

LEarning with Academic Partners (LEAP)

Success and Growing Pains in the First Year

Amber Kemppainen, AJ Hamlin, Haylee Diment, Amanda Moya

Department of Engineering Fundamentals
Michigan Technological University
Houghton, MI USA
amber@mtu.edu, ahamlin@mtu.edu

Abstract—Supplemental Instruction (SI) is a program that has been shown to be successful in supporting students in historically challenging courses and improving grades, retention, and understanding of course material. SI was started at the University of Missouri – Kansas City (UMKC) in 1973, but has since branched out to approximately 1500 institutions in 30 countries. In the spring of 2016, two faculty members from Michigan Technological University attended SI training at the International Center for SI at UMKC with the intention of developing a similar program to support the first-year engineering courses at Michigan Tech.

The LEarning with Academic Partners (LEAP) program is the program that has developed as a result of that effort. While based on SI, the LEAP program has several distinct differences, which will be outlined in this paper. In Fall 2016, LEAP was implemented in three of fifteen sections (180 students, 9 Leaders) of ENG1101 – Engineering Analysis and Problem Solving, the first engineering course taken by calculus-ready students in all engineering majors. In Spring 2017, LEAP has been incorporated into three of fourteen sections (172 students, 9 Leaders) of ENG1102 – Engineering Modeling and Design and one section (61 students, 3 Leaders) of ENG1101. In this paper we will discuss the successes and failures of our first year with LEAP as we look to assess and expand the LEAP program to all sections of ENG1101 and ENG1102 (approximately 1100 students, 50 Leaders) beginning next academic year. We will share perspectives from students, LEAP Leaders, supervisors, and faculty.

Keywords—*peer learning; supplemental instruction; mentoring; first-year engineering*

I. INTRODUCTION

Supplemental Instruction (SI) is a technique that has been shown to be successful in supporting students in historically challenging courses and improving grades and retention [1-3]. SI was started at the University of Missouri – Kansas City (UMKC) in 1973, but has since branched out to approximately 1500 institutions in 30 countries. The program benefits all areas of an institution: students, SI leaders, faculty, and administration. The students benefit by developing a deeper understanding of the course material as they work closely with and are mentored by an SI leader. Mentoring occurs with students who are close in age and have a working knowledge of the environment in which the mentee is meant to operate in

[4]. Mentoring allows students to develop coping skills necessary for success. This technique works particularly well for students who would not normally seek assistance [5]. Successful mentoring emphasizes the student's strengths, leading to increased self-efficacy and retention. The SI Leaders develop leadership and facilitation skills as well as increased skill in the course material. Faculty benefit by using their SI leaders to connect them with students: their problems, areas of confusion, and learning challenges. Finally, the administration benefits by increased retention at the University [3,6].

Supplemental instruction heavily utilizes peer/cooperative learning. Stump et al. [7] outlined several key benefits of this learning environment. First, students co-construct their knowledge of the material. They can discuss different viewpoints and come up with a more detailed understanding of the material. Students who work in small groups increase their persistence and attitude toward learning. Collaborative learning has been shown to improve student performance on homework and tests [8-10].

In the Fall of 2016, the LEarning with Academic Partners (LEAP) program was started at Michigan Technological University as a program to emulate the collaborative elements of SI in the first-year engineering environment. We have retained the key aspects of SI in that the LEAP Leaders are trained in SI group facilitation techniques and they use these techniques to plan and facilitate their LEAP sessions. As with SI, the LEAP leaders attend training before classes begin as well as throughout the semester. Oversight is maintained through peer and supervisor observations. As recommended in SI, LEAP Leaders meet regularly with the faculty whose class they support and hold office hours for additional student support. Additionally, course faculty do not attend the LEAP sessions for their section.

