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Employer Attitudes and Perceptions of Job Preparedness of Recent Iowa State University Horticulture Graduates

Abstract

The purpose of this study was to evaluate the attitudes and perceptions of employers who have recently hired Iowa State University (ISU) Department of Horticulture graduates in regard to the graduates' preparedness when entering the workforce and their abilities to complete job responsibilities. A 70-question survey instrument was distributed electronically to 107 employers who hired ISU Department of Horticulture students who graduated from spring semester 2004 through summer session 2007. A majority of the survey questions was directly related to expected learner outcomes from the undergraduate curriculum. These outcomes related to abilities in professional skills (19 questions) and general horticulture (six questions). Twenty-four questions asked employers to rank the importance of skills in the areas of general horticulture and business, at 12 questions each. A final set of nine questions asked employers to rank the importance of work experience, attitude, and job preparedness. The response rate was 45.8%. Results showed that 52.5% of employers felt graduates were more than adequately to exceptionally well prepared for the position for which they were hired, and another 42.5% felt students were adequately prepared. Overall, employers ranked graduates abilities in general horticulture (4.22) and professional skills (4.24) as good to excellent on a scale of 1 to 5 (1 = very poor, 2 = poor, 3 = fair, 4 = good, 5 = excellent). Employers ranked all 12 of the general horticulture skills with an average to above average importance (4.26), and the 12 business skills with a slightly lower average ranking (3.84) on a scale of 1 to 5 (1 = not important, 2 = below average importance, 3 = average importance, 4 = above average importance, 5 = very important). In the final group of questions related to work experience, attitude, and job preparedness, employers ranked "good work ethic" as the most important skill, giving it an 4.97 on a 1 to 5 scale (1 = not important, 5 = very important). The remaining eight questions averaged 3.83 on the 1 to 5 scale. Results from this research will be used to modify the existing curriculum and expected learner outcomes to better prepare ISU horticulture graduates entering the workforce.

Keywords

alumni, undergraduate, teaching, course content, assessment

Disciplines

Higher Education | Horticulture | Other Education

Comments

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Teaching Methods

Employer Attitudes and Perceptions of Job Preparedness of Recent Iowa State University Horticulture Graduates

Ann Marie VanDerZanden^{1,3} and Michael Reinert²

ADDITIONAL INDEX WORDS. alumni, undergraduate, teaching, course content, assessment

SUMMARY. The purpose of this study was to evaluate the attitudes and perceptions of employers who have recently hired Iowa State University (ISU) Department of Horticulture graduates in regard to the graduates' preparedness when entering the workforce and their abilities to complete job responsibilities. A 70-question survey instrument was distributed electronically to 107 employers who hired ISU Department of Horticulture students who graduated from spring semester 2004 through summer session 2007. A majority of the survey questions was directly related to expected learner outcomes from the undergraduate curriculum. These outcomes related to abilities in professional skills (19 questions) and general horticulture (six questions). Twenty-four questions asked employers to rank the importance of skills in the areas of general horticulture and business, at 12 questions each. A final set of nine questions asked employers to rank the importance of work experience, attitude, and job preparedness. The response rate was 45.8%. Results showed that 52.5% of employers felt graduates were more than adequately to exceptionally well prepared for the position for which they were hired, and another 42.5% felt students were adequately prepared. Overall, employers ranked graduates abilities in general horticulture (4.22) and professional skills (4.24) as good to excellent on a scale of 1 to 5 (1 = very poor, 2 = poor, 3 = fair, 4 = good, 5 = excellent). Employers ranked all 12 of the general horticulture skills with an average to above average importance (4.26), and the 12 business skills with a slightly lower average ranking (3.84) on a scale of 1 to 5 (1 = not important, 2 = below average importance, 3 = average importance, 4 = above average importance, 5 = very important). In the final group of questions related to work experience, attitude, and job preparedness, employers ranked "good work ethic" as the most important skill, giving it an 4.97 on a 1 to 5 scale (1 = not important, 5 = very important). The remaining eight questions averaged 3.83 on the 1 to 5 scale. Results from this research will be used to modify the existing curriculum and expected learner outcomes to better prepare ISU horticulture graduates entering the workforce.

