

The Need for an Emotional Intelligence for Information Technology Course: Framework for Educators and Academic Institutions

Loreen Powell
lpowell@bloomu.edu

Michalina Hendon
mhendon@bloomu.edu

Bloomsburg University
Bloomsburg, PA, 17815, USA

Hayden Wimmer
hwimmer@georgiasouthern.edu
Georgia Southern University
Statesboro, GA, 30460, USA

Abstract

Information Technology (IT) professionals are tasked with problem solving and educating the user on the solution at hand as well as assisting the organization with the correct use of technology to optimize business practices. The manner in which an IT professional communicates their knowledge and instructions for problem solving can be stifled through insufficient interpersonal skills. Currently, IT professionals use main sources of communication, such as email or a management system software tool, in which sufficient time can be taken to craft messages. However, when adequate time is not available to think about a response or read between the lines of a client's problem, the IT professional may find it challenging to communicate with empathy of the client's perspective, which can detract from the collaboration or problem-solving goal of the conversation. As such, organizations report that there is a vital need for IT students to understand and rely upon positive emotion intelligence (EI) to intergrade the interpersonal skills that allow the professional to be both a problem-solver and effective communicator. However, there is limited or nonexistent literature on the EI for IT courses, skills, and assessments. This research investigated current and past the employment needs by examining online IT job advertisements within the United States. Results revealed several key EI skills sought by IT employers. Based upon these results, a solid framework in support of an EI for IT course is offered. This research provides a solid framework for educators and higher education institutions to consider an emotional technology course within the IT curriculum.

Keywords: Emotional Intelligence, Soft Skills, Interpersonal Skills, Curriculum

1 INTRODUCTION

Preparing students to meet the demands of the current and future workforce is consistently a

moving target for IT disciplines at all academic institutions (Levin-Goldberg, 2012). Over the past decade, technology has dramatically altered workforce demands for computing expertise

(Koulouri, Lauria, & Macredie, 2015; Shapiro, and Rison, Phillips, & Herbert, 2006). However, at the same time, there is trending global need for IT students to possess EI skills (Stevens & Norman, 2016). Currently, research which examined job advertisements, conducted interviews and focus groups found that New Zealand organizations want 'soft' skills such as team based, customer focused, business environments among their IT professional hires.

Additionally, Wilkerson, (Wilkerson, 2012), provided a review of the management information systems (MIS) related job skills and skill gaps within the literature. This study found that within 20 papers extracted to detail MIS job skills needed in the field only 2 of the 20 papers did not include interpersonal skills. Further, the results of the research found that "Consistent with prior studies, these results indicate that 'soft' skills are more important to MIS professionals' career success than technical skills" (p.94). Interestingly the research also pointed to oral and listening skills to be more important to an MIS professional then working in a team, and team collaboration was of higher importance than written communication. The implications of this research asserted that technical skills are not as prominently needed as interpersonal skills are in the technology field.

High emotional intelligence is important; however students are not trained in EI skills (Connolly & Reinicke, 2017). Since major factors in the evolution of IS curriculum are changes in technology, changes in industry, and perceived student deficiencies (Reynolds, Adams, Ferguson, & Leidig, 2017), the goal of this research is to investigate current and past the employment needs by conducting a content analysis of online IT job advertisements within the United States. Key EI skills sought by IT employers are reported and a solid framework in support of an EI course within an IT and alike curriculums is provided. This work has practical implications for higher education IT undergraduate programs and faculty. The remainder of this paper is structured as follows: a brief review of EI, methodology, results, discussion of a proposed framework for an EI course and conclusion.

2 BACKGROUND

Emotional Intelligence

EI is defined as "the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in self and others" (Masrek,

Osman, Khamis, & Paiman, 2014). Positive EI traits or competencies are qualities within an individual's personality that can be developed (Vaida & Opre, 2014). An IT professionals' duties are comprised of two sections, technical ability and service. The ability to heighten EI skills such as communication, empathy and listening skills can lead to enhanced interpersonal relationships, team collaboration and understanding; which in turn can allow the individual to provide effective and efficient service.

