

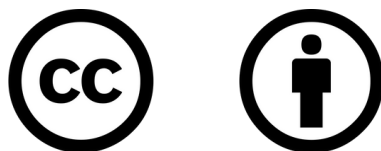
FOR A RACIALLY JUST,  
INCLUSIVE, AND OPEN  
STEM EDUCATION

# STRATEGIC PLAN



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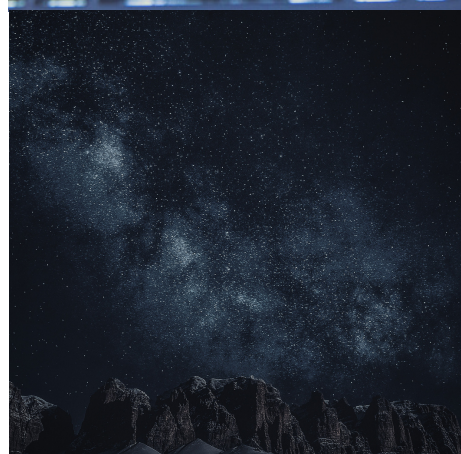
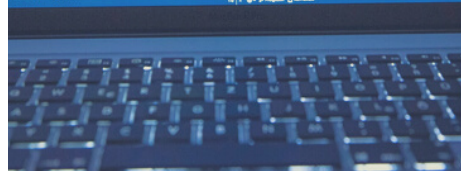
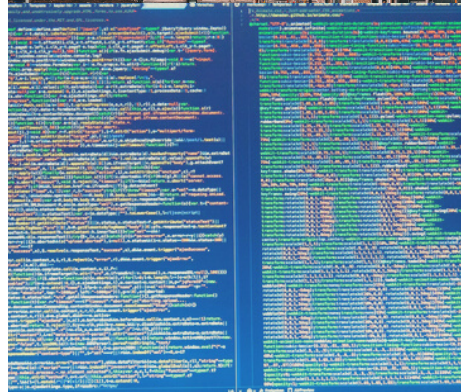
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# Vision

**All students deserve an educational experience that is, for each student, liberatory; It should center historically and currently marginalized students, be fully accessible and relevant, and create agency and voice to critically engage in the broader world.**

**RIOS IS FIGHTING FOR  
EDUCATIONAL JUSTICE IN  
UNDERGRADUATE STEM**

# Mission

**The RIOS Institute provides resources for STEM education and organization leaders to implement social justice, equity, diversity, and inclusion (SJEDI)-centered Open Education and Open Science pedagogy, materials, and resources. We work with and provide support for leaders to bring change to their communities and members of their organizations.**





# Truly Open Education requires social justice

By questioning “Open for Whom,” RIOS imagines an Open Education as the radical idea that education should be affordable, accessible, equitable, inclusive, and relevant to everyone regardless of their background (Roberts, 2020). We imagine Open Education classrooms which center the students as co-constructors of the learning environment and the learning process. We define Open STEM Education to include participating in an Open Science ecosystem which democratizes knowledge, tools, and access to information. However, we can only achieve these goals if Open Education is built upon a framework of social justice. This means that we need to critically reflect on the areas where STEM Education has not allowed all society’s members to access the STEM ecosystem and/or thrive within it when designing and implementing Open Education.



Roberts, J. (October 2020). Keynote Address. Open Education: Do Better. Presented virtually at the 2020 Academic Academy Conference for Academic Senate for California Community Colleges.



# Who is the RIOS Institute?

The Institute for a Racially Just, Inclusive, and Open STEM Education (RIOS Institute) is a virtual synthesis center led by a diverse set of individuals at the interface of open education, STEM postsecondary education, and leadership in social justice, equity, diversity, and inclusion (SJEDI). The RIOS Institute is led by a team of 11 personnel that help set leadership priorities and programming: 3 visionary Fellows who set priorities for OER Cyberinfrastructure, Communications, and SJEDI, 2 Advisors who bring perspectives from students and libraries, 3 Directors that oversee administrative duties, and 3 support staff who support communications, program, and administrative operations. RIOS is committed to continually assessing how well our institute aligns and supports SJEDI principles; and thus employ an external evaluator to help on our learning journey.



