Concreting the Student Learning Experience in Agricultural Economics through Field Research Projects[1]

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Abstract

In this study we evaluate the impacts of an experiential learning assignment in the form of a field research project on undergraduate student learning perceptions in an agricultural economics program. Data included a survey of all students completing the project and voluntary, open-ended interviews conducted by a non-course instructor. Results indicate students perceived the field project enhanced their learning over other assignments, especially with a higher frequency of interaction with industry professionals. Additionally, students stated an improved depth of content knowledge, improved professional understanding, and a deeper awareness of their strengths as a result of the field work project.

Introduction

Walk the halls of any university campus building or strike up a conversation at the student union, and it probably will not take very long until some student disparages his/her university studies in one (or all) of the following ways: *"It's not the real world," "It's just a bunch of hoops to jump through," "Those professors haven't been out in the real world since the middle ages," "It's just a bunch of useless theories," "I'm never going to use this stuff," or "When I get out in the real world and get a job, that's when I'm really going to learn something."* The common denominator of such statements, the unifying theme, is the concept of university learning as being separate from the "real world." Anecdotally, it appears that many students simply do not see a connection between their university studies and their future career. Clearly, such comments do not apply to all coursework, and when pressed, most students would probably admit they have a certain course or professor in mind. Perhaps the grade they are receiving in that course is representative of less than their best efforts, and again when pressed, they might be able to recount some examples that in fact do relate to "reality." On the other hand, examples to the contrary do exist. We would (having witnessed a few ourselves) that there are professors who do not feel a need to make such "real world" connections explicit, or are wrestling with course content.

According to Jiggins and Roling (1994), academic institutions have traditionally left professional work practice and skill development to employers, rather than incorporating it into university coursework. Experiential learning, where students are placed in a situation that allows them to interact and learn in and from a "real world" environment, is one instructional/teaching method which can be used to encourage student skill development for future employment (Dewey, 1938). Kolb (1984) stated that experiential learning is the critical link between the classroom and the "real world." Experiential learning is recommended and used successfully in agricultural education at all levels (Knobloch, 2003; Roberts, 2006; and Retallick and Steiner, 2009), as well as in university forestry and engineering programs (DeGiacomo, 2002; and Miles et al., 2005). Parr et al. (2007) note the importance of experiential learning in university agricultural education. Developers of a new undergraduate major in sustainable agriculture at the University of California, Davis surveyed faculty members from across the U.S. to determine the most important program content components and teaching approaches. The survey results indicated that the top three teaching approaches should include "experiences in the classroom and field," "experiential learning," and "opportunity to apply learned theory into practice." Hawtrey (2007) surveyed 500 students in a 300-level undergraduate economics course regarding the importance of 20 different learning activities. Sixty percent of the students rated experiential learning as "important" or "very important." The learning activities which were rated highest included a media presentation, class presentations, and intervarsity competitions. Overall, implementing experiential learning

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increases student enthusiasm and motivation for assignments (Koontz et al., 1995).

Experiential learning in the form of classroom experiments has been used in economics to demonstrate various hypothesis of economic theory. In a classroom experiment, the students participate as "subjects" in an economic "laboratory," in which auctions and other types of games are performed. The active learning environment and concrete examples provided by the experiments allow the instructor to gage what concepts students understand (or don't understand) and facilitate additional student questions and discussion (Barnett and Kriesel, 2003). Introductory microeconomics student participation in classroom experiments has been shown to increase post-test scores (Dickie, 2006).

Another option, service learning, matches students with a community partner who is in need of a service, which the students then complete as part of their coursework. Examples of service learning incorporated into classroom education and noted in the literature include assessing the economic impact of local events, constructing advertising campaigns for local programs, and assessing the demand for city/county services (Horrisberger and Crawford, 2007; Fannin and LeBlanc, 2007; Haines, 2002; and McGoldrick, 1998; see McGoldrick and Ziegert, 2002, for more on service learning in economics). Holston and O'Neil (2008) incorporate service learning into a dietetics course by asking students to design and deliver educational modules for training Cooperative Extension Educators on various diseases such as cancer and diabetes. Students found the experience improved their ability to interpret and evaluate information, and improved their communication skills.

