

The Impact of Two Experiential Learning Programs: The Graduates' Perspective

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Abstract

The purpose of this descriptive census survey was to explore the impact of participation in two integrated, experiential learning programs in a College of Agriculture and Life Sciences. Specific objectives were to determine the influence of these programs on graduates' (a) decisions to enter careers and graduate school, (b) level of skill improvement, (c) career development and decidedness and (d) preparation for careers and graduate school. Graduates believe their experience positively affected development of their skills and abilities and had a positive influence on their career and graduate school aspirations. Graduates report that the programs enhanced their preparation for careers and graduate school by helping them transition from the role of undergraduate student to that of employee or graduate student. Though both programs had positive impacts, there were some significant differences between the two programs, which have different purposes and outcomes. These findings provide further confirmation that experiential learning is an effective way to meet outcomes while using the real-world, hands-on, experiential learning methods that students often prefer.

Introduction and Review of Literature

Until somewhat recently, the instructional approach to student learning was focused on teacher-centered strategies (Spring, 2005). A transformation to student-centered learning was needed to increase student learning (Huba and Freed, 2000). In the learner-centered paradigm, "students construct knowledge through gathering and synthesizing information and integrating it with the general skill of inquiry, communication, critical thinking and problem-solving" (Huba and Freed, 2000, p. 5). The teacher and student learn and evaluate the learning together and the emphasis is on generating better questions while learning from errors rather than

on getting the correct answer (Huba and Freed, 2000). A well-known example of student-centered learning, and one that is used frequently in higher education, is experiential learning.

Experiential learning is broadly defined as "the process by which a learner creates meaning from direct experience" (Bohn and Schmidt, 2008, p. 5). Experiential learning includes a variety of strategies that engross students in learning opportunities that go beyond traditional lectures and reading and writing assignments (Shapiro and Levine, 1999) and when implemented in a classroom setting, students participate in real-life activities, reflect on those activities and incorporate their new understanding of that activity into their lives (Bohn and Schmidt, 2008).

The idea of experiential education is certainly not new in the field of agricultural education (Wulff-Risner and Stewart, 1997). In fact, several prominent scholars—including John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, Carl Rogers and many others—were helping to mold experiential learning theory in the early 20th century, a time when U.S. agricultural education was organized in both formal and non-formal settings (Knobloch, 2003; Kolb and Kolb, 2005). Experiential learning has long been valued in the field of agricultural education and is recognized as an integral part of the educational process (Cheek et al., 1993), in part because research has shown that the metacognitive skills students employ while participating in experiential learning activities permit them to assess their highest level of understanding and mastery of the area under discussion (Bohn and Schmidt, 2008).

Experiential learning theory suggests that learning occurs as a result of a specific experience or many experiences (Roberts and Harlin, 2007). Kolb espoused that experiential learning theory is "a holistic integrative

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perspective on learning that combines experience, perception, cognition and behavior” (Wulff-Risner and Stewart, 1997, p. 43). And Kolb and Kolb (2005) stated that *“learning is the major determinant of human development and how individuals learn shapes the course of their personal development”* (p.195).

Learning experientially, in genuine contexts, has been a foundational model for student learning in agricultural education (Knobloch, 2003). Parcell and Franken (2009) studied a commodity trading course built on the principles of experiential learning that has shown successful results. Students who participated in an actual trading pool investment became more actively involved in their own learning process. Experiential learning was able to help students take an interest in their own learning and get involved with their course. Another outcome of experiential learning is that learners are able to identify specific parts of their experience upon which they can reflect (Roberts and Harlin, 2007).

In secondary agricultural education, experiential learning takes many forms, including laboratory work, field trips, problem-solving and active observations. Many educators like to call this “learning by doing.” In university agricultural programs, experiential learning is often a focus of curricula (Roberts, 2006)

The College of Agriculture and Life Sciences (CALs) at Iowa State University offers two programs that reflect principles of experiential and student-centered learning: Agriculture Students Providing Integrated Solutions for Agronomy and Farm Business Management Questions (AgPAQ) and Science with Practice (SWP).

