

Identifying and Strengthening Existing Support for Students on a Research-to-Publication Pathway

Connie James-Jenkin
Sowmya Anjur, PhD
Jean Bigger
Amberly Carter
Raven McKelvin '24



Connie James-Jenkin – Electronic Resources, Reference, Collection Development Librarian

- ❖ *Supporting library and classroom research*

Sowmya Anjur, PhD – Science Faculty | Student Inquiry and Research (SIR) Program Coordinator | IMSA Medical Society Advisor

- ❖ *Creating equitable classroom assessments that support and promote an understanding of scientific inquiry and the nature of research*

Jean Bigger – Head of Technical Services | DigitalCommons Manager | Archives Liaison

- ❖ *Capturing student work in DigitalCommons and Student Portfolios*

Amberly Carter – Coordinator of Diversity Equity and Inclusion | Advisor for Brotherhood Sister Circle (BHSC)

- ❖ *Engaging and supporting our CLED students*

Raven McKelvin '24 – Black Woman | FY23 IMSA Intern | Active Club Leader | Junior at IMSA

- ❖ *Sharing her experience as an IMSA Intern and DC student liaison*

Thank you!

Session Description:

Participants will:

1. learn how IMSA is generating and disseminating scholarship and incorporating students on a Research to Publication pathway
2. discover classroom activities that support and promote an understanding of scientific inquiry and the nature of research
3. discuss student work in IMSA's repository and student portfolios
4. hear how we are engaging and supporting our CLED students, like Raven McKelvin '24, who will share her experience as an Intern and student liaison.

Takeaways:

- Embedded links within this presentation to referenced teacher resources: lesson plans, peer-reviewed articles, conference papers/presentations/posters, books and book chapters, webinars, podcasts, and more
- Links to examples of student work and engagement in response to project-based learning assignments



*This record includes all of our presentation materials
and the link to Comments*

How are we are identifying and strengthening existing resources that support an inclusive student Research-to-Publication pathway?

How is this process making it possible for us to organically create portfolios of our best work?

Why does this matter?

IMSA's Learned Experience: *how we are increasing awareness of, and enthusiasm for, academic achievement and student success by:*

Recognizing that we are a “community of scholars” with a robust history of inquiry-based, student-centered, and integrative curriculum and instruction that has frequently led to publication

Being able to provide evidence to support that claim, such as: [Science Publications & Research](#)

Continuing to prioritize equity in STEM and accountability to our mission: [Equity and Excellence](#)

Reinforcing support for IMSA's flagship student research program: [Student Inquiry & Research](#)

Promoting learning experiences with business professionals, nonprofits and entrepreneurial mentors through: [Internship](#)

Identifying current and potential research opportunities and support: [Research to Publication Toolkit](#)

Understanding the importance and benefit of being connected to a global community of scholars

Encouraging community members to develop [Faculty/Staff Portfolios](#) and [Student Portfolios](#) of their professional accomplishments

Sharing monthly download statistics from around the world with IMSA authors, creators, innovators, and stakeholders who require evidence of impact

Creating an institutional identity for scholarly research and publication within secondary and higher education

Conclude with a demonstration,
and a discussion- where we hope to learn
more about how you stimulate and support
research and publication at your institutions

About IMSA:

The Illinois Mathematics and Science Academy (IMSA), is a state-funded residential high school for gifted students in Illinois

The school opened in 1986 with the first sophomore class of approximately 200 students • it's located in Chicago's far west suburb of Aurora • and it has a current annual student body of about 650 sophomores, juniors, and seniors

IMSA was one of the four schools responsible for leading and organizing the foundation of NCSSMST in 1988 by 15 schools

Admission is open to students from across Illinois; however, the process is competitive; students who present the strongest combination of credentials are invited to attend

Founded by:



Leon Lederman, PhD

Nobel Laureate and Director of Fermilab, particle physics and accelerator laboratory

Former Illinois Governor James R. Thompson

Passed the Education Reform Act of 1985 that created the
Illinois Mathematics and Science Academy

Stephanie Pace Marshall, PhD

Founding President of IMSA and Founding President of the National Consortium
for Specialized Secondary Schools in Mathematics, Science and Technology (NCSSS)

IMSA's Mission:

"to ignite and nurture creative, ethical scientific minds that advance the human condition, through a system distinguished by profound questions, collaborative relationships, personalized experiential learning, global networking, generative use of technology and pioneering outreach"