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# Who is the RIOS Community?

**The RIOS Institute supports and collaborates with several stakeholders in the STEM ecosystem. We refer to these stakeholders here as the RIOS community. In this vein, we directly support leaders of organizations that work in postsecondary STEM education OER-related sectors including policy, education, and funding. Within postsecondary education, the RIOS Community also includes STEM Education researchers, curriculum building project leaders, course coordinators, professional developers, and library and instructional technologists.**



# Which levers does the RIOS Institute target for systemic change?

We know systemic change takes systems thinking. We cannot do all of the change ourselves, even with a community of amazing leaders behind us. The RIOS Institute focuses on the following three areas related to Open Education and postsecondary STEM education:

## PEOPLE

We have a suite of activities (e.g. Learning Communities, Webinars, Working Groups) that leaders can participate in to build professional capacity in justice, equity and inclusion that can be implemented into their organizations. We use our social and professional networks to amplify the work of these leaders and other community leaders, particularly those who identify as part of groups historically excluded from STEM by virtue of their gender, race, ethnicity, sexuality, and/or economic status. As we believe that collaboration is the path to STEM Education transformation, we also emphasize community building among this group of leaders. Throughout all of our activities, training, and communications, we prioritize the primary long-term beneficiary - the learners in our classrooms - and involve students in advising and designing RIOS Institute content.

## POLICIES

We are committed to helping leaders affect their organizations through policies that promote equity and inclusion. Social justice work takes structural changes, many of which are upheld through the policies that govern systems. Our professional development experiences ask leaders to identify opportunities for policy change. Through collaborations and working groups, we provide leaders with recommended practices to guide organizational, project, and funding policies, in order to kickstart institutional change. Our own organization serves as an innovation sandbox, in that the policies we recommend are also practiced and evaluated at the RIOS Institute. We strive to lead by example, and invite others to join us on this journey. We also offer consultancy services to organizations with specific challenges around open education and equity-minded education.

## CURRICULUM

Open Educational Resources (OER) provide both a template and an archive of classroom practices. When social justice approaches are used as part of creating, adapting, implementing, and sharing OER, we change the footprint of higher education as well as the experience for students. Postsecondary STEM education has a culture that is strongly shaped by disciplinary norms. We aim to create new cultural expectations for STEM by offering a suite of “train-the-trainer” programming so that our leaders can support classroom teachers, in both curriculum development and pedagogical practices that support social justice for STEM education.



# **RIOS INSTITUTE STRATEGIC PILLARS**

**To do this work, RIOS has oriented its support activities around three pillars.**

## **THOUGHT LEADERSHIP**

**We help lead the RIOS community forward by stimulating relevant research, creating broader awareness around community work, providing expert consultancy for organizations, and leading by example.**

## **BUILDING LEADERSHIP CAPACITY WITHIN COMMUNITY**

**We believe that peer support is vital to equity and inclusion. We strive to create a community of transformation that challenges and supports each other and because we benefit from each other's diverse experiences, expertise, and work.**

## **BUILDING CROSS-SECTOR PARTNERSHIPS**

**We connect organizations and people that can benefit from sharing resources and expertise.**







## Expertise of RIOS Leadership

The RIOS Leadership Team (Directors, Fellows, Advisors, and Staff) represent a collective of scholars in the inclusive education, open science, open pedagogy, and social justice advocacy space. Independently, each member of the Leadership Team is nationally known for their work in all or some of these areas. The RIOS Institute is a unique opportunity for all of these individual skills to be leveraged in ways that can impact the national conversation on inclusive education in as yet unrealized ways. To this end, the RIOS Institute provides an environment for the development of project ideas and scholarship and the creation and dissemination of mission-related scholarship and projects (see 1.2). These can be in the form of conceptual pieces produced either as opinion editorials or shepherded through peer-review. RIOS Leadership Team members may also identify empirical projects appropriate for their expertise and collaboration, seek extramural funding for its implementation and dissemination.

### Key Initiatives



RIOS team members Donovan and Diaz Eaton collaborated with members of the Science Community Gateways Institute on a conference paper directed towards the information and system science community on cyberinfrastructure for open science education. This was presented at the Hawaii International Conference on Systems Science in January, 2022.