Emotional Intelligence (EI) Importance with Information Technology (IT)

The role of an IT professional within an organizational is often cross discipline and service oriented (Jia & Reich, 2011) as they provide technology service and support to end-users (Brooks, Hardgrave, O'Leary-Kelly, McKinney, & Wilson, 2015). As such, frequent interaction with end-users requires the IT professional to regulate the display of emotions. By enhancing positive emotional output, the IT professional establishes a positive relationship, which fosters trust and understanding (Shih, Lie, Klein, & Jiang, 2014). However, the nature of the end-user technological frustration and misunderstanding of common technology jargon often hinders the positive emotional output. Hendon, Powell and Wimmer (Hendon, Powell, & Wimmer, 2017) studied the role of EI among IT professionals and found that there is a strong positive correlation between EI and communication. Thus, supporting that EI and communication skills can be enhanced simultaneously.

3 PROJECT GOALS

The goal of this research is to investigate the current and past the employment needs requisition for IT professionals by examining online IT job advertisements within the United States. This research study seeks to answer the following research question:

1. What percentage of IT job advertisements have some mention of EI needs and which is the most stated EI need (interpersonal, critical thinking, problem solving, oral and written, close interaction, and team environment skills)?

Based upon these results, a solid framework in support of an "EI for IT" course is offered. This research provides a solid framework for educators and higher education institutions to consider an emotional technology course within the IT curriculum to fulfill businesses need

4 METHODOLOGY

To assess organizational demand for EI, a three week (April 26, 2017 – May 17, 2017) content analysis on the job advertisements for IT opportunities within Pennsylvania were reviewed from the website www.indeed.com. The authors chose to use a content analysis because it is an “objective, systematic and quantitative examination of communication content (p. 283)” and has been used in many recent IT studies (Kim & Kuljis, 2010).

Indeed was used because of its well-regarded reputation and the representative sample of IT job advertisements for the period studied. The research period was selected at a time of increase in job opportunities in IT, when recruitment of higher education graduates takes place at the beginning of May. Hence, the researchers assumed that this would likely bring in a high amount of job advertisements. However, this was not statistically verified.

A total of 130 full-time IT job advertisements within Pennsylvania were found, examined and coded. The IT job advertisements were coded for EI skills present vs. EI skills not present within the IT job advertisement. Among those job advertisements that contained EI skills, the skills were categorized and coded into specific EI skills including interpersonal skills, critical thinking, problem solving, close interaction skills with end-user, and team environment skills.

After examination and analysis of the IT job advertisements. The researchers utilized Liberal Education and America’s Promise (LEAP) learning outcomes to create a visual representation and comprehensive matrix for an “EI in IT” course. LEAP’s learning outcomes were utilized because of its emphasis in relating curriculum to the needs of America’s workforce. Additionally, research by the Hart Research Associates (Hart Research Associates, 2013) examined employer’s knowledge regarding what college graduates should know and be able to do. Their consensus also strongly reflected those learning outcomes identified as the LEAP learning outcomes.

5 RESULTS

This study found that 82.31% of IT job advertisements have some mention EI needs. Figure 1 provides a visual summary of the results.

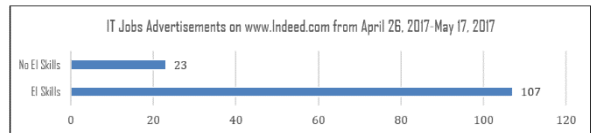


Figure 1: IT Job Advertisement with EI skills vs. no EI skills

Among the job advertisements that contained EI skills, the stated requested skills included interpersonal, critical thinking, problem solving, oral and written, close interaction, and team environment skills. Figure 2 provides a summary of the EI skills needed.

