Advantages of service-learning projects to enhance online project management education

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Abstract

Innovative project management education methods can be used to teach the practical use of project management skills. As the demand for project managers continues to be strong these methods are important to produce new project managers who obtain practical experience during their project management education. One of these methods, experiential learning, was used in a service-learning project for a graduate online project management course. Qualitative data was collected from student surveys and reflections to determine which specific project management skills were impacted and potentially enhanced through participation in a real project. Results showed several project management power skills and technical skills were enhanced, i.e., communication, problem-solving, adaptability, risk analysis, project scheduling, and requirements gathering. Overall, positive reactions from the students, sponsors, and mentors indicate this learning method has value in learning the practical use of project management skills.

Keywords: project management, experiential learning, service-learning, power skills, online education, higher education pedagogy

INTRODUCTION

One of the goals of teaching project management in business higher education would be to enable students to learn project management processes, tools, and techniques and to prepare them for the practical use of these new skills in the workplace. There are several innovative project management learning methods, including serious games, simulation games, virtual reality, augmented reality, learning-by-doing concepts (i.e. experiential learning), and Massive Online Open Courses (MOOCs). These innovative methods have been used over time and are growing in popularity (Noskova & Jelinkova, 2023). The importance of selecting an appropriate project management education learning method is related to the practical use of the skills as cited in recent research, "this subject needs to be practiced in real life" (Noskova & Jelinkova, 2023, p. 41). Noskova & Jelinkova (2023), in their recent systematic literature review, found learning-by-doing was not used in online courses, but instead, the project management studies they found from 2003 to 2023 were focused on face-to-face courses. Their research highlighted the need to explore methods used in online courses. This research study describes the use of an experiential learning teaching method in a graduate online project management course with promising results. The study contributes to knowledge on the use of innovative teaching methods for project management education, especially for online education courses.

The need for project management education that enables students to put their skills into action as soon as they enter the workplace is evidenced by employers supporting this notion. In research by Jaiswal-Dale, Owens, and Bensen (2021) where they received feedback from prospective employers, the employers indicated students hired as new project management employees often needed a little more to prepare them for the workplace such as "a long period of 'internship/training/mentoring'" (Jaiswal-Dale et al., 2021, p. 165). Experiential learning can jump-start students on their road to practical experience. Noskova & Jelinkova (2023) also support the importance of practicing project management skills, "some of the phases can be learned from books, while others cannot and must be trained in practice (e.g., the execution phase of the project)" (Noskova & Jelinkova, 2023, p. 41). The researcher in this study found it can be especially difficult to teach students without prior project management experience how to manage projects strictly from reading a textbook. This is particularly true if their prior work experiences are not at a professional level, such as that found in minimum wage jobs, or if they have never been responsible for anyone else's work except their own. Learning by doing, otherwise known as experiential learning, has the advantage of providing students with experience on a real project. It can also give them a competitive edge when searching for project management positions or seeking a promotion to a project management position. Students completing this assignment were encouraged to include their real project on their resume and discuss it in job interviews.

Service-learning projects were the vehicle for the experiential learning concept. First, using the traditional waterfall approach and then later transitioning to the Agile Scrum approach. This paper will only focus on the assignment when the traditional waterfall approach was used. The service-learning aspect of the project allowed students to experience how their skills could be used to bring value to a non-profit organization. This is important since hiring a project manager is not something a non-profit can usually afford, and students would be able to see the value of their project management skills outside of their jobs. Additional research emphasizes the importance of practical project management education, "project management teaching and learning (PMTL) designed to develop future project leaders requires both knowledge acquisition

and practical application to ensure that theory and practice converge with deep learning." (Ang, Afzal, & Crawford, 2021, p. 1). The evidence of literature on several innovative methods suggests educators should use different teaching methods so that all students can learn effectively (Noskova & Jelinkova, 2023, p. 49). This leads to the research question which investigates the effectiveness of an innovative method.

RQ1: How effective are experiential learning/service-learning methods in an online project management course for obtaining a practical understanding of traditional waterfall project management processes?

This research study used reflections from students and sponsors participating in a project management service-learning assignment as well as qualitative data collected from students. The goal was to determine which specific project management processes and techniques students used and mentioned to determine if this learning method was effective. The next section of this paper will share a review of related literature on project management education methods. That will be followed by a description of the research methodology. The remainder of the paper will present and discuss the results of the reflections and qualitative data and will end with conclusions.

