

Shifting the Power Dynamic – Does Grading by Near-Peer Mentors Impact their Effectiveness?

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Abstract— This work-in-progress paper proposes a study that examines the effects of grading on the role of near peer mentors (NPMs). Two well-developed near peer mentoring models, Supplemental Instruction (SI) and the Learning Assistants (LA) Program do not allow their SI Leaders or LAs to grade student work. This separation in roles prevents a power dynamic between the student and the SI Leaders/LAs from forming where the Leader/LAs have perceived control over student success. At Michigan Technological University, teaching assistants were used in our first-year engineering courses; however, in a course redesign in 2017, the teaching assistant role was converted into a near-peer mentoring (NPM) role that retained grading responsibilities. Our NPMs, who we call LEarning with Academic Partners (LEAP) Leaders, have reported that they find value in grading their students' work as it helps them to plan activities to best suit their students' needs. Additionally, grading allows an opportunity to more closely monitor student submissions and to more quickly identify and intervene when a student is lagging behind.

This proposed study will examine the effects of LEAP Leaders grading their students' work on: 1) the Leader's ability to help their students and 2) the relationships between the Leaders and their students.

Keywords— *peer mentoring, peer teaching assistant*

I. INTRODUCTION

The first-year engineering program (FYEP) at Michigan Technological University consists of two common courses that all engineering students take: ENG1101: Engineering Analysis and Problem Solving (fall) and ENG1102: Engineering Modeling and Design (spring). These classes are designed to be active, collaborative classrooms with the majority of the class focused on students working with others on engineering problems. Since the program's inception in 2000, teaching assistants (TAs) (1:64 students) helped the instructional faculty monitor and guide students on the in-class activities and served as the primary grader for assignments. The faculty graded exams which were primarily multiple choice with one work-out problem.

In the Fall of 2017, the FYEP underwent a major revision that included the following [1]:

- Updates to the learning space which included modifying space within one of the dormitories into an active learning studio classroom that seats 120 students. This classroom holds five sections of 24 students at once.
- Changes to the instructional model from a blended instructional model to a flipped instructional model.
- Institution of a laptop requirement for all college of engineering students.
- The creation of a near-peer mentoring program, the Learning with Academic Partners (LEAP) Program, where each LEAP Leader is assigned to a section of 24 students. The LEAP Leader's responsibilities include 1) grading student work for the students in their assigned section, 2) monitoring and guiding their students through in-class activities during studio sessions, and 3) designing and facilitating one 50 minute LEAP session per week for the students in their assigned section to review that week's course content using SI strategies and facilitation techniques.

The LEAP program provides support for the first-year engineering students in this larger fully flipped classroom. The program maintains needed grading support traditionally provided by undergraduate teaching assistants, while incorporating the in-classroom support similar to the Learning Assistants (LA) Program developed at the University of Colorado Boulder (<https://learningassistantalliance.org/>), along with the review sessions similar to the Supplemental Instruction (SI) model developed at the University of Missouri - Kansas City (<https://info.umkc.edu/si/>) that integrate the "what to learn" with "how to learn".

Both the SI and LA programs emphasize that it is important that the SI Leaders and LAs do not have any impact on course grades. SI is typically used in large lecture based courses where the SI leaders are model students, attending class, taking notes, and listening closely to the professor. They then use this information to plan their SI sessions. In an SI program, SI Leaders do not grade student work and attendance is voluntary and anonymous to the instructor in order to provide a safe space for students to learn where they are not worried about being

graded or evaluated. One area that is emphasized in many overviews of Supplemental Instruction is the increased comfort level students feel being able to ask or answer questions with a group of peers in the SI session than in the classroom. These studies often link this willingness and comfort to the fact that the SI leader is not involved in grading student work or evaluating students in any way [2]-[6].

In the Learning Assistant Program developed at the University of Colorado Boulder, the main responsibility of LAs are to interact with groups of students to elicit student thinking and to help students develop a shared understanding of the course material. LAs can be used in a variety of active course modalities including large classrooms, small classrooms, flipped classrooms, recitations, and online courses. Grading is not a typical responsibility of LAs, as the primary responsibility of LAs is to encourage active engagement in classrooms and work with faculty and staff to provide a student-centered learning environment [7]. However, there are several instances where LAs have had the opportunity and/or responsibility to provide feedback or grade student work. While the primary responsibility of LAs used in an introductory computer science course at an all-women's liberal arts college in New England is to provide feedback on submitted assignments, these LAs did not assign grades [8]. One of the LA variations described in the Learning Assistant Model Implementation Guide [9], allows LAs to sign-up to grade tutorial homework; the Peer Learning Assistants employed in several computer science courses at New Mexico State were responsible for some grading [10]; and in a large public research university in the Mid-Atlantic, the Undergraduate Teaching and Learning Assistants (UTLAs) included for a study by Jardine on the positioning of UTLAs as instructional partners had grading responsibilities [11].