Several team members from the leadership teams of RIOS and its predecessor, SCORE Network, co-authored an article “Sustainability Challenges for Open Resources to promote an Equitable Undergraduate Biology Education” to appear in the open access journal CBE-Life Science Education which explores the challenges of sustaining open STEM education through the lens of social justice.



Team members Cangialosi, Dewsbury, and Diaz Eaton wrote an invited chapter on the RIOS Institute for Policies and Practices: Advocating for Students of Color in Mathematics edited by Harris and Winger (2021) detailing the philosophy of RIOS and its approach to supporting justice for STEM education.



We have collaborated with RLOE to organize discussions and workshops on social justice for STEM OER at OER Northeast and the AACU forum on open learning.

# Stimulating innovative research through Working Groups

Working Groups are a mechanism by which the RIOS Institute stimulates research among and between RIOS Community members. We do this in two ways - by soliciting particular working groups on specific topics and through open calls. These research projects are meant to catalyze collaboration in order to cultivate and support innovative ideas to tackle a shared community challenge. Participants might build communication products to share research and learning (e.g. webinars, white papers, publications) and/or next stage collaborations (e.g. writing a grant proposal, convening a conference).

## Key Initiatives



In Summer 2020, a Working Group on Tagging Ontologies was solicited and co-led by RIOS Institute leadership. Upon completion, two groups emerged - one exploring the use of machine learning to detect and flag racist stereotypes and/or content in OER and a second in which RIOS led a National Science Foundation proposal to build metadata and social infrastructure to highlight anti-racist OER.



RIOS is currently soliciting proposals for new Working Groups. The open call can be found on the [riosinstitute.org](https://riosinstitute.org) website. Proposed projects must align with the RIOS mission.





## Advocacy and awareness

Led by the RIOS vision, the RIOS Institute advocates for those that have been historically and contemporaneously marginalized in STEM education. This includes creating awareness of RIOS Institute work, the work of the RIOS Community, and the work of marginalized voices (including students) in the broader landscape oriented towards justice. A key component is our communication strategy, which focuses both on digital marketing as well as cross-sector educational publication and conference venues for awareness and advocacy.

