

Safety Internships

Are Students Prepared?

By S.D. Allen Iske Jr., Grant Weller
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Supervisors of interns must seek to retain academic quality as they help the students integrate theory and practice, moving them beyond simple experience to fuller utilization and development of their education (Karlsson, 2011). Karlsson's study examined how well the practical experience continued the academic one. In this article, the authors describe a similar project conducted for presentation at ASSE's annual conference (Iske & Weller, 2014). In contrast to Karlsson's study, Iske and Weller (2014) investigated how well the students' academic experience in one such university program prepared them for real-world internship experiences as well as the potential for improvement in the academic preparatory knowledge.

Research on internships often focuses on evaluating student success. Using internship data to validate a program's effectiveness should prove useful to companies that use or are considering adding academic interns to their workforce. The data presented here were gathered from the internship supervisors' evaluations of their interns from University of Central Missouri (UCM). Evaluations were submitted halfway through the semester (at midterm) and as a final evaluation at the end of the internship. For this study, only the final evaluations were considered for assessment of student performance. These data provide a great resource for continuous improvement and validation of program technical content, ensuring a top-notch educational experience for students and a benefit for the companies hiring them.

Internships & Why Employers Sponsor Them

Ferguson (1998) describes an internship as "a means of bridging the gap between the student's education and the business world." Internships are becoming the capstone experience for students in an increasing number of degree programs and disciplines. Internships provide exceptional expe-

riences for students for practical employment advancement and potential employment entry. They can provide firsthand knowledge and understanding of the need to learn work skills, and development of career expectations and future goals.

Internships cross different business and government sectors and are found in various focused technical areas with national and international employers. Internships are often performed by students in mining, manufacturing, oil and gas utilities, construction, loss control, government functions, research and other areas. UCM Safety Sciences students have completed internships in all of these specialties. The UCM Safety Sciences program encompasses the disciplines of safety management and industrial hygiene for both undergraduate and graduate students. All students are encouraged to complete an internship prior to graduation if they are not already required to do so within their program of study.

Internships involve cooperative relationships between students, their academic coordinators and their employers (especially their respective supervisors or mentors). For the interns, the goals are to maximize learning experiences and develop skills. For the employers, the goal is to develop a highly skilled technical workforce, thereby enhancing operations. Internships provide opportunities for employers, student interns and academic programs, while challenging them to provide continuous improvement and verification of these learning environments.

Ortbals (2009) says internships are an extremely important part of a degree program, affirming the student's choice of major while providing hands-on experience in a potential career field. These

IN BRIEF

- This article presents data gathered from employer evaluations of University of Central Missouri students who completed academic internships.
- The data provide a great resource for continuous improvement and validation of program technical content.
- Taking into account feedback from internship providers when evaluating academic programs can help educational institutions improve students' academic experience and meet the needs of hiring companies.

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experiences serve as building blocks to expand when students return to classes.

Study Development & Purpose

In an earlier study, data were collected from industrial hygiene interns and their supervisors. These students were from UCM's ABET-accredited B.S. in Occupational Safety and Health and M.S. in Industrial Hygiene programs. These research data were evaluated and presented at the ABET symposium by Iske, Greife, Zey, et al. (2012). Consider-

ation of these results led to several opportunities to make improvements in course content. In addition, two new classes focusing on high-hazard environments and regulations were developed to cover additional skills and information needs identified by the internship supervisors. The results also verified student success and achievements within a quality educational program.

The results of this earlier study led to the present study, which gathered feedback from the internship supervisors of the two other safety degree programs

at UCM: B.S. in Safety Management and M.S. in Occupational Safety Management. While these two degrees are not yet ABET accredited, they are held to the same standards as degrees that are, with the same expectations for interns and the same philosophy for continuous improvement that is the foundation of ABET accreditation. These two degrees are undergoing changes, along with formal accreditation documentation and procedures to become ABET accredited. The study presented in this article allowed UCM's Safety Sciences faculty to evaluate student academic success in these two safety programs.