Horticulture is an academic discipline that embraces scientific and artistic components

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(Dixon, 2005). Preparing students to succeed in the diverse field of horticulture requires coursework across a range of disciplines, including the plant and soil sciences, disease and insect management, as well as general courses in communications and business. A recent online forum that addressed the future of horticultural

science within academia showed there was a international debate over the definition of horticulture as an academic pursuit as well as what types of courses should be required of undergraduate horticulture students (Darnell, 2005). Furthermore, shrinking budgets, departmental reorganization and consolidation, and adjustments to national trends are forcing many 4-year horticulture programs to reevaluate curricula and programs (Craddock et al., 2003; Lineberger, 2001; Looney, 2004).

Part of program and curricula evaluation includes gathering input from faculty, alumni, and employers. However, responses from these three groups often vary greatly in regard to what the curriculum should cover, the expected learner outcomes, and the overall content of the undergraduate program (Berle, 2007; Cole and Thompson, 2002; Kitto et al., 1996; Madewell et al., 2003; Sauer and Ladjahasan, 2004). Considering input from all three of these sources is important, but due to faculty expertise and interest, financial limitations, and physical resource constraints it may be unrealistic to incorporate all of the recommended modifications. Interestingly, a number of studies that focused on what employer's are looking for when hiring horticulture graduates showed that what employers value most in employees are personal traits such as good character, initiative, a strong work ethic, and a positive work attitude (Andelt et al., 1997; Beidler et al., 2006; Berle, 2007), all of which are difficult to teach as part of a 4-year horticulture degree.

The ISU Department of Horticulture has implemented multiple methods, including direct and indirect measures, to determine whether learner outcomes are being achieved across the curriculum and to evaluate the overall content of the undergraduate program. These methods include student evaluations of the course and instructor, student portfolios, senior exit surveys, senior exit interviews, instructor curriculum review, alumni surveys, and industry input (Duncan et al., 2008). Other universities, including Pennsylvania State University, Oklahoma State University, Clemson University, and Virginia Tech, are using similar approaches to assess their undergraduate programs (Craddock

et al., 2003; Kahn, 2006; Scales et al., 1998; Scoggins et al., 2004).

The purpose of this study was to evaluate the attitudes and perceptions of employers who have recently hired ISU Department of Horticulture graduates in regard to the graduates' preparedness when entering the workforce and their abilities to complete job responsibilities. A majority of the survey questions was developed based on university-, college-, and departmental-based learner outcomes (ISU, 2009a, 2009b).

Materials and methods

A list of graduates from the ISU Department of Horticulture from spring semester 2004 through summer session 2007 was obtained from the ISU College of Agriculture and Life Sciences Career Placement Center. This list of 175 graduates was categorized based on how the students described their employment at the time of graduation. These categories included turfgrass, nursery or greenhouse production, landscape design and maintenance, employed outside of horticulture, still seeking employment, or continuing education. Forty-four graduates were excluded from the research because they were not employed in the horticulture field (22 graduates), were still seeking employment (5 graduates), or were continuing their education (17 graduates). An additional 10 graduates were excluded because no viable employer e-mail address could be obtained. Five employers had hired multiple graduates and they only received one survey. The total sample for the survey was 107 employers of recent ISU Department of Horticulture graduates.

A questionnaire was developed in consultation with the ISU Institutional Review Board. The 70-item questionnaire consisted of 6 multiple choice questions, 58 Likert-type scale questions, 5 short answer questions, and 1 open-ended question, and was developed using SurveyMonkey software (SurveyMonkey, Portland, OR). Participants were asked if they hired an ISU horticulture graduate during the spring semester 2004 through summer session 2007 timeframe, if they currently employ an ISU Department of Horticulture graduate, the type of work that person did or is currently doing, and the minimum

education requirements for the job. Furthermore, participants rated how well the graduate was prepared for the job, and their perception of the graduates' horticulture and professional abilities. Three questions asked employers to rate the importance of horticulture, business, and miscellaneous professional skills of individuals they employ. The final three questions asked employers to describe five specific behaviors of the best and worst college graduate employees they have had and what recommendations they had for the ISU Department of Horticulture to improve the preparedness of its graduates.

