

RAW DATA - URE Summit Thursday Afternoon Discussion Group
1:40 pm – 4:45 pm (20-minute break at 3:00 pm)

EQUITABLE ACCESS to UREs in STEM

Note: There were three groups participating in this discussion. They are numbered here for organization, but do not denote the actual table number at the summit.

GROUP 1

1) Ensuring Far Greater Access: How do we ensure that more students have access to UREs at community colleges, especially those that are underrepresented in STEM disciplines? **Propose 3-5 promising strategies for ensuring access.**

Key Discussion Points	Final Synthesis
<p>Students with disabilities – visual, hearing, physical when faculty are recruiting students into research experiences.</p> <ul style="list-style-type: none"> • Training of faculty to learn how to work with students who have a disability and knowing how to create UREs that provide students with the same experience as non-disabled students. • Professional organizations that assist faculty for how to accommodate students with a disability in a field or lab experience. • Making faculty aware of bias and how to overcome those. <p>In addition to basic accessibility, how to make accessible to students who have other disadvantages such as economic. Need to provide stipends to students so they don't have to work. Don't want doing research to be a hardship and institutional level needs to address this. Child care for extended field experiences that go beyond the regular schedule.</p> <p>Financial aid coverage for courses</p> <p>Faculty members sharing their stories with students – “I was a first generation college student”, “I am an underrepresented minority” etc. Share that you struggled as an undergraduate and be the example for their success.</p> <p>Scientist spotlight project is exposing students to diverse scientists</p> <p>Bring in minority population professionals from the area to talk about their journey and career path. This would also apply to alum who can share common experience of being at community college and now successful professional. Sharing of identity.</p>	<p><u>Strategies for Ensuring Success (3-5)</u></p> <ul style="list-style-type: none"> • Storytelling of faculty, alums, and local professionals to share career paths. Diversity of this group should be as broad as possible. • Publicity to make students aware and make benefits and skills gained clear to all students. Working with different offices and other faculty to share experiences and how to access URE. • Transparency of time and resources (including technology) that students need to be successful. • Institutional resources to address barriers and met students where they are. • Broadly educating faculty on universal design, cultural awareness, disability both seen and hidden

Veterans – creating cross-walks for prior experiences. Show faculty the dedication of veterans around hard working academically. Cultural awareness around confidence which may not be a true reflection of internal beliefs around belonging.

Make time and commitment requirements of experience clear to the student, as best the faculty can so that the student knows what they are getting into and agree before starting.

Awareness that opportunity exist and how to reach those students. How do we do this? Work with other offices on campus – disability services, veterans support groups – to make aware of what experiences exist and pitching in a way that the URE is seen as a positive opportunity.

Reaching students going into health field. Communicating that research skills have benefits in any field and that students should engage.

Create one PowerPoint slide that has highlights and picture of student doing research and send to other faculty. Ask faculty to share with class and contact researcher if interested in joining. Visit first year experience courses and pitch to students in these classes. Program alums could engage here too – collect information from students who are interested in research and reach out directly at registration.

Food insecurity issues – provide food at recruitment events, if need extra students, credit to meal plan. Connecting to other programs on campus that provide support for students and helping connect to research students.

Universal design for learning – what we put in place for some students who have a “barrier”, that access increases the access for ALL students.

Using funding that is specific to one population to benefit all students through pairing students together.

Don’t assume that students don’t have basic technology – computers – students are doing it all on cell phones – transparency at beginning of project to determine what supports a student needs. Internet access is also an issue.

Technology can also help to mentor students who can’t get to campus everyday through video chat.

2) URE Pathways and Retention: What pathways should institutions consider in order to engage and retain underrepresented students in STEM URE experiences? What are the major challenges to overcome to retain students during and after a URE? **Propose four promising strategies for engaging students in UREs. Propose four strategies for retaining students in UREs.**