While SI was originally designed to support large, lecture-based courses, the LEAP program targets blended learning courses with significant active components and a curriculum that involves learning new software (Excel, MATLAB, and NX). Due to the active nature of the course, there are fewer LEAP sessions than a traditional SI program (1 per week versus 1 per lecture), but there are a larger number of LEAP Leaders per course. Each LEAP Leader is assigned a group of 20-24 students, which means there are 3-4 Leaders in a section of 60-72 students, as opposed to a single SI Leader in a large

lecture course. We choose to have more LEAP Leaders per section due to the role they have during class. Rather than acting as a model student as in SI, the LEAP Leaders assist their assigned students with in-class activities and are also responsible for grading their assignments. Additionally, student attendance is required for LEAP, compared to a true SI program where attendance is optional and completely anonymous. We choose to make attendance mandatory to help build student learning communities. If attendance were optional, very few students would attend, which would impede the development of the collaborative learning environment we are trying to achieve.

In Fall 2016, LEAP was implemented in three of fifteen sections of ENG1101 – Engineering Analysis and Problem Solving. In this course, attending LEAP sessions was mandatory and comprised 10% of the course grade. In Spring 2017, LEAP has been incorporated into three of fourteen sections of ENG1102 – Engineering Modeling and Design and one section of ENG1101. In this semester, the LEAP sessions were voluntary, which drastically affected attendance.

Using the definition provided by Terrion and Leonard [4], a successful mentor for the first-year engineering program must have experienced the first-year engineering environment at Michigan Technological University. To increase the potential for success of the LEAP program, the majority of our current LEAP leaders are second or third year students who have gone through the first-year program.

In Fall 2017, we will be scaling up the LEAP Program to all first-year engineering courses: ENG1001, ENG1101, ENG1102 (approximately 1100 students and 50 LEAP Leaders). This paper provides a critical look at what worked and what needs to be improved for this scale up. We review feedback from students, LEAP Leaders, faculty, and the LEAP Directors for this first-year of implementation. The data for this study were gathered through student evaluations of the LEAP Leaders and LEAP Sessions, supervisor observation of LEAP sessions, plans submitted to the shared Google Drive by the LEAP Leaders, personal reflections of the sessions and program by the LEAP Leaders and LEAP Directors, and information from semi-structured interviews with the course faculty and LEAP Leaders.

II. LEAP PROGRAM LOGISTICS

In the 2016/2017 academic year the LEAP Program had several major components. First, the LEAP Leaders completed online modules on SI, FERPA, Title IX, and Bloom's Taxonomy, then attended an all-day training before the semester, and continued training for the first seven weeks of the semester. The all-day training topics included many of the same topics from the SI training experienced by the LEAP Directors at UMKC early in 2016. We covered our LEAP program expectations and semester logistics. We demonstrated the SI facilitation strategies and group learning strategies in a simulated LEAP session and had the Leaders plan and run their own practice LEAP sessions. In the training during the semester, we introduced the Leaders to the technology in their session classrooms, discussed and demonstrated additional peer learning strategies, practiced incorporating these into LEAP

lesson plans, discussed group interaction patterns, and trained the Leaders to observe and debrief each other.

The observations of LEAP sessions are also different from the SI model demonstrated at UMKC. As mentioned previously, the SI model usually has one SI Leader for a large lecture class. This SI Leader typically holds one SI Session for each lecture (perhaps three per week) with at least one session per week being observed by an SI Supervisor. This observation is followed by a debriefing session. In the LEAP Program, we have a much larger number of LEAP Leaders (three per section) all of whom have only one session per week. To observe a similar ratio of sessions, the two LEAP Directors decided to have three observations per Leader per semester. For Fall 2016, the LEAP Directors observed each Leader once at the beginning of the semester and once at the end of the semester. Toward the middle of the semester, the LEAP Leaders would observe and debrief each other.