### Key Initiatives

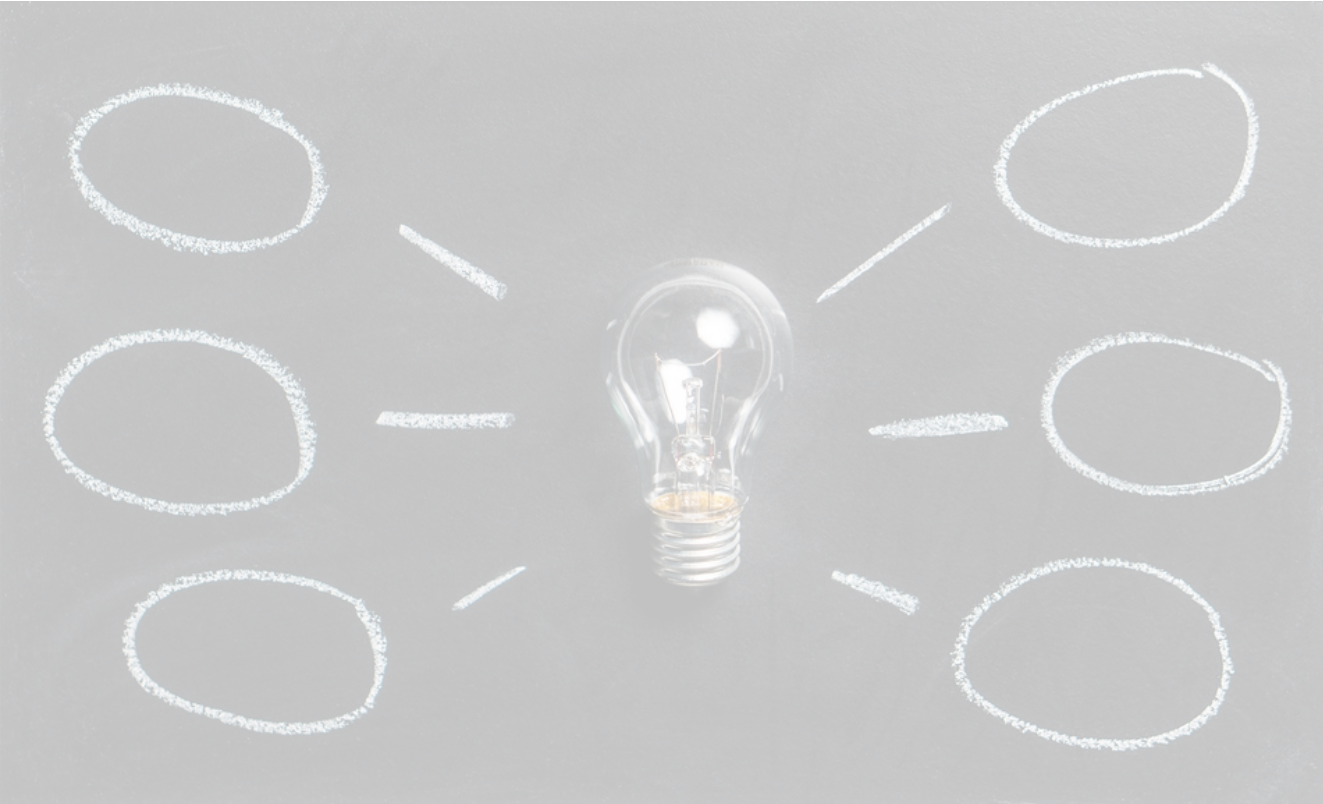


Between 2019-21, starting with the kick off of the SCORE Summit meeting and as of our Summer 2021 reporting period, RIOS Leadership Team and RIOS Community members have reported 5 journal articles, book chapters or other manuscripts; 38 presentations; 11 proposal submissions; 26 educational aids/curricula; 6 media products; 12 meetings/workshops; and 7 other products related to the support and activities offered by SCORE and



In 2021, we hired our first RIOS Fellow of Communications and a Communications Manager. Together, they undertook a process of rebranding from SCORE to RIOS. This included the development of a new website at [riosinstitute.org](https://riosinstitute.org) and a new social media presence, @RIOSCommunity on Twitter and Instagram.





