

OER for Diversity, Equity and Inclusion in STEM Classrooms

A BioQUEST Community Conversation
Shared 2/24/22



Digging into the resources described in the
February 2022 Community Spotlight



This session will address:

1. The February Community Spotlight
2. Many of these resources emerged from BIOME working groups and FMNs
3. Meta-data for inclusive pedagogy; universal design; and, Open Science/Open Ed
4. Introductions to resources
 - a. Mary Mulcahy - Integrating Social Justice into your STEM Classroom: Redlining & Health
 - b. Ben Negrete - Data on Dead Zones and a Scientist Spotlight Featuring Benjamin Negrete, Jr.
 - c. Hayley Orndorf - Getting Started with Universal Design for Learning
 - d. Yarid Mera - Teaching Cancer Biology Through a Lens of Social Justice
5. Invitation to share additional resources and continue the conversation.



Community Spotlight

Each Community Spotlight features an outstanding group, partner, resource, or member of our community.

OER for Diversity, Equity, and Inclusion in STEM Classrooms

This month we are featuring a selection of recent resources from the [QUBES Open Educational Resources Library](#) that are related to all things DEI: Diversity, Equity, and Inclusion in STEM classrooms.

Resources here incorporate social justice issues, broaden representation in course materials, place science in the context of history, help align lessons with Universal Design for Learning principles, and more.

Caitlin Hayes

BioQUEST Communications Manager



<https://qubeshub.org/news/newsletter/feb-community-spotlight>

Published materials - Lessons and PD resources

Lessons



Developing Decolonial Consciousness in Biology Students Through Critical...

Lisa L. Walsh*
Version: 1.0
👁️ 475 📄 57 📅 0 📅 11.2021



Teaching Cancer Biology Through a Lens of Social Justice

Yairid A. Mera, Benjamin L. Wiggins*
Version: 1.0
👁️ 1.5K 📄 119 📅 0 📅 11.2021



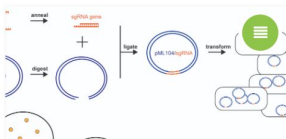
Science and Society: Integrating Historical Science Materials Into an...

Shelley D. Copley*, Sean Babbs, Barbara Losoff
Version: 1.0
👁️ 393 📄 57 📅 0 📅 08.2021



A Hybrid Virtual Kinesiology Laboratory Module for Human...

Edgar R. Meyer, Julianne Locke, Yvette Langdon*
Version: 1.0
👁️ 267 📄 52 📅 0 📅 08.2021



CRISPR/Cas9 in yeast: a multi-week laboratory exercise for undergraduate...

Randi J. Ulbricht*
Version: 1.0
👁️ 408 📄 101 📅 0 📅 08.2021



Data on Dead Zones and a Scientist Spotlight Featuring Benjamin Negrete...

Suann Yang, Benjamin Negrete, Jr.
Version: 1.0
👁️ 407 📄 371 📅 0 📅 07.2021



Exploring Environmental Justice with Data Analytics and Visualization

Ethell Vereen
Version: 1.0
👁️ 521 📄 1.8K 📅 0 📅 05.2021

PD Resources for Faculty



Getting Started with Universal Design for Learning

Andrew Osborne Hasley, Hayley Omdorf
Version: 1.0
👁️ Faculty, Audience ... 📄 246 📄 30 📅 0 📅 1 01.2022



STEM Inclusive Teaching Practices Webinar Series: Fixed vs Growth...

