and the dean's cabinet reviewed the report and asked for an implementation plan. The plan for the SWP program was funded and supported by AEB and the CALS dean. A pilot program was conducted during the 2005 spring term and continued for three semesters, at which time SWP was fully implemented.

Two CALS faculty members were asked to direct the program, which included curriculum development and program planning. The SWP program was organized using a team concept. Two students, one graduate and one undergraduate, were hired to complete the team. The undergraduate served as the liaison between the SWP team and the undergraduates; the graduate student assisted with program implementation and was the liaison between the team and the mentors.

This paper describes how one institution developed a college-wide experiential learning program—SWP—that allowed students to defray some college expenses while providing hands-on opportunities to earn academic credit. The theoretical basis for SWP, as well as a program description, an explanation of program development, and effects of SWP, is presented.

Theoretical Basis

Andragogy is an “intentional and professionally guided activity that aims at a change in adult persons” (Knowles et al., 2005, p. 60). Knowles et al. offered a model of andragogy in practice that outlined: 1) the goals and purposes for learning, which must balance individual, institutional, and societal growth; 2) individual and situational differences, which address differences in situations, subject matter, and individual learners; and 3) the six core adult learning principles, which include the learner's need to know, self concept, prior experience, readiness, orientation to learning, and motivation to learn. The combination of these ingredients maximizes the power of the experiences and as a result maximizes learning (Beard and Wilson, 2002).

Knowledge and experience are inextricably linked, and experiences are more educative when the learner is active and involved (Dewey, 1938). Building off of Dewey's educational philosophy, Lindeman (1926) contended that adult education should be approached from a situational perspective rather than as a subject. Learning can be powerful through the use of context (Mentkowski and Associates, 2000), which creates an environment where transformative learning can take place (Mentkowski and Associates, 2000; Merriam and Caffarella, 1999; and Mezirow, 1991). The result is significant learning and transfer of that learning to future experiences (Raelin, 2008).

Kolb (1984) argued that critical linkages among education, work, and personal development can be accomplished through experiential learning. The four tenets of experiential learning are learning by doing, learning through real-life contexts, learning through projects, and learning through problem-solving (Knobloch, 2003). Experiential learning can be characterized as both a process and context (Roberts, 2006) and its methods emphasize critical linkages between the classroom and real world (Kolb, 1984). Because the role of experience within the learning process is highly complex, an individual's ability to reflect on and learn from that experience should not be assumed or left to chance (Merriam and Caffarella, 1999). Programs like SWP validate and solidify the entire academic curriculum because students have opportunities to apply learning in real-world settings and in context (Mentkowski and Associates, 2000) and in settings where opportunities for learning are not left to chance.

Experiential learning and andragogical theories provide several principles that influence this type of teaching and learning. Learning agreements are used as a means of meshing the work and learning experiences (Merriam and Caffarella, 1999), which encourages active engagement in the learning process and incorporation of personal goals and objectives; this allows learning to take place as a result of the personal context and roles that learners play (Berger et al., 2004). Portfolios and journal writing are appropriate methods for developing critical reflective practice (Merriam and Caffarella; Raelin, 2008), which provides opportunities for critical thinking (Brookfield, 1987; Raelin, 2008) and transformational learning (Mezirow, 1991). Formal and informal evaluations were conducted throughout the program as a means of continuous program improvement (Fitzpatrick et al., 2004; Raelin, 2008). The evaluations included mid-term progress visits that focused on the learning agreements.

The SWP Program

SWP was designed to provide opportunities for students in agriculture to learn while working with faculty and staff in university research laboratories, farms, greenhouses, and other units through a

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planned education and work experience program. The program helped faculty mentors and students negotiate and develop agreements that outlined what students intended to learn as a result of the research or work experience. Students then completed a series of learning and work experiences that contributed to the research program.

Student learning outcomes for the SWP project were to:

1. Acquire technical agriculture skills;
2. Develop organizational and planning skills related to research and other experiences;
3. Develop skills related to data collection; research procedures; written, oral, visual, and electronic communication; human resource management; teaching/instructing others; and critical analysis of data/situations;
4. Use a structured learning process as a link to a more in-depth understanding of the role of the researcher in higher level technical courses;
5. Develop personal linkages between science/research and practical, real-world situations/problems; and
6. Link coursework in the major with relevant experience.

SWP was developed in a manner that was rewarding for both the student and the faculty mentor. Faculty were offered matching funds for student wages as well as honorarium for professional development. Students had the opportunity to develop individualized learning experiences in a specialized field of work, learn through employment experiences at a major research university, earn academic credit for the learning experience, and had the potential for a higher hourly wage for the work experience.

Two academic credits were offered through the Department of Agricultural Education and Studies. Students were evaluated and graded based on their effort and ability to articulate what was learned as a result of the experience. The centerpiece of the entire experience was the development and use of an individualized learning agreement that was negotiated between each student and mentor. The formal written agreement established learning goals and objectives for the work experience. The coordination team reviewed, provided feedback and assistance as necessary, and approved each of the experience agreements.

There were five primary academic components; each represented one-fifth of the grade. Rubrics were developed to evaluate student work and were shared with students. The SWP team was responsible for managing and assessing the academic portion of the program.

1. Participation and Communication.

Students attended an orientation workshop, monthly seminars, end-of-experience presentations, and a final program evaluation meeting. Each student met with an SWP team member at least once during the

semester. This portion of the grade also consisted of timely communication and feedback among the SWP team, faculty mentor, and student.

2. Journal of Activities. A weekly journal of activities related to the work and learning experiences was expected. The journal included a list of activities performed throughout the week, thoughts or questions, issues that needed to be addressed, and progress made toward goals and expectations as outlined in the learning agreement. In short, this was a personal diary of each student's learning practices, work experiences, and thoughts. The journals were not laboratory notes.

