“We need to do this!” Early College students and on-campus summer research

Russ Olwell, Dr. Kirstie Dobbs, Dr. Michael Piatelli, Prof. Tiana Lawrence, Quetzali PazMondesi, Cindy Santana, Ambar Tavares

Talk to a neighbor

What was a summer experience you had in high school that helped set you on your path to college?

Special Guests, Released from Class for a Few Minutes to Talk to Us...

Abbott Lawrence Academy/Lawrence High School/Merrimack College Early College students Ambar Tavares and Cindy Santana

1. What motivated you to do summer research as an EC student?
2. What did you find most valuable about the experience?
3. What advice do you have for other early college programs planning a summer program?
4. Where are you going to college next year?

Introduction and overview

In summer 2022, the State of Massachusetts funded early college students to come onto campus for research experiences. This program funded by the state, put together two interventions:

Impact of Summer Research: Education researchers have found that summer research is a true high impact practice, that it promotes student enthusiasm for science disciplines (Hurtado et al., 2009; Schultz et et al., 2011; Rodenbusch et al., 2016), and students with underrepresented minority status who participate in community-based learning activities are more likely to be retained in science (Estrada et al., 2016).

Why summer experiences are important

Early college students have an accelerated college experience, not all of it on a college campus:

1. With a compressed schedule, we run the risk of early college students and alumni missing key high impact practices such as undergraduate research and study abroad.
2. Early college students run the risk of arriving at college with many electives fulfilled, giving them a major-heavy schedule (particularly in STEM).
3. Our school year programs are often at or near capacity- summer (and winter) terms give us room to get our students more and different credits.

Programs we did at Merrimack College last summer

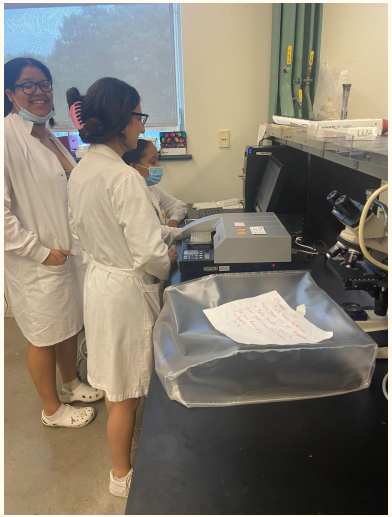
Summer class that bridges 12th grade to freshman year - Diversity, Social Justice, and Ethics, offered Summer 2023.

Biology research for early college students - Dr. Mike Piatelli.

Youth Voice program and research in Lawrence,

Dr. Kirstie Dobbs, Dr. Laura Hsu,

Dr. Stephanie Garrone-Shufran



Summer Resources to Draw On for Summer

The Mass. Department of Higher Education has been supporting summer early college through funding college credits offered over the summer, including programming for EC-12th graders entering college.

The Mass. Department of Elementary and Secondary Education has been investing in summer programming through funding student support, including new programs for food for early college students on campus.

There are more programs now to support summer internships, depending on your region and the discipline you are offering.

Barriers to Summer Programming

1. Staff Exhaustion - summer planning takes place during the most intense part of the Spring term and staff lack bandwidth to pursue these opportunities.
2. Student need for summer employment - many students are helping support their family over the summer through paid employment
3. Logistical difficulties securing space and services on campus over the summer
4. Difficulty recruiting students and instructors for the summer.

Summer Bridge Class - Diversity, Social Justice and Ethics - offered to graduating 12th graders and early college students

From student Merrimack Student Quetzaly PazMondesi

“Before entering college, we grow accustomed to the environment of our high school, hometowns/cities, and the people we are around every day. However, as we enter college, we are exposed to diverse groups of people who share different identities, cultures, religions, etc. Having a grasp of these identities and their significance allows valuable interactions. Taking Diversity, Social Justice, and Ethics integrates new concepts and social issues that pertain to various identities. Becoming aware of these social issues is a fundamental step to emerge yourself in a college community where your intersectional identity is one of many.”

From Prof. Tiana Lawrence about teaching DSJE to early college students and alumni

"Teaching on theories, concepts, and lived experience centered around Diversity, Social Justice, and Ethics with students entering their college experiences is critical and invaluable as it gives students the space, language, and frameworks to self-reflect, navigate their experiences with diverse groups, and make informed decisions as they explore opportunities to both strengthen and challenge their current perceptions and understanding of the world around them.

Students have left the course feeling grounded in their sense of self, confident in their ability to engage and build relationships with a variety of communities, and strengthened in their decision making skills."