“Agron 356/Engl 309 was the original start of ISU’s agronomy department’s course cluster learning environments. Agronomy 356 and English 309 were initially linked and integrated” (Barnett, et al., 2009, p.5). Later, Agron 356/Engl 309 evolved into the program currently known as AgPAQ and was delivered as a learning community for upper-class agriculture students at ISU where students enrolled concurrently in a cluster of courses and completed coursework in teams. The cluster consists of an English course, an agricultural economics course and two agronomy courses (Barnett et al., 2009). Each learning community team worked with real clients and precision agriculture tools to address the client’s needs by preparing a complete crop and soil management plan. The management plans addressed soil loss and residue management, planting dates and rates, profitability and costs and benefits and recommendations for clients in a real-world setting.

The purpose of AgPAQ was to provide students the opportunity to successfully solve professional, real-world, work-based, agricultural problems by integrating skills from the linked courses. *“A major aspect of the AgPAQ learning community was the consultant relationship students developed with identifying problems and opportunities and recommending improvements for a local farmer”* (Barnett et al., 2009, p.4). A main goal of AgPAQ was to create a student learning experience that reflected the realities of the workplace. Student

learning outcomes for AgPAQ included understanding specific principles, being able to apply those principles to solve problems in a professional setting, synthesizing and integrating knowledge from multiple disciplines, solving and analyzing difficult problems in a professional setting and being able to professionally and effectively communicate solutions to a client.

In the SWP program, students worked one-on-one with faculty and staff on a detailed research project or other work assignment. The purpose of SWP was to provide opportunities for agriculture students to learn while working with faculty and staff mentors in university research laboratories, farms, greenhouses and other units through a planned education and work experience program (Retallick and Steiner, 2009). Students who participated in the semester-long SWP program earn money for working on their project and can earn three academic credits for fulfilling all course requirements. Student learning outcomes for SWP included acquiring technical agricultural skill; developing organizational and planning skills related to research and other experiences; developing skills related to data collection, research procedures, written and oral communication, human resources management, teaching and critical analysis of data. Increased understanding of research activities, linkages to higher level course work and gaining an understanding of the connection between research and practical, real work situations/problems are also learning outcomes of SWP.

Although there has been movement in higher education toward student-centered learning and increased focus on student learning outcomes, there has been little research on specific impacts of experiential learning programs on participants. The same is true at ISU. Program organizers and administrators assume the experiential learning portion of AgPAQ and SWP programs benefit students in their future careers and endeavors, but this assumption has not been researched. For CALs to continue promoting its experiential learning programs, it is important to determine the impact of these programs on graduates, specifically with regard to educational and career advancement. Such research could also help improve the quality of or identify areas for improvement in AgPAQ, SWP, or other experiential learning programs at ISU. Nationally, this study can provide imperial data that not only supports the goal of career readiness by providing meaningful and engaged learning, but also validates experiential learning as a means of accomplishing that goal.

Purpose and Objectives

The purpose of this descriptive census survey was to explore the impact of participation in AgPAQ or SWP, as reported by graduates (former participants). The study had four specific objectives:

- Determine the programs’ impact on graduates’ decisions to enter careers and graduate school.
- Determine the level of skill improvement graduates attribute to their participation in the programs.

- Determine the programs' influence on graduates' career development and decidedness.
- Determine the extent to which the programs enhanced graduates' preparation for careers and graduate school.

Conceptual Framework

The conceptual framework for this research is based on the work of Terenzini and Reason (2005), who developed a model that explains how the college experience influences student learning and persistence (Figure 1). The model illustrates the influence of (a) precollege characteristics and experiences and (b) college experiences, including organizational context and peer environment, on student outcomes such as learning, personal development, social change and persistence. We used Terenzini and Reason's model, specifically the student outcomes portion, to help develop the objectives and survey for this study. The survey asked graduates about their individual experiences in AgPAQ or SWP and the impact of these programs on specific aspects of their lives.