Experiential learning through field work or research, in which students are involved in actual data collection, often through interviews, is found in undergraduate sociology, political science, and qualitative methods courses. One example includes that by Rosenthal (1999) in which each student in a political science course was required to interview two high-level appointees in Oklahoma state government. The field research project was designed to concrete student learning on the impact gender has on individual life opportunities and experiences. In agricultural economics the use of field research projects in undergraduate education has not been documented in the literature. However, a recent report by the national Food and Agribusiness Management Education Commission (Boland and Akridge, 2006) recommends that food and agribusiness management education programs need to incorporate experiential learning such as internships, team based assignments, and special projects into the curriculum, as well as establish linkages between educational programs and industry. Industry linkages would facilitate course curricula and content required by industry and provide avenues for student internships and jobs.

Incorporating field work, such as interviewing agricultural producers to construct enterprise budgets or completing business feasibility studies for new or proposed industry, is an effective way of incorporating experiential learning into the classroom, as well as encouraging students enrolled in an agricultural economics program to apply course concepts to actual problems in the field, thus increasing the student's value to potential employers. To this end, we devised an assignment requiring students to complete a comprehensive business plan through interaction with a local or regional agricultural/food processing operation of their choice. The study was administered to students in two separate semesters (12 students the first semester and 18 students the second semester) of a 200-level agribusiness management course. We hypothesize that a structured experiential learning activity with industry engagement will help students to become critical thinkers and differentiate themselves for future employment (Boland and Akridge, 2004).

Methods

The study was conducted in a sophomore/junior level agribusiness management course. The course learning outcome was to complete a comprehensive business plan, including construction, analysis, and evaluation of business financial statements; as well as to compare and contrast financial outcomes of business management decisions, including interpreting results and predicting outcomes. In an effort to provide a "real world" learning experience for students, they were asked to create a business plan for a farming/ranching, horticultural, or food manufacturing business in Nevada. Students were required to interview a business owner/manager two or three times in order to collect relevant information/data to complete the business plan. They were also instructed to seek information from input suppliers, cooperative extension agents, and others as part of their data collection process. The business plan project was required of all students and constituted at its completion 55% of their course grade. Students submitted the components of their business plan in stages, so as appropriate content was presented in class, students applied what they learned in the classroom to their project. Each stage was graded individually and guidance was given to students at each stage, so as to increase their probability of success at the next stage. The requirements for each stage are given below.

Part I:

- Mission statement
- Goals
- Business details (size, location, product(s), customer, distribution)
- Pricing and revenue estimates
- Interview schedule (date, person interviewed, and contact information)

Part II:

- All sections of Part I
- Description of expenses, definition of terms/ formulas
- Enterprise budget (year 1)
- Investments overview
- Break-even analysis
- Updated interview schedule (date, person interviewed, and contact information)

Part III:

- All sections of Part I and II
- Cash flow budget
- Income statement (Profit/loss statement) (year 1)
- Balance sheet (as of the end of year 1)
- Business analysis overview (current ratio, debt/asset ratio, debt structure ratio, rate of return on assets (%), rate of return on equity (%), interest expense ration, gross revenue per labor unit, gross revenue per acre. Briefly discuss the profitability solvency, and liquidity of your business.
- Updated interview schedule (date, person interviewed, and contact information)

The field research project was based on a constructivist theory of learning which posits that cognitive functioning is best facilitated when students can connect new content to prior knowledge (Vygotsky, 1978). Meaningful engagement occurs when students find a fit between their learning needs and their futures and lives. This is known as situated cognition in which "…the student takes part in activities which are directly relevant to the application of learning and which take place within a culture similar to the applied setting" (Brown et al., 1989). Information is retained when students have the opportunity to apply this new learning in their own way. Constructivism also utilizes an inquiry approach, meaning there must be an element of motivation and a problem to be solved (Von Glasersfeld, 1989). Further, the learner must have some confidence that he or she can solve the problem. If subject matter is either too challenging or too easy for students, they will either disengage or disrupt the learning process. Conversely, optimal learning occurs when students are able to stay engaged in a challenging task, known as Vygotsky's Zone of Proximal Development (Vygotsky, 1978). Vygotsky believed that engagement could be secured through the assistance of a knowledgeable other that provided assistance or scaffolding of the learning event.

The project facilitated these constructivist conditions in several ways. First, students were able to choose an agricultural industry of interest. Some students choose their own family farms or industries in which they had worked during the summer or in high school. For most students, this was the first time they were required to make contact with community members and industry personnel during their university experience. Not only were the students able to make valuable community and industry connections for their future employment, they also had an opportunity to apply their classroom learning to a "real world" experience. Additionally, the assignment served as an opportunity to compare and contrast their ideas and philosophies regarding industry practice.

