

# How to Teach Emotional Intelligence Skills in IT Project Management

Amy J. Connolly  
ajconnol@gmail.com  
Computer Information Systems and Business Analytics  
James Madison University  
Harrisonburg, VA 22807

Bryan Reinicke  
breinicke@saunders.rit.edu  
MIS, Marketing and Digital Business  
Saunders College of Business  
Rochester Institute of Technology  
Rochester, NY 14623

## Abstract

High emotional intelligence ("EQ") is considered one of the greatest strengths of an alpha project manager, yet undergraduate project management students are not directly trained in EQ soft skills such as communication, politics and teamwork. This article describes examples of active learning exercises implemented in an undergraduate IT project management course to improve students' EQ skills in project management scenarios. Instruction emphasized the interplay of hard and soft skills in project management. In-class activities were designed to show students how to skillfully interact with peers and stakeholders on an IT project. This research provides examples of pedagogical interventions that involved students in their own learning and forced them to constructively engage with each other and with the material. This research contributes to the literature by demonstrating how to implement suggestions from research directly into pedagogy. Additionally, this research provides a set of activities that can be used to increase the EQ of students in a project management course. Based on the results from this study, the interventions worked as intended. Students reported higher EQ, critical thinking, and communication skills after completing the course.

**Keywords:** emotional intelligence, IT project management, soft skills, skills transference, active learning

## 1. INTRODUCTION

After more than 50 years of developing and deploying information systems, projects continue to fail. While the technologies have evolved and changed enormously over that time period, one factor remains consistent: people. People are the greatest threat to IT project success. Stakeholders make or break a project. Year after

year, the CHAOS Report measures project success by whether a project meets scope, time and cost budgets. However, people estimate, control and ultimately determine the success or failure of those projects (Hastie & Wojewoda, 2015).

Undergraduate education in IT project management tends to spend more time teaching

hard skills like time and scope estimation, requirements elicitation, and how to build Gantt charts, and less time on soft skills like how to work in teams and manage stakeholders at multiple levels of the organization (Cowie, 2003; Jewels & Bruce, 2003; Tynjälä, Pirhonen, Vartiainen & Helle, 2009). Even the Project Management Institute's ("PMI") Project Management Body of Knowledge ("PMBOK") acknowledges that soft skills are important but has little room for it. For example, the 5<sup>th</sup> edition PMBOK added a new knowledge area for stakeholders, but arguably, only three of the ten knowledge areas directly relate to people skills.

To improve the chances of project success, better trained project managers are needed. In order to prepare students for roles in project management, we need to improve their interpersonal "soft skills" and their emotional intelligence. However, while this goal is important, it definitely requires a more holistic approach to project management education.

In this paper, we present a review of the relevant literature and explore an active learning approach that was applied in a project management classroom. This approach was designed to improve student learning in the area of emotional intelligence. We present the details of this approach, the results from the classroom, and the implications to teaching and learning IT project management in an undergraduate college class.

## 2. LITERATURE REVIEW

Sufficient research exists to explain what skills IT project managers need and what skills lead to more successful projects. Known as "alpha" project managers, the top 2% most effective project managers plan and communicate significantly more than the other 98%, and they are better communicators (Crowe, 2006). Communication and the ability to prioritize tasks are soft skills. These skills are even more acute and demanded in agile teams, where clients are more directly involved in product development (Cockburn & Highsmith, 2001).

The question then becomes, how can we teach these skills? For the most part, project management classes tend to focus on the PMBOK material presented on PMI's certification exams, mostly because soft skills are difficult to measure with standardized tests (De Piante, 2010; Scott, 2010). Additionally, EQ skills are difficult to teach via traditional lectures, because they are typically learned from experience. Therefore, an active learning approach may be more effective. In this

section, we briefly review the research on soft skills vs. hard skills and active learning.

### IT Project Management

Project management is an increasingly important topic in information systems education and practice, in part because many studies have shown that project success is far from assured and that having a bad project manager can greatly increase the risk of failure (Poston & Richardson, 2011). In order to train effective project managers, we need to ensure they have the soft skills that industry demands (Mitchell, Skinner, & White, 2010; Pazhani & Priya, 2012; Poston et al., 2011). However, these soft skills are not usually covered in a project management classroom, in no small part because they are not easy to teach or learn, and they are not a primary focus of the PMI exams. Yet their presence can greatly enhance the chances of success for a project.