LITERATURE REVIEW

Project management education is particularly important as the demand for project managers continues to be strong. The Talent Gap report from PMI indicates by 2030 there will be a need for 25 million new project professionals. This increased demand is driven by more industries embracing project management, growth in developing countries, and the retirement of project managers (PMI, 2021). Demand for improved quality of project management education should accompany this growth. This leads to an interest in innovative project management education methods.

Educating students on the actual use of project management skills can be a challenge. Some soft skills also referred to as power skills, such as communicating with stakeholders, addressing conflict, navigating delays, resolving issues, and negotiating changes, are difficult to teach from reading a textbook. Several innovative methods can be employed to help students gain a better understanding of these situations such as using case studies and even simulations. However, communicating with a live stakeholder allows students to explore many different aspects of stakeholder engagement and sheds new light on processes such as how to determine project requirements or how to inform the stakeholder of delays or changes. When navigating traditional waterfall project management processes, a major issue, for example, is performing tasks when working with a real stakeholder who is likely to request changes during the project or keeping a project on track while dealing with an issue. Therefore, the next level of engagement involves experiential learning.

Experiential learning uses aspects of experiential learning theory (ELT), a holistic model of the experiential learning process. The learning in this assignment is most related to the proposition of ELT, which focuses on relearning that uses what the student has learned about specific topics, i.e. project management processes, and allows them to examine and test their learning (Kolb & Kolb, 2005). A real project is a good candidate to be a vehicle for experiential learning, i.e., "Experiential learning is constructing knowledge and meaning from real-life experience" (Yardley, Teunissen, & Dornan, 2012, p. 161). Service-learning is a type of experiential educational method where the student learns concepts from their course while also

performing community service. This research study used an assignment in a graduate project management course that was developed to effectively teach traditional waterfall and then agile project management processes while preparing students to immediately use the learned skills in the workplace. The main focus was on two categories of project management skills: power skills and technical skills.

Power Skills

Soft skills, which are often referred to as "power skills", have always been important for project managers, however, they are not easy to incorporate into project management education. First, it can be difficult to find books on those topics that relate to the unique position project managers are in when it comes to their relationship and/or authority over their project team. Additionally, power skills cannot usually be taught by giving step-by-step instructions. For example, I cannot teach effective communication with team members by listing a specific set of steps to follow. However, power skills are necessary and are often the skills most lacking in project managers. The PMI Pulse of the Profession 2023, which is created from the results of the Annual PMI Global Survey discusses the importance of power skills. The 2023 report emphasizes these skills for successful project managers; "Power skills — also known as interpersonal skills or soft skills such as communication, problem-solving, and collaborative leadership — are proving essential for project professionals" (PMI, 2023, p. 4). The report highlights organizations that emphasize the use of power skills have an advantage over other organizations in how they complete their projects, "organizations that place a high priority on power skills are significantly better at completing projects that meet business goals" (PMI, 2023, p. 8). This reasoning supports the need for improving the power skills of students in project management higher education courses. Experiential learning methods, with their focus on real-life experiences, are natural ways to allow students to practice their power skill development.

Technical Skills

The other main category of project management skills is technical skills. The 2023 Pulse of the Profession puts in perspective the importance of both power skills and technical skills; "Power skills work in concert with technical skills to bring new definition to an organization's project success" (PMI, 2023, p. 4). Examples of technical skills are risk management, project scheduling, and project reporting. These types of skills can be easier to teach using step-by-step instructions and/or an exercise or case. The bottom line is both types of skills must be taught in project management education and some kind of practice is needed to enhance the learning.

RESEARCH METHODOLOGY

The researcher who taught these online graduate project management courses, which were part of a graduate project management certificate, began in 2016 to search out ways to enhance the courses. This eventually resulted in the service learning/experiential project that was an assignment in one of the courses. The main goal was to provide students with experiences that would enable them to use their newly learned skills in the workplace. This was in line with prior research on the need for actual experiences in project management education (Jaiswal-Dale et al., 2021; Noskova & Jelinkova, 2023). Computerized simulation (an innovative learning method)