This observation schedule was modified for the spring semester after we realized that the time between LEAP Director observations allowed undesirable interactions to establish themselves. For example, with one Leader's LEAP Session, one team of students were able to derail any planned activities with distracting conversations. The LEAP Leader was not in control of their session, which should have been caught and modified sooner than the end of the semester. The early observation of this Leader revealed no problems, but the later observation revealed this disturbing dynamic. For Spring 2016, we modified the observation schedule to give the new Leaders more immediate feedback. The new Leaders were observed by a LEAP Director twice at the beginning of the semester and once again at the end of the semester and observed by a peer LEAP Leader during the middle of the semester. Additionally, the new Leaders also observed a returning Leader at the beginning of the semester. The returning Leaders followed the observation pattern from Fall 2016 and were observed three times with debriefing feedback with the observer.

With the increased number of LEAP Leaders per course, another component in the LEAP Program that is different from the SI model is the inclusion of additional group debriefing sessions. While some LEAP Leaders worked together to plan or sought ideas from the LEAP Supervisors, some worked primarily alone. These sessions were used as a way for the LEAP Leaders to meet as a group once a week. We used this time to go over ideas for session plans, how the plans were implemented, discussed what did or did not work, and shared ideas for new activities that could be used or strategies to mitigate observed problems.

III. STUDENT PERSPECTIVE

Student feedback on the LEAP program and the LEAP Leaders was collected through end of the semester surveys using Google Forms. The response rates for the surveys from Fall 2016 and Spring 2017 are 79% and 51%, respectively. The difference in response rates is due to the manner in which the surveys were administered. In the fall, students were given time during their last class meeting to complete the survey and students received in-class assignment credit for completing the

survey. In the spring students were expected to complete the survey on their own time and did not get credit for completing it.

In general, the student's view of their LEAP Leaders was positive. More than 80% of the students agreed or strongly agreed that their LEAP Leaders were both knowledgeable on course content and enthusiastic about the subject. Students felt the LEAP Leaders encouraged participation both in class (76% agreed or strongly agreed) and out of class (85% agreed or strongly agreed). The students felt that their LEAP Leaders took an interest in their personal learning (83% were in agreement). In addition, 93% of the students felt their LEAP Leaders created an accepting atmosphere and 88% felt that their LEAP Leader was a positive role model.

Several open-ended questions were also asked on the survey to get a feel for the types of activities the students liked/disliked and felt were useful/not useful. We also asked the students to give advice to their LEAP Leader as they prepare to be a LEAP Leader again. In response to these questions, students commented on the types of activities to do more or less of, some suggested that their LEAP Leaders be more prepared or have a better grasp of the course content, although one student observed that it was helpful to see their LEAP Leader think through the troublesome spots on a problem. A number of students expressed frustration when their LEAP Leader did not directly answer their question, but instead redirected the question to their team. Many students expressed appreciation for their LEAP Leaders. One student wrote, "Keep up the good job because she has done an awesome job and without her, [I] would not have done as well in this class. She helped me get my basic understanding and took time out of her busy schedule to work through problems with me."

Since there were several sections of our first-year engineering courses offered each semester that had LEAP Leaders, we have a number of students that experienced these classes with both LEAP Leaders and our traditional model of having 1-2 Teaching Assistants (TAs) in a section of 48-72 students. We asked these students to identify the strengths and weaknesses of having TAs and LEAP Leaders, as well as which they preferred and why.

As shown in Fig 1, the majority of students, 54% preferred having LEAP Leaders, while 30% reported they did not notice a difference, and 16% preferred having TAs. It is interesting to note the differences in their reported preferences depending on the semester in which the students had LEAP Leaders. Students that had LEAP Leaders in the spring when LEAP session attendance was not required had a larger percentage of students reporting that they did not notice a difference between LEAP Leaders and TAs compared to those that had LEAP Leaders in the fall, 36% compared to 10%. Correspondingly, the students that had LEAP Leaders in the fall had both a larger percentage of students that preferred LEAP Leaders (60%) and a larger percentage of students that preferred TAs (30%). This suggests that when the students were required to attend LEAP sessions, a greater percentage did notice a difference and as a result were more likely to respond that they either liked the LEAP Leader model or TA model better.