Secondly, we recognized that this assignment had the chance to overwhelm students, as it was a new approach to learning economics and business concepts. Agricultural economics programs primarily utilize standard methodologies, such as text-based learning, analytical problems, lecture, and campus-based assignments. Thus, students had no prior coursework that employed a field experience in this way, nor to our knowledge would they encounter anything similar in the duration of their studies. We provided scaffolding by dividing the assignment into stages due throughout the semester, beginning with the least challenging concepts first, and by working with the students to select an appropriate target industry. If students did not have access to a workable site, we offered them options of local projects they might consider. In addition, we provided examples of past projects and sample interview questions, brought in local resource experts to discuss their own operations, and assisted students in locating and learning to use primary and secondary data sources.

This study employs the framework of evaluative inquiry and case study methodology to investigate the field work assignment. Due to the comprehensive nature of the research questions, which sought to understand not only if students learned from the project, but how they evaluated that learning, we utilized evaluative inquiry noted by King (1991) to guide the study's design. King (1991) states that evaluative inquiry is suitable for a range of curricular uses, including studying the effects of learning tools, such as assignments. King's evaluation inquiry is a flexible method suited to an array of research methodologies. Such inquiry is most appropriate when decisions regarding the viability or use of the curricular aspect are necessary. King developed a number of guiding factors for evaluative inquiry, which are explained below as they relate to our study.

• **Deciding a purpose:** It is important that a clear statement of purpose and streamlined goals are made at outset to facilitate an efficient investigation. In our study, the purpose was to examine the learning and perceived value derived from the introduction of a field-based approach designed to enable students to comprehend and apply business planning in an agribusiness management course.

• **Asking relevant questions:** As evaluation has a "real world" orientation, the research questions must be practical in nature and answerable by individuals in the field. Secondly, the questions must be divided according to those which focus on the process, and those which evaluate the product of the

approach. Finally, questions regarding change or modification of the practice should be included.

• **Making the human connection:** King (1991) notes that in the process of evaluation, people use the results that are most important to them. Thus, in the evaluation process it is important to include individuals who care enough to participate and then assist them in guiding the evaluation.

• **Developing an appropriate methodology:** Choices of which research to employ should be feasible and appropriate to the questions at hand. Whatever method is chosen, it is important that it be able to provide useable data on both the process and the product of the element(s) being studied. The specific method chosen to investigate the research questions was case study. According to Creswell (2006), case study develops an in-depth description and analysis of a case or multiple cases, for example in studying a program. Cases are bounded by certain features (the aforementioned criterion sample) and collected around a central factor. In this case, the central factor was the completion of a field-based business plan assignment.

• **Maintaining the flow of information:** King (1991) proposes that evaluative inquiry is dynamic. Thus, it requires continually sharing information on the progress of the evaluation with interested parties. While this may not always be feasible in some respects, at a bare minimum, information gathered from the evaluation should be available for use at any time, that is, results should not be held simply for a final report. Obvious cautions are to be made about premature or improper use of the information. Information flow was completed by sharing the ongoing research project with the resource economics department, as well as students enrolled in the course at its next offering.

• **Judging the judging:** The last element of King's (1991) evaluative inquiry process involves examining the overall process of the inquiry. The extent to which the process answered the research questions, met individual needs, and made suggestions for change must be analyzed. "If it fails in any of these areas – if it does not meet the overall need or answer the specific questions, if those who were interested are not satisfied with the process; or if individuals are left not knowing how to proceed – then the evaluation needs to look carefully at what went wrong" (p. 266). This last step provides valuable information, the author notes, due to the political nature of evaluation and those cases where "failure is predetermined." The process itself was judged through feedback from the participants, for example, ending each interview by asking for any information they wanted to share which was not included in the questions. It was also judged in its use for designing the project and course the next time it was offered.

Results and Discussion

In order to evaluate student perceptions of their learning due to the field research project two separate data sources were used. Data sources included a survey of all students completing the course, and voluntary, open-ended interviews conducted by a non-course instructor after course completion. Two