## Providing expert consultancy

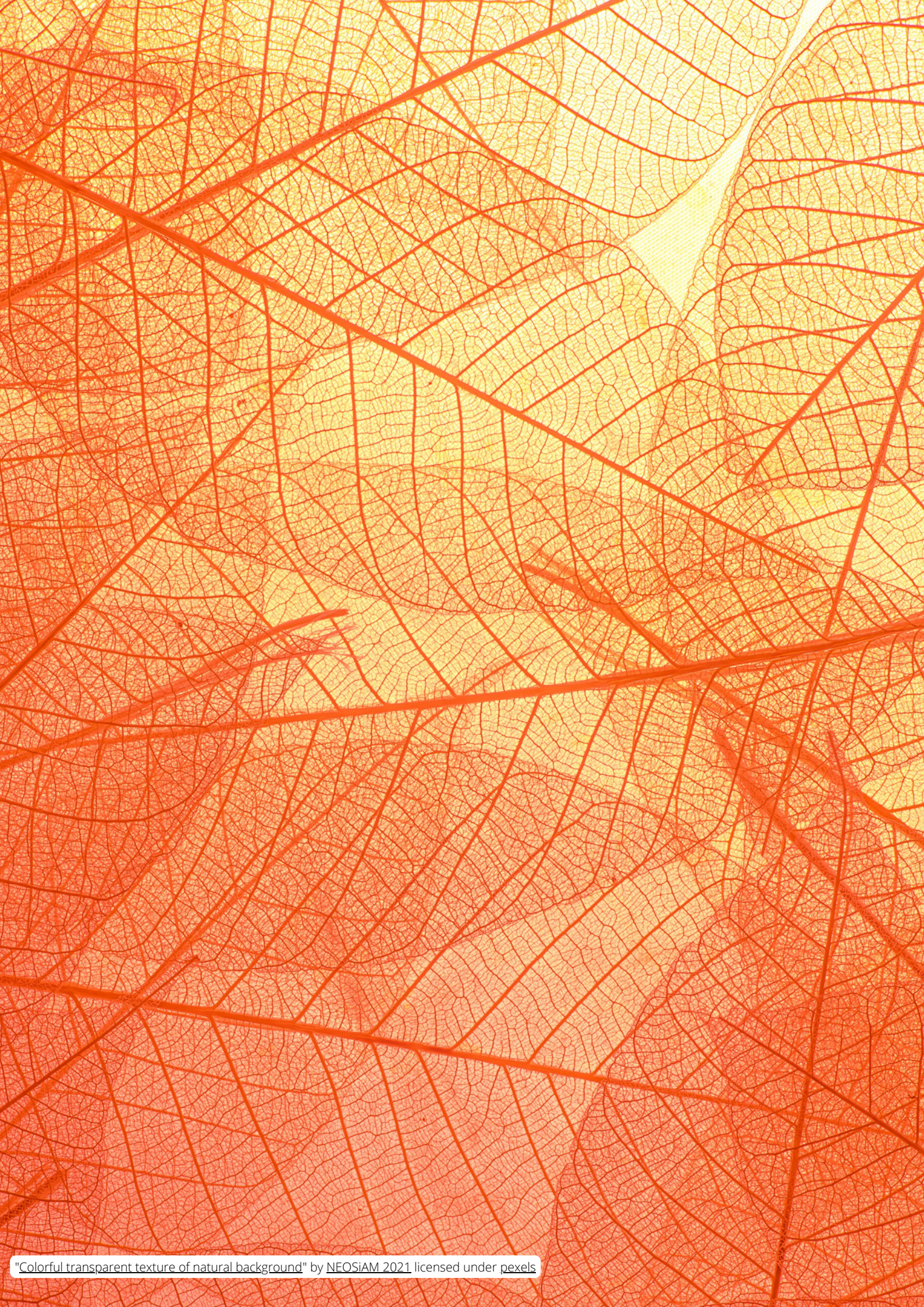
The RIOS Institute is perfectly positioned to consult with institutions of higher education and their adjacent on issues related to open educational resources, open science, and inclusive education. Consultancies of this nature may include, but are not limited to a) assistance with curriculum development, b) professional development workshops on open and/or inclusive education, and c) design plans for the infusion of social justice into pedagogical praxis. This process allows the RIOS Institute to continue to broaden its impacts in the inclusion space by empowering other organizations to engage in inclusive futures unique to them.

### KEY GOALS:

Launch a blog as part of a broader strategy to get our thoughts out into the STEM Education and Open Ed ecosystem - this will complement our formal publication pathways which we will still nurture.

Maintain a consistent and distributed leadership presence at national and international conferences, such as Open Ed Global where these discussions are being had, and leveraging partnerships where available.







## Learning Communities

Learning communities are virtual directed professional development offerings that allow small groups of leaders to learn new ideas, challenge existing practices, and support each other to make change in their organizations. Learning communities are developed and led by RIOS Leadership Team members and/or mentor(s) expert in the topic. Time commitment ranges between 10 - 20 synchronous hours distributed over 2-3 months, providing a low threshold for engagement, but sustained to encourage peer community building and continued reflection. To foster impact, we particularly encourage institutional teams to participate in our activities and we offer “train-the-trainer” mentoring to help participants take the next step by running their own learning community in their community.

### Key Initiatives



The RIOS Institute Learning Communities portfolio since 2020 has included: Social Justice, Equity, Diversity and Inclusion (S-JEDI) in STEM OER, Open Educational Practices, Sustainability and Equity (collaboration with Science Community Gateways Institute), and STEMed Project Leaders in Inclusivity Network (collaboration with QUBES)



All curriculum materials from our S-JEDI group and our evaluation results were published with CC licensing. Due to demand, we hired an additional facilitator and ran two learning communities meeting on different days. Participants were surveyed and 100% (12 out of 12) of respondents indicated the exchange of ideas which took place during the learning community will influence their future work.