The most common strength or benefit the students identified for LEAP leaders was that they had more interaction with their LEAP Leaders. This is due to three factors, 1) the Leaders held LEAP Sessions weekly for their students, 2) there were typically more LEAP Leaders per section than TAs, and 3) when multiple TAs were present in a class, they roamed through the entire class rather than focusing on a subset of the students as the LEAP Leaders did.

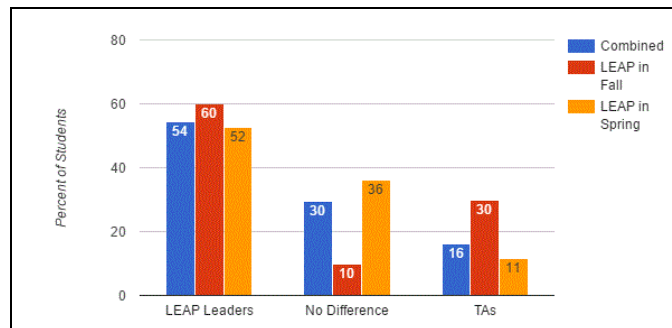


Fig. 1. Student reported preference for peer course support

Here are several of the student comments regarding LEAP Leaders:

- Interactions were very personal and useful/helpful
- It was like having an informed friend
- I enjoyed the atmosphere created by the leap leader better.
- It felt easier to get assistance
- I liked having the additional help for topics if I need it.
- The leap sessions were really helpful
- I enjoyed having LEAP sessions, I feel like they strengthened my understanding of the material
- LEAP leaders offered more support.
- LEAP Leaders were more accessible

For those students that preferred TAs, their primary reasoning was based on their TAs knowledge, their grading efficiency or that they preferred to work independently.

- [My TA] explained problems and broke down material in a way easier to understand
- they generally knew more about the class and they can grade things faster
- The TA had less outside class work to do so homework assignments got graded faster. I like having TAs because I like to work independently

Many students commented that they felt both their TAs and LEAP Leaders were knowledgeable and helpful. Here are several comments from students reporting they did not notice a difference between LEAP Leaders and TAs:

- Both seemed equally knowledgeable about the subjects. The class with the LEAP leader was larger, so

it felt like they had a similar amount of students to deal with as the TA did. There wasn't much difference other than in amount of direct communication.

- They both did the same job with the same knowledge and enthusiasm
- I did not use the additional resources that a LEAP leader provides; the differences between the two did not mean anything to me.

IV. INSTRUCTOR PERSPECTIVE

In the ENG sections that piloted the LEAP program this past year, only two had no prior experience with the LEAP program. The other three instructors were the two LEAP Directors and the Chair of the Department who were all aware of what the program entailed and were already “sold” on the benefits. To get an unbiased viewpoint, we interviewed the two faculty with no experience to see what issues they faced during implementation and what things would have benefited them. Overall, the main issues that were identified were based on a lack of initial communication from the LEAP Directors with the faculty using LEAP Leaders in their classroom. This was due to a last minute decision to pilot LEAP within sections of ENG1102. The two faculty were contacted over the semester break and made aware that they would be having three LEAP Leaders in their classrooms rather than a single TA. They were told that each LEAP Leader would be working with a subset of their student teams and providing a LEAP session outside of class once a week.

The lack of additional information about LEAP training, time commitments, scheduling of LEAP sessions were made apparent very quickly during the semester. There was a problem initially with scheduling the teams in that, while the LEAP director teaching ENG1102 scheduled her teams to make a specific LEAP Session, this plan was not communicated clearly to the other instructors. Therefore, some students were not able to go to the LEAP session offered by the Leader they work with in class or the one their teammates were going to. This drastically affected the attendance at and the overall dynamic of the LEAP sessions for ENG1102. In the future, the LEAP sessions will be built into the schedules for incoming students, so this should not be an issue moving forward.