### Teaching Soft Skills versus Hard Skills

Generally speaking, the skills that define the most successful project managers would be categorized as "soft" skills, whereas the PMI exams measure more of what are generally considered "hard" skills, or skills and knowledge in a very specific area (Pazhani, et al. 2012). Although hard skills and soft skills represent different types of knowledge, they need to be balanced effectively. Hard skills are often aligned more clearly, though not exclusively, as explicit knowledge. Explicit knowledge can be recorded and disseminated more easily via text than its counterpart, tacit knowledge. Soft skills are more aligned with tacit knowledge, though again not exclusively. Tacit knowledge is generally harder to convey via text. Tacit knowledge must frequently be acquired by doing, rather than by reading, and this problem extends well beyond academia. The difference and difficulty in capturing and conveying tacit knowledge have been noted in the literature on knowledge management as well (Crane & Bontis, 2014; Herschel, Nemati, & Steiger, 2001).

Soft skills are as critical to project management as hard skills, but unlike hard skills, instruction of soft skills is most effective when taught in context in a more holistic way (Adams & Morgan, 2007). Active learning is one way to convey these important soft skills to students and allow them to see them in action.

### Active Learning

Active learning is generally defined as learning that actively engages the students in the learning process (Zheng & Li, 2016). In numerous studies, it has been shown that engaging students in the

learning process can improve learning outcomes, especially where soft skills are concerned (Adams & Morgan, 2007). It has also been shown that active learning approaches can help students master difficult concepts, particularly when students have little professional experience on which to draw (Connolly & Lampe, 2016; Reinicke & Clark, 2010).

In addition to successful applications in IS classrooms in general, active learning principles have been used to teach project management (Davidovitch, Parush, & Shtub, 2006; Gan Kok Siew, Joshi, Lending, Outlay, Quesenberry & Weinberg 2014). However, despite a plethora of professional project management education websites, books and articles on the importance of soft skills training, very little research describes how to implement active learning in a formal college class to train students in soft skills (Cowie, 2003; Tynjälä, et al. 2009). This research presents specific, measurable, assignable, realistic, and time-related ("SMART") activities appropriate for an undergraduate project management class to improve students' emotional intelligence and soft skills.

### 3. CLASSROOM INTERVENTION

These interventions were applied in an undergraduate course on IT Project Management at a 4-year, regional senior campus linked to a Research One institution in the Southeast United States. The course is a required part of an Information Management & Systems ("IM&S") curriculum within the College of Arts & Sciences. Before taking this class, students learn skills in relational databases, technical presentation and communication, data warehousing, social informatics, and introductory programming. Of special note is the fact that almost half the students in the IM&S program earn a health informatics minor, 40% study a business administration minor and 10% receive other minors. The demographics of the IM&S students are more diverse than typical IT programs, being evenly split between men and women. They are often first-generation, non-traditional students with limited professional IT experience.

Originally, material in this class was taught in a standard lecture format with PowerPoint slides interspersed with audience discussion. The course schedule followed the book chapters in sequence, which closely parallel the PMBOK (Schwalbe, 2010). In addition to a group project and in-class quizzes, students completed a midterm and a final exam. Students reported difficulty with the midterm and final exam format due to the amount

of material to recall. Students struggled with the group project because they did not practice with the material during class, and they had difficulty applying the concepts.

Additionally, group members sometimes expressed frustration with the group project due to personality conflicts that impeded productivity. Such conflicts are not uncommon in groups (Tuckman et al. 1977), and it can be argued that these are a part of the learning experience for students. However, more harmonious groups are much more likely to succeed, especially in short term projects (Richards, 2009; Matta et al 2011). Students enjoyed the in-class discussions but often appeared distracted or bored during lectures (e.g., browsing Facebook, completing other class homework, or texting).

To improve student outcomes, this class was redesigned based on principles from active learning pedagogy, as more fully described in the exercises below. First, the material was divided into four cohesive and related units to improve student memory by reducing cognitive load. These units were titled introduction and project selection, triple constraint, people, and finishing touches. Rather than a midterm and final, students completed four unit exams. These exams were not comprehensive, but they required students to apply concepts to new, unfamiliar problems. The group project remained the same. A graphic syllabus of the course is shown in Figure A.3. in the Appendix.

Class enrollment was limited to 24 students. It met twice per week for 75 minutes in an active learning classroom. The chairs and tables in this room are modular and moveable. A picture of the room is shown in Figure A.2. in the Appendix. The nature of the room encouraged movement, small group work and collaboration. The instructor had one year of previous experience teaching classes in active learning classrooms on campus. This experience provided a basis for the interventions described.

#### Five Stages of Team Development

The class as a whole was treated as one big project team, with the end goal to learn project management. Although students were eventually divided into teams of four for the group project, students were free to assemble and reassemble the room in any formation during class activities. Based on this premise, Tuckman's five-stage model of team development can be seen occurring throughout the semester. This model has five stages, which generally occur in sequence: forming, storming, norming,

performing and adjourning (Tuckman, B.W. & Jensen, M.A.C., 1977).