was the first learning method used to help achieve this goal. The simulation (SimProject) took students through managing a traditional waterfall project with obstacles to overcome. The instructors found this type of simulation enhanced text-based learning in several project management knowledge areas such as scope, time, cost, risk, human resources, communication, stakeholder, and quality management (*provided upon acceptance*). The skills practiced during the simulation were both power skills (i.e., conflict resolution) and technical skills (i.e., budgeting and resource allocation). The simulation was found to be useful since students enjoyed the experience and were also able to practice project management skills. Case studies were also used to simulate projects. For example, in the case study, during initiation, students read about stakeholders and were then required to create a stakeholder register and strategy analysis by recording the names and documenting strategies to manage communication with them. The instructor found this was often the last time students thought about stakeholders on the project in the case. This is a problem since, in reality, stakeholders can make or break a project and have a significant impact on project success throughout the life of the project. While the importance of stakeholders is difficult to teach in a case it is something students are confronted with more than once while participating in a real project. In a real project, students must take time to get to know the stakeholders, build trust, and work to prevent conflict. The advantage of a real project is the interaction with live stakeholders who have different types of personalities and behaviors, some helpful to the project and some not. For example, some stakeholders in this assignment knew what they wanted and could clearly communicate it while others were not as clear. In any case, the student team members must build a relationship with the stakeholders which cannot be done when working on a case study.

In 2020, the researcher began discussions with instructors at another university on the feasibility of a service-learning project. The two groups held meetings and created a framework together. However, full collaboration was not able to be established. Therefore, the first running of this assignment began as a stand-alone project at a large public university in the southeast United States in the **Spring of 2021.** The project is still running; however, it has morphed over time to first teach traditional waterfall methods and then agile project management processes. This paper will focus only on the semesters where the traditional waterfall project management methodology was used in 2021 and 2022.

Service learning was selected as the experiential learning method because students would be able to practice their project management skills while also helping a non-profit organization. Although project management expertise is often needed by many non-profits, the expense of a project management consultant is often prohibitive for them. Therefore, the introduction of project management techniques can be helpful to a non-profit while also providing them with a learning experience that could help the sponsors with future projects. Between 2021 and 2022 when this project was conducted using traditional waterfall methods, students worked in teams of four or five to help a total of 16 non-profit company sponsors to plan and organize a wide variety of projects. The organizations were in the following categories: food pantries and soup kitchens, senior services centers, after-school programs, disability services organizations, environmental preservation organizations, food banks, museums, elementary schools, and STEM programs. The projects varied widely and included having the student teams work on the following types of deliverables: marketing plans for the non-profit, planning of fundraising events, data collection in preparation for grant writing, planning of celebration events, enhancing community awareness and/or community engagement of the organization, planning for the preparation of a significant build, and management/tracking of organization volunteers.

Service-learning assignment details

This section will describe required planning and preparation for the service-learning project assignment. The work began prior to the start of the semester with the instructor identifying local organizations and contacting them to inquire about their interest in being a sponsor and participating in the projects with students. This took some time and generally required a virtual meeting between the instructor and the potential company sponsors who were also sent a one-page document with an overview of the project and potential deliverables. Potential organizations were approached because they had an existing relationship with the university or were recommended by students. After conducting this project for several years, it became difficult to find new local organizations and sponsors.

Approximately six organizations were selected each semester and once the semester began, students formed teams. The instructor introduced the project to the students during a virtual session. Students were also given written instructions detailing what they were to do during the project and a list of project deliverables and due dates. Teams were allowed to choose from the organizations curated for their semester and were then given the name and phone number of a contact person from the organization. An important part of the success of the projects was the volunteer mentors from the local Project Management Institute (PMI) chapter. Each mentor was assigned to work with a team throughout the semester to help answer the teams' questions about running a project, give advice, and answer questions about their careers as project managers. The PMI chapter mentors for the semester were also allowed to choose the organization they were interested in, and teams were given their contact information. Students and mentors were allowed to choose their own projects to enable team engagement. For example, one of the teams was extremely enthusiastic about their project working with an animal rescue organization and produced many great suggestions based on their own experiences. The local PMI chapter was also enthusiastic and worked through their Social Good committee to provide a volunteer coordinator for the mentors. It is important to keep in mind everything for this project was conducted virtually, i.e., students met virtually with sponsors and mentors. However, they never met the sponsor or mentor in person or visited the site locations face-to-face. This was a difficult adjustment for some students and for some sponsors, but in the end, neither group indicated it was a disadvantage in their reflections. The expected value of this fully virtual project was in having students participate in the successful completion of a real project with all the ups and downs of a face-to-face project as well as learning how to conduct a project through virtual engagement.