Value of Accreditation & Internships

ABET accreditation ensures that students will be well prepared for the dynamic nature of their profession. These programs and internships provide students with technical and professional skills for success by improving their educational experience, using best practices and innovation in education, providing formal feedback and emphasizing the continuous quality improvement process (ABET, 2013). For academic programs, ABET accreditation means demonstration of specific required activities that highlight educational commitment. This accreditation provides international recognition of quality, promotes best practices in education, ensures that faculty and staff are involved with assessment and continuous quality improvement, and is based on learning outcomes rather than teaching inputs (ABET, 2013).

While ABET program accreditation is voluntary, it provides advisory board oversight, ensures program quality and encourages contributions to academic excellence from outside sources. The criteria and elements of ABET accreditation for program maintenance and for advancing achievements are as important for today's students as the improvements from these outcomes for tomorrow's internships.

UCM students expect a top-notch education and they are assured that experi-

FIGURE 1
Internship Employer's Evaluation Form

**University of Central Missouri
Safety Sciences Programs
Internship Program – Employer's Evaluation**

Student's Name: _____
 Evaluation Period: Final Evaluation
 Company Employer: _____
 Evaluator's Name: _____
 Location: _____

ATTITUDE - APPLICATION TO WORK		ABILITY TO LEARN	
Outstanding in enthusiasm		Learned work exceptionally well	
Very interested & industrious		Learned work readily	
Average in diligence and interest		Average in understanding work	
Somewhat indifferent		Rather slow in learning	
Definitely not interested		Very slow to learn	
KNOWLEDGE LEVEL		RELATIONS WITH OTHERS	
Very knowledgeable in all areas		Exceptionally well accepted	
Possesses adequate knowledge in all areas		Works well with others	
Knowledgeable in most areas		Gets along satisfactorily	
Lacking knowledge in some key areas		Difficulty working with others	
Inadequate knowledge level		Works very poorly with others	
JUDGMENT		INITIATIVE	
Exceptionally mature in judgment		Proceeds well on his/her own	
Above average in making decisions		Goes ahead independently at times	
Usually makes the right decision		Does all assigned work	
Often uses poor judgment		Hesitates	
Consistently uses bad judgment		Must be pushed frequently	
MATURITY - POISE		QUALITY OF WORK	
Quite poised and confident		Excellent	
Has good self-assurance		Very good	
Average maturity and poise		Average	
Seldom asserts himself/herself		Below average	
Timid or brash		Very poor	
QUANTITY OF WORK		OVERALL PERFORMANCE	
Unusually high output		Outstanding	
More than average		Very good	
Normal amount		Average	
Below average		Marginal	
Low output, slow		Unsatisfactory	
ATTENDANCE		PUNCTUALITY	
Regular		Regular	
Irregular		Irregular	

The student's outstanding personal qualities are:

The personal qualities that the student should strive most to improve are:

The knowledge base of the student is inadequate in the following areas:

Additional remarks:

Signed _____ Date: _____

This report has been discussed with the student: Yes ___ No ___

TABLE 1

Evaluation Form Criteria Rating for Internship

Question	Criteria rated on a scale from 0 to 4
1	Attitude – Application to work: 0 = definitely not interested; 4 = outstanding
2	Knowledge level: 0 = inadequate; 4 = very knowledgeable
3	Judgment: 0 = consistently uses bad judgment; 4 = exceptionally mature in judgment
4	Maturity – Poise: 0 = timid or brash; 4 = quite poised and confident
5	Quantity of work: 0 = low output, slow; 4 = unusually high output
6	Attendance: 0 = irregular; 4 = regular
7	Ability to learn: 0 = very slow to learn; 4 = learned work exceptionally well
8	Relations with others: 0 = works very poorly with others; 4 = exceptionally well accepted
9	Initiative: 0 = must be pushed frequently; 4 = proceeds well on his/her own
10	Quality of work: 0 = very poor; 4 = excellent
11	Overall performance: 0 = unsatisfactory; 4 = outstanding
12	Punctuality: 0 = irregular; 4 = regular

ence by attending an ABET-accredited institution. According to ABET (2013), “Accreditation is an assurance that the professionals who serve us have a solid educational foundation and are capable of leading the way in innovation, emerging technologies, and in anticipating the welfare and safety needs of the public.”