During forming, team members get to know each other but do very little productive work. In storming, "people test each other, and there is often conflict" (Schwalbe 2010, p. 385). After beginning to work together, the team builds norms and a common understanding in the "norming" stage. The actual project work is done during performing when the team focuses on the task at hand. Finally, during adjourning, the team breaks up. The following sections illustrate how these stages manifested throughout the class.

### Icebreakers

On the first day of class, students were challenged to learn everyone's name. To help students learn names and to overcome their reticence on the first day of class, they completed a "People Bingo" activity towards the end of the class period. An example Bingo card is provided in Table A.2. in the Appendix. To complete the exercise, students were tasked with finding one person in class who fit in each cell (Peterson, 2015). Students became so engrossed with this exercise, that they did not notice the class period end for 15 minutes. The items in the bingo cells may be modified to match the class makeup as needed.

Throughout the semester, students were verbally quizzed on random classmates' names to check for recall. Recall was always close to 100%. Learning names is integral to team forming (Tuckman, 1977). It "humanizes learning, builds community, and positively impacts students' wellbeing" (O'Brien, Leiman & Duffy, 2014).

### Class Rules for Discussion

On the first day of class, students completed a brief questionnaire on Socratic, an online quiz tool (similar to iClicker technology). The questionnaire asked about students' experience with discussion-based classes, what they considered an "ideal discussion," and what the rules for class discussions should be. Then, the class was divided into 4 or 5 ad hoc groups. Each group agreed on one or two rules for class discussions and wrote the rule on the board in their own words. The class then met as a whole to discuss the rules that everyone should follow during discussions. These rules are presented in Figure A.1. in the Appendix.

In this exercise, students often assume "everybody knows" what the rules mean, even though that is not necessarily true. To flesh out these assumptions, students were asked to describe concrete examples of following or not

following the rules. For example, physically show us what "being attentive" looks like. This exercise helped to improve "storming" and begin the "norming" process for the group (Tuckman et al. 1977), and it was students' first of many experiences where they were introduced to the idea that not everyone thinks like they do. Students were challenged to confront assumptions and talk about their similarities and differences.

### Creative Expression

Throughout the semester, student activities involved drawing or writing on the whiteboards distributed throughout the room. This practice became such a habit, that during the particularly difficult lesson on dependencies, one student brainstormed his personal mental map on the board next to his seat without any prompting. His diagram was so useful, that he was asked to explain it to the class. The ability to draw one's thinking "aloud" to others is exceptionally useful in IT teams, particularly on projects. The student's illustration is shown on Figure A.4. in the Appendix. Teaching a topic to someone else improves both participants' learning, and in many cases, is the best way to learn material in a meaningful way (Argyris, 1991).

### Requirements Gathering Process

Gathering and interpreting useful requirements is tricky even for experienced analysts (Robertson & Robertson, 2013). To introduce students to this idea, students worked in pairs. Everyone was asked to imagine his or her perfect wedding or Super Bowl party. Each student interviewed his or her partner to gather the partner's requirements for the event and to write them down on a piece of paper. Students felt fairly confident about their lists. Then, to simulate a real project, students' lists were swapped with a pair across the room or at another table. Then, they were asked to plan the event described by the requirements, but many found they couldn't. They did not have enough information.

This exercise helped students understand why requirements need to be specific and measurable. Students learned how to interview a stakeholder, actively listen, and probe for better information. During the class discussion, students drafted questions they should have asked to clarify requirements. For example, most students wrote "food" without specifying what kind and how much. It also brought students closer together and improved their emotional intelligence, in that they began to realize that they need to explain what their communication means in clear and specific terms. This exercise laid the groundwork

for the norming process to transition into performing (Tuckman et al. 1977).

A second activity to teach students about EQ in project management was a story puzzle. Each student was given a random snippet on a slip of paper, where each snippet was part of a well-known fairy tale story with slight modifications to make it slightly less obvious. In this case, the story of Snow White was modified by deleting words such as "the magic mirror", "Snow White" and "dwarves". The class worked as a team to make sense of the storyline and to build a mental model of the final product. This exercise was harder than it seemed, because pieces were missing, as often happens on real projects. Even once students identified the story as Snow White, they did not put the events in the correct order. It was about 75% correct, which is good enough for the first prototype of most IT systems, particularly in agile environments with limited resources and tight time constraints (Ambler, 2003).

### **Cost Estimating**

People are notoriously bad at estimating activity costs and durations, but they do slightly better when they work as a group (Schwalbe, 2010). Students worked together to estimate the cost to host their personal Super Bowl party. Despite the familiar theme of the task, students' estimates were excessive. They estimated it would cost between \$32 and \$180 per person to host a Super Bowl party. (In 2011, Americans spent on average \$118 to host a Super Bowl party (Statista 2012).) Despite their gross overestimations, the act of working together in a small group to create cost estimates improved their understanding of the task. To complete the exercise, students had to listen and respond to peers and to research and support their contributions with facts.