The survey was piloted to a sample of employers and survey experts to control validity. Data collection was conducted via the Web and through e-mail contact. To increase responses, the tailored design method was used (Dillman, 2000). In the first correspondence (27 Jan. 2009), participants received a letter via e-mail describing the research project and a link to the questionnaire. Two weeks later (10 Feb. 2009), a reminder notice was sent to nonrespondents with a link to the questionnaire. On 18 Feb. 2009, nonrespondents were sent a final follow-up e-mail, which again included a link to the questionnaire. Data collection was completed on 23 Feb. 2009. The SurveyMonkey software coded the completed surveys, compiled the data, and computed simple statistics, including means, percentages, and standard errors.

Survey results were compared with ISU Department of Horticulture senior exit survey data (2004–06) to evaluate reliability of the instrument.

Results and discussion

Of the 107 employers who received the questionnaire, 49 questionnaires were completed and usable for a response rate of 45.8%. The respondents had the same proportional allocation as the 107 employers who received the questionnaire; 65% turfgrass, 12% nursery or greenhouse production, and 23% landscape design and maintenance.

MINIMUM EDUCATION REQUIREMENT AND PREPAREDNESS FOR THE POSITION. Fifty percent of participants reported that an Associate's degree or 2 years of college was the minimum education requirement for the position filled by the ISU horticulture graduate, while 32.5% reported the minimum education requirement was a Bachelor's degree. Other minimum education requirements included high school diploma (7.5%), certificate program or 1 year of college (7.5%) or some other undefined requirement (2.5%). Furthermore, 95% felt the ISU horticulture graduates they hired were prepared for the position, with 17.5% being exceptionally well prepared, 35% being more than adequately prepared, and 42.5% being adequately prepared.

ABILITIES IN GENERAL HORTICULTURE. Participants rated the ISU graduate's abilities in six areas of general horticulture as good to excellent on a five-point scale (1 = very poor, 5 = excellent) (Table 1). The highest-rated ability was implementation of horticultural production strategies (4.45) and the lowest-rated ability was understanding management of soil-based and artificial substrates (4.08).

Table 1. Horticulture industry employer survey responses rating Iowa State University Department of Horticulture graduates' abilities in general horticulture.

Survey question	Average rating (1–5 scale) ^a	Responses (no.)
Implement horticulture production strategies (harvest, quality, storage...)	4.45	40
Apply basic horticulture knowledge	4.25	40
Recognize plant stressors	4.25	40
Have a basic understanding of technical principles (nutrition, planting, propagation...)	4.18	40
Plant identification	4.10	40
Understand management of soil-based and artificial substrates	4.08	39

^a1 = very poor, 2 = poor, 3 = fair, 4 = good, 5 = excellent.

ABILITIES IN PROFESSIONAL SKILLS. Participants rated the ISU graduate's abilities in 15 of 19 professional skills >4.0 on a five-point scale (1 = very poor, 5 = excellent) (Table 2). The highest-rated professional abilities included knowing how to use electronic communication tools (4.58), understanding field terminology (4.53), the ability to work as part of a team (4.48), and possessing high standards of achievement (4.48). Four professional skills were rated <4.0, including defining problems and proposing solutions (3.98), debating issues (3.95), understanding basic business concepts (3.80), and motivating and organizing others when problem solving (3.68).

IMPORTANCE OF HORTICULTURE SKILLS. Participants rated 10 of 12 horticulture skills as important to very important (the average was >4.0) on a five-point scale (1 = not important, 5 = very important) for graduates they employ (Table 3). The highest-rated skills were proper watering techniques (4.68), fertilization techniques (4.53), disease identification (4.49), and pesticide application (4.42). The two lowest-rated skills were the ability to interpret a soil test (3.95) and pruning techniques (3.78), however, the rating for both skills still ranks them as having average to above average importance.