At the beginning of the interview, the Faculty raised several questions as to things they wished they had known at the beginning of the semester, or things they were still not sure of. Some were related to the LEAP Leader role and some were related to the LEAP Sessions themselves. Their main questions are listed below:

- What do the LEAP Leaders need from the Faculty?
- How much influence should the faculty have on the LEAP Session?
- Where are the LEAP sessions? Who is doing which one?
- What are the Leaders covering in the LEAP Sessions?

- Are the LEAP Sessions similar to each other or even covering the same material?

Answering these questions provided the basis for two presentations with Departmental faculty for the full-scale implementation of the LEAP Program in Fall 2017

V. LEAP LEADER PERSPECTIVE

Overall, two themes emerged from the data regarding the LEAP sessions based on interviews with the LEAP Leaders; in order for a LEAP session to be effective, group collaboration must occur and the session itself must be a safe environment. Fig 2 below shows how these themes interact with one another, each impacting the success of the other. In order for Group Collaboration to occur, the students need to be engaged with other people (LEAP Leader and peers) and with the activities presented in the LEAP Session. For this engagement to start, the students need to be comfortable in the LEAP environment (with their peers and LEAP leader) and these need to see the perceived value of these interactions. We will discuss each of these themes and how they interact below in more detail.



Fig. 2. Modeling an effective LEAP Sessions

The first theme to focus on is the Group Collaboration. As mentioned previously, group collaboration only works when students are actively engaged in the collaborative activity. It requires students to communicate with each other. In order to do this, they need to feel comfortable with both giving and receiving information to or from one another. They need to be actively involved in their own learning process. Engagement is a particular problem in some sessions. Some topics are less interesting for students and soliciting their involvement can be difficult. To try to solicit student interest and engagement with the session topics, some Leaders made regular use of personal reflection as a tool to motivate students by seeing how the topic can relate to themselves. At the beginning of many of her plans, one of the Leaders has the students indicate their strengths and/or weaknesses with a specific topic or brainstorm how the topic could be used to solve a particular problem. This technique is often used at the end of the session as well as to reflect on what was learned during the session. These two tools emphasize the real-time gains for the students on the material. It ties the information to their specific needs

for the course and it shows them the value of what they learned during the session. Another technique used quite frequently was to direct students to resources they could use to help them succeed. The LEAP Leaders discuss the learning centers, software help functions, and study strategies.

Effective collaboration has been shown to increase engagement in intellectual discussion, which provides for deeper understanding of the material [7]. As part of developing activities that are valuable to the students, the peer mentor must understand a student's strengths and weaknesses [11, 12]. Terrior and Leonard [4] state that "when a mentor validates a student's strengths and perspectives, the student can become more successful." This is something that the Leader's did well by encouraging students to reflect (engage) on the topics for each LEAP session. During the session, the students were asked to focus on what they did well, as well as what they wanted to improve. The leader focuses on the information that the students need to work on and makes this relevant, or valuable to them while reinforcing the skills they already possessed. The LEAP Leaders worked to facilitate a collaborative environment to encourage students to provide each other with feedback and promote a deeper understanding of the material.

The Leaders regularly use peer learning techniques in their plans which call for students to help each other through activities or provide problems for one another. Students were routinely asked to "create this code with me," or "explain it to the class," or "have one student be the teacher." One example was from an ENG1101 plan from Fall 2016 which states that they are going over the Tugboat problem. The Leader's notes indicate that the plan was to "go over how to do this, ask students to write their versions on the boards and explain what each part of the function does." Activities, such as the problem described above, help the students engage with the course material and work together to learn it. The activities, one Leader reflects, are essential to getting the students to understand the material.

