

AC 2008-345: JOINING THE WORKFORCE: STUDENT PERCEPTIONS OF THEIR READINESS IN NON-TECHNICAL SKILLS

Albert Lozano, Pennsylvania State University - Wilkes-Barre

Albert Lozano is Associate Professor of Engineering at Penn State Wilkes-Barre. His research interests are centered in the study of errors in bioelectrical impedance measurements, the incorporation of RFID in education and the development of techniques to enhance student learning. He can be reached at a-lozano@psu.edu

JOINING THE WORKFORCE: STUDENT PERCEPTIONS OF THEIR READINESS FOR NON-TECHNICAL SKILLS

Albert Lozano-Nieto, PhD
The Pennsylvania State University
Commonwealth College
Wilkes-Barre Campus
P.O. Box PSU
Lehman, PA 18627
Phone: (570) 675-9245
email: AXL17@psu.edu

In the past, engineering and engineering technology schools had an almost exclusive emphasis on the technical contents of their programs, giving the students the necessary background and tools to ensure their technical performance. At that time, these programs put a minimal emphasis on what was known as “soft skills”. These education deficiencies were corrected mainly through feedback from employers and by the accreditation criteria from ABET. The traditional accreditation criteria started addressing these issues and the current TC2K criteria from TAC of ABET has stressed the emphasis on the abilities of graduates to communicate, work in teams, understand and value lifelong learning and ethical issues, thus helping to close the gap between the student’s preparation at graduation and “the real world”. Furthermore, colleges and universities have intensified their student support services, offering workshops and similar activities for students to learn how to write resumes, dress appropriately for a job interview, etc.

However, the students that we graduate are still generally highly unprepared for “the real world” although there is little more than just anecdotal evidence on this issue. This is mainly based on comments from employers and on graduates discussing with a faculty member who they trust an employment offer extended to them. Our graduates may be proficient in technical issues, may have the abilities to communicate, work in teams and understand but they are still lagging behind in those areas that can be seen as the bridge between the technical realm and operating in today’s society.

To evaluate how students perceive their own abilities and deficiencies, the senior class in a BSEET program was asked to respond to an anonymous survey. This survey was designed to measure how students view themselves in those particular areas, necessary to function in society but not taught in school or addressed by student support services. The paper presents and discusses in detail the results obtained as well as steps to take in order to improve the knowledge of our students on these issues at the time of graduation. By doing this, we will enhance the integral approach to the education of the students who choose come to our institutions. It is necessary to point out that because of the small sample, the conclusions drawn should be considered with caution at this point until we have a more reliable sample.

INTRODUCTION

One of the goals for institutions of higher education is to produce highly skilled and qualified graduates to serve the profession and the society. Engineering technology programs try to accomplish this goal by combining technical expertise and knowledge with a well rounded education that will enable graduates to function in today’s complex world. This duality has long been recognized by our accrediting organization, TAC of ABET, that has played a critical role in adapting engineering technology programs to today’s reality. Furthermore, part of the current

TC2K criteria is based on the skills and abilities of our graduates several years after having been in the workplace.

However, there is still a gap between the technical and communication knowledge that we give to our graduates and them becoming successful professionals in the workplace¹. Colleges and universities prepare students up to the point of graduation, but they don't extend their education to the skills that the students will need immediately after graduation, in particular those related to finding and evaluation employment offers. While it is true that almost all the institutions offer to their students several workshops on resume writing, may hold on-campus recruitment events and some of them also offer workshops for interviewing, the fact is that we leave the students alone after they have graduated. The anecdotal evidence from this author for several years suggests that the graduates from our engineering technology programs (and possible almost all academic programs) feel left alone at the time making a decision regarding their future employment. This also suggests that the students don't have the necessary skills to properly evaluate what a potential employer is offering to them in terms of the technical aspects of the job, the potential to grow inside and outside the company by developing transportable skills, the future and viability of the company and all the benefits associated to their employment. Based on this anecdotal evidence it seems like we could increase the extent of our involvement in the professional future of our students.

DESCRIPTION OF THE MEASUREMENT TOOL

To better understand how prepared our students perceive to be regarding future employment, we administered a survey to the senior class of the baccalaureate degree in electrical engineering technology (BSEET) at the Wilkes-Barre campus of Penn State. This survey addresses three main points:

- 1) how the students perceive to be prepared for an interview;
- 2) how students perceive their level of understanding of compensation packages and their implications, and
- 3) the student perception of the campus involvement in their preparation for job interviews and negotiating compensation packages.