2022 Strategic Plan:

Equity in STEM and accountability to our mission

Commitment to the growth of our people and having the mindset of a learning laboratory

Innovation and impact throughout the state in teaching and learning

Strong Foundation of Collaboration:

- Integrating library research and instruction into classrooms and assignments
- building and reinforcing an inclusive research-to-publication pipeline at IMSA with intention
- Collecting, disseminating, and promoting: faculty/staff and student publications & research • open educational resources • innovative/creative works • hosted conference events
- Developing new opportunities for the inclusion of student work – Distinguished Student Work, Exemplary Classroom Work, online journals, such as: [Zeitgeist: A Journal of Politics, History, and Philosophy](#)
- Recognizing and reinforcing faculty/staff and student achievement
- Developing steps to ensure that IMSA is showcasing success equitably among faculty/staff and students
- Showcasing research projects from SIR students, for example: [2022 IMSAloquium presentation](#)
- Recognizing and reinforcing student learning
- Protecting the intellectual property of our students
- Ensuring the integrity of our data, evolving and documenting our processes, and actively supporting Equity in STEM, and accountability to our mission

Information Literacy Instruction

Connie James-Jenkin
Librarian

Researching the Professional Literature

- Students have little prior experience
- Instruction methods
 - Embedded
 - Scaffolded
 - Asynchronous tutorials
 - One-shot, librarian as guest speaker format

The One-Shot, Librarian as Guest Speaker in MSI: Methods of Scientific Inquiry



Framework for Information Literacy in Higher Education

ACRL Frames

•Searching as Strategic Exploration

- utilize divergent (e.g., brainstorming) and convergent (e.g., selecting the best source) thinking when searching
- match information needs and search strategies to appropriate search tools

- use different types of searching language (e.g., controlled vocabulary, keywords, natural language) appropriately
- understand how information systems (i.e., collections of recorded information) are organized in order to access relevant information
- manage searching processes and results effectively.

ACRL Frames

- **Authority is Constructed & Contextual**
- Define different types of authority
- Research tools as indicators of authority
- Acknowledge they (student) are developing their own authoritative voices

ACRL Frames

•Scholarship as Conversation

- cite the contributing work of others in their own information production
- contribute to scholarly conversation at an appropriate level, such as ... undergraduate research journal, conference presentation/poster session

Dovetails with IMSA's Priority Outcome:

“IMSA innovations are published in professional journals, presented at conferences and shared with partners/government. Student work that illustrates breakthrough outcomes is highlighted.”

Librarian Led MSI Session

- Pre-work
- Born out of COVID
- Benefits of students:
 - Having increased familiarity with IRC (Library) before session
 - Thinking about literature searches
 - Being able to ask questions “In private”
- In-Class
 - Kahoot to assess knowledge based on the pre-work
 - In-depth discussion of research strategies
 - Discussion regarding questions and IRC in general

References

- Association of College & Research Libraries. (2015). *Information literacy framework for higher education*.
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- Cook, D. (2022). Is the library one-shot effective? A meta-analytic study. *College and Research Libraries*, 83(5). <https://doi.org/10.5860/crl.83.5.739>
- Howard, K., Nicholas, T., Hayes, T., & Appelt, C. W. (2014). Evaluating one-shot library sessions: Impact on the quality and diversity of student source use. *Community & Junior College Libraries*, 20(1-2), 27-38. <https://doi.org/10.1080/02763915.2014.1009749>
- Nicholson, K., & Seale, M. (2022). Information literacy, diversity, and one-shot “pedagogies of the practical.” *College and Research Libraries*, 83(5).
<https://doi.org/10.5860/crl.83.5.765>