Table 1. Student Survey Descriptive

Variable	Description	Frequency	Mean
Learning	Students perception of learning experience in field work project over other assignments		
	0: Inferior	6.6%	
	1: Same	7%	
	2: Improved	50%	
	3: Much improved	36.6%	2.17
Previous Field Study	Number of field work projects student completed while in college		
	1: None	7%	
	2: 1-2	76%	
	3: 3-4	10%	
	4: 5 +	7%	1.90
Recommend	Student would recommend project for future courses		
	1: Definitely Not	0%	
	2: Probably Not	0%	
	3: Neutral	0.4%	
	4: Probably Yes	30%	
	5: Definitely Yes	66.6%	4.60
Class Standing (Class)	Class standing when student completed project		
	1: Freshman	13.4%	
	2: Sophomore	16.6%	
	3: Junior	16.6%	
	4: Senior	53.4%	3.13
College	0: Other College	33.4%	
	1: College of Agriculture	66.6%	0.66
Industry Contact (Industry)	Student perception of industry contact on learning experience		
	1: Detracted	3.4%	
	2: Somewhat Detracted	0%	
	3: Neutral	6.6%	
	4: Somewhat Enhanced	50%	
	5: Enhanced	40%	4.23
Gender	1: Male	36.6%	
	2: Female	63.4%	1.63
Age Group (Age)	1: 18-22	50%	
	2: 23-26	3.4%	
	3: 27-35	23.3%	
	4: 26-45	13.3%	
	5: 46+	10%	2.30
Homework (HW)	Student prefers homework assignments		
	0: No	6.6%	
	1: Yes	93.6%	0.93
Field Work (FW)	Student prefers field work assignments		
	0: No	13.4%	
	1: Yes	86.6%	0.86
Textbook (Text)	Student prefers textbook assignments		
	0: No	20%	
	1: Yes	80%	0.80
Lecture	Student prefers attending lectures		
	0: No	6.6%	
	1: Yes	93.4%	0.93
Case Study (CS)	Student prefers case study assignments		
	0: No	40%	
	1: Yes	60%	0.60
Exam	Student prefers exams		
	0: No	46.6%	
	1: Yes	53.4%	0.53

separate data sources were used to satisfy the requirements for triangulation necessary to ensure validity in qualitative study (Creswell, 2006). Objective measurements of increased student knowledge or skills were not completed, as it has been shown that student perceptions of their strengths or capabilities are highly correlated to their actual performance (Lane et al., 2004; House, 1994).

Student Survey

A survey of all students completing the field project during the two semesters was conducted on the last day of the course. The survey was designed to gauge student evaluation of the field project compared to other learning experiences in the program. The first section of the survey examined students' perceptions of their learning, their experiences with industry professionals, and the value of the field research project to them and future students. The second section of the survey examined students' preferences for various instructional methodologies (lecture, textbook, case study, etc.), and the final section of the survey collected basic student demographic information. Students were given complete definitions of "case study," "field research study," and "learning" before completing the survey to avoid confusion. A complete overview of survey sample statistics can be found in Table 1.

As is shown in Table 1, the majority of the students completed the course in their junior/senior year (70%), approximately 66% were female, 50% were between 18 and 22 years of age, and 66% were majors in the College of Agriculture. Students recognized that working with a community member/industry professional enhanced their learning (90.0%) and believed their learning as a result of the field research project was improved or much improved over other methods (86.6%). Students preferred lectures, homework, and field work assignments over other types of assignments. Surprisingly, many students noted having completed one to three field work assignments while in college, with all students noting that they would recommend the field work project for future courses.

Given the discrete, ordered, and multinomial-choice nature of the student survey data, the students' perception of their learning as a result of the field work project was modeled using an ordered probit model. The ordered probit model evaluated the survey data to determine which student demographics, preferences for learning/instruction methods, and perceptions of the effect of working with an industry professional were likely to positively influence their perceived learning experience in a field work project. The qualitative learning perceptions may be modeled as a linear function of the observable explanatory variables, x_i, and the unobservable variables, ε_i

$$(1)\ y_i^* = x_i\beta + \varepsilon_i$$

Each student respondent classified his/her learning perceptions across four categories and hence, we observe

$y_i = 0$ *(inferior);* $y_i = 1$ *(same);* $y_i = 2$ *(improved),* $y_i = 3$ *(much improved)*

Equation 2 shows the vector of explanatory variables that was considered for their effect on the probability that the student perceived a much improved learning experience.

$$(2)\ x_i = \{\textit{College, Class, Industry, HW, FW, Text, Lecture, CS, Exam, Gender, Age}\}$$

