Leadership Capabilities Exploration and Development via an Experiential Leadership Course: A Work in Progress

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Objective. This work-in-progress practice paper describes the assessment of learning and the leadership development of students enrolled in a self-directed course, Experiential Leadership. Students identify a formal, extended activity (such as serving as a club officer or working on a course-based project team) that provides opportunity for leadership development. They write a proposal describing the activity, create a leadership development plan (LDP), receive coaching from engineering leadership faculty, work with their mentors, and write periodic reflections regarding their leadership learning and development. This paper supports the ASEE Engineering Leadership Development Division's strategic initiatives "Design" and "Assess." The purpose of this study is to examine students' leadership development as a result of taking the Experiential Leadership course. Specifically, we are interested in the following questions:

Q1: What leadership capabilities do students choose to explore?
Q2: What self-reported growth do students experience in each capability?
Q3: What factors contribute to that change?
Q4: What lessons do students describe?
Q5: How do the activities, lessons, and leadership development trajectory support students' engineering leadership identity development?

Background. The Jerry Holmes Leadership Program for Engineers and Scientists (JHLP) at the University of Oklahoma offers both curricular and co-curricular opportunities to undergraduate and graduate students in engineering, computer science, environmental science, and geosciences. While many of JHLP's offerings are open to all students pursuing these degrees, students desiring a more focused leadership development experience can apply to be Holmes Leadership Associates (HLAs). HLA participation is open to undergraduates and graduate students who have sophomore standing or above and at least 2 years remaining in their degree program. HLAs design a personal leadership development plan, attend monthly meetings, and enjoy special events with invited speakers and corporate sponsors. Each HLA is matched with a professional mentor who provides coaching in leadership and professional development.

HLAs are expected to take courses supporting their leadership development. For many years, the college offered only one course focused on engineering leadership [1]. JHLP's curricular component was enhanced in 2019 with the launch of the Undergraduate Certificate in Engineering Leadership and the creation of a new course, Experiential Leadership.

Experiential Leadership was designed to provide course credit for undergraduate students participating in JHLP as Holmes Leadership Associates and pursuing the engineering leadership certificate. The course is graded, and assignments and expectations align with the program's participation requirements. Initially intended to be optional, the course was first offered in the spring of 2020. When the COVID-19 pandemic disrupted academic life, JHLP was faced with a challenge: How could we sustain students' engagement with the program? The Experiential Leadership course provided a solution. We quickly made enrollment mandatory for

undergraduate HLAs. Students accepted as HLAs prior to Fall 2020 enrolled during that semester, while those admitted during Fall 2020 enrolled in the course the following spring.

Our expectations were exceeded. Despite the pandemic, overall engagement increased. Students completed program requirements more promptly and met with their mentors more frequently. Even though JHLP meetings were held virtually, attendance increased, and students sought and attended additional activities hosted by student organizations and other university groups. Year-over-year retention improved, and anecdotal reports indicated that students were more satisfied. We were so pleased with the results that we decided to make one-time enrollment in Experiential Leadership mandatory for all undergraduate HLAs during the first spring semester of their participation. Students pursuing the certificate may repeat the course for up to 3 credits, and several have taken advantage of this option. At the time of this writing, 116 students have taken the course at least once.

Course description. Experiential Leadership is a "field-study" course, which at our university means that students follow a common syllabus and structure but do not meet regularly as a class. Students individualize the syllabus to meet their own learning objectives. In consultation with course instructors and their mentor, they select readings, podcasts and videos; identify and pursue activities that promote capability development; and track their progress. The assignments incorporate elements of reflection, narrative exploration, learning with others through teamwork, and learning from industry professionals [2]. The course is graded.

To create the Leadership Development Plan, each student reviews the descriptions of the JHLP leadership capabilities and selects three "target" capabilities as their focus for the semester. JHLP's capabilities are based on those created by MIT's Gordon Engineering Leadership Program [3] and the Rice Center for Engineering Leadership [4], with some modifications. The 26 JHLP capabilities fall under five domains: Personal Development; Interpersonal Relationships; Management and Teamwork; Leadership; and Intercultural Competence (Table 1). A full description of each capability is available on the program's website, https://ou.edu/coe/student-life/leadership/.

The Initial LDP is a two-part assignment. In the first part, students describe their most important leadership activity for the semester. This leadership activity provides a context for developing their leadership capabilities. They explain their role and responsibilities, the project's objective, their goals for the team or organization, and their personal goals with regard to the activity. The second part of the assignment focuses on the development of leadership capabilities. Students review the list and choose three "target capabilities" for the semester. For each capability, students (1) explain why the capability was chosen; (2) evaluate their current competence level according to the revised Bloom's Taxonomy [5] and provide evidence; (3) identify what they would like to accomplish by the end of the semester; and (4) create a step-by-step action plan for each capability. Goal definition and the action plan follow one version of the SMART Goals process (where the acronym stands for Specific, Measurable, Action-oriented, Realistic, and Timely or Time-bound [6]) and the Getting Things Done method [7] of personal project management. Students meet with the instructor a few weeks after submitting the initial plan; during this meeting, the instructor provides feedback. Revisions are due one week following the

meeting. Students are encouraged to follow the plan and track their own progress throughout the semester.

Table 1. JHLP Leadership Capabilities.