Brett Woods
Version: 1.0
👁️ growth mindset, f... 📄 343 📄 42 📅 0 📅 1 08.2021



Structuring Courses for Equity

Austin D. Hocker, Eleanor V.H. Vandegrift*
Version: 1.0
👁️ Equity, metacogni... 📄 346 📄 64 📅 0 📅 08.2021



Integrating Social Justice into your STEM Classroom: Redlining & Health

Mary Mulcahy, Ethell Vereen, Marci Cole Ekberg, Jennifer...
Version: 1.0
👁️ STEM education, ... 📄 325 📄 79 📅 0 📅 07.2021



Critical inquiry for inclusive teaching of statistics

Carrie Diaz Eaton
Version: 1.0
👁️ statistics, data sci... 📄 200 📄 46 📅 0 📅 06.2021



STEM OER Accessibility Framework and Guidebook

Cynthia James, Amee Evans Godwin, Sean Fox, Anastasia...
Version: 1.0
👁️ OER, OER Evaluat... 📄 841 📄 184 📅 0 📅 01.2021

<https://qubeshub.org/community/groups/bioquest/ideasresources>

Where did these resources come from?

BIOME Fall Working Groups
Faculty Mentoring Networks



CULTIVATING SCIENTIFIC CURIOSITY
BIOME INSTITUTE 2020

BioQUEST QUBES



BIOME INSTITUTE 2021

BioQUEST QUBES
CURRICULUM CONSORTIUM

Current and Upcoming



CourseSource
Online4Bio Writing
(Spring 2022)



ImmunoReach:
Bridging
Immunology with
Other Disciplines
(Spring 2022)



Molecular CaseNet
(Spring 2022)



Applying Universal
Design for Learning
Principles to
Existing Cases
(Spring 2022)



Hosting a Project
with BioQUEST /
QUBES (Spring
2022)



QB@CC:
Conceptualizing
Connections
between
Mathematics and...



Project EDDIE:
Teaching Scientific
Concepts and
Quantitative
Reasoning with...

[View all past FMNs](#)

Save the Date: July 18 - 29, 2022

Sparking IDEAS

Inclusive, Diverse, Equitable, and Accessible
Communities in STEM Classrooms

2022 Biology & Mathematics Educators Institute

Where did these come from?

Users tagging their resources with our teaching metadata.

Add tags

Make your resource more discoverable: ⓘ



Resource Tags

Choose from these recommended tags:

QUBES Resource Tags **REQUIRED - MUST SELECT AT LEAST ONE SUB-ITEM**

- ▼ ☒ Teaching material
 - › ☐ Audience Level
 - › ☐ Instructional Setting
 - › ☐ Activity Length
- ▼ ☒ Reference material
 - › ☐ Workshop material
 - › ☐ Publication
 - › ☐ Conference material
 - › ☐ Other
- ▼ ☒ Dataset
 - ☐ Raw
 - ☐ Cleaned

Inclusive Pedagogy for Life Science Education **OPTIONAL**

- ☐ Developing Self-awareness
- ☐ Developing Empathy
- ☐ Classroom Climate
- ☐ Fostering a Sense of Belonging
- ☐ Promoting Engagement and Self-Efficacy
- ☐ Leveraging Networks

QUBES Universal Design Tagging Ontology **OPTIONAL**

- ☐ Universal Design for Learning (UDL)
- ☐ Universal Design
- ☐ Accessibility
- ☐ Usability
- ☐ Assistive Technology
- ☐ Assistive Technology Compatible

Open Science and Education Practices Ontology **OPTIONAL**

- ☐ Open Educational Practices
- ☐ Open Access
- ☐ Open Education
- ☐ Open Educational Resources (OER)
- ☐ Defining the "Open" in Open Content and Open Educational Resources
- ☐ Open Source
- ☐ Open Data
- ☐ Open Science
- ☐ Open Pedagogy

Mary Mulcahy

Integrating Social Justice into your STEM Classroom: Redlining & Health



Integrating Social Justice into your STEM Classroom: Redlining & Health

Mary Mulcahy, Ethell Vereen, Marci Cole Ekberg, Jennifer...
Version: 1.0

◆ STEM education, ... 👁 325 ⬇ 79 🔗 0 💬 0 📅 07.2021

Mulcahy, M., Vereen, E., Ekberg, M. C., Kovacs, J., Ansari-Yan, D., Basham, T., Boyer, M., Heard, M. J., Jones, a. C., Jones, S., Lannan, E., Marsteller, P., Prescott, S., Santos, G. R. (2021). [Integrating Social Justice into your STEM Classroom: Redlining & Health](#). 2021 Biology and Mathematics Educators (BIOME) Institute, QUBES Educational Resources. [doi:10.25334/Y5B6-6R35](#)

Summary:

Workshop about models for introducing social justice issues into classes developed in a Faculty Mentoring Network. Presented at the 2021 BIOME Institute.