Methods and Procedures

We chose to use a web-based survey and email notifications for this descriptive survey research because the study's population was located throughout the United States and an electronic instrument would increase the speed of results (Dillman, 2007) and was most cost effective (Ary et al., 2010). The researcher-developed instrument was adapted from the "Summer Undergraduate Research Experiences (SURE)" survey (Taraban and Blanton, 2008) and previous end-of-year evaluations from AgPAQ and SWP. The survey had five sections: (a) program participation and after graduation; (b) skills, abilities and career impact; (c) career/education influence, overall impact, mentoring and career benefits; (d) education and recommendation; and (e) demographics.

To assess internal validity, six experts (some who were associated with and familiar with the programs in the study and others who were not) viewed the instrument

and provided comments. External validity was not a threat as the survey included the entire population and no generalization to a larger population was needed. According to Goodwin (2010), face validity addresses whether the measure seems to be applicable to those who are taking the survey and content validity ensures the survey or questionnaire makes sense to the reader in terms of the construct being addressed. If a question did not fit an objective, it was omitted. The panel of experts reviewed the final survey, in its electronic form and we addressed all questions and issues before sending the survey to graduates. The project underwent IRB review and was declared exempt under federal regulation 45 CFR 46.101(b).

The population for this census study was all graduates (N = 123) of Iowa State University's College of Ag and Life Sciences who participated in one of the two programs. We compiled a list of participants from course lists and obtained current email addresses for graduates from the ISU Foundation, which maintains up-to-date alumni lists. The ISU Institutional Review Board approved the final draft of the survey, letters to graduates and study procedures.

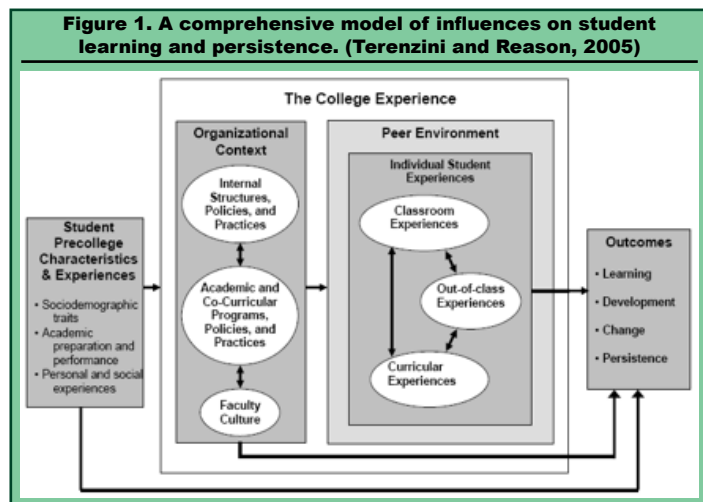
Data collection followed Dillman's (2007) tailored design method and was conducted using SurveyMonkey (SurveyMonkey Corporation, 2009). We contacted graduates five times via e-mail over a 2-week period. The first contact was a pre-notice with information about the purpose of the study and confidentiality, an invitation to participate and an announcement that the survey would soon be arriving via email. The second contact, sent 3 days after the initial email, provided detailed information and a link to the online survey. The third and fourth contacts were brief thank you/reminder e-mails sent to non-respondents. The fifth and final contact was another reminder e-mail sent to non-respondents; it included a link to the survey and a notice that this was the final contact.

Of the 123 graduates contacted, 62 responded for an overall response rate of 50.41%. Some graduates did not complete the entire survey and the usable response rate was 43.90% (n = 54). To control for nonresponse error, we compared early and late respondents (Linder, et al., 2001). There were no differences between early and late respondents.

We recorded, calculated and analyzed data using Excel and SPSS. We calculated descriptive statistics including frequencies, means and standard deviations for the first four objectives and conducted independent t tests to address the fifth objective (differences between programs). We calculated effect sizes to measure magnitude and used Cohen's (1992) definitions of small (0.20), medium (0.50) and large (0.80) to describe the effect size.

Results

Just over half of the responding graduates participated in AgPAQ (n = 28, 51.9%); the rest participated in



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SWP (n = 26, 48.1%). Upon graduation, most (51.9%) graduates entered the workforce (Table 1). AgPAQ students were more likely to enter the workforce (64.3% versus 38.5% for SWP students), whereas SWP students were more likely to enter graduate school (57.7% versus 10.7% for AgPAQ students). Similarly, AgPAQ students aspired to complete professional development and certifications, whereas SWP students aspired to complete more advanced degrees (Table 2).