As our LEAP Leaders fulfill the roles of a Teaching Assistant, Learning Assistant, and Supplemental Instruction Leader, we must consider that grading their students' work may impact both their ability to help their students and the relationships between the LEAP Leaders and their students. We think that the LEAP Leaders gain valuable insight into where their students are having difficulty by grading in-class assignments, homework assignments, along with quizzes and tests. This helps them to identify the concepts and topics they should cover in their weekly LEAP sessions. Additionally, by grading student work, the LEAP Leaders are more aware of which students are falling behind in their work and can intervene quickly before the student gets too far behind. While grading does give the LEAP Leaders more power and authority in their relationship with their students, we are unsure of the effects of this power and authority.

II. INITIAL FINDINGS

Over the past few semesters, we have sought some initial feedback from our LEAP Leaders to see what they use to develop their LEAP session plans and if grading is one of the tools they use. In an end-of-term survey, the LEAP Leaders were asked to describe how they chose the content for the LEAP sessions (short response question) and then to identify how much they used each of the items shown in Table I to develop their LEAP session plans (options they could select were Critical Information Source, Somewhat Useful, or Not at all Useful).

The responses from the 61 LEAP Leaders that completed the survey (response rate = 69.3%) from Fall 2020 and Fall 2021 showed that the majority of the LEAP Leaders found that their observations of student progress during the studio sessions and grading assignments were their top two critical information sources for planning their weekly LEAP sessions. When looking at preferences, it appears that 36% of the LEAP Leaders (n=22) rated studio session observations higher than grading, while 15 LEAP Leaders (24.6%) rated grading higher. It is interesting to note that of the 4.9% of the LEAP Leaders (n = 3) who found assisting in studio sessions not helpful, all indicated that grading was a critical information source for determining content for their LEAP session. However, the majority of leaders use a combination of sources to help them develop their LEAP session plans. To help their students, it appears that answering questions in class and grading their student's work allows the LEAP Leaders to know exactly who the students are and how they are performing in class. This also gives them valuable insight as to which concepts are the most challenging for students to master, which allows the leaders to plan activities that best suit their students' needs.

TABLE I. USEFULNESS OF SOURCES USED BY LEAP LEADERS TO DEVELOP LEAP SESSION PLANS

Item	Percent of respondents		
	<i>Critical Information Source</i>	<i>Somewhat Useful</i>	<i>Not at all Useful</i>
Observation of student progress during studio session	72.1	23.0	4.9
Grading assignments	60.1	36.1	3.3
Performance in previous LEAP sessions	49.2	49.2	1.6
Input from faculty	49.2	47.5	3.3

To address the relationship between the LEAP Leaders and their students, we looked initially at the end of the term evaluations of the LEAP Leaders completed by their ENG1101 students in Fall 2021 (response rate of 83.98%; n = 648). We pulled four questions from this survey that address the students' comfort level and the relationship between student and LEAP Leaders as shown in Table II. In the first three questions, students were asked to identify their level of agreement with each statement on a 5 point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Percent Agreement was calculated by adding the percent of agree and strongly agree responses. On the fourth question, "Approximately how many times did you attend LEAP sessions this semester?" students were asked to select from one of the following ranges: a) none, b) 1-3 times, c) 4-7 times, or d) 8-14 times. In general, it appears that the students are generally comfortable asking their LEAP Leader questions and feel welcome in the LEAP sessions. These initial findings give a generally positive impression of the effects of grading on the LEAP Leader's ability to help their students and the relationships between the Leaders and their students. A more comprehensive study is proposed for the Fall 2022 semester and is outlined in the next section.

