INTRODUCTION
Since 2017, the Center for Partnerships to Improve Education (CPIE) has promoted mentored student research through its Summer Research Employment program. Each spring semester, CPIE encourages faculty in the School of Education, Health, and Human Performance (EHHP) to invite students to work alongside them on research initiatives during a summer session—Maymester (approximately 3 weeks), Summer I (approximately 5 weeks), or Extended Summer (approximately 6 weeks). The students then apply to CPIE for a research summer job earning $11 per hour for up to 20 hours per week. CPIE is the hiring department responsible for approving timesheets and funding the program, while the research mentors provide daily supervision of the student researchers.

During summer 2021, 38 individuals—24 student researchers and 14 research mentors—participated in Summer Research Employment. The research mentors were nine Department of Health and Human Performance (HEHP) faculty, four Department of Teacher Education (TEDU) faculty, and one EHHP staff member. Six research mentors worked with two or more student researchers, including one team comprised of six students. The remaining research mentors (n=8) each worked with only one student.

To evaluate Summer Research Employment, each participant was asked to respond to a reflection survey. Research mentors and students received comparable, not identical, surveys addressing the same themes—the researchers, the research, impact, overall perceptions, and final thoughts. The student survey consisted of 15 items, whereas the mentor survey was made up of 20 items. The items were a combination of multiple choice and open response. One item asked for a rating. Twenty students completed the survey for a student rate of 83%. Three students started but did not respond to enough items to be considered a “completer,” and one student did not begin the survey at all. 93% (n=13) of research mentors completed. One mentor started the survey but did not respond to enough items to be included in the analysis. With 33 of 38 individuals completing the two surveys, the overall completion rate was 87%.

The survey responses are summarized below by theme. It is important to note that mentors and students did not receive their surveys at the same time. Students were asked to complete the survey prior to their final summer paycheck. Mentors received the survey link on September 1, 2021 and were asked to submit by September 13, 2021.

THE RESEARCHERS
Twenty students completed the survey. 90% (n=18) were undergraduate students and 10% (n=2) were graduate students. Of the undergraduates, eleven (61%) were seniors, six (33%) were juniors, and one (6%) was a sophomore. No freshmen participated.
The students represented a range of majors, including exercise science (n=3, 15%), public health (n=7, 35%), and teacher education (n=10, 50%). The specific teacher education programs of study represented by the student researchers were special education, elementary education, physical education, middle grades education, secondary history education, and teaching, learning, and advocacy.

Thirteen research mentors completed the survey. 61.5% of mentors (n=8) were housed in the Department of Health and Human Performance. 31% (n=4) were housed in the Department of Teacher Education. One mentor was a staff member in the School of Education, Health, and Human Performance. Six mentors (46%) were on the tenure-track but not tenured at the time of survey completion. Six mentors (46%) were tenured at the time of survey completion. One mentor (8%) was not on the tenure-track. Nine mentors (69%) had previously participated in the program, whereas four mentors (31%) had no prior experience with Summer Research Employment.

The Research

Five items on both surveys were used to ascertain if the mentors and students possessed a shared understanding of the research they conducted together. Respondents were asked to provide a brief description of the research project. The responses ranged from a phrase, to a sentence, to a paragraph. Among the teams in which both the mentor and student(s) responded, the researchers demonstrated a common understanding, albeit with varying levels of elaboration.

The research mentors and students were asked to describe the contributions of the student to their respective research project. For teams in which both faculty and student responded, the responses confirmed a shared perception as evidenced by explanations that mostly aligned. As shown below, the student researchers developed a range of skills while offering a variety of contributions to the projects. Specifically, the student researchers:

- Interviewed participants
- Helped write manuscripts
- Analyzed data
- Reviewed literature
- Interpreted interview data
- Wrote annotated bibliographies
- Performed content analyses
- Summarized findings
- Coded data
- Developed meta-summaries
- Ran statistical analyses
- Drafted descriptive statistics
- Organized key findings tables
- Developed research questions
- Tested water quality

Research mentors were asked if their research team included additional students and/or faculty. 31% (n=4) mentors indicated that at least one other faculty-student research pair was part of their research team. On a related note, five mentors (38.5%) noted that additional students not funded by CPIE were part of their research teams. In contrast, nine mentors (69%) said there were no other
faculty-student research pairs involved, and eight mentors (61.5%) said there were no other students on their research teams.