### **Dealing with Stakeholders**

Stakeholders can make or break a project (Schwalbe, 2010). Two class activities specifically focused on dealing with stakeholders. The first exercise taught students how to assess stakeholders' power and interest on a project. The class was divided into one of two roles: stakeholder or project team. Each stakeholder was given a job title and how he or she felt about the project (resistant, unaware, supportive, leading, or neutral). Stakeholders chose their level of interest and power based on their job title, while the project team designed a plan to assess the stakeholders. In this exercise, the project under development was to replace an existing electronic health record ("EHR") system in a hospital. The example cards given to students for this exercise are shown in Table A.3. in the

Appendix. Stakeholders roleplayed their assigned jobs, while the project team was tasked with interviewing the stakeholders. Stakeholders' roles were kept secret from the project team, but stakeholders could talk amongst themselves. The project team then categorized the stakeholders into a power/interest grid based on their findings before the class debriefing.

A second stakeholder exercise focused even more directly on reading people's emotions. This exercise was loosely based off "The Dating Game" from the TV show "Whose Line Is It Anyway?". Half the class was assigned to the project team, while the other half observed. Each team member received a "secret identity." Each identity was a unique emotion-based role that described how the team member felt about the project. These roles are provided in Table A.4. in the Appendix. The project team then met to discuss the project's status. For this exercise, it was helpful to choose a charismatic, outspoken student to lead the meeting to prevent the exercise from stalling. After the meeting, the rest of the class tried to identify the emotions they observed.

Note that these exercises required a full class period to perform and debrief. "The debriefing is the most important part of the role-play" (Nickerson, 2007, p. 3). During debriefing, students solidify what they learned from the exercise by discussing what happened, what it means, and how they will use it in their careers. Roleplay can increase empathy and understanding, which are vital to increased EQ (Nickerson, 2007). Students found these activities interesting and engaging, which are key components of active learning.

### **Utility and Risk Management**

Risk is a complicated concept. To help students assess their understanding of risk, they first rated their personal risk preference on a risk utility graph on the whiteboard (averse, neutral or seeking). Curiously, most students ranked themselves partway between seeking and neutral. This exercise prepared the class to discuss the differences between risk strategies. Students' risk strategy rankings are shown in Figure A.5. in the Appendix.

To test these risk preferences, students played a short game of "Deal or No Deal" using an Excel spreadsheet (Sloman, 2009). Most students quickly discovered that when money is involved (even pretend money), they are far more risk-averse than they initially thought, although one student switched to risk-seeking. All students

agreed that their risk assessment would change, depending on the circumstances.

#### **Regular Assessment**

At the end of each class period, students completed a minute paper on Socrative (Stead, 2005). The minute paper asked students what they learned for the day and if they had any additional questions. The minute paper is a useful yet seldom-used tool to gauge whether students have learned the day's material, to encourage students to reflect on what they've learned, and to solicit questions that can be researched and discussed at the next session.

#### **Adjourning**

On the last day of class and to celebrate the end of the semester, we took a group photo of the class. Remarkably, students did not find it unusual and they did not need prompting to complete the exercise. Class adjourned on a positive note.

### **4. STUDENT LEARNING OUTCOMES**

To gauge the effects of these interventions on student learning outcomes, at the end of the semester, students were asked to complete a brief survey on Survey Gizmo. Seventeen out of the 24 students completed the survey, or about 70% response rate. The survey was optional and anonymous and unrelated to students' final grades. Out of these respondents, 70% said it was the first class where they were encouraged to move furniture. The other 30% had taken another active learning class, which is unsurprising because the active learning classrooms had been in use across campus for at least two years.

Students were asked to identify what skills they feel confident they can do and to rank these skills by order of importance to their career. Students felt most confident about critical thinking and interpersonal skills (83.3%), followed by team building (77.8%), effective communication and organizational skills (66.7%), and leadership skills and project leadership (61.1%). Students then ranked the skills from most to least important as follows: (1) critical thinking, (2) interpersonal skills, (3) team building, and (4) effective communication.

Students were asked to compare this class to other classes on campus as to amount of material, retention of material, use of lecture or in-class activities, usefulness, and interest. Most students ranked the course above the mean in terms of more material, retention, in-class activities, usefulness, and interesting. As a

control, students were asked "what is a critical path". Two-thirds of students correctly identified it as the longest path through the schedule, and one-third identified it as the shortest path. Even in industry, there is some debate on this issue (LePage, 2013).

As shown in Table A.1. in the Appendix, students reported that the classroom format and in-class activities were useful, engaging and improved their learning. It should be noted that when asked if the class should be taught in a "standard format" the students overwhelmingly agreed that the active format was better (56.3% either disagreed or strongly disagreed that a standard classroom would be better, while only 18.8% felt that a standard classroom would be better). Additionally, only 13.3% of the students felt that a lecture would have been a better way to learn the material, while 60% agreed that the active learning environment was better.