Key Discussion Points	Final Synthesis
<p>R: Getting to know students so that when they don't show up someone notices. Reach out and find out how to support to overcome whatever the barrier is to continued enrollment. Faculty advocating to administration to support the funds to support the students' enrollment.</p> <p>R: Hire a retention specialist that the faculty can contact when they have concerns about a student.</p> <p>R: Build a community for the students so they don't feel like they are the only one and that they contribute to the end product.</p> <ul style="list-style-type: none"> • Group work in class • Lab meetings where students share what they are doing and what struggles are occurring • Bring students who are doing internships or honors projects together <p>R: Be okay with failure – be clear that the student is not the failure but that this is how research works.</p> <p>E: early exposure to research – library research on a topic that is interesting to the student. Second semester they work with a faculty and are asked why the research was interesting. Make the experience locally relevant to the student.</p> <p>E: photos of students that travel next to the scientific poster with a statement about the experience.</p> <p>E: bring vulnerability about belonging with alum/professionals</p> <p>Feeling of not belonging when at conference or a poster session</p> <p>E: Keep research projects with a local or cultural focus</p> <p>R: Mentors helping students find the next step along the pathway either at the community college or beyond</p> <p>R: Sharing career pathway that shows end goal and how URE fits into end goal</p> <p>R: Engage family of student from the beginning of the URE</p> <p>E: Have current students participate in engagement process</p>	<p><u>Four Strategies for Engaging Students</u></p> <ul style="list-style-type: none"> • Travel opportunities • URE having a local focus • Early exposure of students to the research in first semester. Could even be a library research project where the student selects a topic that interests them • Keeping communication open about feelings of belonging and vulnerability as a student in URE <p><u>Four Strategies for Retaining Students</u></p> <ul style="list-style-type: none"> • Build relationships/community between faculty/students and students/students so that when students don't return or show up, there is someone who notices and reach out and support through challenges. • Work with campus professionals, eg. Retention specialist who can support students who are struggling and guide them to resources that faculty may not have access to • Keeping communication open about feelings of belonging and vulnerability as a student in URE • Connection to the family through publicity and sharing of clear information on what the family can expect during the URE.

3) Designing for Student Needs: How do we design UREs in STEM disciplines to meet the full range of underrepresented students’ needs? **Propose 3-4 promising strategies.**

Key Discussion Points	Final Synthesis
<p>Universal design for learning – making implicit practices explicit</p> <p>Think about where students are going to struggle and give support around research practices before you get there. How to ask a good question, how to troubleshoot and how to do all this as part of the process and not as personal failure.</p> <p>Reflection on why an experiment failed is a learning process and guiding student through that process.</p> <p>Creation of URE that can be utilized in online courses – citizen science projects? How to create a sense of belonging in a scientific community? Equipment needs? Big data could be utilized for these experiences.</p> <p>Team work for creating flexibility to address student needs.</p> <p>Competition model to connect with an external mentor. Example of working with NASA when the college doesn’t have the expertise for the project.</p> <p>CURE – including research in an introduction course that has a diverse population of students.</p> <p>Designing research questions that meet the local cultural interests of the student population. Example: students researching native plants and the healing properties.</p> <p>Faculty need to know what the student needs are and how to address failure and other challenging/sensitive topics (around culture), with the students through an appropriate lens.</p> <p>Faculty sensitivity to culture</p> <p>Faculty training on how to work with diverse populations of students to raise awareness and provide resources of how to move past challenges.</p>	<p><u>Key Strategies (3-4)</u></p> <ul style="list-style-type: none"> • Universal design for learning – making implicit practices explicit • Creating online URE to reach a diverse population of students • Using the competition model of an external mentor to reach disciplines that lack an experienced faculty • Professional development for faculty around cultural sensitivity this could be a high quality faculty mentoring program with on-going conversations

4) Ensuring Benefits for Students: Beyond access for these students, how do we ensure that underrepresented students in STEM disciplines benefit from their URE experiences? What are the unique factors or dimensions of UREs that impact the student learning experience?

Propose 3-4 promising strategies for ensuring benefit. List 3-4 unique factors for impacting the learning experience.

Key Discussion Points	Final Synthesis
<p>Connections to industry so that when students develop skills it is clear where they can use the skills locally, either jobs or internships</p> <p>Expanding funding for URE at community colleges</p> <p>Make a lot of noise about the student research – gain community support</p> <p>Connect students to a mentor at a college that they transfer to so that the student has a place to plug into.</p> <p>Build a network to support students after they leave the community college</p> <p>Collect data on students to determine how the experience is impacting their success to determine if there is a difference between minority and non-minority student success.</p> <p>Online undergraduate research conferences</p> <p>Exchange program between community college – matching related projects and having students virtually share posters/presentations</p>	<p><u>Promising Strategies for Ensuring Benefits (3-4)</u></p> <ul style="list-style-type: none"> • Expanding and sustaining funding to ensure that URE continue at community colleges • Be flexible to student needs • Connections to local 4-year colleges and industry to create a pipeline for students as they move past the URE • Online or virtual undergraduate research conferences/poster sessions/presentations <p><u>Unique Factors for Impacting Learning (3-4)</u></p> <ul style="list-style-type: none"> • Networking • Exposure to disciplinary practices such as failure • Engagement in learning leads to ownership of learning process

