

## **Lessons Learned from Mentoring Undergraduate Research this Summer: Salient Practices of Undergraduate Research Mentoring**

By: Eric E. Hall, Elizabeth Bailey, Simon Higgins, Takudzwa Madzima, Svetlana Nepocatych, Matthew W. Wittstein, and Caroline J. Ketcham

This past March, as universities were transitioning to distance learning, in addition to figuring out how to teach our classes remotely, many of us had to consider how to continue to support our undergraduate research mentees. For the sake of this blog, we will use the following definition of undergraduate research - "Undergraduate research [scholarship, and creative activity] is an inquiry or investigation conducted by an undergraduate in collaboration with a faculty mentor that makes an original intellectual or creative contribution to the discipline" (Wenzel 1997, p. 163). Compared to other definitions of undergraduate research, this one is unique because of the role placed on the mentor, as well as the goal being on an original contribution to the discipline. However, we know that it is not just having a mentor that is important, but for the greatest benefits to occur for the students, the mentoring needs to be high quality (see (Vandermaas-Peeler, Miller, and Moore 2018).

As the semester continued on and it became clear that our university's summer undergraduate research program was not going to happen in person, our department started having discussions about how best to still meet the needs of our students during this time and simultaneously support each other in our own professional development. Our department has a strong history of providing high quality mentoring in these experiences and a departmental culture of sharing liminal space among students and faculty (Walkington et al. 2020). Over the past few summers, we have created a cohorted experience for faculty and students which has involved common times that all students and mentors meet for a variety of activities such as:

- journal clubs (students select articles that are representative of their research project; papers are provided to faculty and students prior to it date; students lead discussion about research articles, often by posing discussion questions to the group)
- sessions on professional development (faculty members determine the topics to discuss with students and take turns leading the discussion; topics often discussed include: how to present and discuss data, transferable skills learned from research into workplace/graduate school)
- discussions with colleagues, alumni and other guests (faculty from different departments and universities have joined in previous years; as well as alumni who have talked about

the value of research in their careers and answer any questions posed by students and faculty)

- blocked time to write (after discussion with mentors, students could choose what they worked on during this block of time (usually 2-3 hours); examples of things students often work on include abstracts for presentation, parts of manuscripts, annotated bibliographies, flyers for participant recruitment, and institutional review board applications).

As a department, we decided that we wanted to continue to offer these types of activities to our students through different technologies (i.e., WebEx, Zoom, etc.) and included the students in the co-creation of a summer plan (Cook-Sather, Bovill, and Felten 2014; Bovill 2020).

In framing these activities we have continued to use the Salient Practices Framework (Walkington et al. 2018; Shanahan et al. 2015) as a way to make sure that we are providing the highest quality of experiences. Below you will find a brief explanation of these ten practices, as well as some of the activities that we are utilizing as a group and as individual mentors. Inherent in this model, we have also thought about the co-mentored experience our students are receiving and the benefits that can come from such an experience for both students and faculty (Ketcham et al. 2018; Ketcham, Hall, and Miller 2017). In an effort to learn from all of us, we, as faculty, have taken turns in organizing activities and professional development opportunities. Additionally, faculty who did not have a summer undergraduate research student often joined, further amplifying our departmental and program culture; a mentoring constellation. See Table below to see some of the specific practices implemented by the constellation of exercise science faculty, as well as the mentoring of individual student projects.

Table. Examples of Salient Practices Framework Applied During Summer 2020 (also see <https://www.centerforengagedlearning.org/salientpractices/> for other information about the framework)

***Practice 1: Strategically plan to meet varying needs and abilities of students***

**Group:** Co-create summer schedule; student-led journal club; cohorted writing time; faculty-led professional development; shared google drive and schedule

**Individual:** Co-create summer goals; set weekly meeting times; shared google drive and documents; open communication for flexibility in meeting times; pair students on certain components; modify project(s) to virtual context

***Practice 2: Set clear, scaffolded expectations***

**Group:** Identify expectations and goals as a group; flexibility to meet student needs; each responsible to come to meetings prepared