Student teams were given a timeline for project deliverables, i.e. assignment due dates. Teams were also given guidelines for meeting with the mentor and company sponsor such as limits on the number of meetings to conduct so they would not overwhelm either the sponsor or the mentor. A strict rule was implemented by the instructor for the teams to create agendas and meeting minutes for all meetings to encourage productive meetings. The project was worth 50% of the grade and the semester ran 15 weeks. Table 1 (Appendix) shows a rough timeline the student teams were given for meetings and due dates for the assignment deliverables. Student teams took the initiative to set up and conduct their own meetings. Additionally, the instructor provided support through an initial Q&A session, a discussion forum, and recorded videos on potentially difficult topics such as how to work with stakeholders to extract details about their projects and how to prepare for meetings with stakeholders. At the end of the semester, mentors

and sponsors were invited to the virtual student presentations where teams shared their findings and recommendations. The presentations were well attended by the sponsors and the mentors.

RESULTS AND DISCUSSION

Data was collected during the semester using several vehicles: 1) student surveys, 2) student reflections, 3) sponsor surveys, and 4) project artifacts. 66 students completed surveys about the project, at the end of the semester in 2021 and 2022. Most of the data was qualitative and came from student surveys and reflections. This data was analyzed to answer the following research question: RQ1- How effective are experiential learning/service-learning methods in an online project management course for obtaining a practical understanding of traditional waterfall project management processes?

To determine the benefits to the students from the assignment they were asked to discuss lessons learned from conducting the project. The effectiveness of the learning method was determined by reviewing answers to two specific questions in the survey:

1) List at least one lesson learned from the project

2) Write a comment about the project and its value for you.

The criteria for effective learning were when the answers to either question referred to the use or understanding of specific project management processes, tools, or techniques. A thematic analysis method was used to identify themes related to the project management processes from these answers. These themes were then grouped into two categories important to managing projects: 1) power skills and 2) technical skills. In addition to categorizing the answers, the information was analyzed to determine if the project experience appeared to have enhanced the learning. The goal was to determine which project management processes were referred to most often or which answers most strongly demonstrated enhancement of the skill by students during the real project.

After analyzing the qualitative data those project management processes that were impacted and likely enhanced by participation in the real project assignment are documented in Figure 1 (Appendix). They are grouped by power skills and technical skills. Power skills were seen as critical and both are documented in the PMI 2023 Pulse of the Profession Report (PMI, 2023). The following results and discussion will describe the skills impacted and most likely enhanced by student participation in a real project.

Power Skills

The overwhelmingly popular response referred to by the teams from the survey was the power skill of communication, which was broken down into two types: 1) communication between the sponsor and the team, and 2) communication amongst the team. Specifically, survey responses referred to both clear and open communication with the sponsor particularly dealing with the project goals and objectives. This was not surprising and mimics real projects in organizations, which makes it valuable for students to experience first-hand. Prior research references both the need for effective communication and the importance of good communication skills for students,“multi-modal communications and collaborative competencies are crucial for project management graduates in the contemporary workplace” (Ang et al., 2021, p. 9). Students taking the survey referred to issues with sponsors who didn’t know what they wanted out of the project, i.e., clear goals, and objectives. This sometimes occurred because the

project team did not do an effective job with requirements gathering from the sponsors, however, it also occurred because sponsors changed their minds after the project started or did not have a clear idea of what they wanted at the beginning of the project. Another issue with sponsor communication was emphasized as a need for open lines of communication with the sponsor, suggesting it was sometimes difficult to get in contact with the sponsor or set up meetings with the sponsor. This real project experience was a good opportunity for students to see how a seemingly small issue can derail a project early on and often requires the use of problem-solving skills. Some team reflections on lessons learned about communication are as follows:

- "The importance of a clear understanding when working with your project sponsor of what they are truly looking for. As we worked our way through the project, there were multiple times, we had to go back to the project sponsor to clarify what we understood and what they were understanding and expected. Communication is key."
- "The importance of asking the correct questions in order to get the right answer."
- "This project allowed me to recognize how a project can easily get off track or stall because of miscommunication. Aligning the project goals with the sponsor and project team will contribute to successful execution."