GROUP 2

1) Ensuring Far Greater Access: How do we ensure that more students have access to UREs at community colleges, especially those that are traditionally underrepresented in STEM disciplines? **Propose 3-5 promising strategies for ensuring access.**

Key Discussion Points	Final Synthesis
<ul style="list-style-type: none"> • Partner with MESA (state funded similar to TRIO) or ELSAM (provide space and advising for underserved students) • One on one conversations and recruit through organizations listed above • Go to students (Clubs, extra-curricular activities) Have students communicate with them and recruit them • Embed research into the coursework to gain interest and gather exposure (highly suggested electives or in mandatory curriculum) • Catching students up to our beginning standards by building pipeline earlier • Invite students to school for research with students specific to similar backgrounds • Flexibility to let students have the opportunity to adapt • Money • Capture The Flag Competitions • Invite students with you to activities, conferences • Strategies to show students skill, teach students to be good learners • Allow students to choose project within parameters of classes • Tools to identify for faculty • Community based research project 	<p><u>Strategies for Ensuring Success (3-5)</u></p> <ul style="list-style-type: none"> • Recruitment – Go to students, partner, leaders of similar background of who you are attempting to attract, solutions of online research for rural schools (Transportation and Internet) • Preparation for faculty and students and administrators with common language • URE/design flexible schedules for students

2) URE Pathways and Retention: What pathways should institutions consider in order to engage and retain traditionally underrepresented students in STEM URE experiences? What are the major challenges to overcome to retain students during and after a URE? **Propose four promising strategies for engaging students in UREs. Propose four strategies for retaining students in UREs.**

Key Discussion Points	Final Synthesis
<ul style="list-style-type: none"> • Open access and having personnel as lab assistants for a more flexible schedule for URE • Similar prep commonality between adjuncts and lead faculty • Safe spaces for STEM likeminded individuals especially minority services tutoring, social support. • Create a matrix to locate gaps at institutions CCURI. • Peer tutors after rigorous training sessions • Peer mentors to help new student • Webinars and social media to open pathways into programs 	<p><u>Four Strategies for Engaging Students</u></p> <ul style="list-style-type: none"> • Open access • Relevant Social Media • Safe spaces for digital and physical access with resources • Trained Peer Support <p><u>Four Strategies for Retaining Students</u></p> <ul style="list-style-type: none"> • Faculty Engagement (Making personal connections and seeing where they are at) • Building pipeline with partners in the outside community

<ul style="list-style-type: none"> • Making sure they knew every students name, meeting one on one with instructor, prioritize support based on need • Partnering for events, competitions 	<ul style="list-style-type: none"> • Build URE's into pathways (Let students know the pathways)
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3) Designing for Student Needs: How do we design UREs in STEM disciplines to meet the full range of underrepresented students' needs? Propose 3-4 promising strategies.	
Key Discussion Points	Final Synthesis
<ul style="list-style-type: none"> • Remote URE's continuing project at institution and the leaders from the former research experience mentor the next group • Survey the students to find out their barriers pre, present, and post survey of students need anonymous (Community College student survey engagement) NESSE • Identifying not deficits but experiences/opportunities assets • Demographics are different based in various schools • What other skills will assist them in their long-term careers • Educational researchers to identify models • Central repository for Community College STEM resources (tools, videos, modules, journals) (like Clark.center) 	<u>Key Strategies (3-4)</u> <ul style="list-style-type: none"> • Traditional Capacity (Assessing institutional hiring processes etc...) • Assess needs, desires, and strengths of our students "Gap Analysis" • Central Repository to document concepts that correlate to pathways for successful students in URE's
4) Ensuring Benefits for Students: Beyond access for these students, how do we ensure that underrepresented students in STEM disciplines benefit from their URE experiences? What are the unique factors or dimensions of UREs that impact the student learning experience? Propose 3-4 promising strategies for ensuring benefit. List 3-4 unique factors for impacting the learning experience.	
Key Discussion Points	Final Synthesis
<ul style="list-style-type: none"> • Demographic role reversal • Difficulty for community college faculty designing and thinking of project, setting up project and recruit project, plus focus on underrepresented students, lots of hurdles. • Take pieces of work that needs to be done. URE faculty liaison that helps find partners to increase players involved in URE. • Student success coordinator help faculty member in lab but also helps student navigate complexities of lives. • Add opportunities to learn about social justice in STEM and how ethnicity impacts success in URE program. 	<u>Promising Strategies for Ensuring Benefits (3-4)</u> <ul style="list-style-type: none"> • Training faculty/student mentors on implicit biases and issues in regards to diversity and inclusion. • Ongoing training in best practices of mentoring through undergraduate research. • Intentional incorporation of employer valued skills. <u>Unique Factors for Impacting Learning (3-4)</u> <ul style="list-style-type: none"> • Provide access to unique resources that students can use (equipment, job opportunity, internship, job skill sets).