For two items, disagreement between the research mentors and student researchers was evident. When asked if their summer research involved collaboration with a non-College of Charleston entity or organization, the response of the research mentor was recorded first and then compared to the response of each student researcher who worked with that mentor. Ten mentors and students agreed, whereas eight disagreed. One student responded *I'm not sure.* Further analysis of the data suggested that student researchers may have had difficulty differentiating research participants from research collaborators. The external collaborators confirmed by the research mentors were Berkeley Charleston Dorchester Council of Governments, SC Space Grant Consortium, a Berkeley County School District school, and Clemson University.

Both mentors and students were asked to identify the statement that best describes their relationship to the research project. As indicated in the table below, the choices were worded differently on each survey.

<table>
<thead>
<tr>
<th>Choices on the Student Survey</th>
<th>Choices on the Mentor Survey</th>
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<tbody>
<tr>
<td>• I assisted my research mentor with their research project</td>
<td>• My student researcher(s) assisted with my research project</td>
</tr>
<tr>
<td>• My research mentor supported my research project</td>
<td>• I guided my student researcher(s) through their research project</td>
</tr>
<tr>
<td>• My research mentor and I collaborated on a shared research project</td>
<td>• My student researcher(s) and I collaborated on a shared project</td>
</tr>
<tr>
<td>• Other</td>
<td>• Other</td>
</tr>
</tbody>
</table>

The responses of the mentors were recorded and then compared to those of their respective student researchers. Twelve mentors and students agreed that the research was mostly mentor-led (n=6 agreements), followed by collaborative (n=4 agreements), and then student-led (n=2 agreements). Seven mentors and their students did not submit responses in agreement with one another. Interestingly, in three cases of disagreement, students selected the collaboration option, yet the mentors selected the student-led option. This suggests that perhaps the mentors’ high level of support was perceived as collaboration rather than guidance. One mentor also commented that "[We] worked together on this project to prepare a dataset that we both will use for research this year (my faculty R&D project and [the student’s] bachelor’s essay."

IMPACT
Research mentors and students were asked open-ended questions to understand the impact of Summer Research Employment on their work and learning, respectively. The mentors indicated that their participation in the program positively impacted both their teaching and scholarly productivity, and that they enjoyed the experience.

As evidenced below, mentors were not remiss in acknowledging the amount of work accomplished with their student researchers.

• *Completed 51 in-depth qualitative interviews that would have taken me a year or more to do alone*  
• *This experience is magnificent. In fact, I'll go as far as to say my work would not have been possible during the pandemic without these two brilliant students.*
• It’s very difficult to find time to train students for an intervention while also performing other faculty tasks. Utilizing student researchers as trainers for these studies makes them more viable.
• Student was a huge help in generating stats to present [publicly] and we are better prepared to engage in our joint research projects this academic year.
• Student has been amazing in both helping me analyze data and helping with the writing

Though the work they accomplished was research-focused, mentors noted the impacts of the experience on their teaching.

• Mentoring students helps to develop my communication, time management, statistical methods instruction, and research methods instruction.
• It helps enhance faculty productivity and developing mentoring and training skills which can also translate back to the classroom.
• This is my third summer working with students through the CPIE program, and I find it to be one of the most rewarding experiential learning opportunities our students with research interests have at the College. CPIE has given me the opportunity to develop my skills as a research mentor, as well as develop experiences that I can utilize as practical examples teaching courses throughout the year. It also builds my relationships with students who often go on to work with me on independent study courses later in their academic work.

Mentors also described their summer role as a source of professional pride and joy.