Impact on Career and Graduate School

Graduates from both programs reported that their experience had a significant impact on their career or advanced education (Table 3).

Graduates who reported no impact on their career or graduate school explained that the program was not beneficial because of their individual situations and not because of the program:

At the time of enrollment in AgPAQ, I thought the program would have a great impact on my future career, but now looking back I can say that it was just a group of classes no different than any other. I am not degrading the program; it just wasn't a program for me.

When I was participating in Science With Practice, my goal was to go to graduate school. However, I decided to take time off from school and work. In my current job, I might be able to use some of the knowledge from my project, but it does not relate well to my current job. If my current job was more research based, it might be more relevant. Nevertheless, I still believe that it was a great experience and I would encourage all students to participate in a project.

Graduates who reported that the programs had an impact early in their career or advanced education provided explanations such as the following:

I feel that the lessons learned in careers stretch way beyond what could even have been reached in SWP, but it definitely eases the transition into the workforce at the beginning. I have to do weekly reporting for my job, so SWP influences that a lot. (And overall, my SWP job does not relate to my current career so most of the knowledge doesn't transition).

As I gain more experience, I find that I am building my own way of doing things and handling customer relations. The experience I gained in AgPAQ significantly helped me in finding a job and having early confidence to deal with growers in the first year of so of my career.

Table 1. Graduates' entry decision (n = 54)

Decision	AgPAQ		SWP		Total	
	n	%	n	%	n	%
Entered the workforce	18	64.3	10	38.5	28	51.9
Entered graduate school	3	10.7	15	57.7	18	33.3
Returned to family business/farm	5	17.9	0	0.0	5	9.3
Entered the military	0	0.0	0	0.0	0	0.0
Other	2	7.1	1	3.8	3	5.5

Table 2. Graduates' aspired highest level of education (n = 54)

Level of education	AgPAQ		SWP		Total	
	n	%	n	%	n	%
Professional development courses/workshops/seminars required of my position/employer	9	32.1	1	3.8	10	18.5
Professional certification (i.e., CCA, CPAg, etc.)	7	25.0	1	3.8	8	14.8
Master's degree focused on professional development	5	17.9	5	19.2	10	18.5
Master's degree focused on science/research	4	14.3	7	26.9	11	20.4
Professional degree (i.e., Ph.D., DVM, MD, JD, etc.)	1	3.6	12	46.2	13	24.1
Other	2	7.1	0	0.0	2	3.7

Table 3. Impact of AgPAQ /SWP experience on graduates' career/advanced education (n = 54)

Impact	AgPAQ		SWP		Total	
	n	%	n	%	n	%
No impact	4	14.3	6	23.0	10	18.6
Significant impact early but has since diminished as I gain more experience	10	35.7	10	38.5	20	37.0
Significant impact throughout, thus far	14	50.0	10	38.5	24	44.4

Graduates who reported continued significant impact on their career or graduate school explained the benefits that they attribute to the programs:

In Science With Practice, I learned to design, execute and analyze experiments independently, which, I believe, put me ahead of other students entering graduate school. Additionally, I got the opportunity to create and present a poster. It is rare to give poster presentations in undergraduate studies so this was very helpful, especially since I now do at least one per year as a graduate student.

AgPAQ was a great program that was kind of the capstone to a college education. It tied a lot of different areas of education together and put it into real life scenarios. Farming back at home, it is on a much lesser scale in regards to client-based communication and help. I still utilize communication skills I learned with the partners on the farm and bring the knowledge I gained on our agronomy and economics side towards making our operation more profitable. I think a lot of people may think it is not useful if you are not going into agronomy/sales/service, but it is something I use every day.