The students also noted significant learning of the soft skills that the intervention was designed to improve. One student commented, "I have learned more skills in this class than any other course I have taken during my tenure in college." Another student wrote "Be prepared to interact and learn in a different way." "Take full advantage of everything that the classroom has to offer."

Students noticed that they had to step up their game in this environment. The class format put the onus to learn on the students. As one student wrote, "This type of class puts the responsibility to learn a little more on the student. You must be engaged and willing to participate to get the full effect of this kind of class."

The intimate classroom arrangement improved students' learning and increased communication skills. Students felt more comfortable talking to and interacting with peers. As one student wrote, "Don't be nervous about public speaking, because by the time you're done with that class, you'll be comfortable to talk in front of your whole class." Plus, they got to know their classmates better. One student said that it "shares similarities to real world meeting rooms." It "made presentations and group work more fun and interactive." When asked what they would change about the room, the most frequent suggestions were nothing, to use round tables instead of rectangular ones, and to have a bigger room.

Students' most significant learning experiences included communicating with others, emotional intelligence, critical thinking, group discussions, hands on activities, drawing pictures to help

understand, role playing games, and team work exercises. Students' least interesting or least useful learning experiences were not having group discussions every day and anything with math formulas. One student wrote "I cannot recall an experience during the semester which was not useful."

One student appreciated that "getting to put your individual ideas on the board and learning from each other made learning seem more fun and interesting, because every student had a different point of view on a specific subject." When students have serious fun, their brains are more engaged in the task. They are more likely to experience higher order thinking, to retain difficult concepts, and to make vital mental connections (Willis, 2006).

Considering the small sample size and the potential bias of self-reports, these results should be viewed as a qualitative proof of concept, in that students recognized the usefulness and importance of the active learning interventions. Although these activities worked in this class one semester, it is possible they may not work in all project management classes. Future studies could assess students' soft skills pre- and post-intervention of these activities with a more rigorous survey instrument and compare results across different classrooms to test their effects.

## 5. CONCLUSION

Project management is one of the fastest growing positions for IT/IS professionals. Employers "need students to understand problem solving, interviewing clients and developing solutions to problems involving technology" (Janicki, Cummings, & Kline, 2014, p. 66). This research presented an active learning method to increase students' soft skills and emotional intelligence in a project management classroom. Based on the evidence collected in the classroom, this approach engaged the students in the learning process and improved interpersonal skills.

Conveying tacit skills and emotional intelligence are not as straightforward as increasing standard skill sets, and we believe that the intervention presented in this paper can be applied to other classrooms to aid student learning. This research presented ways to incorporate these skills into the curriculum without sacrificing quality. As we improve the EQ of future project managers, we expect to see more IT projects succeed.

## 6. REFERENCES

- Adams, J., & Morgan, G. (2007). "Second generation" e-learning: characteristics and design principles for supporting management soft-skills development. *International Journal on ELearning*, 6(2), 157-185.
- Ambler, S. (2003). Agile model driven development is good enough. *IEEE Software*, Sept/Oct, 71-73.
- Argyris, C. (1991). Teaching smart people how to learn. *Harvard Business Review*, May/June, 99-109.
- Cockburn, A. & Highsmith, J. (2001). Agile software development: the people factor. *Software Management*, Nov, 131-133.
- Connolly, A. & Lampe, M. (2016). How an active learning classroom transformed IT executive management. *Information Systems Education Journal*, 14(1), 15-27.
- Cowie, G. (2003). The importance of people skills for project managers. *Industrial and Commercial Training*, 35(6-7), 256-258.
- Crane, L., & Bontis, N. (2014). Trouble with tacit: developing a new perspective and approach. *Journal of Knowledge Management*, 18(6), 1140-1127.
- Crowe, A. (2006). Alpha project managers: what the top 2% know that everyone else does not. *Velociteach*.
- Davidovitch, L., Parush, A., & Shtub, A. (2006). Simulation-based learning in engineering education: performance and transfer in learning project management. *Journal of Engineering Education*, 95(4), 289-299.
- De Piante, J. (2010). The soft part is the hard part. *PMI*. Retrieved from <http://www.pmi.org/learning/communicate-clearly-effectively-soft-skills-6621?id=6621>.
- Gan Kok Siew, B., Joshi, K. D., Lending, D., Outlay, C., Quesenberry, J., & Weinberg, R. (2014, May). Active learning approaches in information technology (IT) pedagogy. In *Proceedings of the 52nd ACM conference on Computers and people research* (pp. 113-117). ACM.
- Hastie, S. & Wojewoda, S. (2015). Standish Group 2015 Chaos Report – Q&A with Jennifer Lynch. *InfoQ*. Retrieved from <https://www.infoq.com/articles/standish-chaos-2015>.