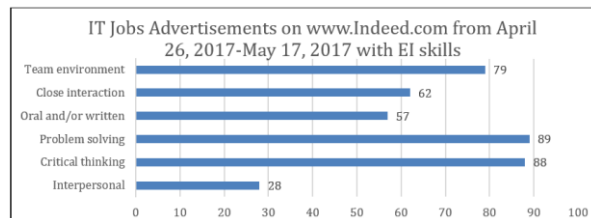


Figure 2: IT Job Advertisement with EI skills Summary

6 DISCUSSION AND PROPOSED FRAMEWORK OF AN EI FOR IT COURSE

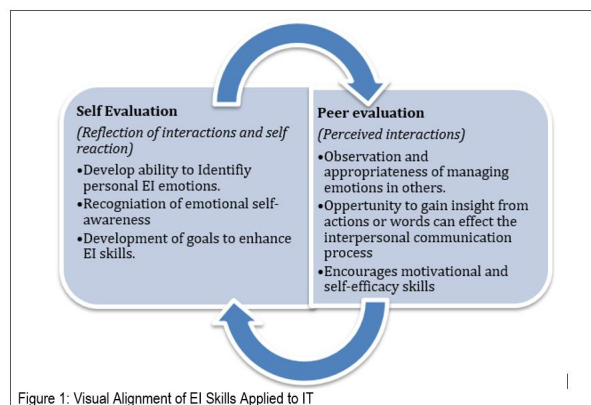


Figure 1: Visual Alignment of EI Skills Applied to IT

Figure 3: Visual Alignment of EI Skills Applied to IT

As shown in figure 3, the proposed framework for an “EI for IT” course is driven, by design, to focus on leveraging EI to achieve the organization’s soft-skills objectives and exercise self-evaluation and peer evaluation to establish opportunities for positive personal growth. Hence, the goal is to produce IT professionals who know how to effectively communicate and bridge the gap between the IT knowledge/jargon and the end user. As such, the proposed course will have reflection and perspective influences. Specifically, the reflection influence will focus on developing

internal skills/abilities to become confident and emotionally aware. The perspective influence will focus on developing skills through the lens of another to gauge the benefits of EI implementation and learning through observance, participation and critical feedback.

difference occurs within the specific focus of communication/soft skills. Specifically, an EI course focuses on the communication with people, where as traditional IT courses focuses on communication with a technological device. Table 1 details a suggested matrix of EI skills for IT with exercises correlated to (Mayer, DiPaolo, & Salovey, 1990; Sluyter & Salovey, 1997).

A matrix of course learning outcomes for an "EI for IT" course is presented in table 2. The major

Table 1 : Suggested Matrix of EI skills for IT

LEAP Learning Outcomes	EI for IT Course Learning Outcomes	Suggested Exercises Correlated to 1997 Mayer-Salovey 4 Branch Model of Emotional Intelligence
Learning Outcome 1: Knowledge of Human Cultures and the Physical and Natural World - Study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts. Focused by engagement with big questions, both contemporary and enduring.	Knowledge in social competences.	Disrupt preconceived notions of what technology is and how it effects everyday life. Perception, Appraisal and Expression of Emotion
Learning Outcome 2: Intellectual and Practical skills - Inquiry and analysis, critical and creative thinking, written and oral communication, quantitative literacy, information literacy, teamwork and problem solving. Practices extensively, across the curriculum, in the context of progressively more challenging problems, project, and standards for performance.	Appraise EI techniques and provide constructive feedback on the positive benefits of active listening and communication adaptability. Inquiry and analysis of the characteristics of service and intercultural differences in communication, values, and emotional adaptability	Emotional Facilitation of Thinking
Learning Outcome 3: Personal and Social Responsibility -Civic knowledge and engagement (local and global), intercultural knowledge and competence, ethical reasoning and action, foundations and skills for lifelong learning. Anchored through active involvement with diverse communities and real-world challenges.	Design framework of communication and problem-solving solution as it relates to an organizational situation.	Understanding and Analyzing Emotions; Employing Emotional Knowledge
Learning Outcome 4: Integrative and Applied Learning - Synthesis and advanced accomplishment across general and specialized studies. Demonstrated through the application of knowledge, skills, and responsibilities to new setting and complete problems.	Evaluate the effectiveness of interpersonal communication and social skills through presentation of framework.	Reflective Regulation of Emotions to Promote Emotional and Intellectual Growth

Proposed Implementation

In Disrupt preconceived notions of what technology is and how it effects everyday life,

during week 1 and 2, students should evaluate the end result of the course. What is their end goal, what do they want to learn? What do they think they already know?

Next, in week 2-4 for Perception, Appraisal and Expression of Emotion, students should explore their course journey by mapping the methods and practices of course theories with a student assessment of how the same practices and theories are applied throughout the world. The student's worldview of their discipline is needed to understand how interconnected technical projects become and the need for the student to be diverse in best practices throughout the world.

In weeks 5-10, for Emotional Facilitation of Thinking, ask students to provide an example of their work (program, website, design, theory) to another student outside their discipline with only an introduction to their work and ask the recipient to detail their perception of the project. The students should provide a set of question to the outside reviewer that questions the understanding of their work. This will provide the student with the opportunity to streamline questioning, understand perceptions from a pseudo user point of view and will initiate communication and active listening.