The ordered probit model results are shown in

Table 2. Ordered Probit Model Results

Variable		Coefficient	Std. Err.	Z Stat
College	0: Other College 1: College of Agriculture	-0.036	0.692	-0.05
Class	Class standing when student completed project 1: Freshman 2: Sophomore 3: Junior 4: Senior	-0.905**	0.395	-2.29
Industry	Student perception of industry contact on learning experience 1: Detracted 2: Somewhat Detracted 3: Neutral 4: Somewhat Enhanced 5: Enhanced	1.400***	0.461	3.04
HW	Student prefers homework assignments 0: No 1: Yes	-2.035	1.737	-1.17
FW	Student prefers field work assignments 0: No 1: Yes	2.013**	1.043	1.93
Text	Student prefers textbook assignments 0: No 1: Yes	1.373*	0.857	1.6
Lecture	Student prefers attending lectures 0: No 1: Yes	-0.857	1.552	-0.55
CS	Student prefers case study assignments 0: No 1: Yes	1.652**	0.863	1.91
Exam	Student prefers exams 0: No 1: Yes	-0.072	0.862	-0.08
Gender	1: Male 2: Female	0.4527	0.608	0.74
Age	1: 18-22 2: 23-26 3: 27-35 4: 26-45 5: 46+	0.625*	0.341	1.83
Observations: 30				
LR chi2: 21.98				
Pseudo R2: .3406				
Log Likelihood: -21.2744				

(*)(**) (***): Significant at the 0.10 (0.05) (0.01) level.
Std. Err.: Standard error.

Table 2. The marginal effects of the explanatory variables on the probabilities are not equal to the coefficients, only the signs are interpretable as having either a positive or negative effect on perceived learning experience.

Significant variables included lower class standing (freshman/sophomore); working with industry professionals; preferences for field research, textbook, and case study assignments; and age. These results are not altogether surprising. Students with a freshman or sophomore class standing were more likely to perceive an improved learning experience as a result of the field research project, which makes intuitive sense as the "newness" of their college experience and this type of assignment was likely to cause enthusiasm. Students who worked mainly with industry professionals to complete their business plan were more likely to perceive an improved learning experience over those who did not, demonstrating the importance of incorporating interaction with industry professionals into undergraduate curricula.

Students with strong preferences for field work, case study, and textbook reading assignments perceived an improved learning experience over students who did not prefer these methods. This was the result we anticipated, as we expected students who have preferences for more traditional university instructional methods such as lectures and exams would not value the field work project as much. These variables were not statistically significant, but were all negative as we expected. Finally, students in a higher age group would more likely find their learning experience improved through field work projects relative to younger students. This may be due to stronger recognition of the importance of job skills and assignments that can be directly applied outside of the university environment. Hawtrey (2007) found a similar result among students enrolled in evening classes. Interestingly, the college variable was not significant in the model, indicating that students with majors in the College of Agriculture were no more likely to find the agricultural-based field work project beneficial to their learning than students majoring outside the College of Agriculture. This could be a result of students finding the experience applicable across subject matter.

Student Interviews

In this study, a criterion sample was drawn from students who successfully completed the field research project. Students were informed of the study via e-mail invitation. In the end, four females and two males, all Caucasian and under the age of 25 completed the interviews. One student was a senior, three were juniors, and two were sophomores.

A set of interview questions was developed in order to validate the survey results and also to further probe student experience in the project. For example, students were asked, *"What aspects of this experience did you find most useful?," "What if anything did this experience teach you about your strengths and weaknesses in regard to your major/future career?," "Was your professional philosophy affected in any way by this experience?," and "How are you different than students who have not had a similar field experience assignment?"*

As related by Miles and Huberman (1994), the approach to the data was inductive which is appropriate for exploratory and descriptive studies. The first phase of analysis was completed by identifying codes. Secondly, meaning-making was facilitated through data reduction which involves searching for themes, making initial intuitive hypothesis, and clustering like-items so that conclusions could be drawn. Finally, data display was completed through comparison and contrast.

The codes data resulting from the student interviews revealed a number of primary themes, including improved depth of content knowledge, improved professional understanding, increased self-reliance, deeper awareness of strengths, value of hands-on learning, and critical comparison. Further discussion of these themes is provided below along with selected student responses in italics.

• **Improved depth of content knowledge:** Numerous students commented that they were surprised at how much work a business plan required. They appeared to develop a more comprehensive understanding of the variables involved in creating a comprehensive business plan and in forecasting a profitable business. In some cases students realized that the knowledge they gained from completing a business plan could also help them in their personal lives.