• It is gratifying to support a student to learn outside of class. My student seemed to enjoy learning about research "up close" and indicated a desire to earn a terminal degree.
• I enjoyed teaching my student about different aspects of research. It allowed me to refresh different things I’ve learned from my various research experiences to teach [my student]. It has encouraged me to do more research.
• I always love working with students as researchers!
• I really enjoy student mentoring. It gives the students the opportunity to do research in [their field of study] that is important to them and holds a deeper value of understanding.
• Mentoring students in research is one of the most rewarding aspects of my work at the College of Charleston. It allows me to get to know the student better and to work more one-on-one with students. As a mentor, seeing my students grow professionally and gain concrete skills is rewarding. Students greatly contribute to advancing my research projects.

The quality of interactions with the student researchers was a high point for many mentors.

• We have so many talented students and they are capable of doing quality research when given the opportunity and resources. My students were organized, driven, curious, and thoughtful. They had to step out of their comfort one to try something new, and they excelled this summer.
• We have a mutual respect and admiration for each other. They are hard workers who have a ton of potential
• Further strengthens my view that undergraduate students are capable researchers if provided training and guidance
• I think I was very fortunate with these students as researchers. I have found Honors students to be more driven by internal motivation than the general student body. [My] CPIE researchers conducted their research according to the timeline and established expectations.
• My mentees have been amazing and have shown the real value of this program

Several mentors commented about the dual benefits of the Summer Research Employment program to faculty and students.
• CPIE this year, and in years previous, has been incredibly rewarding because I am able to see the research capabilities and interests that our undergraduate students have. It is a great learning experience for them but also helps push important research forward during the summer months.

• Students are amazing researchers! The CPIE funding provides an opportunity to keep our student researchers engaged in research during the summer (a time when faculty can dedicate more time towards scholarships and mentorship). CPIE funding provides a wonderful opportunity to compensate students for their hard work and helps to hold students accountable.

• Provides me with research help, but also the students benefit tremendously with the experience on the resume/CV

Student researchers described how their participation in Summer Research Employment helped them develop and apply research skills.

• I have a deeper understanding of putting together a research process from start to finish.

• This experience has really helped fill gaps in my research experience, particularly in regard to data/statistical analysis, writing findings, and the logistics of preparing and submitting a paper for publication.

• This research experience has enhanced my learning at the College in many different ways. Firstly, I have been able to learn how a systematic review is conducted by actively participating in the process. I have learned how to run a comprehensive search, work collaboratively in a team and communicate effectively about information, questions, or problems. I have learned skills through this project that I would have otherwise not learned.

• This project has allowed me to refine my skills of literature reviews including literature searching, reading articles, and managing sources. I have also had the chance to work on my scientific writing skills by beginning to draft a manuscript for the research project.

• I have learned so much more about how to conduct a systematic meta-summary, how journal publication works, and I have now seen how beneficial and cool conferences can be.

• I have learned about manuscript work and how to conduct interviews as a research assistant.

• I’ve learned effective research practices and enhanced my writing skills.

• It has helped me apply hands-on learning experience to some courses I have taken [in my major]. I have a better understanding of how to create and run a research study.

Not only did their skills increase, but student researchers noted how their engagement with the content area deepened and expanded due to their involvement in the program.

• I have worked with [this research project] for over a year now, but this summer really enhanced my time with the project since I was able to dedicate 6 straight weeks to it. I was passionate about seeing [the survey results] and coding these responses was valuable learning experience for my future in graduate school. The literature review also enhanced my understanding while reading through our own data.

• I have been able to see and participate in the research side [of my field of study], which is not an area that I would have explored if this study would not have been available.

• I have become an advocate for my research topic and plan to continue discussing it professionally after my research has ended.

• Before this project, I was unaware of [a particular issue] but now I realize the impact and importance of this issue, especially in [different settings].

• I have really enjoyed the opportunity to see other parts of the field that I am not usually exposed to. It was also beneficial for me to work with individuals in the field in other settings!

• My research experience definitely allowed me to see [research topic] in a new light. I had some previous experience with [this topic] including how it impacts health, but most of this was
secondary research. This project gave me hands on experience in the field that I intend to use as I begin my bachelor’s essay this semester.