While UCM’s B.S. in Safety Management and M.S. in Occupational Safety Management programs were not ABET-accredited at the time of this study, the criteria and elements for academic excellence for students and academic programs have been applied equally to them for the development, continuous improvement and verification of program results. These programs are already designed to meet the highest standards to enable students to meet the needs of future employers and the public. The results from this assessment will help guide efforts to improve course content to ensure that interns continue to be provided the technical resources and skill sets needed for success. This is a key mandate and a standard for ABET programs and all programs in general. UCM expects these two programs to be ABET accredited within the next few years.

Research

Internships are essential for bridging the academic learning environment with the practical, real-world application of skill sets in these disciplines for students. Young and Baker (2004) discuss the need to link classroom theory with professional practice during the internship. This assumes that the intern will have accumulated sufficient theory from academic studies before beginning the internship.

During an internship within a UCM program of study, the internship supervisor or mentor evaluates the student’s performance with a midterm and a final evaluation. These evaluations are essential for feedback to the student, employer and internship coordinator. However, the literature review shows limited use of student evaluations for validation or improvement of technical content in

What Do Internship Providers Need From Interns?

- Self-motivated, good work ethic, task-oriented;
- Quick learner who invests in continuous learning, eager to learn;
- Knowledgeable, yet knows when to seek help and ask questions;
- Good listening skills, follows directions;
- Works well with limited supervision;
- Adheres to established security policies;
- Keeps informed of safety requirements;
- Good leadership skills, relates with others, understanding, personable, outgoing;
- Dresses professionally;
- Understands differences between office and college campus;
- Confidence in decision making, yet not overconfident;
- Technical knowledge;
- Knowledge of regulations;
- Good communication skills, practices public speaking;
- High achievement/high energy;
- Accountable, dependable, thorough;
- Adapts well;
- Punctual.



selected courses. Thus, the purpose of the research reported here was to focus on and collect information from interns’ final evaluations to evaluate and assess the success of students’ academic preparation for internships.

By evaluating the success of interns, and the impressions of the internship supervisors, this report can be used to identify opportunities for improvement in academic offerings or content. For the internship provider and supervisor, this process provides an opportunity to share feedback with the academic side of the equation, giving them a voice in academic programs related to their indus-

TABLE 2

B.S. Safety Management Intern Evaluation Results

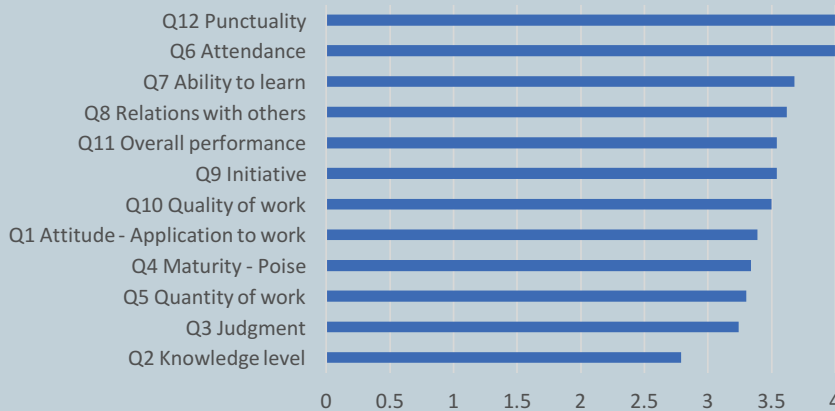
Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Student average
Total averages	3.39	2.79	3.24	3.34	3.30	4.00	3.68	3.62	3.54	3.50	3.54	4.00	3.49
SD	0.65	0.77	0.68	0.71	0.68	0.00	0.59	0.52	0.67	0.64	0.61	0.00	0.37
Range	2	3	2	2	2	0	2	1	2	2	2	0	1.58

Note. Individual scores and averages are available upon request.

FIGURE 2

B.S. Safety Management Intern Evaluation Results

Total Averages (0 as negative to 4 as positive)



try. Setting up the academic program to meet the needs of the companies that hire graduates just makes sense.

What Was Asked

The final evaluations have a set of technical/personal questions (measured with a numerical rating), and a set of subjective questions for comments to evaluate an intern's overall growth and development in technical and leadership skill criteria.