In Weeks 11-14, for Understanding and Analyzing Emotions; Employing Emotional Knowledge, with the feedback provided from the reviewer's perspective and the project completed for use, it will be up to the student to explain more in-depth the outcome of their project to the reviewer in a short introduction. The student should be able to convey the theory or idea first introduced to the reviewer in a visual outcome. This exercise will provide the student with the ability to enhance skills of communication to articulate their project to a reviewer that does not have the same background as the student. Cultivate communication and practice of interdisciplinary sharing of ideas through application of the reviewer's perceptions of the project will be the central principle of the exercise.

In Reflective Regulation of Emotions to Promote Emotional and Intellectual Growth during weeks 12-16, the project should be explained to the class and instructor with the feedback provided from the reviewer. The student will break down the communication chain of the project and explain how they understood their work in the reviewer's perception. Self-evaluation of positives and enhancements should be discussed through the student's point of view. The student will then elicit feedback from the class cohorts on the project as a whole as well as the instructor providing self-analysis questions that challenge the underlying the positives of understanding and

problem-solving from another's perspective and correlate the comprehensive exercise to working in an organization with different demands and sensitivities.

In conclusion, the Suggested Matrix of EI skills for IT uses LEAP's learning outcomes as a guideline for relating curriculum in IT to EI learning outcomes through directed exercises that challenge the student's communication skills while stimulating self-evaluation and perception. The EI exercise can be changed to fit the course at hand, however the element of interdisciplinary communication provides the student with the understanding of how technology and technical theory can be explained and perceived from another's point of view. The exercises in EI also can enhance the student's ability to engage their empathy/authorship by seeing their work through another's lens.

7 CONCLUSIONS

The results from this study verified the need for an EI for IT course. It also expanded the literature that focus on EI and technology. The discussion/framework for an EI for IT course presented provides educators and academic institutions with a foundation to alter their existing IT curriculum or the creation of specialized courses that highlight the interpersonal and social skills needed with the technology discipline. Expanding options for an EI course may attract and influence additional students to enter the IT discipline.

This research is not without limitations. First the study is limited geographically by only reviewing IT job advertisement within Pennsylvania. Secondly, the extent of time that the job advertisements were pulled was not extended period of time. Future research will address these limitations. Implications of this research include providing higher education institutions and educators with a framework for using an "EI for IT" course as part of their undergraduate curriculum.

8 REFERENCES

- Brooks, N. G., Hardgrave, B. C., O'Leary-Kelly, A. M., McKinney, V., & Wilson, D. D. (2015). Identifying with the Information Technology Profession: Implications for Turnaway of IT Professionals. *ACM SIGMIS Database*, 46(1), 8-23.

- Connolly, A. J., & Reinicke, B. (2017). How to Teach Emotional Intelligence Skills. *Information Systems Education Journal*, 15(4), 4.
- Hart Research Associates. (2013). It takes more than a major: employer priorities for college learning and student success. *Liberal Education*, 99.
- Hendon, M., Powell, L., & Wimmer, H. (2017). Emotional intelligence and communication levels in information technology professionals. *Computers in human behavior*, 71, 165-171.
- Jia, R., & Reich, B. H. (2011). IT service climate—An essential managerial tool to improve client satisfaction with IT service quality. *Information Systems Management*, 28(2), 174-179.
- Kim, I., & Kuljis, J. (2010). Applying content analysis to web-based content. *CIT. Journal of Computing and Information Technology*, 18(4), 369-375.
- Koulouri, T., Lauria, S., & Macredie, R. D. (2015). Teaching introductory programming: a quantitative evaluation of different approaches. *ACM Transactions on Computing Education (TOCE)*, 14(4), 26.
- Levin-Goldberg, J. (2012). Redefining, Reinventing, and Rebuilding Schools for the 21st Century. *eLearn*, 2012(4), 4.
- Masrek, M. N., Osman, M. A. F., Khamis, Y., & Paiman, M. J. (2014). The relationship between emotional intelligence and job satisfaction: The case of Malaysian information technology professionals. *International Journal of Multidisciplinary and Current Research*, 2, 1106-1111.
- Mayer, J. D., DiPaolo, M., & Salovey, P. (1990). Perceiving affective content in ambiguous visual stimuli: A component of emotional intelligence. *Journal of personality assessment*, 54(3-4), 772-781.
- Reynolds, J., Adams, R., Ferguson, R., & Leidig, P. (2017). Programming in the IS Curriculum: Are Requirements Changing for the Right Reason? *Information Systems Education Journal*, 15(1), 80.
- Shapiro, E., and Rison, S., Phillips, A., & Herbert, A. (2006). *Towards 2020 Science*: Microsoft.
- Shih, S.-P., Lie, T., Klein, G., & Jiang, J. J. (2014). Information technology customer aggression: The importance of an organizational climate of support. *Information & management*, 51(6), 670-678.
- Sluyter, D. J., & Salovey, P. (1997). *Emotional Development and Emotional Intelligence: Educational Implications DC*: BasicBooks.
- Stevens, M., & Norman, R. (2016). *Industry expectations of soft skills in IT graduates: a regional survey*. Paper presented at the Proceedings of the Australasian Computer Science Week Multiconference.
- Vaida, S., & Opre, A. (2014). Emotional intelligence versus emotional competence. *Journal of Psychological and Educational Research*, 22(1), 26.
- Wilkerson, J. W. (2012). An alumni assessment of MIS related job skill importance and skill gaps. *Journal of Information Systems Education*, 23(1), 85.