3. Final Report and Reflection. Students wrote a final report that included a comprehensive reflection on the entire experience. The learning agreement, journal, and students' reflections regarding their personal development throughout the experience were used to summarize what was learned. Reports focused on student development related to the goals and expectations outlined in the agreement. Students shared what they had learned through the work experience and elaborated on how this would benefit them in the future. Students developed a list of skills or competencies that were either enhanced or newly added as a part of their skill set. Finally, students developed and included a resume entry.

4. Presentation. Students developed and conducted 20-minute oral presentations near the end of the semester. The purpose of the presentations was to summarize the extent to which students were able to accomplish the goals established in the learning agreement, discuss what was learned as a result of the experience, and articulate the academic and professional linkages that were made as a result of the experience.

5. Portfolio. Students submitted a professional, comprehensive portfolio. It was an accumulation of artifacts from the experience and the presentation of their final reflection. The material in the portfolio included the learning agreement, journals and micro-reflections, comprehensive final reflection, presentation materials, and a compilation of other related material.

SWP Program Development

Several programmatic steps were incorporated to facilitate this type of self-directed experiential learning. Program planning and development included selecting participants, organizing and conducting orientation workshops, conducting progress visits, organizing student presentations, planning a recognition program and dinner, and conducting a formal evaluation.

Orientation workshops were scheduled at the start of the semester. The objectives of the workshops were to formally explain the program, review the expectations and timeline, and answer any questions. A folder of information including details related to

the program and checklists for completing the requirements was provided to each participant.

To meet the requirements of SWP and earn academic credit, students were required to: 1) assist in development of, discussion about, and agreement to a program of work centered on student learning; 2) conduct 10 hours of experiential learning and work experience per week; and 3) complete all requirements.

Mentors were required to: 1) assist in development of, discuss, and sign a learning/work agreement; 2) provide leadership and information to students enabling them to better understand their responsibilities; 3) maintain open communication with students to ensure that the learning agreement goals were achieved; and 4) provide resources and opportunities for the students to acquire the experiences necessary to complete both the work and academic experience. Efforts were made to minimize increased faculty workload while maximizing human capital.

Several communication tools were developed and used throughout the semester. A timeline was created to show the dates of all important SWP activities as well as due dates for assignments, which were due the same time and same day each week to provide continuity throughout the semester. Expectation sheets were developed for each assignment and activity that included assignment objectives, guiding questions, and an explanation of how to submit the work. WebCt was used to submit journals, define expectations, and facilitate communication among the students and SWP team.

A recognition dinner and program was held to celebrate and reward participants. The SWP coordinators and the Associate Dean of Academic and Global Programs gave remarks, the top three student presentations were given special recognition, and all participants were awarded certificates of appreciation for their participation in the SWP pilot project.

Accountability and follow-up were critical to the success of the SWP program's pilot phase. To ensure that students and mentors were following through on the initial experience agreements, progress visits were scheduled and conducted near the middle of the experience. A set of questions was developed to use during the visits and focused on the experience agreement, strengths and weaknesses of the program, and current progress being made. This gave students and mentors the opportunity to discuss any concerns and explain the research and/or projects being completed. Suggestions were collected for the purpose of program improvement and were then incorporated into an end-of-program, web-based evaluation of SWP.

Effect of program

To date, more than 100 students majoring in agriculture and life sciences and 48 faculty members representing all 15 CALS departments, including

offices, laboratories, greenhouses, and teaching and research farms, have participated in SWP. Using end-of-experience program evaluation techniques, the SWP team was able to assess the program and make improvements. Reaction to the SWP project was overwhelmingly positive.

Most mentors and students indicated they observed improvement in the areas of communication, time management, responsibility, organization, self-confidence, listening skills, and research skills. All participants agreed that SWP prepared students for a career and most believed the working relationship between faculty/staff supervisors and students had improved. Mentors working alongside new students revealed they had a quicker and stronger connection, whereas mentors who had a previous working relationship reported more interaction and the ability to rely more heavily on students because of this project. Students mentioned the increased interaction with their mentors was an advantage of the program.

Participants believed that SWP assisted in the transition from a sole work experience to one of working and learning. Mentors and students found that goal setting and development of a written learning agreement was beneficial in converting their experience from one exclusively of work to one in which learning occurs. Participants reported that SWP created unanticipated opportunities and benefits. Both groups identified increased opportunities for networking and collaboration between faculty and students. Participants also reported that the program provided an opportunity for students to explore the potential of graduate education.

As a result of input from participants, programmatic changes were made in future semesters of SWP. The oral presentation and recognition banquet were replaced with a professional poster presentation and reception. A two-credit experimental course was developed to formalize and add credibility to the academic component of the experience. Times for the required seminars were established and made available through the university schedule of classes. Professional development topics were incorporated into the seminars. Annual reports were developed and presented to stakeholders.

Summary

SWP participants believe that the program had value and enhanced their academic experience. SWP was an individualized learning program that enabled students to not only gain valuable experience, explore linkages between coursework and the real world, and explore research as a career, but also focus on the learning that takes place in such experiences rather than just the work. The SWP program also assisted students with learning how to summarize their research results and experiences in a professional manner and articulate them in a variety of methods including written, oral, visual, and electronic.

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Programmatically, SWP is a sound experiential learning experience that was developed using experiential and adult learning principles and best practices. It provided an opportunity to create synergy because both the faculty member and student benefit from the experience (Brew and Boud, 1996). Experiential learning programs in higher education, like SWP, require a commitment from all involved, including administration. One of the primary elements of success of SWP is the communication among students, faculty mentors, administrators, and funders. The SWP model could be incorporated at the course, department, college, or university level.

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