The use of this evaluation data by individual interns is beneficial and critical to connect practical application of classroom academics with real-world situations, tasks and field experience to comprehend personal learning and application of skills. Additionally, the use of employer evaluations of interns provides valuable and critical methods for student interns to connect practical field learning with academics.

Internship coordinator, faculty and other advisory professionals assess and evaluate current program criteria and technical course content to ensure the success of students within academics and in preparation for career launches. Finally, employers can use the evaluations to identify the value of student skill sets as well as use them for future employee screening. These outcomes provide a direct feedback loop for input into academic programs for any

changes necessary by students, faculty and employers. These are the key components for a successful internship.

The Internship Evaluation Tool

The document in Figure 1 (p. 38) is given to the intern for use by his/her internship provider to conduct a midterm and final evaluation. The evaluation document includes both personal behavioral skill assessment parameters and technical skill assessment questions.

The internship provider is asked to complete the same evaluation form at the two intervals and submit the documents to the internship coordinator via e-mail. For the purposes of this research project, only the final evaluations were collected and used for the evaluation, assessments and recommendations.

Results

Data collected from student internships covered the period from 2011 to 2013 for both degree programs with internships. Data are summarized in Tables 2 and 3, and Figures 2 and 3. During this period, 66 B.S. in Safety Management students and 11 M.S. in Occupational Safety Management students were enrolled in internships. Results from the evaluation document were assigned numerical values as described in Table 1 (p. 39).

The following summarizes the findings from the B.S. in Safety Management student evaluations:

- Number of interns evaluated = 66;
- Overall student average ($n = 66$) = 3.50;
- Achievement 51 of 66 interns rated ≥ 3.25 ;
- Students' performance in all areas (except one intern): satisfactory.

Evaluations included the following provider comments of B.S. in Safety Management student strengths and weaknesses:

Strengths:

- good leadership skills;
- quick learner;
- self-motivated;
- relates with others;
- eager to learn;
- enthusiastic;
- punctual;
- good communication skills;
- task oriented;

TABLE 3

M.S. Occupational Safety Management Intern Evaluation Results

Questions	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Student average
Total averages	3.27	2.64	3.09	3.09	3.00	4.00	3.18	3.36	3.18	3.27	3.18	4.00	3.27
SD	0.65	1.12	0.83	1.22	0.77	0.00	0.87	0.67	1.08	0.90	0.87	0.00	0.66
Range	2	3	2	4	2	0	2	2	3	2	2	0	1.83

Note. Individual scores and averages are available upon request.

- understanding of people;
- well spoken;
- good work ethic.

Weaknesses:

- lack of regulatory knowledge;
- need to ask more questions;
- confidence in decision making;
- be more vocal;
- public speaking.

Table 2 summarizes the average scores for the evaluation questions for this group. Figure 2 illustrates the information as a bar graph.

The following summarizes the findings from the M.S. in Occupational Safety Management student evaluations:

- Number of interns evaluated = 11;
- Overall student average (n = 11) = 3.28;
- Only 8 of 11 interns rating ≥ 3.00;
- Students' performance in all areas:

satisfactory.

Evaluations included the following provider comments of M.S. in Occupational Safety Management student strengths and weaknesses:

Strengths:

- eager to learn;
- high achievement;
- good communicator;
- punctual;
- works well with limited supervision;
- personable;
- knowledgeable;
- outgoing;
- dependable;
- thorough;
- accountable;
- adapts well;
- high energy.

Weaknesses:

- know when to seek help;
- adhere to security policies;
- keep informed of safety requirements;
- professional dress;
- listen to direction;
- understand difference between an office and a college campus;
- continue learning;
- overly confident;
- improve listening skills;
- technical knowledge;
- knowledge of regulations.