According to student researchers, their enhanced skills and knowledge translate into impacts on how they will approach and experience learning.

- This research experience has helped me learn to become more engaged in articles and has helped me mold a way of thinking that guides me to ask the right questions.
- This experience has uncovered a newfound appreciation for research and digging for answers. I think this opportunity will directly influence my learning forever.
- This has enhanced my learning by offering me a good bit of experience in the research field, and exposing me to new kinds of learning and a new way to understand and use science!
- I feel like this research has helped me see a new perspective on these academic journals, which will help me embrace class-pertinent research in the future.

Student researchers recognized the long-term benefit of the program and described how their participation prepared them for graduate/professional school and careers.

- The opportunity to conduct and lead a research project at the undergraduate level has provided me with an environment to hone my research skills and given me the confidence to pursue a graduate degree in [my major].
- This research experience has allowed me to have a better understanding of the research process and how a topic can be applied across several fields of study. After graduation, I plan on attending graduate or professional school in which my field of research has a direct relation. I have not only learned about the process of starting a research process and forming initial hypothesis but the methods in which I completed the research will be used for years to come as I further explore [my chosen] field.
- This experience has allowed me to understand how the research process works. I have many options to choose from for beginning my career path including academia, and I feel that working on my own project gave me an understanding of what post-graduate research would look like. I also have potential plans to attend graduate school, and I feel like this project gave me a glimpse into what graduate school research could entail.
- The research experience has helped prepare me for my future as an educator because now I am hyper aware of things to look for in regards to diversity in education and ways to promote it.
- This experience opened my eyes to all the future career opportunities that could be available. It also helped me narrow down some things that I did and did not like about the research process.
- This experience has prepared me for collaborating on research entirely virtually, which will be helpful for future research projects I embark on that may be multi-site, collaborative studies.
- Working closely alongside a large [data set] and reading through qualitative data will most definitely enhance my resume and preparation for graduate school. This sort of one-on-one research work with a faculty member was not as common at my previous university, so this was an important and valuable experience for me personally and professionally.

The Summer Research Employment program helped foster greater appreciation for the work of faculty, as well as stronger professional interactions between students and their research mentors.

- This experience has allowed me to see how much work faculty put in outside of the classroom. It has also facilitated a relationship with faculty that I will forever be grateful for. They have taught me so much and will always be mentors that I can reach out to.
- Yes, I feel more confident in my ability to connect with faculty with this experience. I also understand the amount of work faculty puts into their research projects and gives me an
appreciation for their work. I feel more comfortable talking to faculty about research and my research interests after beginning a project of my own.

• This experience has allowed me to grow closer with my advisor, and become a more integral part of her research team. There were several incidences in which we would bounce ideas back and forth and I truly felt like a valued and appreciated part of the team.

• This research experience has had a very positive impact on my interactions with faculty. I have been able to meet new faculty and build a closer relationship with one faculty member. This was a very challenging year for many and being a part of this team has positively impacted my year. The professors were very encouraging and approachable. This project has allowed me to work with wonderful professors and learn from them outside of the classroom in a research environment which I think is very beneficial.

• This research most certainly helped me expand my horizons and connect with faculty beyond professors whom I have had in the classroom. I was fortunate enough to make this connection through a professor I had in my junior year and I believe that it really highlights the fact that the faculty at CofC really do care for their students and push for their success.

• I have only worked closely with [one professor] on this project, however, I really enjoyed getting to work with a professor I admire as part of a team. Everyone I worked with from the College was very helpful and supportive.

Student researchers were appreciative of how their mentored research experience connected them to the College and their field of study.

• This research experience has opened my eyes to the possibilities I have at a smaller school like CofC in comparison to a large state school, where my likelihood to participate in this research experience would be much less.

• I feel like research helped connect me to the College in a way that I had not yet. This came in the form of relationships with a team that included a fellow student and our professor.

• I read many research articles in my classes, so being able to be a part of the process that helps to make those articles that advance science was a treat.

