Engineering Educators Bringing the World Together
2025 ASEE Annual Conference & Exposition
Palais des congrès de Montréal, Montréal, QC • June 22–25, 2025 ASEE

Paper ID #47724

BOARD # 386: J ATE - The Journal of Advanced Technological Education Special Project (DUE ATE 2325500): Lowering Barriers to Publishing for Two-Year College Faculty and Students

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J ATE – The Journal of Advanced Technological Education Special Project (DUE ATE 2325500): Lowering Barriers to Publishing for Two-Year College Faculty and Students

The Journal of Advanced Technological Education Special Project (J ATE) was a one-year pilot funded through NSF's DUE ATE program whose goal was to build a community of peer-reviewed published authors from technical and community colleges. The "publish or perish" academic aphorism of the 4-year university tenure system does not cross over to community colleges, and community college faculty face many barriers to pursuing scholarship [1], [2]. Two of this project's objectives that directly impact two-year college faculty were 1) providing new writers with professional development interactions with experienced writing coaches to support them in writing and publishing their work in a peer-reviewed journal and 2) supporting faculty in developing and incorporating lessons into their community college research programs to enable their undergraduate research students to become peer-reviewed published journal authors. These objectives were implemented with two separate programs, called "J ATE Connect" and "J ATE URE" (Undergraduate Research Experience). We report on the successes and lessons learned from these two programs.

J ATE Connect program approach
The J ATE Connect program was modeled on the successful Mentor Connect [3] program, which has, since 2012, provided 20 community college faculty per year with assistance and resources to prepare grant proposals, with 86% submitting a grant application, 65% of which have been funded [4]. The Connect staff aimed to recruit experienced coaches and writers from community college faculty, evaluators, and others involved in NSF community college projects. Coaches were nominated and needed experience as published authors in the J ATE journal, while writers applied to participate. A total of 21 writers formed 11 writing teams. Each writing team was paired with one of eight writing coaches and met twice in-person: once to kick-off the program in July 2023 and once in a January 2024 workshop to finalize their manuscripts. Teams also met virtually as needed throughout the program. All 11 teams submitted manuscripts for the J ATE journal's January 2024 deadline, and 10 of these were accepted for publication. Five of the teams went on to submit a second publication for the journal's May 2024 deadline.

J ATE URE program approach
Community college faculty applied to participate in the J ATE URE program. Eleven faculty were selected and each nominated between 1 and 3 students to work with. 23 undergraduate students were selected, forming 12 writing teams (one faculty was on two teams). Four of the URE faculty also fully participated in Connect as writers or coaches and an additional two were able to attend the Connect workshop in January. There was great diversity among the faculty: they had different levels of experience with writing to publish; they mentored community college research in several formats, including Course-based Undergraduate Research Experiences (CUREs), funded research that provided students with stipends, and extracurricular research that took place outside of regularly scheduled class time; and their experience with mentoring undergraduate research ranged from recently setting up a research program to many years. The original intent was for faculty to select students who had participated in research who would write about completed research while still in community college. The short 2-year college timeframe, however, meant that many of these students had already graduated or were soon

graduating and not all faculty had returning research students to work with. Thus, some selected students were no longer attending community college and other selected students were new recruits to the research project. In addition to working with their own writing teams, the URE faculty each created shared lessons to help students write and submit a research paper for publication. Students provided faculty with feedback on the lessons before they were published on J ATE online platform.

The URE staff met online with the faculty cohort five times. The plan had been for the faculty to meet during Summer 2023 to develop lessons that would be delivered to the students starting in Fall 2023, but a delayed start date, plus extended time to recruit the faculty cohort, pushed the program start into the Fall term. The faculty kickoff meeting in October 2023 was followed by an abbreviated version of the Scientific Communication Advances Research Excellence (SCOARE) workshop, which has been shown to improve mentoring skills in science communication [5]. Faculty then determined the overall set of lesson topics and selected the specific lessons they would each work on, which were developed and shared in Spring 2024.

The URE staff met online with the student cohort 10 times, with the bulk of the meetings during Spring 2024. Topics included identifying the core elements of a research narrative, the structure of a scientific paper, the process of publishing a journal article, using a reference management system, tools for collaborative writing, using styles in Google Docs and Microsoft Word, peer review, and details about the journal's formatting requirements and the submission process. Additional faculty lessons covered ethics, copyright, plagiarism and authorship; understanding a journal article; writing an effective research problem statement; crafting a draft of a manuscript; data analysis and visualization; designing effective tables and figures; and how to respond to the strengths and weaknesses of a scientific argument.