FIGURE 3

M.S. Occupational Safety Management Intern Evaluation Results

Total Averages (0 as negative to 4 as positive)

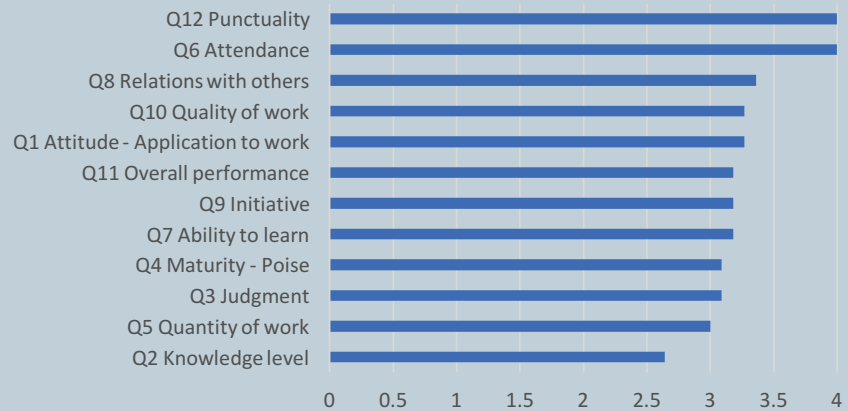


Table 3 summarizes the average scores for the evaluation questions for this group. Figure 3 illustrates the information as a bar graph.

Internship Observed Outcomes

Areas of evaluation for interns via these final evaluations from mentors or supervisors of sponsors included both direct and indirect measures. Direct measurement topics included communication skills (e.g., writing, speaking), technical skills in specific areas, personal attributes (e.g., knowledge, enthusiasm, interest, initiative, motivation) and diversity of expertise. Indirect measures included individual confidence, time management, responsibility for work assignments, quality of work, and evaluating work tasks for new performance method concepts or different perspective for completing tasks.

For the students, internships provided a capstone for their educational experience, pulling together the theories and bringing discussions into focus. Working with a company presented opportunities to learn hands-on methods in practice and in context. They developed professional contacts and networks while exploring possible career paths in industrial hygiene and safety. These internships introduced students to potential employers and provided them with a trial period. By learning what

TABLE 4

Summary of Undergraduate & Graduate Evaluation Results

Questions	Undergraduate total average	Graduate total average
Q1 Attitude - Application to work	3.39	3.27
Q2 Knowledge level	2.79	2.64
Q3 Judgment	3.24	3.09
Q4 Maturity - Poise	3.34	3.09
Q5 Quantity of work	3.30	3.00
Q6 Attendance	4.00	4.00
Q7 Ability to learn	3.68	3.18
Q8 Relations with others	3.62	3.36
Q9 Initiative	3.54	3.18
Q10 Quality of work	3.50	3.27
Q11 Overall performance	3.54	3.18
Q12 Punctuality	4.00	4.00
Student average	3.49	3.27

various companies seek in employees, students could choose educational experiences to focus their career preparation. These educational and real-world experiences culminated in graduates feeling prepared to contribute to the workforce.

For the employers and sponsoring company supervisors, student interns provided insight from the educational side including up-and-coming theories that may benefit safety and efficiency efforts. Academic networks made up of students and faculty members bring together a variety of research and work experiences that may offer new solutions to troublesome issues that a company may be facing. By sponsoring student interns employers can try out future professionals in the context of their own work environment. For many employers, the interns become their recruits of choice.

B.S. in Safety Management

Review of the data collected for undergraduate internships revealed that nearly all intern students performed their tasks in a satisfactory manner. Behavior characteristics and initial technical skills met expectations. Interns performed assigned tasks in a satisfactory manner and completed assignments as required. Students were rated very satisfactory overall (3.50/4.00 rating) and more than 75% of the interns were rated 3.25, an above-average rating for performance. Only one intern seemed to have experienced a less than successful internship appointment. However, lessons may be learned from every experience and new knowledge most likely can be gained.

Positive measures for the interns included communication skills, acceptable knowledge levels, cooperative personalities, leadership characteristics and desire to learn. Although these measures were considered strengths, employers determined

that undergraduate interns need continued improvement with technical knowledge and regulatory standards, speaking skills, personal confidence projected in performance of work tasks and additional skill developments with technical skill sets.

M.S. in Occupational Safety Management

Review of collected data for the graduate internships revealed that all students performed tasks in a satisfactory manner. As with the undergraduate students, behavior characteristics and initial technical skills met expectations. Interns performed assigned tasks in a satisfactory manner and completed assignments as required. Students were rated satisfactory overall (3.28/4.00 rating) and more than 75% of the interns were rated 3.00, an above-average rating for performance.