Last year it seemed as if the LEAP leaders didn't have much structure to the sessions, and simply reviewed ways on how to do various problems from class. This year, it has been more activity based, and interactive with the students. This has caused them to engage with the material more, which in turn improved their proficiency with the programs.

One important element that the activities should focus on is content that is meaningful to the students. Meaningful content impacts the engagement that students have with their session and the activities planned for the session. During one session that was observed, the students were reviewing for a lab practical. At the beginning of the session, the Leader had the students write down two things they were weakest at or have problems with and two things that they felt confident in. The students then did a mock lab practical. Before they went over the results, the Leader asked the students to "write down unexpected problems they had or if you didn't have a problem, write down something that took you longer than expected." They then compared the lists to develop a study strategy for the practical. This allowed students to specifically

focus the session on what they needed to learn and at the same time, let other students know which students were confident in the material they were struggling with.

In the example discussed above, students were preparing for a software skills test and the mock practical was directly related to this upcoming test. It is more difficult to engage the students when the content that week may not be closely tied to something the students find challenging or relevant at the time. In her reflection of her first plan, a session with limited content, one Leader states: "I thought it went well for the first time. I think that once the sessions progress and there are more things to cover there will be a better flow to the session." In a later exam review session, this same Leader states: "I think this session went well. I think that because I went over what to expect in the exam and what questions they had about the format, that they felt a lot more comfortable afterwards."

One Leader really articulated this struggle to provide meaningful content for her sessions. Her students were all very competent on the first major topic for the course (solid modeling using NX) and it was difficult for her to find ways to cover NX in her sessions in a way that made it seem meaningful for the students.

I didn't want to jump into MATLAB too early, cause it was so far away and I didn't want to do too much NX and make it repetitive and then all the students be like "well, we already know this, we don't have to go to the LEAP Sessions anymore." That was my biggest fear, [having] them thinking they didn't have to show up because I was too easy on them.

The second theme that emerged from this study was that students need to feel comfortable in their LEAP session, working with their LEAP Leader, and with their peers. With regard to the safe environment, Colvin and Ashman [12] report that students feel they can not go to the instructor for help, but they can go to their near peer mentor, coach or tutor. Tremblay and Rodgers [9] report that first-year students with high anxiety who were mentored performed just as well as those students with low anxiety. However, high anxiety students who were not mentored did significantly worse than those students with low anxiety. They hypothesized that these results were due to the fact that "the first year students in the peer mentoring program had a greater sense of belonging, or felt more comfortable with their peer group" [9]. These results do vary with time. In general, the more time spent with the group, the more support the mentees report from their mentors and the more comfortable they feel within the group [13, 14]. They need to feel as if their LEAP session is a place where they can make mistakes without repercussions.

Within the majority of the Leader's initial session plans were activities designed for the teams to get to know each other. They know this interaction is important. One Leader expanded upon her experience with her LEAP Leader when she was a student and her motivation for joining the LEAP Program as a Leader. She emphasizes the feeling of comfort and security she had with her LEAP Leader in general.

Well I had a really good experience with [my LEAP Leader] and whenever I would ask questions and anything,

even if she didn't know the answer, she would like try to work through it with me and like make me comfortable about asking questions in general. I'm the type of person who hates looking stupid or if I ask a question or answer one and get it wrong, I hate being wrong and so it's hard for me to ask questions, but she made it really easy and like comfortable, so I wanted to be like that kind of person for someone else.

This shows that for this individual, being able to ask the questions was a struggle, but she was able to do that with her LEAP Leader. This shows that the LEAP Leader was able to create an open and welcoming environment for these types of interactions in the LEAP session. She was able to discuss the problems with the course material and get help for the questions she was having. This relationship was such that she chose to become a LEAP leader to help others in the same way. After being a LEAP leader, several leaders discussed their relationships with their students. This shows the developing rapport they have with their students and the connection the students feel they have with them.