Once again, the purpose of this survey was to start gathering more meaningful data than just the anecdotal evidence described previously. The author is aware that this is only the initial step towards having a meaningful evaluation of student perceptions. The author also recognizes that the answers given to this survey do not represent all the students on campus, nor its results could be extrapolated to all the previous and future senior classes in the BSEET program and because of the small sample, they need to be considered with caution.

| SURVEY ON STUDENT PERCEPTIONS REGARDING FUTURE EMPLOYMENT IN ENGINEERING TECHNOLOGY | |
|---|---|
| <p>Have you had a job interview for a full-time position related to your major of study? YES NO If YES, please write the approximate date</p> <p>(For the following questions relate to your most recent full-time job interview. If you didn't have one, project your answer for a future job interview related to your major.)</p> | |
| 1.- What is your level of comfort knowing that you were dressed (or will dress) appropriately for the job interview and will be able to conduct it in a professional manner? | 6.- How comfortable do you feel in placing an economical value to your technical skills? (in other words, how comfortable you are in establishing a salary for you). |
| 2.- Describe how comfortable or uncomfortable you were during the whole job interview process (If you have not had a job interview yet, put yourself in a situation imagining one in the near future). | 7.- How comfortable do you feel about understanding the non-monetary aspects of a compensation package after a job offer has been extended to you? (We refer to health benefits, retirement plans, 401(k)'s, etc...) |
| 3.- Describe the aspect(s) of the job interview that made you feel the most uncomfortable. | 8.- Describe how comfortable you are in understanding your fiscal liability (taxes you have to pay depending on your monetary compensation and various personal situations)? |
| 4.- After the job interview was finished, did you follow up with the potential employer? If so, how? | 9.- Are you familiar at all with professional liability? Do you believe you will have to have your own professional liability insurance once you are working in your field? |
| 5.- Imagine that during the interview you are told you will hear from them in a couple of weeks. Imagine that after three weeks you haven't heard anything from them. Would you feel comfortable in calling that company and asking what was going on? What would you say? | 10.- Did the Campus helped you to learn any of these issues (conducting job interviews, understanding compensation packages, liability, etc.)? Do you feel the Campus should do more or less to help students in these areas? If so, how? |

Figure 1: Summary of survey for students

RESULTS

Level of readiness.

A total of 11 senior students in the BSEET program responded to the initial survey. This survey will also be administered to the senior class each year in order to increase the sample size and being able to draw more meaningful conclusions.

Five of the students responding (45%) had already experienced an interview for a job related to their major while 6 students (55%) did not. All the 11 students reported to feel from moderate to very comfortable about dressing appropriately for an interview. This is an expected response as students are exposed to the literature and workshops on campus that help them to get ready for the interview process. Furthermore, anecdotal evidence from the author by seeing students on campus who have had or will have an interview around the class periods confirms this response. Similarly, all the students also had a clear understanding of how to follow up once the interview was finished even in the event that some time had elapsed from the date of the interview.

Comfort level during an interview.

The students exhibited a wide range of emotions regarding the level of comfort during the interview process as it is summarized in the chart below:

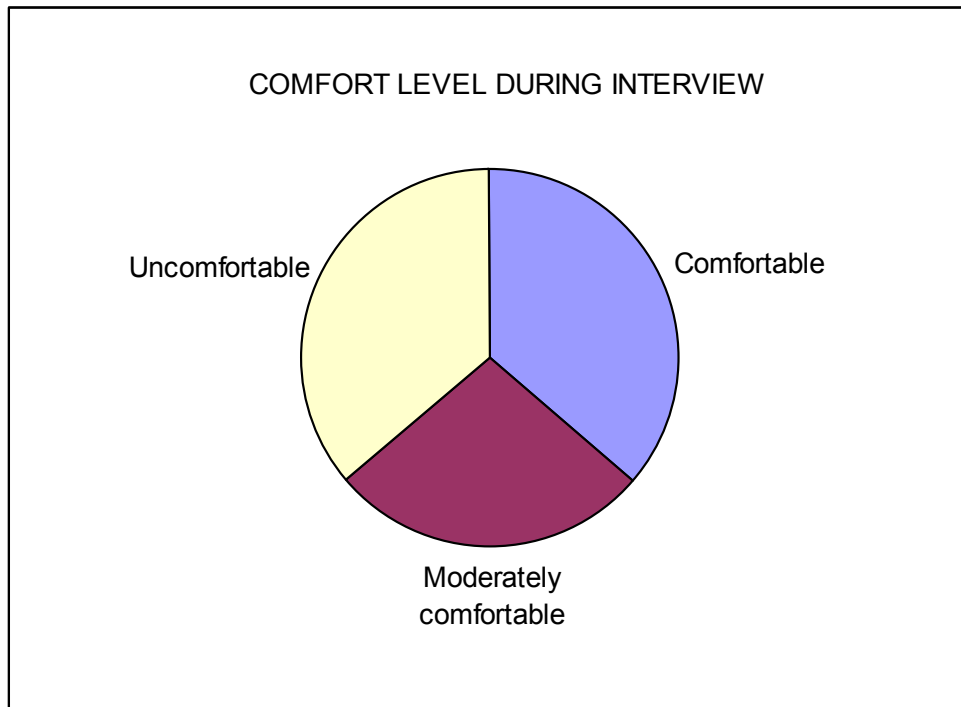


Figure 2: Student responses – level of comfort

There was no difference in the level of comfort between the students who already had an interview and were recalling this experience from the students who were projecting how they would feel in an actual job interview. The level of comfort during an interview seems to boil down to the different personalities of our students. When the students were asked to identify the areas that made them feel