IMPORTANCE OF BUSINESS SKILLS. Participants rated the importance of 12 different business skills, again on a five-point scale (1 = not important, 5 = very important) (Table 4). Seven skills were rated with a 4.0 or greater. The top-ranked skills were time management (4.68), managing employees (4.54), and the ability to speak professionally (4.49). Two skills were rated <3.0 (average importance) and included marketing techniques (2.54) and advertising techniques (2.46).

IMPORTANCE OF MISCELLANEOUS PROFESSIONAL SKILLS. The last set of skills participants rated was miscellaneous professional skills (Table 5). These nine skills also used the same five-point scale (1 = not important, 5 = very important). A good work ethic was rated the highest (4.97), which was the highest of any skill or ability in the entire survey. Also rated highly was proper attitude or personality (4.89). The lowest-rated skill was being a member of a professional organization (3.14).

Table 2. Horticulture industry employer survey responses rating Iowa State University Department of Horticulture graduates' abilities in professional skills.

Survey question	Average rating (1-5 scale) ^z	Responses (no.)
Know how to use electronic communication tools (e-mail, etc.)	4.58	40
Understand field terminology	4.53	40
Work as part of a team	4.48	40
Possess high standards of achievement	4.48	40
Perform mathematical calculations	4.45	40
Use word processing software	4.41	39
Organize and interpret information on a computer	4.38	40
Use resources such as libraries, journals, and electronic sources	4.38	40
Interpret laws and regulations	4.28	39
Have resume and interview skills	4.25	40
Analyze and interpret data	4.23	40
Have a holistic perspective of the ecosystem	4.20	40
Write a concise report	4.18	39
Seek out opportunities for continued education	4.15	40
Present an oral report	4.10	40
Define problems and propose solutions	3.98	40
Debate issues	3.95	38
Understand basic business concepts (accounting, marketing, etc.)	3.80	40
Motivate and organize others when problem solving	3.68	40

^z1 = very poor, 2 = poor, 3 = fair, 4 = good, 5 = excellent.

Table 3. Horticulture industry employer survey responses rating importance of horticulture skills.

Survey question	Average rating (1-5 scale) ^z	Responses (no.)
Proper water techniques	4.68	37
Fertilization techniques	4.53	36
Disease identification	4.49	37
Pesticide application	4.42	36
Identifying abiotic stresses (abiotic = nonliving agents such as temperature extremes; construction damage, etc.)	4.32	37
Irrigation troubleshooting	4.27	37
Plant identification	4.24	37
Understanding of plant growth	4.24	37
Irrigation repair	4.19	37
Insect identification	4.03	37
Ability to interpret a soil test	3.95	37
Pruning techniques	3.78	37

^z1 = not important, 2 = below average importance, 3 = average importance, 4 = above average importance, 5 = very important.

FIVE BEST TRAITS OF A COLLEGE GRADUATE EMPLOYEE. In a short-answer question, participants were asked to list five specific behaviors, skills, or knowledge areas associated with their best college graduate employee. Responses to this question were coded into themes and are reported here. Strong personal skills (82% of responses) were listed

overwhelmingly as the most important, followed by science and industry skills (12%) and other skills (6%) (Fig. 1). The personal skills-type responses were then coded into subcategories with work ethic, initiative, people skills, communication skills, and organization skills being mentioned most often and totaling 66% of the answers (Fig. 2).

Table 4. Horticulture industry employer survey responses rating importance of business-related skills.

Survey question	Average rating (1–5 scale) ^z	Responses (no.)
Time management	4.68	37
Managing employees	4.54	37
Ability to speak professionally	4.49	37
Conflict management	4.28	36
Ability to write professionally	4.22	36
Client relationships	4.16	37
Production management	4.08	37
Understanding budgets	3.94	36
Understanding laws of business	3.43	37
Accounts payable/receivable	3.27	37
Marketing techniques	2.54	37
Advertising techniques	2.46	37

^z1 = not important, 2 = below average importance, 3 = average importance, 4 = above average importance, 5 = very important.