9 APPENDICES AND ANNEXURES

Figure 1: IT Job Advertisement with EI skills vs. no EI skills

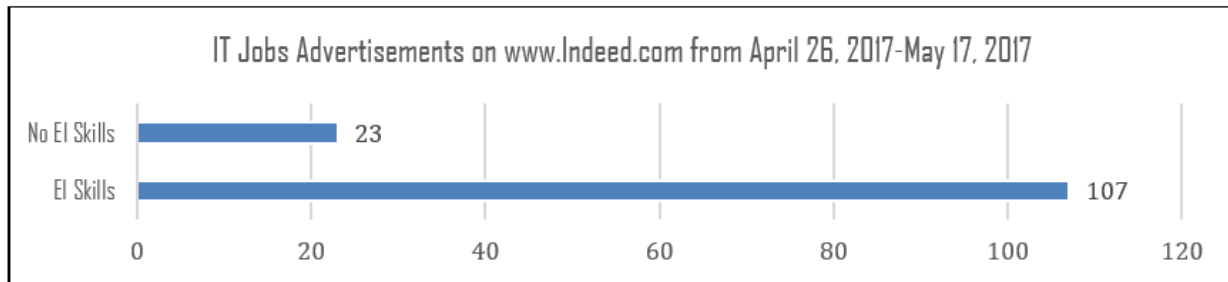


Figure 2: IT Job Advertisement with EI skills Summary

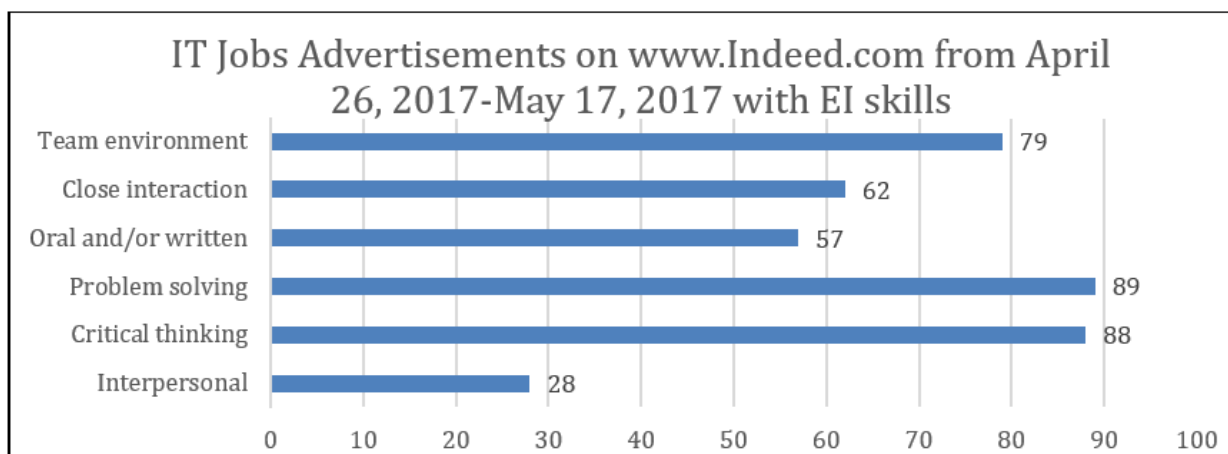


Figure 3: Visual Alignment of EI Skills Applied to IT