- Faculty/student groups (diverse) write journals/social media updates on URE opportunities and experiences. Create social network.
- Learn scientific communication, how to present, go to conferences, how to properly communicate in a professional environment.
- Understanding unique mentor and mentoring style. Provide mentors with resources and best practices in their demographic.
- Cohorts that naturally form within the URE student experience. Increases motivation to stay.
- Provide access to unique resources that students can use (equipment, job opportunity, internship, job skill sets).
- Industry/laboratory field trips.

- Inability for faculty and administration inhibiting discussions on how ethnicity affects outcomes and negative stereotypes of underrepresented groups. Ignoring problem and not having brave conversation that biases exist.
- Encourage naturally occurring student cohorts within the URE program.

GROUP 3

1) Ensuring Far Greater Access: How do we ensure that more students have access to UREs at community colleges, especially those that are traditionally underrepresented in STEM disciplines? **Propose 3-5 promising strategies for ensuring access.**

Key Discussion Points	Final Synthesis
<ul style="list-style-type: none"> ○ Accessibility – labs, programs, etc. ○ Economically favorable ○ Go to organizations to recruit student ○ Advertising – through advising. Recruiting students at the high school level; go into the high school setting and self-advertise for your program ○ Equitability – resources to minority institutions. What concerns and approaches are there to target the different communities ○ Educating students – first generation student may not understand the importance, availability, or definition of what UR is. Education of families is also important to highlight value of participation in UREs. ○ Target the community – campus tours for middle schoolers, summer camps, church groups, etc. ○ Access for students that are parents or do not have average student schedules. ○ Incorporating research into the course (CURE); access to all. Focus on gateway courses so that reach students early on. ○ Partners with local agencies ○ Target schools that are pushing dual enrollment ○ Disability – multi-lingual, physical access to the labs, financial support to focus on underrepresented students. Have clear broader impact goals ○ Make a URE that is relatable. Make it interesting to the students ○ Contact funding agencies to be more flexible with their criteria (part-time verse full-time; most grants target full-time students) ○ Showing the students what they can actually do with this. ○ Ensuring that faculty are trained professionally to ensure that more offer this, which in turns reaches more students. Possibly training high school teachers as well. 	<p><u>Strategies for Ensuring Success (3-5)</u></p> <ul style="list-style-type: none"> • Accessibility – funding, multi-lingual, physical changes in lab, ability for everyone to participate (CUREs), particularly in freshman level courses so that students can get exposure early • Advertising and outreach – targeting student groups and the community (groups, middle and high schools, etc.) • Interesting project that may be community-based – making it relevant to the students will hopefully pique their curiosity and have them stay in the discipline • Professional development for faculty – more faculty trained and incorporating research, then more students naturally reached

2) URE Pathways and Retention: What pathways should institutions consider in order to engage and retain traditionally underrepresented students in STEM URE experiences? What are the major challenges to overcome to retain students during and after a URE? **Propose four promising strategies for engaging students in UREs. Propose four strategies for retaining students in UREs.**

Key Discussion Points	Final Synthesis
<p>Engaging</p> <ul style="list-style-type: none"> ○ Diverse faculty – multiple backgrounds to engage students to want to participate ○ Start from day one – so important to show students from diverse backgrounds why this is important and relevant to them. Bring alumni from URE to speak to them, someone from a nearby 4-year college, etc. ○ Show students the end game/future as well. Where have past students ended up? ○ Relevance of the project and do-ability of the project. Do not create a project that is hard to accomplish. Should not be about results but about the process. ○ Partnering with MSI – minority serving institution. ○ Communication – be intentional and aware of how you communicate. For example, students that are deaf cannot listen to side conversations. Be direct ○ Confidence building – you may not be a good test taker, however you could be a great researcher. By putting some grade control in their hands... <p>Retaining</p> <ul style="list-style-type: none"> ○ Meet non-academic needs – food banks, academic emergency funds, Aunt Bertha. By helping needs they may have may allow them to have the ability to participate ○ Possible tuition waiver for students to ensure participation; institutional buy-in. Approach Deans for operational budgets, approach the Foundation or trustees ○ Academic support – offer mentors, tutors, reach students that are coming from low-academic areas to better keep them if they are not doing well. ○ Intentionality 	<p><u>Four Strategies for Engaging Students</u></p> <ul style="list-style-type: none"> • Diversity – faculty, alumni, community groups • Relevancy – why is this course important for not only your course but for the future? • Communication – letting students know why you are doing something. Be sure to include and represent all students • Intentional education <p><u>Four Strategies for Retaining Students</u></p> <ul style="list-style-type: none"> • Meeting non-academic needs – students have hurdles that are not just centered around their courses and schooling • Meeting academic needs – students do not just have problems based around economics • Community – having students build relationships with faculty and each other