Another highly cited issue was **team communication**. This was sometimes due to a breakdown of communication amongst the team members about what was to be done, how it was to be done, and who would do which tasks. This is expected since the teams were newly formed and had likely not gelled yet. Evidence of enhancements to communication skills for the students was found in some of their problem-solving techniques. For example, some teams adjusted well to virtual meetings and lessened communication issues by designating one team member as the single point of contact for sponsors who delivered and received all communication between the team and the sponsor. This technique worked well and demonstrated a high level of professionalism to the sponsors while also teaching the students how to work effectively with stakeholders. Some teams referenced the different working styles of team members, which led to communication issues. Project managers are aware of differences in communication styles and preferences as evidenced by the project management process to create stakeholder communication plans. One way used to address this issue was through the creation of a team contract resulting from a group discussion of team rules and guidelines. One student referred to these differences: "The lesson I learned from this project is that not everyone works the same way."

After communication, the next most popular response dealt with the advantages of a **"real project",** in other words, the value of experiential learning. Prior research studies also discovered this benefit, "while working on a real business project, students and company sponsors learn the skills of successful project management" (Jaiswal-Dale et al., 2021, p. 166). Students felt there was value in working on a real project with real people, and even when it didn't go well, they learned valuable lessons to help them personally in their future careers. Comments about the advantage of a "real project" often referred to one or more of the project management power skills and technical skills such as communication, problem-solving, requirements gathering, stakeholder engagement, and risk management. The service aspect of the projects was also noted by some. Some student responses about the "real project" follow:

- "This was so important to learn how to put together a project for a real client. Real-life experiences are what will aid me in my career as I'm dealing with running real projects with real people."

- "I have always felt that real-life experience outweighs any simulated experience. I got to see how *communication* breakdowns happen in real time and how that can affect the project. There was no textbook to help me out and we had to figure out with real people."
- "Working with real-life people helped me to see how to take theories about project management and apply them."
- "Participation in real-life projects teaches you everything that is essential that cannot be learned in a library setting. This project specifically taught our group how to work with nonprofits, how to listen and record information provided by sponsors and mentors in real-time, and how to coordinate meetings with many individuals to effectively utilize everyone's time."
- "This real-life experience has better equipped me to lead projects for my new organization. I learned that a real-life project has more complexities than a case project. I also learned the importance of evaluating risk."
- "The project had good value because we were able to connect with an actual company and attempted to make a **notable impact**."
- "I had very little real-world experience before this, so this was valuable to me because it was real in terms of talking to real people and creating real documents that will be given to a real customer."
- "This helped me learn a real-life application of the things I've learned in other classes."

The power skills of **problem-solving and adaptability** were impacted and potentially enhanced. Teams ran into various issues which they needed to solve to keep the project going such as scheduling timely meetings with sponsors who were already very busy and managing expectations of sponsors. Several times, sponsors believed the students would come to their site and help run the project, although they were told multiple times, and in the beginning, that would not be the case. Students had to manage stakeholder expectations, which would have been difficult to simulate, highlighting another positive impact of a real project. Each issue had to be addressed through team problem-solving, which was often followed by adjustments to the project to resolve the issues. Team members often needed to pivot to maintain a good relationship with the sponsor, which was a learning experience in itself. Although these were real problems, the upside was the exposure students received in a somewhat "safe zone" to be introduced to the issues and work together to resolve them while still maintaining the relationship with the sponsor and not jeopardizing their jobs/careers. Students reflected on adaptability as follows:

- "Projects are constantly changing, and you have to be adaptable and ready to take on the unknown."
- "That often a real case will have more variables that can change as the project develops which will require adaptation. It's one thing to know it intellectually and understand that it can happen, but quite another to experience it firsthand."
- "I enjoyed the chance to work with a non-profit organization and found it a new challange to make recommendations to execute a project for someone that is not a project manager."