- Herschel, R. T., Nemati, H., & Steiger, D. (2001). Tacit to explicit knowledge conversion: knowledge exchange protocols. *Journal of Knowledge Management*, 5(1), 107-116.
- Janicki, T., Cummings, J., & Kline, D. (2014). Information technology job skill needs and implications for information technology course content. *Information Systems Education Journal*, 12(6), 59-70.
- Jewels, T. & Bruce, C. (2003). Using a case method approach in an IT project management curriculum: a long look over the shoulder of a practitioner at work. In Informing Science + IT Education Conference Proceedings, *Informing Science Institute*, Pori, Finland, 649-661.
- LePage, M. (2013). Critical path vs longest path. *Plan Academy*. Retrieved from <https://www.planacademy.com/critical-path-vs-longest-path>.
- Mitchell, G. W., Skinner, L. B., & White, B. J. (2010). Essential soft skills for success in the twenty-first century workforce as perceived by business educators. *Delta Pi Epsilon Journal*, 52(1), 43-53.
- Nickerson, S. (2007). Role-play: an often misused active learning strategy. *Essays on Teaching Excellence: Toward the Best in the Academy*, 19(5), from <http://podnetwork.org/content/uploads/V19-N5-Nickerson.pdf>.
- O'Brien, M., Leiman, T. & Duffy, J. (2014). The power of naming: the multifaceted value of learning students' names. *QUT Law Review*, 14(1), 114-128.
- Pazhani, S. S., & Priya, T. S. (2012). Need for soft skills development towards managerial efficiency. *International Journal of Management Research and Reviews*, 2(11), 1895-1901.
- Peterson, D. (2015). How to play the ice breaker game People Bingo. Retrieved from <http://adulted.about.com/od/icebreakers/qt/peoplebingo.htm>.
- Poston, R. S., & Richardson, S. M. (2011). Designing an academic project management program: a collaboration between a university and a PMI chapter. *Journal of Information Systems Education*, 22(1), 55-72.
- Reinicke, B., & Clark, U. (2010). Moving data, moving students: involving students in learning about internet data traffic. *Information Systems Education Journal*, 8(57), 3-16.
- Robertson, S. & Robertson, J. (2013). Mastering the requirements process: getting requirements right. Pearson Education, Inc., Westford, Mass.
- Schwalbe, K. (2010). IT project management. Boston, MA: Cengage Learning.
- Scott, L. (2010). People skills and the new project managers. *PMI.com*. Retrieved from <http://www.pmi.org/learning/professional-development/career-central/people-skills-and-the-new-project-manager.aspx>.
- Sivan, A., Wong Leung, R., Woon, C., & Kember, D. (2000). An Implementation of Active Learning and its Effect on the Quality of Student Learning. *Innovations In Education & Training International*, 37(4), 381-389.
- Sloman, J. (2009). Deal or No Deal – an expected value game. *The Economics Network*, from [https://www.economicsnetwork.ac.uk/showcase/sloman\\_deal](https://www.economicsnetwork.ac.uk/showcase/sloman_deal).
- Statista. (2016). Average spending on Super Bowl parties in the U.S. 2012. *The Statistics Portal*, from <http://www.statista.com/statistics/249514/super-bowl-party-average-spending-in-the-us>.
- Stead, D. R. (2005). A review of the one-minute paper. *Active Learning in Higher Education*, 6(2), 118-131.
- Tuckman, B. W., & Jensen, M. A. C. (1977). Stages of small-group development revisited. *Group & Organization Management*, 2(4), 419-427.
- Tynjälä, P., Pirhonen, M., Vartiainen, T. & Helle, L. (2009). Educating IT project managers through project-based learning: a working-life perspective. *Communications of the Association for Information Systems*, 24(16).
- Willis, J. (2006). Research-based strategies to ignite student learning: insights from a neurologist and classroom teacher. Association for Supervision and Curriculum Development, Alexandria.
- Zheng, J., & Li, Z. (2016). Engaging students as co - lecturers in information systems and technology courses. *Information Systems Education Journal*, 14(3), 76-84.