## Communications

Communication work is both internal and external. Through external communications, our primary objectives are establishing the expertise of our Institute, and engaging in advocacy and awareness. This helps recruit additional member-subscribers. Internal communications are meant to highlight the work of the RIOS Community, both activities directed by the Institute as well as related work of our partners and experts that our community should know about. Through this internal communication work, we are celebrating the next generation of STEM OER leadership together.



### Key Initiatives



Throughout our learning communities and working groups, we have made an effort at communicating our ideas and process to the entire RIOS community through the use of open practices. In the S-JEDI learning community, a member of each learning community reported weekly learning. In our Tagging Ontologies Working group, our participants co-authored a reflection on their experiences.



The newsletter, delivered quarterly under SCORE, is in the process of relaunching to a monthly newsletter under RIOS rebranding. The goal is to share news across the network, highlight leadership, and keep the community informed about RIOS news and opportunities.







## Cross-Sector Convening

RIOS believes that while each community separately has their own domains of support (educational institutions, libraries, OER organizations, STEM education researchers, etc.), there is a need for support which helps leaders connect across sectors. The RIOS Institute serves as a hub to connect people with expertise, provides virtual and in-person opportunities for leaders to connect across silos, and provides funding for innovative and collaborative pilot projects and research aligned with the RIOS mission. We do this through communications so that the community knows about the great things happening across sectors and through events and convenings such as meetings, showcases, and learning communities.

### Key Initiatives



Our first in-person convening was the SCORE Summit, funded by the National Science Foundation which recruited a total of 35 individuals representing more than 17 organizations. As of July 2021, a total of 140 individuals have participated in at least one activity that has been directly or indirectly sponsored by the RIOS Institute, and 72 individuals are members of the current online community group.



In our mini-grants program, funded by the Hewlett Foundation in 2021, we held a Showcase in which each awarded team presented their final results and work.



## Strategic Partnership Building

The RIOS Institute supports a broad community. Many of these members go on to make action within their communities directly. Sometimes, they partner with the institute directly in substantial ways, through providing funding, collaborating to seek funding, and collaborating on professional development experiences. We also actively recruit strategic partnerships externally where certain resources, expertise, and/or experience are needed by the RIOS community

### Key Initiatives



The Institute for the Study of Knowledge Management and Education (ISKME), BioQUEST, and the Science Education Resource Center participated in the SCORE summit in 2019. Since then, multiple leadership staff from each group have participated in mini-grant opportunities, learning communities, and working groups. In 2021, they joined with each other, led by RIOS Institute, to co-write a grant to the National Science Foundation on metadata challenges for curating anti-racist teaching resources. This transition from RIOS Community participant to active RIOS Partner also exemplifies our commitment to building leadership capacity through collaborative partnership.



In Summer 2021, RIOS Institute collaborated with the Science Gateways Community Institute to run a learning community on sustainability strategies for OER and STEM Education organizations. We were able to recruit several new organizations to participate in this learning community, including Atlantic OER, RLOE, Historically Black Colleges and Universities (HBCU) OER Affordable Learning Solutions, University System of Maryland, and UBalt OER Sustainability and Equity.



RIOS Fellows and Advisory members were chosen to help strengthen partnerships in STEM, Equity in higher education, and OER, as well as for their particular expertise in areas relating to starting a new institute. As our organization grows and the landscape changes, we look to update the organization and responsibilities of our Leadership Team, including our Fellows, and our Advisory Board members.







# Building the RIOS Institute

The RIOS Institute was established in April 2021 with funding by the William and Flora Hewlett Foundation to continue efforts of the SCORE Network which was created with initial funding from a National Science Foundation grant awarded in 2019. The RIOS Institute will continue to expand the capacity of the SCORE Network to develop platforms and programming that support and elevate ideas relevant to the intersection of social justice and open education. The RIOS Leadership Team meets weekly, has developed a comprehensive strategic plan, and is identifying external funding sources able to support its mission beyond the terms of the Hewlett Foundation support. RIOS Fellows were initially conceptualized as leading experts that can help lead and consult on critical pieces of RIOS' work. As we grow, the key work of Fellows and staff have become more critical to the current mission and shaping of the RIOS Institute and are all valued members of the Leadership Team. To support the RIOS Institute or to get involved, contact [partnerships@riosinstitute.org](mailto:partnerships@riosinstitute.org).