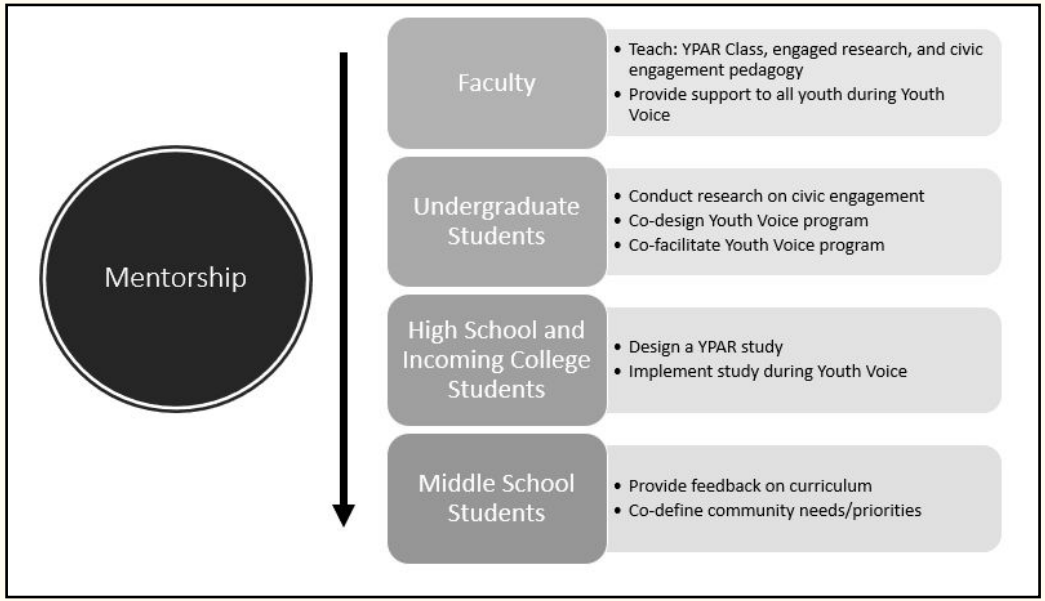
Political Science- Youthvoice Program

Layer 1: Middle school students in Lawrence Mass. were recruited through the YMCA for a summer program on civic engagement and youth voice centered on the local community.

Layer 2: Early college students were in our summer program to learn how to be YPAR researchers with Prof. Kirstie Dobbs. They learned about Civil Engagement and Qualititative Research Methods and received political science research credit.

Layer 3: Early College alumni (12th grade+) were engaged in the research experience and as mentors for the program, receiving course credit for their experience.

Model of Youth Voice Program



What early college students learned in the field doing youth voice

- How to engage with local, state, and national community actors in a professional setting
- The importance of reflexivity and reciprocity in developing community partnerships
- How to apply equity-centered lenses to develop research projects that promote social justice and inclusion of marginalized or underserved groups
- How to conduct focus groups and participation observation research
- How to apply (monitoring, evaluation, and learning (MEL) systems to assess impact of community-centered programs

What EC students learned in the Biology Research Program

Skills and experiences:

- Pipetting, reading OD numbers, plating with agar plates, using 96 well plates, performing serial dilutions, gram staining microbes
- Sterile techniques such as using ethanol to wipe our lab benches and keeping a sterile space using bunsen burners
- How to keep a lab journal
- Watching presentations from graduate students in Biology to learn about different projects and experiments that were ran throughout the summer.
- Increase critical thinking and analytical skills
    - Reading scientific literature and develop and modify hypothesis-driven research questions

What Early College Students Learned About Campus over the summer

- Early college students appreciated getting to spend more time on campus, rather than one class per day.
- Eating in the cafeteria and being in the Biology department gave students time to get to know more faculty and staff on campus, and to feel more comfortable being in a college setting.
- High school students reported that mentors have a “big sister/little sister” relationship, and that the mentors were able to provide an honest view of college and campus life that helped the high school students think about their own college application process.

Role of Peer Mentors

All summer programs had some form of undergraduate peer mentorship built in:

- “I would have loved something like this when I was in high school”
- Summer’s different pace allowed for more mastery learning than the labs done during the school year.
- Explaining and writing instructions for labs, as well as helping students with processes such as laboratory notebooks, helped the peer mentors solidify their knowledge and skills.
- The peer mentors found that working with high school students helped them understand when they were being vague, how to use more precise language, and sharpened both their understanding of the material, the purpose of the lab technique and its correct application and their teaching acumen as a result.

Lessons Learned

1. Recruiting more students and starting earlier on recruitment. Use local non-profits that work with youth to help
2. Integrating internships into our programming to pay students as well as give credit.
3. New sources of funding for STEM internships - Mass Life Sciences Center internship program, Work Based Learning Alliance.
4. Drawing on local resources - workforce development board summer youth funding for interns.
5. Start small and build in future summers, starting with resources you have now!
6. Work collaboratively with the state - ask questions when you need to

Conclusions: “This is my career for the rest of my life”

Biology Students found:

- They were more confident about their laboratory skills as a result of the summer research experience, and felt confirmed in their choice of majors/career fields.
- The idea of attending the college they were doing laboratory work as much more attractive, given their summer experiences and the new connections they made to the matriculated college student mentors.
- More students would take advantage of these summer opportunities if they were presented throughout the school year, so that students could plan their summer around it.

Political Science: Ownership over “knowing”

YouthVoice Students Found

- “Overall, this experience was very impactful and through the research, we are able to develop solutions for youth and create spaces where they feel comfortable enough to make a change.”
- One early college student remarked that she could see that herself and the middle students were connected through a “consistent learning process where they learned from each other” and that the ownership over “knowing” was not just regulated to the faculty in the room.
- The early college students reported the importance of working with others with diverse viewpoints and stressed the importance of working with others with different skill sets

Plan your own summer program right now (just not for this summer)

1. Need: What is an experience or class that your students need for what they want to do next?
2. Human Resources: Who are the people on your campus who want to do more with early college students? What programming would they be excited about offering?
3. Time, Space and Resources: What is the minimum amount of time needed for a program to address the need? What is the minimum space? What expenses will you incur to support students?

Poster presented at a conference in D.C by Cindy and Amber