Supporting Docs

[Redlining and Health Workshop - Google Docs](#)

Ben Negrete

Data on Dead Zones and a Scientist Spotlight Featuring Benjamin Negrete, Jr.



Data on Dead Zones and a Scientist Spotlight Featuring Benjamin Negrete...

Suann Yang, Benjamin Negrete, Jr.
Version: 1.0

fish, graphing, gra... 408 371 0 0 07.2021

Yang, S., Negrete, Jr., B. (2021). Data on Dead Zones and a Scientist Spotlight Featuring Benjamin Negrete, Jr.. Scientists Spotlights and Data Nuggets, QUBES Educational Resources. doi:10.25334/7BCE-ED43

Summary:

In this lesson, students plot data and interpret graphs of the metabolic responses of fish to hypoxic conditions. Then, students view and reflect on an interview with fish ecophysiological Benjamin Negrete, Jr., who collected the data that they graph.

Supporting Docs

1_IC_Data_on_dead_zones.pdf (PDF | 399 KB)

Data Set A.csv (CSV | 2 KB)

Data Set B.csv (CSV | 350 B)

2_P_Data_on_dead_zones - Google Slides

3_SW_Data_on_dead_zones - Google Slides

Interview with fish ecophysiological Benjamin Negrete, Jr - YouTube

Hayley Orndorf

Getting Started with Universal Design for Learning



Getting Started with Universal Design for Learning

Andrew Osborne Hasley, Hayley Orndorf
Version: 1.0

👁 Faculty, Audience ... 👁 246 📄 30 🔖 0 💬 1 📅 01.2022

Hasley, A. O., Orndorf, H. (2022). [Getting Started with Universal Design for Learning](#). Universal Design for Learning, QUBES Educational Resources. doi:10.25334/8EC1-V892

Summary:

Three resources for faculty interested in an introduction to Universal Design for Learning (UDL).

Supporting Docs

[Introduction to the Universal Design for Learning Guidelines \(v1.0\)](#)

[UDL Mapping Activity \(v1.0\)](#)

[Applying UDL to Existing Materials \(v1.0\)](#)

Yarid Mera

Teaching Cancer Biology Through a Lens of Social Justice



Teaching Cancer Biology Through a Lens of Social Justice

Yarid A. Mera, Benjamin L. Wiggins*
Version: 1.0

assessment, canc... 1.5K 119 0 0 11.2021

Mera YA, Wiggins BL. 2021. Teaching cancer biology through a lens of social justice. *CourseSource*.
<https://doi.org/10.24918/cs.2021.38>

Summary:

The biology classroom is not separate from the greater context of society; social issues can and should be presented in connection with the content. Here we present an example of antiracist teaching using the molecular/cellular biology of cancer in an introductory biology course as a topic through which to address historic racial disparities.

ARTICLE FILES

- Mera-Teaching Cancer Biology Through a Lens of Social Justice.pdf(PDF | 164 KB)
- S1. Teaching Cancer Biology through a Lens of Social Justice- Glossary of Key Terms.docx(DOCX | 21 KB)
- S2. Teaching Cancer Biology through a Lens of Social Justice-Class Timeline.docx(DOCX | 18 KB)
- S3. Teaching Cancer Biology through a Lens of Social Justice-Video Example of the Class Session.mp4(MP4 | 336 MB)
- S4. Teaching Cancer Biology through a Lens of Social Justice-Class Slides with Polling Questions.pptx(PPTX | 696 KB)
- S5. Teaching Cancer Biology through a Lens of Social Justice- POGIL Student Worksheet and Key.pptx(PPTX | 117 KB)
- S6. Teaching Cancer Biology through a Lens of Social Justice-Exam Question and Key.docx(DOCX | 646 KB)
- S7. Teaching Cancer Biology through a Lens of Social Justice-Exam Question Public pre-released version.docx(DOCX | 1 MB)