Technical skills

Risk analysis, was the most mentioned technical skill that was impacted by the project. This is likely because textbook learning teaches how to analyze risk, document it, and create a plan to deal with it. However, students are often going through the motions to create the assigned deliverable but can fail to understand the importance of the exercise and the danger of not analyzing risks ahead of time. Project teams were able to experience the real need for discussing potential risks and identifying ways to resolve or mitigate the risk as more than an exercise where there was no negative consequence for doing a poor job other than a loss of points. In the real project, teams ran into issues and were generally able to resolve risks and continue on with their project without interruption. Teams were happy when the issue was one they had already identified. However, some projects hit a bump, and teams learned the pain of analyzing a new issue and resolving it on the fly usually under a tight deadline. Students made the following comments about the importance of risk analysis and planning in the survey:

- "Given the scope of the project my team carried not being properly identified, it allowed me to realize the importance of fully fleshing out any potential risks, assessing them, and devising plans to mitigate if they arise."
- "I learned how to better build risk registers during project planning to more effectively deploy responses if the risk meets the trigger criteria."
- "Things will not go as planned (hardly ever, it seems), and it is good to account for potential obstacles."

The technical skill of **project scheduling** was tested as students learned the real meaning of having a schedule and keeping it. This hit home for some teams because the course deadlines were real, and the downside was not just a loss of points but also an unhappy sponsor who didn't get a deliverable on time or did not get the correct deliverable. All students were familiar with creating a project schedule, but a real project brings home the importance of a realistic schedule and the frequency of having a project get off course. Students shared their thoughts as follows:

- "I feel I have a better understanding because I was able to go through a full project from start to finish. I was able to understand the importance of scheduling realistic time frames, rather than just trying to meet the customer's demands."
- "Time management is crucial in the undergoing of execution of a project."
- "I learned the importance of communication outside the meetings. Sometimes, our team would conduct meetings and we have no idea what is due. If we communicated everything before the meeting, we have a more productive meeting."

Finally, another technical skill that was often cited in reflections was **requirements gathering.** Teams sometimes struggled with how to start a conversation with the sponsor about requirements. For some teams, it was like looking at a blank sheet of paper to take notes about something you don't understand and don't know which questions to ask. For these teams, the instructor recommended conducting research on the organization before the meeting and starting with basic who, what, why, when, how, and where questions. The instructor also provided a short video of tips and steps for gathering requirements. Students reflected on their experiences with requirements as follows:

- "Fully understand the project requirements and organization policy for the specific business entity I am working with to prevent future misunderstandings."

- "Our team was too eager to develop the marketing strategy and we hadn't even addressed the requirements from the sponsor. It is important to complete a thorough needs analysis."
- "Project success is all about communication and getting the requirements from stakeholders upfront."
- "Gathering requirements from sponsor is really important."
- "In all of my other projects we have not had to work directly with a client. With this project it really pushed our group to make sure that in all of our meetings we had questions to ask in order to get all of the information we needed. This project helped to show what it was like working with a client and making sure they were happy as well as well as moving forward in the project."

Mentors

It is important to note the impact of the mentors on the students and their projects. As previously noted, the mentors added huge value to the experiential learning. The addition of mentors for the project teams was a successful aspect of the assignment as evidenced by the many positive reflections from the students about the mentors each semester. This student feedback was shared with the mentors who also enjoyed the experience based on their comments, and several of them volunteered for more than one semester. Some of the feedback follows:

- "Our mentor gave us valuable insight into how to communicate with non-profit agencies and how to communicate effectively with multiple stakeholders."
- "The biggest advantage to having a mentor was the motivation and persuasion provided by her every step of the way. Our mentor was always there to share helpful advice and motivate the group to push through situations that seemed like a dead-end"
- "Sometimes we get caught up in certain ideas or head down a certain path that might not be ideal, but the mentor can help us realign and stay on track."
- "Having a mentor who was able to share their insight and real-world experience aided me in seeing how project management is used in the workplace and how the obstacles happen but by asking the questions and keeping the conversation going you will be able to move forward and help guide the project. These are things I will be able to take as I develop my own project management style."

Sponsors

Sponsors were an essential part of these projects which could not have been done without them. Most of the projects went well but there were critical issues with a couple of sponsors. Ironically, the projects with the most issues generally were the best learning experiences for the students. What was important to the learning in these situations was the resources provided to assist the students such as the team mentor dedicated to their project. Additionally, the instructor was available to discuss serious situations and intervene if needed. In all cases, the goal was to talk through the situation with the teams and allow them to come up with solutions. The instructor continuously reinforced with the student teams the need to maintain a good relationship with the sponsors even if it meant the team or the instructor needed to take the

blame. Sponsors were asked for general feedback about their experience with the students which follows:

- "I found your students to be very professional and easy to work with. The work completed by your students will be used by our new hire to follow for implementation of the program."
- "It was nice working with the team. Our project is a tricky one, but everyone did well giving input and coming up with an action plan."
- "The team was precise in their meetings--Having never worked in industry before, I was thrilled to experience it, and I really appreciated it!"
- "I am excited to review the processes and ideas the students gave me over the next month with hopeful implementation next semester. They were a great sounding board and really listened to my concerns and constraints!"