Positive measures for the interns included good communication skills, acceptable technical skill sets, eagerness to learn, and proving themselves

to be personable, dependable and accountable. Although these findings identify strengths for interns, employers determined that graduate interns need continued improvement with technical knowledge and regulatory standards, seeking assistance for work performance as appropriate, need for additional learning, understanding professional conduct, adjusting from campus to workplace environments, listening and following supervisor directions.

Table 4 summarizes results of undergraduate and graduate student evaluations. The results tend to support higher performance by undergraduates in internships. However, internships for undergraduates often require more general or entry-level technical skill sets compared to advanced expectations for graduate-level interns. Companies often will repeat internships, allowing students to learn and develop over time the responsibilities and duties of the position, and gain the appropriate skills and tools to perform work tasks. Employers may assign higher-level performance tasks and more difficult tasks to graduate-level interns with the expectation that these students already possess the necessary skill sets.

In addition, undergraduates often complete internships during an academic program, whereas graduate students have limited time to complete internships. Thus, graduate internships may reflect an entry into the workforce for the company. Preparing students in areas such as technical training, previous experience, communication skills and overall motivation may affect the internship's success. Several parameters that directly affect an internship's success and outcomes are beyond the control of the student, such as environment of the internship sponsor, conduct and preparation by the mentor or supervisor for the

internship, and the available schedule and coordination with work tasks.

Conclusions & Recommendations

The researchers reviewed, evaluated and presented internship data to faculty members and technical advisors within curriculum discussions for modifying existing courses with technical content or adding new courses to close the knowledge gap that the study identified. Areas for modifying curriculum based on internship feedback include the need for greater emphasis on legal and regulatory standards in applicable courses, and adding new courses on high-hazard environments such as construction, mining and oil/gas. As a result, UCM now offers a junior/senior-level course for high-hazard industries.

Courses were also evaluated to strengthen required communication skill development for writing and speaking, encouraging student time management and advising students on continued lifelong learning requirements. Changes include focusing on professional ethics, training on professional image, values and mannerisms, and promoting the growing need for certification and advanced qualifications or education to meet employer requirements and the future demands of the safety profession.

ABET requires a review of programs to ensure that they meet the expectations and demands required of students to achieve successful careers, as well as continuous improvement procedures to meet these demands. Non-ABET-accredited programs should have the same criteria of expectations for students.

Educational institutions should take into account feedback from current and future internship providers when evaluating and improving academic programs. This research presents the initial results from internship evaluation data to better improve or verify the success of the programs studied. Research results indicate that the current UCM Safety Sciences academic programs contribute to students' professional success; however, further efforts and progress by faculty and other advisory contributors must be continued for the future.

Internships serve as a cumulative metric of programs to ensure students' knowledge preparation for success and application to field work. In this way, interns and academic programs benefit by learning what companies need, while companies benefit by learning what students and academic programs offer.

Companies hiring interns can influence academic programs that produce their future employees. They can screen future employees through the internship system. Internship programs connect the company to their community and provide great public relations; students will talk to others about their experiences in the company. Interns can perform simple regular tasks, thereby freeing up experienced workers to address exceptions and more difficult tasks. Witnessing experienced workers solving novel problems helps prepare students

to do the same for their future employers. By setting up a communication feedback loop between student interns, academic programs and employers, the resulting continuous improvement process will help to ensure a valued learning environment in academic classes and student readiness to apply what they are learning in the field.

Importantly, companies often hire interns they sponsor upon graduation. According to an NACE (2015) report, "half of job-offer-receiving students (50.5%) indicated that at least one of their offers was from their internship employer. . . . Overall, 28.6% of students who had an internship received an offer from their internship employer." The report covers all academic programs utilizing internships, not solely safety programs. Based on limited UCM Career Services data on graduates with full-time employment, 22.5% of UCM interns accepted positions from their internship employer. Data are not available about when students received job offers from the internship employer, whether immediately or upon graduation. These data may be collected in the future.

In summary, strong communication channels and feedback for all groups involved will ensure that companies find employees they need, and future industrial hygiene and safety professionals will be ready for professional practice. **PS**

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