Using tags to find additional QUBES Resources

Follow tags in a resource

STEM OER Accessibility Framework and Guidebook

Author(s): Cynthia Iimes¹ Amee Evans Godwin¹ Sean Fox² Anastasia Karaglani¹ Nick Lohaito¹

1. ISKME 2. SE Tags: Accessibility

Summary:

This framework
authors of STI
materials to b

Licensed under

Version 1.0 - p

Tags

Publication

More tags

Accessibility x Enter tags

Search

Description

The ability to access and benefit from some system or entity (<https://en.wikipedia.org/wiki/Accessibility>). In the UDL context, this term generally refers to access for people with disabilities, particularly compatibility with assistive technologies. It is also used more broadly in the sense that a goal of UDL is to make learning accessible to the widest range of people possible. Not to be confused with usability.

Resources (1-20 of 49)

Date Title/Name

Categories

All Categories 57

Members 4

Resources 49

Teaching Materials 49

Collections 4

Note: Results do not include pending, unpublished, and some private

Using tags to find additional QUBES Resources

<https://qubeshub.org/tags/>

foster|

Fostering a Sense

fostering sophistic

More tags

Fostering a Sense of Belonging x Enter tags

Search

Tags: Fostering a Sense of Belonging

Description

Use diverse scientist narratives, use inclusive language, use student names, helping students understand adversity as shared, transient experiences to increase social belonging.

Date

Title/Name

All Categories (1-20 of 49)

Scientists Offering Solutions through Sprints

08 Dec 2021 | Teaching Materials | Contributor(s):

Categories

All Categories 49

Resources 49

Teaching Materials 49

Note: Results do not include pending, unpublished, and some private items.

We encourage you (authors and users) to post comments on resources



Getting Started with Universal Design for Learning

Author(s): [Andrew Osborne Hasley](#)¹, [Hayley Orndorf](#)²

1. North Carolina State University Biotechnology Program 2. BioQUEST

[Download](#)[Adapt](#)

0

[Version History](#)[File Contents](#)[Views/Downloads](#)[Adaptations](#)[▶ Comments](#)

Comments

[↓ Date](#)[↓ Likes](#)

Hayley Orndorf 1:10 pm 18 Feb 2022

0 

While you can work through these resources independently, I highly recommend working through the activities with a partner or group. The work of contextualizing UDL to a discipline is not trivial and benefits greatly from conversation. If you find yourself working through them alone, let me know! I'd love to hear from you and talk through your ideas!

[← Reply](#) [📄 Copy link](#) [🚫 Report abuse](#)[✎ Edit](#) [🗑 Delete](#)

A Collection of the resources where you can share additional ideas

"IDEAS" 12 posts

STEM OER Accessibility Framework and Guidebook

STEM OER Accessibility Framework
A Practical Guide for Curators and Authors of STEM OER (Creative Commons Attribution)

This framework, developed by ISKME in partnership with SERC, provides a practical reference for curators and authors of STEM OER, with 23 accessibility criteria, or elements, to reference as they curate, design and adapt materials to be accessible.

0 likes 0 comments 3 reposts

Deborah Rook onto IDEAS
11:19 am 04 Feb 2022

Critical Inquiry for Inclusive teaching of statistics

Professional development workshop slides to help curate conversations in teaching statistics with a critical inquiry lens.

0 likes 0 comments 1 reposts

Deborah Rook onto IDEAS
11:19 am 04 Feb 2022

Data on Dead Zones and a Scientist Spotlight Featuring Benjamin Negrete, Jr.