Graduates also responded to five specific questions related to how their experience made an impact on them (Table 4). The categories with the highest means for

Table 4. Impact of the AgPAQ or SWP experience on graduates' personal development (n = 54)

Impact	AgPAQ		SWP		Total		T-statistics			
	M	SD	M	SD	M	SD	T	df	Sig.	d
Helping me become a more active learner	3.79	1.031	3.85	0.834	3.81	0.933	-0.236	52	0.815	.064
Helping me become a more motivated learner	3.79	0.995	3.81	0.801	3.80	0.898	-0.089	52	0.929	.022
Assisting me in the transition from an undergraduate student to employee/graduate student	3.79	0.917	3.65	0.846	3.72	0.878	0.548	52	0.586	.159
Influencing my career plans for after my bachelor's degree	3.43	1.069	3.38	0.852	3.41	0.962	0.166	52	0.869	.052
Influencing my plan for postgraduate education (either right after graduation or in the future)	3.29	1.049	3.27	0.919	3.28	0.979	0.061	52	0.951	.020

Note. Scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree or agree, 4 = agree, 5 = strongly agree.

* p < .05.

both programs were helping me become a more active learner and helping me become a more motivated learner. There were no significant differences between programs.

Level of Skill Improvement

In the next set of questions, graduates were asked to report, based upon what they know now, the extent to which they improved their skills and abilities as a result of their experience (Table 5). The category with the highest overall combined (SWP and AgPAQ) mean was research skills, with a mean of 3.57. The category with the next highest mean was other and graduates who selected other mentioned skills such as attention to detail, taking constructive criticism, cultural awareness, ability to work in new settings and group work. Graduates reported moderate improvement in all categories except research skills and other. There was a significant difference between programs only in the writing skills category; AgPAQ students reported greater improvement than SWP students.

Influence on Career and Graduate School Decidedness

Graduates were also asked to report the extent to which their experience in AgPAQ or SWP influenced their view of the workplace or graduate school (Table 6). The category with the highest overall combined (SWP and AgPAQ) mean was better prepared me for workplace/graduate school. The next highest category was better able to solve problems that I faced as a new employee/graduate student. Graduates

indicated moderate improvement for four of the five categories. There was a significant difference between programs in the fifth category, helped to transition to workplace/graduate school; AgPAQ students rated this category higher than SWP students.

Graduates were asked to share a specific example of how their experience impacted, if at all, their transition to the workplace or graduate school and their career or educational advancement. Some of the common themes were transition to the workplace or graduate school, problem-solving abilities, improvement of skills, pursuing careers/educational decisions, teamwork and career/graduate school expectations.

Enhancement of Career and Graduate School Preparation

To investigate the extent to which the AgPAQ and SWP programs enhance career and graduate school preparation, graduates were asked if they were better able to do certain tasks (Table 7). The category with the highest overall combined (SWP and AgPAQ) mean was communicate more effectively and professionally with

Table 5. Improvement of graduates' skills and abilities as a result of their AgPAQ or SWP experience (n = 54)

	AgPAQ		SWP		Total		T-statistics			
	M	SD	M	SD	M	SD	t	df	Sig.	d
Skills and abilities										
Research skills	3.70	1.171	3.42	1.323	3.57	1.264	0.806	51	0.424	.224
Communication	3.57	1.069	3.23	1.210	3.41	1.141	1.098	52	0.277	.298
Self-confidence	3.48	1.312	3.08	1.412	3.28	1.364	1.081	51	0.285	.293
Technical skills	3.46	1.105	3.08	1.468	3.28	1.295	1.101	52	0.276	.292
Organization	3.50	1.202	2.92	1.017	3.22	1.144	1.897	52	0.063	.521
Writing skills	3.50	1.232	2.85	1.156	3.19	1.230	2.007	52	0.050*	.544
Responsibility	3.18	1.219	2.96	1.183	3.07	1.195	0.663	52	0.510	.183
Listening skills	3.32	1.278	2.69	1.011	3.02	1.189	1.996	52	0.051	.545
Time management	3.11	1.197	2.84	1.179	2.98	1.185	0.817	51	0.418	.227

Note. Scale: 1 = no improvement/very small improvement, 2 = small improvement, 3 = moderate improvement, 4 = large improvement, 5 = very large improvement.
* p < .05.