The original plan was for the manuscript drafts to be completed by March 15, 2024, to allow time for internal peer-review among the URE participants, time for the journal's reviewers to respond with comments, and time for the writing teams to complete revisions. Most of the teams completed their manuscripts close to the Journal's May 31 submission deadline, which compressed the timeline for internal peer review. Additionally, the number of papers submitted to the journal for this issue was larger than previously experienced and strained the availability of journal editors and reviewers, making it harder than anticipated for sufficient reviewers to be assigned to each of the manuscripts and contributing to the delays. Despite the delays, out of 12 proposed manuscripts, 11 were submitted to the journal, 10 were accepted with revisions and 8 were ultimately published.

Program Evaluation
Independent evaluation of the program was done through retrospective pre-post surveys of both the J ATE Connect and URE cohorts. In addition, URE staff interviewed the URE student and faculty participants. Questions addressed both the writing experience and programmatic details about the implementation of the Connect and URE programs. As the main goal of the URE program was to create a set of materials and processes that faculty could continue to use in their research programs that would support mentoring students to write to publish, that will be the focus of the URE results reported in this paper, rather than details related to the URE program implementation.

J ATE Connect program lessons learned
Connect writers reported that the most helpful aspects of the Connect program were being part of a team of writers; having a point person to reach out to for materials, resources and discussions; having a stipend that is tied to deadlines; attending the in-person writing workshop; having a coach; and having a schedule of interim deadlines. When asked about the challenges writers experience regarding publishing, common themes emerged, such as the lack of time and need to balance other competing commitments; the lack of internal or external incentives to publish; the need to practice writing; and the challenge of determining what journals are looking for. Common suggestions for improving the Connect program were providing training to coaches to ensure consistency; offering support for templates and creating formatting instructions; creating a central repository for information and hosting writing workshops earlier in the timeline.

J ATE URE program lessons learned
URE students were motivated to write for reasons that included having pride in being an author, being passionate about their research and writing, building their resume or CV, collaborating with peers, and having a financial incentive to do the work. Students reported that the most important elements of the URE program were having a point person to reach out to for materials, resources and discussion; having a schedule of interim deadlines; receiving feedback from other URE participants; being part of a team of writers; and the URE assignments and lessons. Many of the challenges students faced in the program revolved around managing multiple commitments and finding the time to do the assignments and writing. Quite a few students had communication issues within their teams when dividing the writing. A few students gave general comments about needing more guidance to ultimately publish a high-quality article. Students were prompted to share what additional support would have been helpful to address the challenges. The most common response was having better time management skills to meet the URE program deadlines. Some students also noted that it would have been helpful to have received feedback on their ideas and work earlier in the process to pivot their research or paper focus, if needed, and to know if they were meeting the journal's expectations. A few students wished for better collaboration within their team to ensure they were on track to complete the work by the deadlines. Some student suggestions for improving the URE program were providing time management lessons, creating a central repository of reference materials and examples of high-quality journal submissions, and hosting a study hall for people to informally ask questions and work together to solve issues.

URE faculty reported that the most important elements of the URE program were having a point person to reach out to for materials, resources and discussion; having a schedule of interim deadlines; being part of a team of writers; and reviewing other papers within the URE program. Faculty shared a range of challenges they experienced. A couple of the faculty members alluded to managing multiple commitments that impacted their ability to fully support students and issues keeping students engaged through the entire research and publishing process. One faculty member said they had issues staying on-track once students graduated. Faculty shared ways that some of their challenges could be addressed. Two faculty members wished they had brought additional and/or different students into the program to keep the momentum going. One faculty member believed they should have chosen a different project, and another reiterated they had too many commitments. A few faculty members provided ways the URE program could have supported them further, including providing a clear syllabus of timelines and deliverables,

having group meetings for faculty and students to share with each other (as opposed to separate meetings), and providing faculty with lesson plans.