Table 5. Horticulture industry employer survey responses rating importance of miscellaneous professional skills.

Survey question	Average rating (1–5 scale) ^z	Responses (no.)
Good work ethic	4.97	37
Proper attitude or personality	4.89	36
Organizational skills	4.38	37
Internships or work experience	4.19	37
Use of e-mail/internet	3.62	37
Use of spread sheet software	3.62	37
Use of word processing software	3.51	37
Bilingual in Spanish	3.32	37
Member of a professional organization (GCSAA, PLANET, etc.) ^y	3.14	37

^z1 = not important, 2 = below average importance, 3 = average importance, 4 = above average importance, 5 = very important.

^yGCSAA = Golf Course Superintendents Association of America, PLANET = Professional Landcare Network.

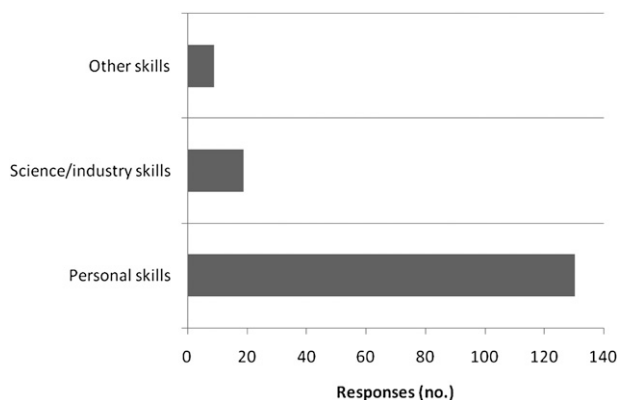


Fig. 1. Horticulture industry employer survey responses to five skills, behaviors, or knowledge items that represent the best college graduate employee grouped by themes.

FIVE WORST TRAITS OF A COLLEGE GRADUATE EMPLOYEE. In the second short-answer question, participants listed five specific behaviors, skills, or knowledge areas associated with their worst college graduate employee

(Fig. 3). Responses to this question were also coded into themes and are reported here. Again, personal skills were listed most often, encompassing 88% of the responses. Science and industry skills accounted for 10% of

the responses and other skills made up the remaining 2% of the responses. Personal skills were again coded into subcategories with poor work ethic, lack of initiative, poor communication skills, poor team player, lack of people skills, and poor organization abilities making up 99% of the responses (Fig. 4).

Interestingly, the presence (for the best college graduate employees) or lack of (for the worst college graduate employee) of the same skills, behaviors, and knowledge areas were very similar. Clearly, employers prefer certain types of skills and abilities, be they personal or technical.

RECOMMENDATIONS TO IMPROVE PREPAREDNESS OF ISU DEPARTMENT OF HORTICULTURE GRADUATES. In the final open-ended question, participants were asked to make suggestions on what the ISU Department of Horticulture can do to improve its graduates' preparedness for employment. The responses were coded into themes in the categories of personal and communication skills, sustainability, internships, technical skills, job information, and miscellaneous. Suggestions listed only once fell into the miscellaneous category and included the following items: providing a class that discusses "real-time" landscape industry issues; helping students see the big picture; getting students to care about issues like the environment and their fellow workers; and instilling a desire to learn after college. All other items were listed multiple times and are described below.

Many of the suggested improvements were in the category of personal and communication skills, including speaking and writing skills, teaching how poor communication skills will lead to poor results, better resumes and interviewing techniques, and a heavier focus on professionalism, people skills, and problem-solving skills. Additionally, participants suggested more personnel management with one response being "Knowing turf and how to deal with it is fine, but the people management skills are lacking. They need to be aware of what they can and cannot say to employees they are managing or supervising." Another response along this line was "You are only as good as you can get your staff to be." Finally, one respondent suggested the ISU