Domain	**Leadership Capabilities**
Personal Development	1. Developing self-awareness 2. Setting and achieving goals 3. Problem-solving and decision-making 4. Developing technical and financial expertise
Interpersonal Relationships	5. Practicing good followership 6. Building positive relationships 7. Practicing inclusivity 8. Collaboration 9. Managing conflict and negotiation 10. Communicating effectively
Management & Teamwork	11. Organizing 12. Working in a team 13. Staffing 14. Managing projects 15. Training and mentoring 16. Empowering and delegating
Leadership	17. Creating a shared vision 18. Motivating and inspiring others 19. Adapting leadership styles 20. Building power and influence 21. Boundary spanning 22. Leading change
Intercultural Competence	23. Understanding cultural dimensions of leadership 24. Intercultural communication 25. Understanding the global context of engineering practice 26. Working with other professions

The LDP assignment originally used by JHLP was modeled on the Personal Leadership Development Plan created by MIT-GEL [3], with four skill ratings for each capability: Does Not Possess, Introductory, Intermediate, and Advanced. For the Experiential Leadership course, we made the LDP assignment more detailed but limited skill assessment to the three target capabilities rather than the full list. In addition to aforementioned capability ratings, our students also rated their competence using the revised Bloom's Taxonomy. Table 2 shows the alignment of the scales. Note that Bloom's "Apply" overlaps with GEL's "Intermediate" and "Advanced"

levels. We followed this dual model for two years. However, it became apparent that the dual ratings did not add value and promoted some confusion. Bloom's Taxonomy provided a more fine-grained assessment and allowed better indication of progress. Since 2022, assignments have incorporated Bloom's Taxonomy only.

Table 2. MIT-GEL Capability Ratings and Bloom's Taxonomy.

MIT-GEL Capability Ratings	**Bloom's Taxonomy Levels (Revised)**
Does Not Possess	Not applicable
Introductory	Remember
Intermediate	Understand, Apply
Advanced	Apply, Analyze, Evaluate, Create

The Midterm Reflection allows students to assess progress toward their goals for both the major leadership project and their target capabilities. For this assignment, students assess the current state of their project and identify changes the team needs to make or activities the team needs to maintain in order to complete the project successfully. Students also identify changes they personally need to make in order to support the project.

For each target capability, they discuss their progress with respect to their plan, identify actions taken and not taken, and describe results to date. They identify and describe any changes needed, including the addition, modification, or deletion of action items; new due dates; and adjustments to the method used to measure progress. They update their LDP to reflect these changes and to indicate actions that have been completed. Within two weeks of submission, students meet for a second time with the instructor. As with the initial LDP, students have one week to submit any necessary revisions based on the instructor's feedback.

The Final Reflection is due at the end of the semester. Students describe and assess their project's outcome or current state. They are asked whether they are satisfied with the outcome and, if they had to repeat the project, what they would change. Students are instructed to concentrate on their own behavior and aspects of the project they could have reasonably influenced.

For each target capability, students trace their leadership development over the course of the semester by discussing whether and to what extent they followed the plan, identifying reasons for not completing any actions, and describing the results. Next, they compare their initial Bloom's Taxonomy rating to their current self-assessed rating. They provide evidence in the form of specific and descriptive examples. They are reminded that their course grade is not dependent on their Bloom's Taxonomy levels or on the direction of progress on the scale, and that regression on the Bloom's scale does not indicate a regression in their leadership development. Then, in the spirit of continuous improvement, they identify actions they could take over the next six months to continue developing this capability. Finally, students summarize their leadership development as a result of taking this course. They discuss lessons learned and how their understanding of leadership has changed.

Methodology. To answer the research questions, the target capabilities chosen will be counted and a frequency analysis performed (Q1). Self-reported growth will be evaluated by the student's initial and final Bloom's Taxonomy levels (Q2). Factors contributing to the reported change and lessons described by students (Q3, Q4) will be evaluated by thematic analysis of the written assignments, using narrative analysis methods [8]. Demographic attributes, academic majors, and other information available from participants' JHLP applications and transcripts will be considered in the analysis. As this course is regularly offered and available for repeat enrollment, we plan to eventually incorporate longitudinal analysis for students who complete the course more than once.

Theoretical frameworks. The Leadership Identity Development model [9], [10], Engineering Leadership Orientations [11], the Team Leadership Framework [12], the Revised Bloom's Taxonomy [5], and Self-Determination Theory [13] will inform the analysis. The Leadership Identity Development model provides a structure for understanding college students' leadership development over time and has served as the basis for recent work on engineering leadership identity [11], [14]–[17]. The Team Leadership Framework combines several complementary theories of teamwork and leadership and, in our opinion, is well suited to modeling engineers' work in both professional and academic settings [18], [19]. Self-Determination Theory provided the inspiration for the design of this course. This theory posits that intrinsic motivation increases when a person has the opportunity to exercise autonomy, develop mastery, and build relationships—all of which are present in Experiential Leadership.

Findings. The informed consent process is underway. Data analysis is scheduled to commence later in 2024.

Implications. The Experiential Leadership course demonstrates one way of converting the requirements of a co-curricular program into a curricular offering. For students, the course may foster both intrinsic and extrinsic motivation for pursuing leadership development goals. The link to intrinsic motivation is described above. The modest extrinsic motivators—enrollment in a one-credit course and fulfillment of an academic certificate requirement—provide impetus for pursuing the associated activities. Program directors and staff may benefit from improved attendance, engagement, and retention rates. Although engineering educators might hope to create thriving programs on the basis of intrinsic motivation alone, higher education remains a largely transactional activity. Given the opportunity to choose between doing homework that will impact a course grade and completing an assignment for a co-curricular activity, engineering students will often choose the former. Requiring one-time enrollment in Experiential Leadership should (1) encourage students to take their leadership development seriously, and (2) enhance their learning by providing a full semester of scaffolded assignments and coaching. For engineering education researchers, this course provides a source of rich qualitative data. The proposed analysis will elucidate the link between students' leadership capabilities development, engineering leadership identity development, and their academic and cocurricular experiences.

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