Importantly, ninety percent (90%) of the faculty respondents agreed with each of the following statements: they are more likely to help students publish in journals in the future; this program was effective to build a community of faculty interested in supporting student publishing; and participating in the URE program was a worthwhile use of their time. Most (80%) of the URE faculty respondents reported learning new skills, resources, or knowledge that will help them support student publishing in the future. Nearly two-thirds (60%) of the faculty respondents were very likely to incorporate something they learned from the program into their work with other students, and 50% were very likely to include scientific communication into their practice of undergraduate research. Thirty percent (30%) of the faculty members were very likely to make changes to their research process or undergraduate research program, as well as including undergraduate students in the manuscript preparation process moving forward. Some faculty who had previously had their students prepare posters or abstracts said that after this program, they would now aim to have their students take a greater role in writing a manuscript.

Discussion of the J ATE URE program
Writing teams whose research was complete or nearly complete at the beginning of the program were more likely to submit a manuscript that was accepted for publication. Some students and faculty said that starting from a poster provided a good starting point for their manuscript. While anecdotal, the reasons for not having papers accepted to be published may be informative. For one team, it proved too difficult to coordinate student writers who had transferred to different colleges. Two teams worked on setting up their research protocols and data collection for most of the program period. One team did not opt to respond to reviewer comments on their paper because they received the reviewer feedback after the student had already left campus and started a full-time job and the revision requests were too extensive.

Faculty scaffolded the student writing to different degrees. Most faculty were involved with creating the initial manuscript outline or provided early feedback on an outline created by the students. Some faculty met with their students regularly while other student teams worked independently for the most part. Some faculty gave their students certain sections to write, while taking the lead on writing other sections. In other teams, students wrote all of the sections themselves. In most cases, everyone on the team was involved in the final editing. Because of all these variations, we learned that many approaches to writing to publish can work.

Many of the faculty reported that the lessons created by the faculty cohort were useful and would help them in future years. These lessons and a manuscript template have been published online and are openly available to anyone interested[6]. Additionally, there are now eight additional undergraduate original research and review paper manuscripts that can serve as examples for other students.

Observations across the two programs
A difference that impacted the writing process was that each of the Connect writers had an experienced published coach who could provide focused and intentional direction, while not all URE teams had dedicated input from an experienced coach. Additionally, all Connect

participants attended an in-person workshop where they had focused time to work with their team members, coaches and other experts. While six URE faculty participated in this workshop, some URE students and faculty reported scant time working in person with others. Overall, the Connect manuscripts required less content and formatting revision than did the URE manuscripts.

For both Connect and URE participants, the journal's formatting and submission requirements were a challenge, and nearly all submissions needed revision. There were similarities in the time required to prepare a manuscript. Connect writers reported spending from 10 to 100 hours, with a median of 55 hours. URE Students reported spending from 14 to 120 hours in the URE program, with a median of 50 hours. This time included writing, doing the assignments and attending meetings. URE faculty who monitored their time reported spending 10 - 200 hours in the URE program, with a mode of 100 hours. This time included attending meetings, working with the students on the manuscript and preparing a URE lesson. While there was a lot of variation in time spent, an estimate for the time needed to prepare a manuscript for publication would be at least 50 hours per person on a small writing team.

References
[1] C. Harrington, D. Lyken-Segosebe, J. M. Braxton, and L. A. Nespoli, "Community college faculty engagement in the scholarship of teaching and learning," *New Drctns Community Coll*, vol. 2021, no. 195, pp. 157–173, Sep. 2021, doi: 10.1002/cc.20474.
[2] C. Kelly-Kleese, "UCLA Community College Review: Community College Scholarship and Discourse," *Community College Review*, vol. 32, no. 1, pp. 52–68, Jul. 2004, doi: 10.1177/009155210403200104.
[3] "Mentor Connect - Home." Accessed: Jan. 15, 2025. [Online]. Available: https://www.mentor-connect.org/
[4] E. L. Craft, J. Vickery, N. Campbell, and E. DeWitt, "Impacts of the National Science Foundation-funded Mentor-Connect Project on Two-Year Colleges," *ASEE annual conference*, Jul. 2020, Accessed: Jan. 15, 2025. [Online]. Available: https://par.nsf.gov/biblio/10147750-impacts-national-science-foundation-funded-mentor-connect-project-two-year-colleges
[5] E. K. Dahlstrom *et al.*, "Translating mentoring interventions research into practice: Evaluation of an evidence-based workshop for research mentors on developing trainees' scientific communication skills," *PLoS One*, vol. 17, no. 2, p. e0262418, 2022, doi: 10.1371/journal.pone.0262418.
[6] "nanoHUB.org - Group: Journal of Advanced Technological Education." Accessed: Apr. 23, 2025. [Online]. Available: https://nanohub.org/groups/jate