**Appendix**

**Table A.1. Survey Results**

<b>Rate your agreement with the following statements.</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly disagree</b>
I would recommend this class be taught in a normal classroom in the future	6.3%	12.5%	25%	25%	31.3%
I learned more in the active classroom compared to my other classes	43.8%	18.8%	25%	0%	12.5%
Because of the furniture arrangement, I was forced to participate in class more	53.3%	20%	20%	6.7%	0%
The classroom kept me on my toes	37.5%	37.5%	18.8%	0%	6.3%
I would have preferred a more traditional lecture format to learn the material	13.3%	0%	26.7%	20%	40%
I felt that I came to class prepared	31.3%	43.8%	18.8%	6.3%	0%
After class, I found it useful to go back and review the materials we created together	18.8%	43.8%	18.8%	12.5%	6.3%
I will use the concepts and skills we learned in class in my future career	43.8%	37.5%	18.8%	0%	0%
The active learning classroom was fun	43.8%	43.8%	12.5%	0%	0%
I felt challenged by this class	31.3%	37.5%	12.5%	6.3%	12.5%
Every day was an adventure	31.3%	18.8%	37.5%	0%	12.5%
I would have understood the material better if we had had lectures every day	12.5%	18.8%	25%	18.8%	25%
Project managers must have emotional intelligence and soft skills to succeed	62.5%	31.3%	6.3%	0%	0%

**Figure A.1. Discussion Rules**

- Don't talk while someone else is talking.
- Think before you speak.
- Everyone should participate.
- Respect everyone's ideas.
- Be engaged in the discussion.
- Be attentive.