CONCLUSION

This research sought to determine if an experiential learning service project was effective in teaching traditional waterfall project management processes in online project management courses. Prior studies indicate innovative teaching methods are an excellent way to learn and practice project management (Noskova & Jelinkova, 2023). Effectiveness was measured from student qualitative survey responses and reflections from participating in a service-learning project during the course. The data showed several specific power skills and technical skills were impacted and, in some cases, enhanced through student participation in a service-learning project with local non-profit organizations.

Similar to research on the impact of a computerized simulation or project management education (*provided at acceptance*) this research study identified skills that were impacted by an experiential learning project. The power skills that were impacted were stakeholder communication, team communication, problem-solving, and adaptability. The technical skills that were impacted were risk analysis, project scheduling, and requirements gathering. Results show students learned practical implementation of several project management skills from this real project. Additionally, positive student feedback about the project and the mentors, as well as sponsor feedback about the student teams, led to the conclusion that the project was successful in achieving its goals of improving practical knowledge of some specific project management skills. Future research could continue to collect data in order to see if any additional skills emerge as positively impacted.

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APPENDIX

Figure 1 - Project Management Skill Learning Impacted by Experiential Learning Project

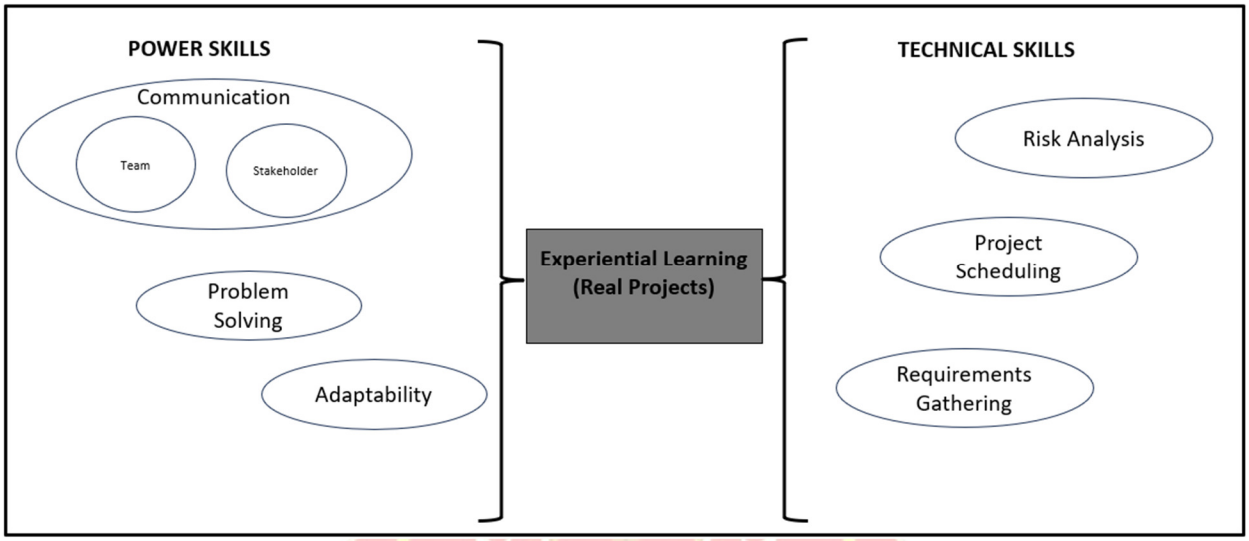

Table 1 – Assignment Due Dates and Deliverables

Semester Week Due Date	Project deliverable
Week 3	Project Teams' initial meeting with their mentor
Week 4	Project Teams' initial meeting with their sponsor
Week 7	Project deliverables: Stakeholder register and analysis, Project charter
Week 10	Creation of project requirements
Week 11	Creation of risk register and analysis
Week 12	Creation of Work Breakdown Schedule (WBS)
Week 13	Project Timeline/Project Roadmap
Week 14	Project Summary/Recommendations and Lessons Learned
Week 15	Project presentations and student surveys