3) Designing for Student Needs: How do we design UREs in STEM disciplines to meet the full range of underrepresented students' needs? **Propose 3-4 promising strategies.**

Key Discussion Points	Final Synthesis
<ul style="list-style-type: none"> ○ Connection with people that provide support services; lower stakes person and not the faculty member that is assigning your grade. Librarians, tutors, disability services, veterans' affairs, transfer to schools ○ Give students a perspective on career paths. Where can you go after? What can you do? What kinds of careers are out there? Invite recruiters, etc. ○ Enticing, exciting, attractive...relevant!!! ○ Getting out into the field trips; working out in the field. ○ Try to reach as many students as possible – offering activities around their schedules. Online learning for some aspects to allow for accessibility. For example, have the librarian do an online version of the in-class lesson on how to access and get journal articles. ○ Designing labs that can be done within the session and time allowed with the limitations of lab space, time, etc. If something has to be “checked” 2 days later but you only meet once a week for lab....how feasible is the study for student accessibility? ○ Transferable skills – can go throughout disciplines. Making relevance to what employers want as far as skills. ○ Tell students that everything you are doing is intentional. Explaining importance. Ex. The Transparency Framework. ○ Fund URE students – REU awards that why not CCs? Possibly fund some for UR and some through lab tech help...? Replace outside employment/external pressure ○ Student intake survey – ask about student needs and find out ways to help 	<p><u>Key Strategies (3-4)</u></p> <ul style="list-style-type: none"> • Support services – success coaches, writing center, etc. Support for the underrepresented students (not just academic support) • Flexibility and logistics – do this around the specific needs • Transparency and relevancy – know your students and where they are coming from

4) Ensuring Benefits for Students: Beyond access for these students, how do we ensure that underrepresented students in STEM disciplines benefit from their URE experiences? What are the unique factors or dimensions of UREs that impact the student learning experience?

Propose 3-4 promising strategies for ensuring benefit. List 3-4 unique factors for impacting the learning experience.

Key Discussion Points	Final Synthesis
<p>Ensuring benefits:</p> <ul style="list-style-type: none"> ○ Identify skills for their resume and their importance for future employment; relay what employers want and how this UR is meeting that ○ Celebrate student success – incorporate special awards (see below!) ○ Facilitate and supports student travel and participate in meetings; helps with not only networking but also giving the students a sense of ownership ○ Peer learning (community) – work in a group instead of being a sole UR student so that they do not feel lonely. ○ Provides students with a competitive advantage <p>Unique factors:</p> <ul style="list-style-type: none"> ○ Give students a certificate of completion/award to each student that completes the URE – tell them to put into a portfolio for future use ○ Research scholar – have a cord to wear at graduation denoting they completed 2 semesters of UR ○ Ask donors and foundation of school to fund student travel; conversation piece between donors. Have students write a thank you – teaches then a skill ○ Identify conferences that will possibly not only fund the students travel but also provide a stipend. ○ Students have experiences and learn things in a different way than in the traditional classroom. Trouble-shooting in a real-world type of experience ○ Lower student to faculty ratio – more time to interact and strengthen a personal relationship ○ Students feel that they are a part of something more – a scientific endeavor. They will have an actual STEM identity 	<p><u>Promising Strategies for Ensuring Benefits (3-4)</u></p> <ul style="list-style-type: none"> • Skills – relaying the relevance to the next step • Helping them articulate and market their skills • Recognition and dissemination – of their work, their product, but more importantly their success <p><u>Unique Factors for Impacting Learning (3-4)</u></p> <ul style="list-style-type: none"> • Unique situation – lower faculty:student ratio, peer learning communities, • Being exposed to skills would not get in the traditional classroom - • Scientific endeavor – I am a scientist! STEM identity