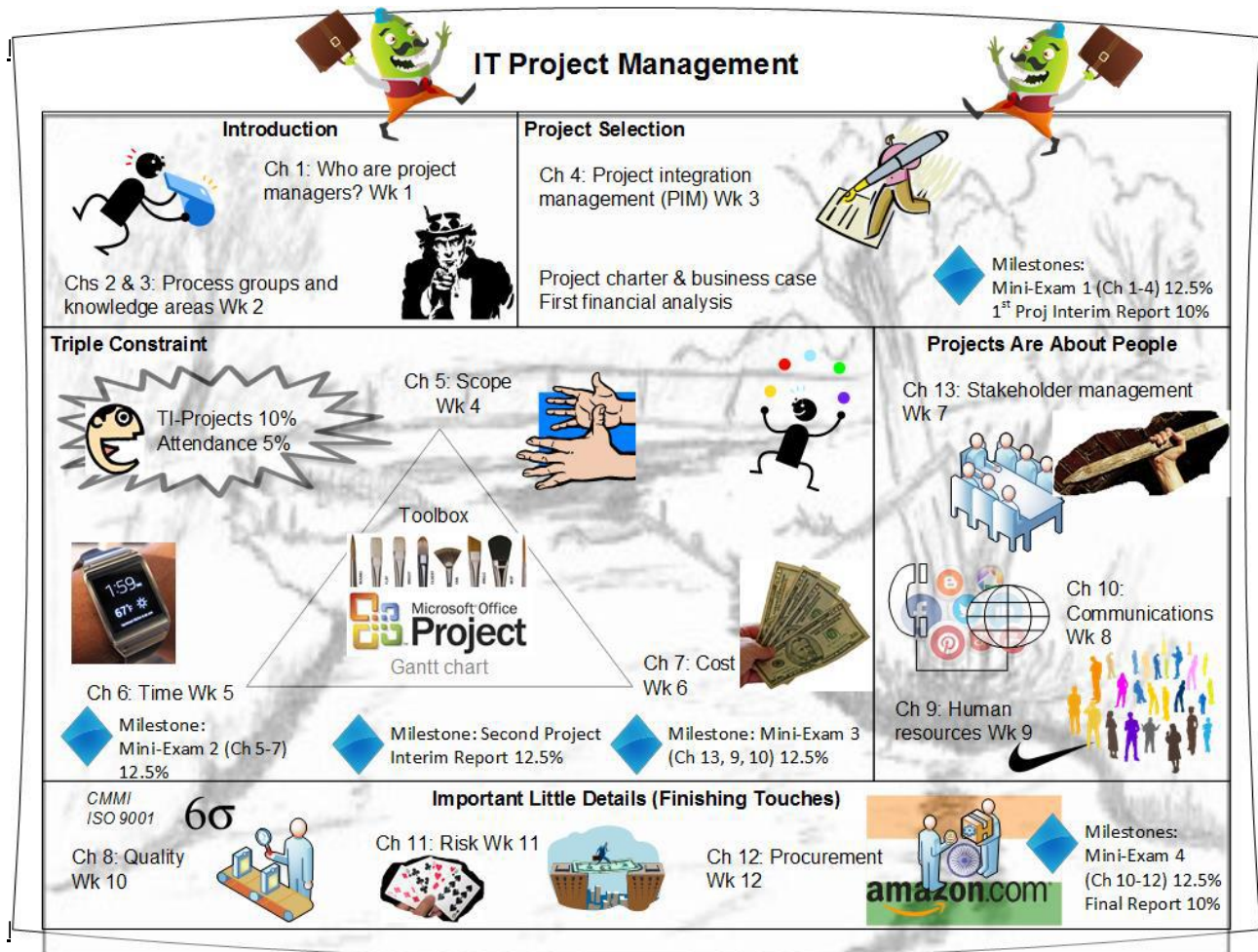
**Table A.2. Icebreaker Bingo**

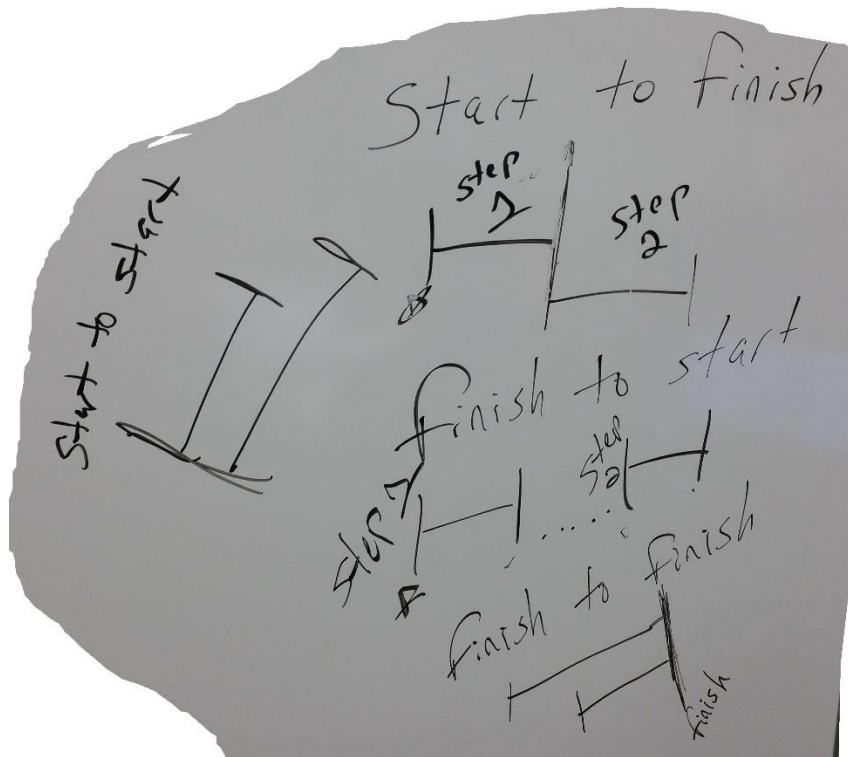
Has a pet	Wears glasses or used to wear glasses	Wearing blue today	Has an iPhone or iPad	Wildcard
Pays for TV cable	Did an internship	Prefers Android	Prefers online classes	Works in an IT department
Owens a Roku or other TV on demand device	Graduating next fall semester	Something about me	Has lived on campus	Likes to clean house or organize messes
Wildcard	Taken an online class	Graduating this spring semester	Worked in retail	Does work "just-in-time" (not early)
Prefers in-person class	Attended community college	Wildcard	Shopped Black Friday sales	Works in a healthcare setting

**Figure A.2. Active Learning Classroom**



**Figure A.3. Graphic Syllabus**





**Table A.3. Stakeholder Exercise to Build Power/Interest Grid**

<p><b>New Patient</b> Interest: _____ Power: _____ <u>Resistant</u></p>	<p><b>New Physician</b> Interest: _____ Power: _____ <u>Unaware</u></p>	<p><b>Hospital CIO</b> Interest: _____ Power: _____ <u>Supportive</u></p>
<p><b>Current EHR Vendor</b> Interest: _____ Power: _____ <u>Resistant</u></p>	<p><b>IT Staff Person</b> Interest: _____ Power: _____ <u>Leading</u></p>	<p><b>State Legislature</b> Interest: _____ Power: _____ <u>Unaware</u></p>
<p><b>New EHR Vendor</b> Interest: _____ Power: _____ <u>Leading</u></p>	<p><b>Department Administrative Assistant</b> Interest: _____ Power: _____ <u>Resistant</u></p>	<p><b>Head Shift Nurse</b> Interest: _____ Power: _____ <u>Neutral</u></p>
<p><b>Physician About to Retire</b> Interest: _____ Power: _____ <u>Neutral</u></p>	<p><b>X-Ray Technician</b> Interest: _____ Power: _____ <u>Leading</u></p>	<p><b>Billing Specialist</b> Interest: _____ Power: _____ <u>Neutral</u></p>

**Table A.4. Stakeholder Exercise Related to Emotional Intelligence**

Ecstatic that project is ahead of schedule	Angry that project is behind schedule	Preoccupied with another project because the other project manager makes more demands on my time
Concerned that no one takes me seriously when I speak in meetings	Frustrated because too much work has left no time for family	Worried because kids are sick at home without a sitter
Happy, no matter what goes wrong - unflappable	Apathetic - I don't care what happens because nobody listens anyway	Scared I'll be fired any day because I feel like an imposter here
Sad about a death in the family	Sick with flu-like symptoms and I took lots of cold medicine	Confused about what I'm supposed to be doing on this project