- *I really liked interacting with everyone and I felt like I had an impact on some of the students [and] built good relationships with them. Like when I see them outside of class, they come up to me and talk to me and stuff like that. So that was just really cool to see and I really liked that interaction a lot. I have even had past students ask me to give them recommendations because they didn't feel like they had made good connections to their professors.*
- *As a LEAP Leader I learned what it meant to be a true mentor to over 20 students per semester and help them along in their educational careers. I was able to see the "light bulb moment" when students finally understand a concept which must be what most educators live for because the feeling was pure pride.*

In addition to the two themes that need to be present for an effective LEAP Session, there are several things that the Leaders found useful or desirable to keep for the upcoming year. First, they valued the relationship between the Leaders and the Directors. They knew they could approach us with suggestions or if they needed help gathering supplies or with ideas for activities. They valued the benefits of supervisor observations and our feedback to them. The second thing the LEAP Leaders found most valuable were the weekly debriefing sessions with each other. The Leaders saw it as a way to build community among the Leaders. They work on their skills, share ideas and get feedback from other Leaders and the Directors on strategies for engaging students.

- *I think the debriefs are really important. I feel like they're helpful not only with getting us to work on our skills sometimes and help develop more and see how things went with other LEAP Leaders and what they ended up doing. But it is more of, I think, just to bring us all together and kind of basically debrief and talk about how it went. It us helps us relax a little more. It just felt like we got comfortable with the people we were around, so we were more open to bringing up our issues or problems we had or things we were*

successful at. We were willing to talk about them more.

- *It's important to maintain a relationship, not only with LEAP Leaders and your students, but among other LEAP Leaders and among the head of the program like with you and Dr. Hamlin. It's not only that you can work together, but as long as everyone maintains a friendly relationship, you can improve the program and the members of the program so I would say: maintain that.*

They did feel their first semester was more difficult than the second. Their first semester, they worked harder to develop their plans and seemed more unsure if they would work well or not. They also suggested that during a Leader's first semester, it would be useful to have an experienced coach matched with the new Leaders. They also desire a way for the LEAP leaders to get together to plan sessions together and support the new Leaders.

- *I definitely think with the LEAP Sessions the program needs more structure for new LEAP Leaders. So if I would have had more examples of sessions to provide to my students, I feel like I definitely feel like I would have been more confident from the start. I don't really know how to explain it cause again, like I said, they all felt they were really strong in a lot of topics, but there were some nights where I would sit there for like a couple hours and try to think of something to do for them and it would just take me so long.*
- *One of the aspects of LEAP that I would change would be the consistency of LEAP sessions between sections, or between LEAP leaders within the same section. In my experience, it worked better to plan things out with the other leaders in my section, rather than planning it out alone. This provided more consistency between the different LEAP sessions, to ensure that the same material was being covered.*

From the interviews with and reflections from the LEAP Leaders, the LEAP Leaders projected generally positive thoughts of the program. They see positive interactions between themselves and the students and the gains in the students' understanding and motivation to learn. Below are two reflections from the LEAP Leaders that summarize these thoughts.

- *Overall, I found this program to be inspiring, practical and focused toward a positive first year engineering fundamentals experience. I wish I would have been able to have the true LEAP experience as a student but grateful I've been able to see this program develop from nothing. Lastly, I'm extremely grateful of the experience this program has brought to me as an older Undergraduate student as I've been able to mentor and work hands on with students and then move into a supervision role much like I understand industry to be. The LEAP program is truly a game changer for both the students in the program and the LEAP Leaders and faculty facilitating it.*

- *Overall, the LEAP program has added value to the ENG 1101 and ENG 1102 classes. In my experience, it has made students more communicative with the LEAP leaders and faculty to help them voice their concerns. I have even had past students ask me to give them recommendations because they didn't feel like they had made good connections to their professors. The LEAP program has been a success and as it continues to grow, I feel as though it can only improve.*

VI. CONCLUSIONS

Overall, it seems that the students have responded positively to the LEAP Leaders. They connect with them as individuals, they are confident that the Leaders are able to help them with the course material and they enjoy the more individualized attention. Within the LEAP session, combining this feeling of security and working on content that is valuable to them, the students are more likely to engage in the group collaboration activities within the LEAP session.