Table 6. Influence of the AgPAQ or SWP experience on graduates' views of the workplace and graduate school (n = 54)

Influence	AgPAQ		SWP		Total		T-statistics*			
	M	SD	M	SD	M	SD	T	df	Sig.	d
Better prepared me for workplace/graduate school	3.39	1.100	3.04	1.241	3.23	1.171	1.097	51	0.278	.298
Better able to solve problems that I faced as a new employee/graduate student	3.43	1.136	2.88	1.211	3.17	1.194	1.703	52	0.095	.468
Helped me transition to workplace/graduate school	3.32	1.249	2.46	1.334	2.91	1.350	2.447	52	0.018*	.666
Influenced my career/educational advancement	2.86	1.458	2.72	1.370	2.79	1.405	0.352	51	0.727	.099
Helped me to clarify career/education goals	2.85	1.292	2.50	1.393	2.68	1.341	0.954	51	0.345	.261

Note. Scale: 1 = none/very little extent, 2 = small extent, 3 = moderate extent, 4 = large extent, 5 = very large extent.
* p < .05.

Table 7. Graduates' skill enhancement as a result of their AgPAQ or SWP experience (n = 54)

	AgPAQ		SWP		Total		T-statistics			
	M	SD	M	SD	M	SD	t	df	Sig.	d
Better able to										
Communicate more effectively and professionally with clients/mentors	4.26	0.764	4.12	0.653	4.19	0.709	0.736	51	0.465	.197
Communicate more effectively and professionally with co-workers	4.04	0.744	4.04	0.774	4.04	0.751	-0.013	52	0.989	.000
Integrate and synthesize knowledge from multiple disciplines	4.07	0.900	3.88	0.766	3.98	0.835	0.819	52	0.417	.227
Think independently and formulate my own ideas	4.00	0.903	3.92	0.845	3.96	0.868	0.323	52	0.748	.091
Understand discipline specific principles at the beginning of my career (or graduate program) to the point that I was better able to understand and solve the problems I faced then	3.96	0.808	3.85	0.784	3.91	0.791	0.534	51	0.596	.138
Analyze and solve problems	3.96	0.693	3.81	0.694	3.89	0.691	0.829	52	0.411	.216

Note. Scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree or agree, 4 = agree, 5 = strongly agree
* p < .05

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clients/mentors. The category with the next highest mean was communicate more effectively and professionally with co-workers. There were no significant differences between programs.

Conclusions and Recommendations

We drew the following conclusions from this study:

AgPAQ and SWP have a positive impact on graduates' plans for careers and graduate school. In addition, the programs help graduates prepare for the workplace or graduate school by providing real-world, hands-on experiences that allow them to transition from the role of undergraduate student to that of employee or graduate student.

AgPAQ and SWP improved graduates skills and abilities in several areas as well as helped clarify their career and educational goals.

A concerted effort to integrate writing into an experiential learning program, such as integration of the English 309 course in the AgPAQ program, does have a significant impact on writing skill development. English was intentionally developed in AgPAQ. Whereas, writing was required but not formally incorporated in SWP.

The extent to which AgPAQ and SWP affect graduates' career decidedness aligns with the specific outcomes and purposes of each program. For example, AgPAQ focuses on applying skills in a professional setting and AgPAQ graduates reported they would continue to participate in ongoing professional development required by their profession. The SWP program focuses on completing a research project or other work with a faculty mentor and SWP graduates aspired to complete advanced degrees (e.g., Ph.D., DVM, MD, JD, etc.).

There is value in offering experiential learning programs in ISU's CALS. And, as evidenced by comments from graduates in this study, past participants do not hesitate to recommend that other students participate in these programs.

Experiential learning opportunities, such as AgPAQ and SWP, enhance student learning by having students use real-world life skills that will transfer into their future careers and education. Students who participate in experiential learning courses are more comfortable and confident as they enter the workplace or graduate school. The ISU CALS and higher education in general, should continue to encourage student-centered, high-impact teaching methods like those associated with experiential learning. For any such endeavors, we recommend that educators provide experiences that conform to the eight principles of good practice recommended by the National Society for Experiential Education (2011): (a) intention, (b) preparedness and planning, (c) authenticity, (d) reflection, (e) orientation and training, (f) monitoring and continuous improvement, (g) assessment and evolution and (h) acknowledgment.

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