• **Improved depth of professional understanding:** Students clearly showed a much stronger awareness of the depth and breadth of the profession they were entering, especially the extent to which professional contacts and resources could be helpful

Table 3. Codes

Codes	
	1. ALS=Awareness of Learning Style
2. APPA=Analyze Problem & Plan Approach	3. BF=Budget/Finance
4. CB=Changed Belief	5. CONF=Confusion
6. D=Disbelief	7. DT=Details not thought of
8. E=Empowering	9. FFP=For Future of Profession
10. IPI=Influence of Perceived Expert	11. LCS=Lack of Self Confidence
12. ME=More Encompassing	13. MG=Mission Statement/Goals
14. MP=More Pertinent	15. NAK=Newly Acquired Knowledge
16. O=Ownership	17. OV=Other views
18. P=Personalized	19. PB=Personal Benefits
20. PC=Personal Connections	21. PC=Procrastination
22. PH=Phone	23. PI=Public Interaction
24. PL= Project Limitation	25. PPW=Perceived Program Weakness
26. RLE=Real-life experience	27. SAR=Situational Analysis/Response
28. SB=Solidified Belief	29. SFW=Similarity to Future Work
30. SL=Solidified Learning	31. SR=Self reliance
32. SS=Surprise at Support	33. ST=Stranger
34. TI=Take Initiative	35. TOP=Talk to other people

for support and information. Many students choose agriculture as a career because they have been raised on a ranch or have family in the business. Three of the students interviewed grew up on a family ranch. In these cases, the project enabled the students to look at their family business from a different perspective. Thus, in some cases the increase in professional knowledge came via their parents.

• **Self-reliance:** Students commented on how the project forced them to test their own limits and pushed them beyond their comfort zones.

• **Deeper awareness of strengths:** The project allowed students to become better acquainted with the aspects of their future work that might present them with the greatest challenges. However, students also gained confidence from recognizing their strengths.

• **Value of hands-on learning:** Students commented that case studies provided them with correct answers, but in the field work project they had to seek solutions for themselves.

• **Critical thinking:** The students also learned the importance of critical thinking and application to different environments. Students realized that in some cases what they had been taught would not always work in their particular industry, requiring them to make appropriate adjustments.

Summary

The results of this study are encouraging in terms of the benefits students derive from experiential learning, and suggest that further efforts to include field work as a part of such programs would have positive impacts on students' learning experience. As an evaluative inquiry, it is important that we describe areas where the research fell short of our expectations (King, 1991). One area that proved to be problematic was students' varied interpretation of the term "field experience." Certain responses given during the student interviews indicated that some students considered the project an assignment, and did not fully appreciate the field aspects. This was especially apparent among students who completed the majority of their interview work over the phone without visiting the operation. Secondly, some students gathered a great deal of information from the internet, instead of using primary industry sources. Finally, the lack of specifications regarding the number and variety of interactions with primary sources prevented students from viewing the operation from a systems perspective.

Additionally, there was an issue of bias not considered in the initial development of the project. Of the six students interviewed, two completed the work on their family farms, while a third worked with her former FFA advisor. While the students still completed the project, their personal connections removed an aspect of professionalism. In some cases, more information was available to these students without completing the data gathering done by other students. However, both participants who used their own family businesses admitted to a much deeper understanding and appreciation of the work done by their parents. In addition, such connections gave the students, both of whom were intending to return to work in the family business, an opportunity to try out their own voice regarding the information and procedures they had learned as best practice during their course of study. Conversely, in the case of students who did not examine familiar industries, the assignment did not require job shadowing or a specific amount of time spent on-site. Therefore, future iterations of the project should include more specific protocols to encourage a deeper understanding of the business operation.

Regarding site selection, we would advocate that students investigate their family's industry, but not their family's operation. This will allow students to become more familiar with the variety of approaches to their industry's management while providing them with the experience of making professional contacts. However, another avenue for future exploration would be to have students' trade operations. That is, a student with a family background in cattle ranching might assist a fellow student to complete his/her assignment on the family's ranch, and vice-versa. A final limitation was the lack of regional specifications, as students commented that requiring them to investigate local operations (as opposed to those located 2-6 hours away) might encourage more frequent interactions with the producer and a better knowledge of the local area.

Overall, we believe the project added a much needed element of connectivity between classroom and context. The students had the opportunity to deepen their learning because the project utilized aspects such as prior knowledge, inquiry, and meaningfulness recommended through constructivist approaches to learning. Furthermore, they more closely approximated work which they will be called upon to do in the "real world;" they created their own viable business plans, tested their learning and beliefs, and perhaps most importantly, were forced to assert and insert themselves into the learning process.

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