**Individual:** Identify summer goals and work backwards to plan; discuss long-term goals and how summer experience fits in; collaborate on needs to meet specific goals (e.g. data collection)

***Practice 3: Teach the necessary research methods for the discipline***

**Group:** Highlight common topics that apply to human subject research (e.g., survey design, participant recruitment); provide guidance and feedback on best practices for creating/adapting research protocols during COVID

**Individual:** Use YouTube, tutorials, and self-recorded videos to demonstrate techniques or learn skills; be available to students to troubleshoot survey and interview techniques (video calls, text, phone); hold virtual testing sessions; use data management, collection, and transcription software

***Practice 4: Balance high expectations with emotional support***

**Group:** Find space to talk about challenges with COVID, both personal and research specific; share projects with the group to get feedback; optional student run book club around Diversity, Equity and Inclusion (DEI) issues (i.e., antiracism).

**Individual:** Allow extra time to talk about non-research struggles and successes; discuss student needs and interests outside of research (e.g., work, COVID, volunteer, DEI/antiracism concerns); integrate time for personal interests and 'down' time while balancing realistic research and writing goals; holistic development/mentoring

***Practice 5: Build a sense of community***

**Group:** Meet multiple times a week with different faculty leaders; check-ins with different faculty during writing times (rotating host so exposure to multiple faculty); create a student GroupME chat to ask questions and support each other; opt in for book discussion

**Individual:** Some research teams have co-mentors, so community developed on individual meeting times; peer-mentored assignments and grouping students with varying skill sets for some aspects of projects; sharing citation/reference software platforms (e.g., Zotero, Mendeley, etc.)

***Practice 6: Importance of one-to-one mentoring***

**Group:** The department places a high value on mentoring and understands the need, despite time demand to mentor students individually; create a climate where students feel empowered to go to different faculty for different support needs

**Individual:** Mentor/co-mentors meet with each student minimum of 30-60 mins weekly, which allows for an individual approach to meet the needs of each individual student and project; personal counseling and career coaching

***Practice 7: Increase student ownership of the summer***

**Group:** Students increase leadership of group meetings over time and lead peer-review sessions

**Individual:** Transition from faculty led one-on-one meetings to student led meetings; transition from assigned work to weekly check-in where the students lay out their own to-do list for the week ahead and report on progress; peer-teaching/mentoring with more senior students assisting junior students early in the process (e.g., paired writing for manuscripts in a similar area); allow students responsibility for developing their own projects schedules and timelines; set accomplishment goals that fit each individual student and meet their needs

***Practice 8: Support professional development of the students***

**Group:** Joined American College of Sports Medicine virtual conference; weekly professional development sessions with rotating faculty leaders; invitation of graduate/alumni to share professional experiences

**Individual:** Sharing disciplinary development opportunities (e.g., webinars or online panels); attend virtual conferences and webinars; provide opportunities to interact with professionals in the field in online presentations

***Practice 9: Create opportunities for students to learn mentoring skills***

**Group:** Students lead journal clubs and events of interest, all on virtual sessions; facilitate peer review of writing

**Individual:** Ask students to identify potential future directions and mentees for their research with the possibility to manage their introduction to the research project/process; see previously mentioned peer-mentoring of junior students by senior students such as paired writing, peer-peer methodological training, etc.

***Practice 10: Support students to disseminate their research findings***

**Group:** Prepare for poster session required as capstone of the summer undergraduate experience; give midpoint updates about the status of the project, weekly journal clubs and writing sessions; peer review of writing

**Individual:** Goal setting and working toward manuscript development and preparing for presentations; writing a blog post or a magazine/news article to disseminate their research to reach broader audiences; use comments on drafts to give students responsibility for revision (comment on strengths, summarize any problems, give recommendations for revision/synthesis)

While we feel very good about how things have gone so far under the circumstances, we would be curious to hear from you. What has worked for you in mentoring remotely since COVID and what challenges have you experienced?

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