To determine the broader impacts of Summer Research Employment, research mentors were asked to report any resulting scholarly activities. Their responses, as of September 13, 2021 indicated range of completed, in-progress, and planned ways to disseminate or extend their research activity:

- 2 manuscripts accepted
- 6 manuscripts in progress
- 5 manuscript submissions planned
- 2 conference proposals accepted
- 2 conference proposal submitted
- 3 conference proposals planned
- 1 public presentation completed
- 1 grant application submitted
- 1 IRB application in progress

**OVERALL PERCEPTIONS**

Both research mentors and student researchers were asked to rate their overall perception of Summer Research Employment. Response choices were highly satisfied, somewhat satisfied, unsure, and dissatisfied. 92% of research mentors (n=12) were highly satisfied. One (8%) selected somewhat satisfied and referenced their earlier comment that “I have phenomenal students as researchers. However, it has forced me to not take the decision in application of CPIE lightly.” 95% of student researchers (n=19) were highly satisfied. One (5%) selected unsure and commented that “I know more but I am angrier [at the systemic barriers I researched] than ever.” No mentors or students selected unsure or dissatisfied. Optional comments from student researchers were:
• Research has been a large commitment this summer, but as the end came in sight, I was extremely proud of the work I put in and the product that was produced.
• As a student who participated in the study as well as help assist, it makes me appreciate the experience from both the subject’s and researcher’s point of view.
• I have a great working relationship with my mentor who helped me take the project where I wanted. She allowed me to work on what I wanted while giving positive direction and feedback.
• Highly satisfied because I learned how to use a new piece of equipment and was introduced to a new topic that I have never explored before.
• I am highly satisfied because I had a great time, I have accomplished all I have set out to do, and I am going to continue to be working on the project!
• I really enjoyed this time and all of the things that I learned.

Research mentors were asked how likely they are to participate in the program again. 100% responded very likely. One commented that “I am uncertain of our access to programs like CPIE in the future given the changes happening at the School level.” Student researchers were not asked this question.

New this year was a question asking research mentors about the types of support CPIE should consider providing to them. Student researchers were not asked this question. The responses were categorized as financial support, training, or other. 46% (n=6) of responses were financial. This included funds to support student travel to conferences, purchase software for student researchers, and provide stipends for research mentors. 23% (n=3) of responses focused on mentor training. Topics identified were time management, strategies to maximize student engagement in the research process, and understanding roles in research. Four responses (31%) were categorized as other. Of these, one suggested lengthening the research experience beyond the summer. Another response advocated for more support for students but did not specify the type of support. Two responses indicated that no additional support was needed.

**Final Thoughts**

Research mentors and student researchers were asked to rate the hiring process for Summer Research Employment based on quality of information provided, the application, notifications, professionalism of CPIE staff, etc. The rating scale ranged from five stars for very good process to one star for poor process. Four students (20%) did not include a rating. All other students gave a five-star rating. Optional student comments included:

• I was a pre-existing employee for the College, so there was a very minimal hiring process for me.
• The hiring process was professional and straightforward!

Research mentors were asked to consider the quality of information, communication, timeliness, validation of students’ hours worked, and professionalism when rating the organization of the program. The options ranged from five stars for very well-organized program to one star for poorly organized program. Three mentors (23%) skipped the item. All other mentors gave a five-star rating. Optional comments from the research mentors were:

• This is an outstanding program that leaves a lasting impact on these future educators that can continue on in ways we cannot even imagine.
• This process and working with the CPIE team has been wonderful. Just want to say thank you for this support.
• Y’all are the best. Seriously. This program is outstanding and Dr. Howard is a wonderful human being doing wonderful work.
• I thought it was a well-organized program. The communication was excellent especially about important dates, the amount of funds, and the number of hours for the student.
• Thank you for supporting our research!
• Great experience!