more uncomfortable, the most common response (4 students) was related to their technical skills and in particular to being able to perform the tasks required for the person by the company that is interviewing them. This can be particularly overwhelming for some graduates after taking a tour of the company and seeing their operation. A couple of students also expressed discomfort with not being prepared on what type of questions they should ask nor answering questions about themselves. This indicates that these particular students had not attended any workshop on interviewing as these are issues commonly addressed during those training sessions. Once again, there was no difference between both groups of students.

Compensation packages.

The survey also revealed that students need some additional help in placing an economic value to their technical skills. The results of the surveys given to the students show not only a great disparity between their perceptions in this area, but also a level of unawareness on salary compensation for a given position and geographical area. Although some of the students who had had interviews were still confused on this item, this confusion was most evident with the students who had not had an interview. These students also felt, in general, uncomfortable with placing that economic value to their technical skills. It seems evident that those students with experience in interviewing had done some background research to feel comfortable with assigning a range of economic value of the skills from their degree.

One of the most potentially disturbing set of answers (although not surprising) from the students came from the question about understanding the whole compensation package and benefits from a potential employer. While approximately half of the total students expressed to feel at least comfortable with understanding compensation packages, the responses from some of the other students included statements such as “*Not at all. Needs guidance and help*”, “*Good pluses*”. “*Good – add about 3k depending on package*” and finally “*I don’t mind these at all*”. These answers suggest a lack of understanding on the importance of benefits while evaluating a compensation package; we can suspect that some of the students who expressed a high level of comfort understanding this issue may also have incorrect assumptions. Related to this issue, the students also had a variety of opinions regarding their understanding of taxes and fiscal liability that ranged from feeling very comfortable to not knowing anything about it. It seems clear that the understanding of these two issues (benefits and fiscal liability) should be an integral part of the preparation to be successful in the professional environment that we give to our students in addition to the traditional engineering economics offered at most Institutions³. We can only wonder how many costly mistakes have been made by our graduates because of lack of preparation in this matter.

Institutional Support.

The last question on the survey was focused on assessing how students perceived the help that they received from our campus to address all the previous issues. These responses need to be analyzed with the caution of knowing that some students may not have taken advantage of the opportunities for their development offered by the different campus services nor been aware of their existence. All the students surveyed agreed that the campuses (or institutions) should help their students in understanding all these issues. However, the differences were on their particular experiences with

using the resources provided to them by our campus. While a couple of the students said that the campus does enough if students want to use these resources, the majority of the students (8 students) responded that the campus should do more, and in particular with helping them to understand competitive wages and compensation packages. However, based on the different perceptions that the students had of the help the campus provided, this issue needs to be further investigated before concluding that our Institutions need to increase the services they provide to our students.

CONCLUSION

While preparing our students to become successful professionals in their fields of choice, we go to great extents to ensure that they are not only highly skilled in the technical areas but also have the communication skills to function in today's complex world. The author believes that we can improve the student success in their professional and personal lives by helping them to learn the skills that have been described in this paper. While most institutions have programs and workshops on resume writing and interviewing, they seem to be only focused on some aspects such as appropriate dressing and similar issues and do not focus on how the graduates may feel during the interview process based on their different personalities. Our students and graduates should know that not only is normal to be nervous before and during an interview, for example, but that they have also control over the whole process. We need to tell them that interviewing is a two-way process, that they are also interviewing a prospective employer, that the employer need their skills the same way that the graduates need a job, rather than the more common perception of being a unidirectional, power-driven approach from the interviewer down to the graduate.

From the technical skills that we teach our students we should emphasize that when they visit a company during an interview process, they may feel overwhelmed by all the processes involved in the operation of the company and they may have doubts about their ability to perform as competent professionals². We need to emphasize that the employer does not have an expectation of the recently hired individuals to be able to know everything and it can be indeed a slow process. The students need to be reassured that if the employer would not think they are qualified to do the specific type of job demanded, they would not have been invited for an interview, let alone to have an employment offer extended. Exposing students to the amount of work involved in the operation of a company during field trips, or even better by summer internships⁴ can be a good solution for the students to ease their concerns and become more comfortable about their technical abilities and skills.

Finally, in the same way that we help students to learn technical and communication skills, they should also be exposed to the economic realities of their profession as well as our society. While finding the range of salaries in a specific job and geographical area can be seen as a difficult task, they need to learn the different resources, from networking with previous graduates to published national salary surveys that can help them to place an economic value to their skills. We should also help students to avoid making costly mistakes by helping them to become used to evaluation the whole compensation package instead of only monetary salaries and give them the skills to become successful professionals and individuals.

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