TABLE II. END OF TERM LEAP LEADER EVALUATION QUESTIONS

Question	Percent Agreement
My LEAP Leader displayed a personal interest in students and their learning.	89.1
I felt comfortable approaching my LEAP Leader for questions or advice.	92.4
I felt welcome in the LEAP session.	95.3
Approximately how many times did you attend LEAP sessions this semester? (8-14 times)	97.0

III. PROPOSED METHODS

In the Fall of 2022, we are proposing a study where we will have some LEAP Leaders grade as they currently do and we will hire separate graders to complete the grading for another group of LEAP Leaders to have a clear comparison group. Two of our instructors will be co-teaching 14 sections of ENG1101 with 14 LEAP Leaders. These sections were chosen to remove any differences due to instructors. We will have seven of the 14 LEAP Leaders grade their students' work ($n=120$) in addition to supporting their students on in-class activities during the studio session and planning and facilitating one LEAP session per week. The remaining seven of the 14 LEAP Leaders will not grade their students' work ($n=120$); the grading will be completed by hired graders. These LEAP Leaders will still be present in the studio session and plan and facilitate a weekly LEAP session, but have no grading responsibilities for their section. We will match our grading and non-grading LEAP Leaders based on experience, race, and gender so that both groups are as equivalent as possible. Although we cannot completely eliminate differences in grading between the LEAP Leaders, these differences will be minimized as two of the ten LEAP Leaders work closely with the faculty to ensure grading consistency between the LEAP Leaders and graders.

The research questions to be addressed by this study are:

- RQ1. To what extent does grading support our LEAP Leader's ability to help their students?
- RQ2. What impact does grading have on the relationships between the LEAP Leaders and their students?

To address these research questions, we will get feedback from both the LEAP Leaders and their students. To gather information from our LEAP Leaders, we plan to continue our end of term survey described above. Additionally, we will have two focus groups for our LEAP Leaders: one group will consist of the LEAP Leaders in our study group that graded their students' work, and the other will consist of LEAP Leaders in our study group that did not grade their students' work. We will use a semi-structured interview protocol and deductive coding to identify and analyze any themes identified from the focus groups. The questions related to RQ1 include how the LEAP Leaders prepare for their weekly LEAP sessions, what they use to identify student knowledge gaps, and how confident are the LEAP Leaders in identifying their students' knowledge gaps and identifying students that need additional support or interventions. To address RQ2 we will also ask questions about the LEAP Leaders' relationships with their students as well as

asking the LEAP Leaders to identify their perceived power role (coercive power, reward power, legitimate power, referent power, and/or expert power) [12], and how they think that this affects their relationships with their students.

To gather feedback from our students, a survey will be given at the end of the semester. The survey will utilize several factors from the Classroom Life Inventory [13] as well as having the students identify the perceived power role of the instructor and LEAP Leader [12]. The Classroom Life Inventory was designed to measure the influence of cooperative learning experiences on classroom climate and contains 59 Likert-type questions divided into 12 factors. We plan to use the following seven factors from the Classroom Life Inventory [13]: cooperative learning, teacher academic support, teacher personal support, student academic support, student personal support, class cohesion, and fairness of grading.

IV. DISCUSSION

With so many studies emphasizing the importance of separating the course evaluation and grading from help provided by Supplemental Instruction Leaders and Learning Assistants [2]-[7], [9], it is important to understand the effects that grading has on this mentor/student relationship as well as the role grading plays in our LEAP Leaders ability to help their students. Past surveys of the LEAP Leaders indicated that the majority find grading assignments to be a critical information source when planning their weekly LEAP sessions. The Fall 2021 evaluations of our LEAP Leaders by their students indicated that it may be possible to have a positive relationship despite the LEAP Leader having some control over student assessment. These survey results do not give a complete picture of the effects that grading may have on this relationship and the ability of the LEAP Leader to plan effective sessions. Therefore, this work in progress paper outlines a study for Fall 2022 that will allow us to shed additional light on these issues.

We expect to find that the LEAP Leaders that do not grade student work will use other means to determine student knowledge gaps, such as their observation of student progress during studio sessions, other LEAP Leaders that are grading student work, and suggestions from their faculty member. We hope to learn how LEAP Leaders feel that grading impacts their relationships with their students. We expect the LEAP Leaders will primarily self-identify their perceived power roles as expert and/or legitimate power. Some may use reward power (e.g. candy) or coercive power (e.g. reduction of participation points) to motivate their students. We expect the students will identify that the LEAP Leaders possess referent power because they can relate to their LEAP Leader as another undergraduate student who was successful in the class who they may see as a role model and show them personal support in their first-year engineering class. Additionally, we expect the students will identify legitimate and expert powers as ones that their LEAP Leader possess based on their role in the classroom and their previous success in this class as a student.

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The template will number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first ...”

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