In this lesson, students plot data and interpret graphs of the metabolic responses of fish to hypoxic conditions. Then, students view and reflect on an interview with fish ecophysiological Benjamin Negrete, Jr., who collected the data that they graph.

0 likes 0 comments 1 reposts

Deborah Rook onto IDEAS
11:18 am 04 Feb 2022

Developing Decolonial Consciousness in Biology Students Through Critical Reflection Assignments

Integrating Social Justice into your STEM Classroom: Redlining & Health

Workshop about models for introducing social justice issues into classes developed in a Faculty Mentoring Network. Presented at the 2021 BIOME Institute.

0 likes 0 comments 2 reposts

Deborah Rook onto IDEAS
11:19 am 04 Feb 2022

Structuring Courses for Equity

As instructors, we continually look for new ways to create equitable learning environments and support learning for all students in our courses. Recently, we have explored ways that we can increase structure to better support students. We have identified four evidence-based elements that we include in our course design and implementation: 1) structured assessments and feedback; 2) structured out-of-class learning; 3) structured class time using inclusive practices; and 4) structured assignments using transparent design. In this essay, we identify some relevant literature to address each of these levels of structure and describe our experiences with implementation at each level to support equitable classroom environments.

0 likes 0 comments 1 reposts

Deborah Rook onto IDEAS
11:19 am 04 Feb 2022

STEM Inclusive Teaching Practices Webinar Series: Fixed vs Growth Mindset and Why the Biggest Challenge May be Faculty (Episode Seven)

This webinar will explore how faculty can teach with a growth mindset and identify some potential areas of fixed mindset that might prove to be obstacles for many students.

0 likes 0 comments 2 reposts

Deborah Rook onto IDEAS
11:19 am 04 Feb 2022

Science and Society: Integrating Historical Science Materials Into an Undergraduate Biology Course

Vision and Change in Undergraduate Biology Education (American Association for the Advancement of Science, 2011) stresses the importance of fostering an understanding of the relationship between science and society. We describe a library-based activity that enables students in an

Getting Started with Universal Design for Learning

Three resources for faculty interested in an introduction to Universal Design for Learning (UDL).

0 likes 0 comments 6 reposts

Deborah Rook onto IDEAS
11:19 am 04 Feb 2022

A Hybrid Virtual Kinesiology Laboratory Module for Human Anatomy and Physiology

The integration of virtual technology is becoming a common trend in anatomy education at the undergraduate and graduate levels. The incorporation of virtual 3D anatomical models into the classroom is beneficial to students, especially if they do not have access to

You can include both QUBES and non-QUBES materials.

How to post to a collection.

<https://qubeshub.org/community/groups/bioquest/collections/oer-for-diversity-equity-and-inclusion-in-stem-classrooms>

Additional Resources

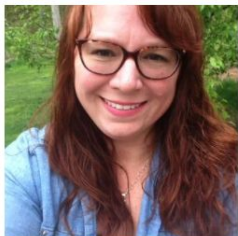
[Take a quick survey to recommend future webinar topics.](#)

Comment on [individual resources](#) ([How to comment](#))

Share additional resources in [the collection](#) ([How to post to a collection](#))

Visit [News and Activities](#) to see other Community Conversations and Newsletters.

Thanks for joining
us. Please feel free
to share questions
and comments.



Sarah Prescott, PhD

Executive Director



Sam S. Donovan, PhD

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Newsletter



Caitlin Hayes

Communications Manager



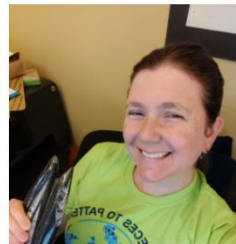
Jenny Kwan

Full Stack Developer



Hayley Orndorf

Workshop Coordinator and
UDL Program Manager



Deborah Rook, PhD

Deputy Director



Katrina Wells

Project Assistant