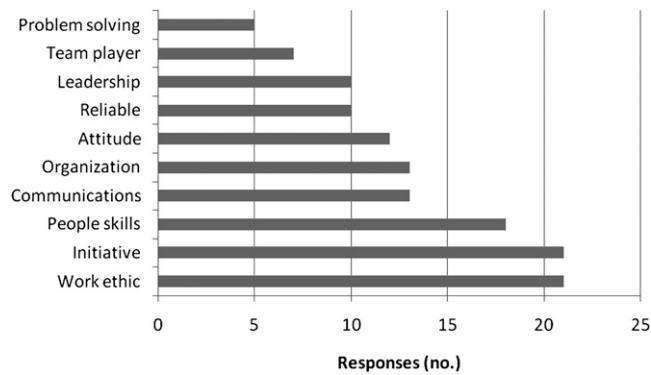


Fig. 2. Subcategories of personal skills theme responses from horticulture industry employer survey responses listing five skills, behaviors, or knowledge items that represent the best college graduate employee.

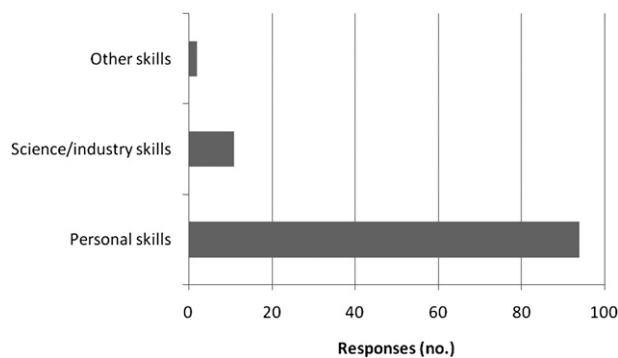


Fig. 3. Horticulture industry employer survey responses to five skills, behaviors, or knowledge items that represent the worst college graduate employee grouped by themes.



Fig. 4. Subcategories of personal skills theme responses from horticulture industry employer survey responses listing five skills, behaviors, or knowledge items that represent the worst college graduate employee.

Department of Horticulture emphasize the importance of becoming bilingual stating, “I think we are getting to the point that Spanish should become a requirement for a turfgrass program.”

Several respondents suggested improvements in the area of sustainability, including more knowledge of generally accepted sustainable

practices, new management practices, integrated pest management, selecting the right plant for the right location, incorporation of low-maintenance plant material, and alternative methods to treat disease and insect problems.

Another area commonly mentioned for improvement was internships. Specifically, one respondent

wrote, “Hands-on practical experience during the summer or internships that last for a few months would help them gain skills and also see if the work is something they will enjoy in the long run.”

Several technical skills were listed as potential areas for improvement, including irrigation, and equipment adjustment and repair. Other respondents suggested the need for better computer skills, including Excel (Microsoft, Redmond, WA), Word (Microsoft), and computer-aided design software. The suggestion for better technical skills was expressed well by one respondent who wrote, “Any practical skill they gain like laying brick, building walls, or operating equipment is a plus, but it can be taught after hire.”

The last area of suggested improvements included ensuring that students had a good understanding about the industry, including facts about expected pay rates and job advancement potential, and an understanding that horticulture is, or at least can be, hard physical labor. One respondent offered a suggestion, stating that, “You need to love what you are doing because unless you own your own business and are quite successful with that business the pay is not what many other college graduates will earn. If they (students) are looking for money, suggest they switch to engineering or molecular biology.”

Conclusions

Results of this survey are similar to others conducted in horticulture (Berle, 2007; Craddock et al., 2003) and in other areas of employment (Andelt et al., 1997; Cole and Thompson, 2002). Employers are looking for solid technical skills, but they also want more personal skills such as communication, professionalism, teamwork, and management skills. Some of the skills most desired, such as a good work ethic and initiative, are also some of the most difficult to teach at the collegiate level. This is the first employer satisfaction survey done by the ISU Department of Horticulture. Findings from this survey will be combined with results from two other recent surveys (Duncan et al., 2008; Beidler et al., 2006) and will be used as part of the ongoing and cyclical undergraduate program assessment conducted by

the department. These results and additional discussions will be used to make the necessary adjustments to the curriculum and learner outcomes to enhance student learning and better prepare graduates for employment in the green industry.

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