Budget
While applying for Summer Research Employment, student researchers identified the summer session and number of weekly hours they expected to work. The three summer sessions were Maymester (3 weeks), Summer I (5 weeks), and Extended Summer (6 weeks). The options for number of work hours per week were 5-10 hours, 10-15 hours, or 15-20 hours. To document actual hours worked, each student submitted an employee timesheet for CPIE approval. Total expenditures for 2021 Summer Research Employment were $22,256.30. All funds were spent on student wages at $11 per hour. The sum of all hours worked was 2023.3. On average, each student researcher worked 84.3 hours and the average cost per student was approximately $927.35. The table below provides an historical overview.

<table>
<thead>
<tr>
<th></th>
<th># Student Researchers</th>
<th># Research Mentors</th>
<th>Total Hours Worked</th>
<th>Avg Hours per Student</th>
<th>Total Expenses</th>
<th>Avg Cost per Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>6</td>
<td>7</td>
<td>359.0</td>
<td>59.8</td>
<td>$3,949.00</td>
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<tr>
<td>2018</td>
<td>11</td>
<td>8</td>
<td>921.5</td>
<td>83.8</td>
<td>$10,136.50</td>
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<tr>
<td>2019</td>
<td>16</td>
<td>13</td>
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<td>67.0</td>
<td>$11,789.25</td>
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<tr>
<td>2020</td>
<td>9</td>
<td>7</td>
<td>665.25</td>
<td>73.9</td>
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</tr>
<tr>
<td>2021</td>
<td>24</td>
<td>14</td>
<td>2023.3</td>
<td>84.3</td>
<td>$22,256.30</td>
<td>$927.35</td>
</tr>
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Conclusion
2021 Summer Research Employment was a beneficial experience for both students and mentors and remains a worthwhile investment of funds. For students, the benefits included development of research skills, connections to prior and future coursework, relationships with faculty/staff, and increased connection to the College. They also viewed their mentored research experience as good preparation for advanced study and career. Mentors were able to advance their scholarly work, inform their teaching, and experience a sense of professional fulfillment.

From 2020 to 2021, student participation nearly tripled from nine to twenty-four, and mentor participation doubled from seven to fourteen. The number of mentors working with multiple student researchers tripled from two in 2020 to six in 2021. A steady uptick in the average hours worked per student has persisted since 2019 and, coupled with the fact that over two-thirds of the mentors have past Summer Research Employment experience, could point to improved mentor competence in engaging students in the research process. The average number of scholarly outputs (publications, conference submissions, etc.) resulting from the program remained steady at 1.6 per mentor. Mentors reported twelve scholarly outputs in fall 2020 (rate of 1.7 per mentor) whereas twenty-three were reported in fall 2021. It should be noted that the reporting deadline in 2020 was October 1, compared to September 13 in 2021.

CPIE was successful in generating an improved mentor response rate. In 2020, only 57% of mentors submitted the survey compared to 93% in 2021. Strategies used included shorter response period (from 4 weeks to 2 weeks), frequent reminder emails to non-responders before the deadline, and personalized emails to non-responders the day after the deadline. This also resulted in an increased overall response rate (81% to 87%), though the student response rate decreased from 100% to 83%. Based on mentor and student interest, as well as the program’s continued positive impact, and manageable cost, CPIE intends to offer Summer Research Employment again in 2022.
2021 SUMMER RESEARCH EMPLOYMENT

24 STUDENTS working alongside 14 RESEARCH MENTORS to conduct research and apply skills.

- Deepen knowledge
- Impact teaching
- Disseminate results
- Strengthen engagement

STUDENTS

24 students working alongside 14 research mentors to conduct research, learn and apply skills, deepen knowledge, impact teaching, disseminate results, strengthen engagement.

46% tenured; 46% not tenured; 8% not tenure track.

62% HEHP faculty, 31% TEDU faculty, 7% EHHP staff.

This experience has really helped fill gaps in my research experience, particularly in regard to data/statistical analysis, writing findings, and the logistics of preparing and submitting a paper for publication.

- Student Researcher

The student researchers...

- Reviewed literature
- Helped write manuscripts
- Organized data tables
- Analyzed and interpreted data
- Summarized findings
- Developed research questions
- Ran statistical analyses
- Wrote annotated bibliographies

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