We plan to continue the debriefing sessions valued highly by the LEAP Leaders and the modified observation schedule used in Spring 2017. We also plan to institute a new position of Head LEAP Leader for the Fall. This person will be in charge of helping coordinate session planning with the other LEAP Leaders in their section.

With regard to concerns raised by Faculty, these were used to develop presentation materials for the Department Faculty to answer these common questions and concerns so the Department can move forward with a common understanding of the LEAP Program in the Fall.

In the future, we plan to continue to gather feedback from students, LEAP Leaders, and instructors to improve the program. In addition, we will gather more quantitative data regarding student performance and retention.

REFERENCES

- [1] L. Brewer, C. Lee, & A. Raines. "Supplemental Instruction at the University of Arkansas." Presentation at the 8th International Conference on Supplemental Instruction, Kansas City, MO. 2014
- [2] N. Olson, G. Green, & R. Watson, "CCSI: Community College SI an in depth investigation of lessons learned." Presented at the 8th International Conference on Supplemental Instruction, Kansas City, MO. 2014.
- [3] University of Missouri - Kansas City (UMKC). Frequently Asked Questions Retrieved from <http://info.umkc.edu/si/faq> 2017
- [4] J. L. Terrior, & D. Leonard, "A taxonomy of the characteristics of student peer mentors in higher education: Findings from a literature review." *Mentoring & Tutoring*, vol. 15, no 2, pp. 149-164.
- [5] J. Bean and S.B. Eaton, "The psychology underlying successful retention practices." *Journal of College Student Retention: Research, Theory & Practice*, vol 3, no. 1, pp. 73-89, 2001.
- [6] B. de Leon, & T. Sullivan, "SI Leader Meetings Using Training to Create Community." Presented at the 8th International Conference on Supplemental Instruction, Kansas City, MO. 2014
- [7] G. S. Stump, J. C. Hilpert, J. Husman, W. T. Chung, & W. Kim. "Collaborative learning in engineering students: Gender and achievement." *Journal of Engineering Education*, vol. 100, no. 3, pp.475-497, 2011.
- [8] M. Jacobi, "Mentoring and undergraduate academic success: A literature review." *Review of educational research*, vol. 61, no. 4, pp. 505-532, 1991.
- [9] P. F. Tremblay & S. Rodger. "The effects of a peer mentoring program on academic success among first year university students." *The Canadian Journal of Higher Education*. vol. 33 no. 3, 2003.
- [10] C. M. Hsiung, "The effectiveness of cooperative learning." *Journal of Engineering Education*, vol. 101, no. 1, pp. 119-137., 2012.
- [11] A. Nora, & G. Crisp, "Mentoring students: Conceptualizing and validating the multi-dimensions of a support system." *Journal of College Student Retention: Research, Theory & Practice*, vol. 9, no. 3, pp. 337-356, 2007.
- [12] J. W. Colvin, & M. Ashman, "Roles, risks, and benefits of peer mentoring relationships in higher education." *Mentoring & Tutoring: Partnership in Learning*, vol. 18, no. 2, pp. 121-134, 2010.
- [13] E. J. Grant-Vallone, & E. A. Ensher, "Effects of peer mentoring on types of mentor support, program satisfaction and graduate student stress: A dyadic perspective." *Journal of College Student Development*, vol. 41, no. 6, pp. 637, 2000.
- [14] H. J. Shotton, E. S. L. Oosahwe, & R. Cintrón, "Stories of success: Experiences of American Indian students in a peer-mentoring retention program." *The Review of Higher Education*, vol. 31, no. 1, pp. 81-107, 2007.