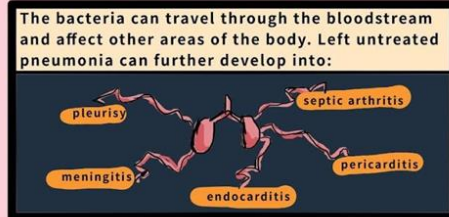
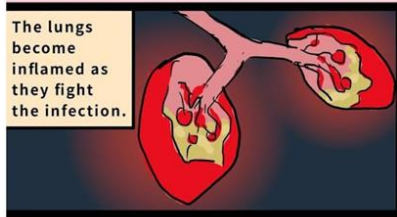
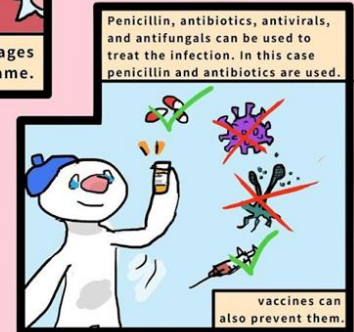
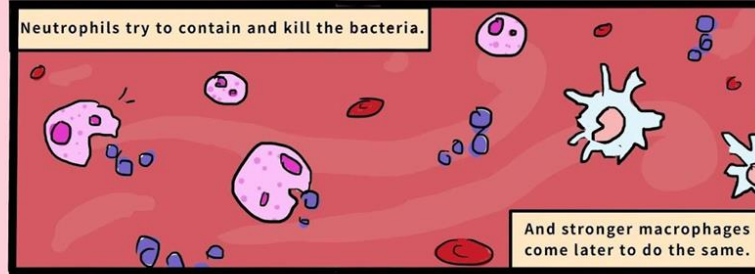
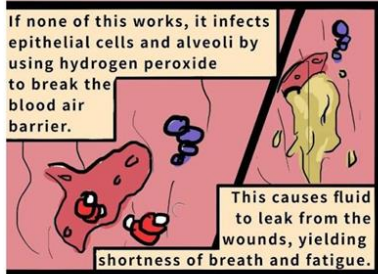
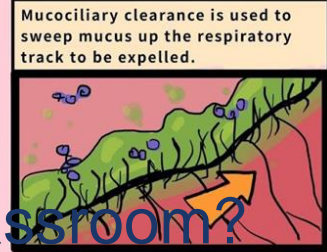
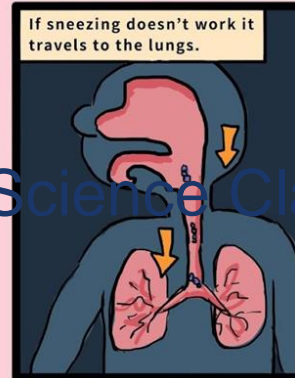
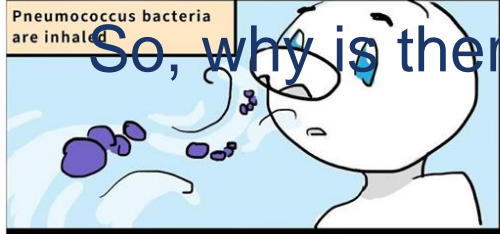
**Creating equitable classroom assessments
that support and promote an
understanding of scientific inquiry and the
nature of research**

Sowmya Anjur, PhD

Science Faculty | Student Inquiry and Research (SIR)
Program Coordinator | Red Cross Club Advisor |
Spectrum Advisor

Pneumonia

Pneumonia is an infection in the lungs. There are many causes of Pneumonia: bacteria, fungus, or viruses. Depicted here is a case caused by Pneumococcus bacteria, one of the most common causes of pneumonia.



So, why is there Art in the Science Classroom?

Incentivizing Students in the Classroom:

- IMSA students have a lot of creativity and passion
- Often they do not have the opportunity to use their skills
- Due to the rigor of the classes they take, they are often encouraged to recall previous learning
- Therefore the idea arose to encourage them to do projects and other activities, which could be tied to publication in DigitalCommons in an equitable way

Pathophysiology Class:

- Biology elective for 11th and 12th graders
- The class is based on modeling biological systems
- Students learn about homeostasis and model diseases
- Students take responsibility for their learning and enjoy learning through modeling
- We decided to publish student work from this class because students used learning from other classes to complete their projects

Identifying Equitable Assessments:

- Identifying Biases
- Multiple sources of evidence for assessing work
- Reflective practices

Creating Equitable Assessments:

- Avoid making assumptions
- Offer students choices to demonstrate their learning
- Offer a variety of assessments to cater to individual student needs

Modeling Projects:

Heart Model Project

(ISTA Spectrum 2015)

Graphic Novel Project

(ISTA Spectrum 2020)

Heart Model Project:

- Introduced as a replacement for the written cardiovascular unit test
- Intended to remove inherent fear of written assessments
- Provided students with an innovative way to express their creativity in applying what they had learned in class
- Gave them an opportunity to reflect on their learning

Heart Model Project Steps:

- Blueprint of heart model
- Building the model
- Demonstrating the model
- Reflecting on the model

Student Heart Model Projects



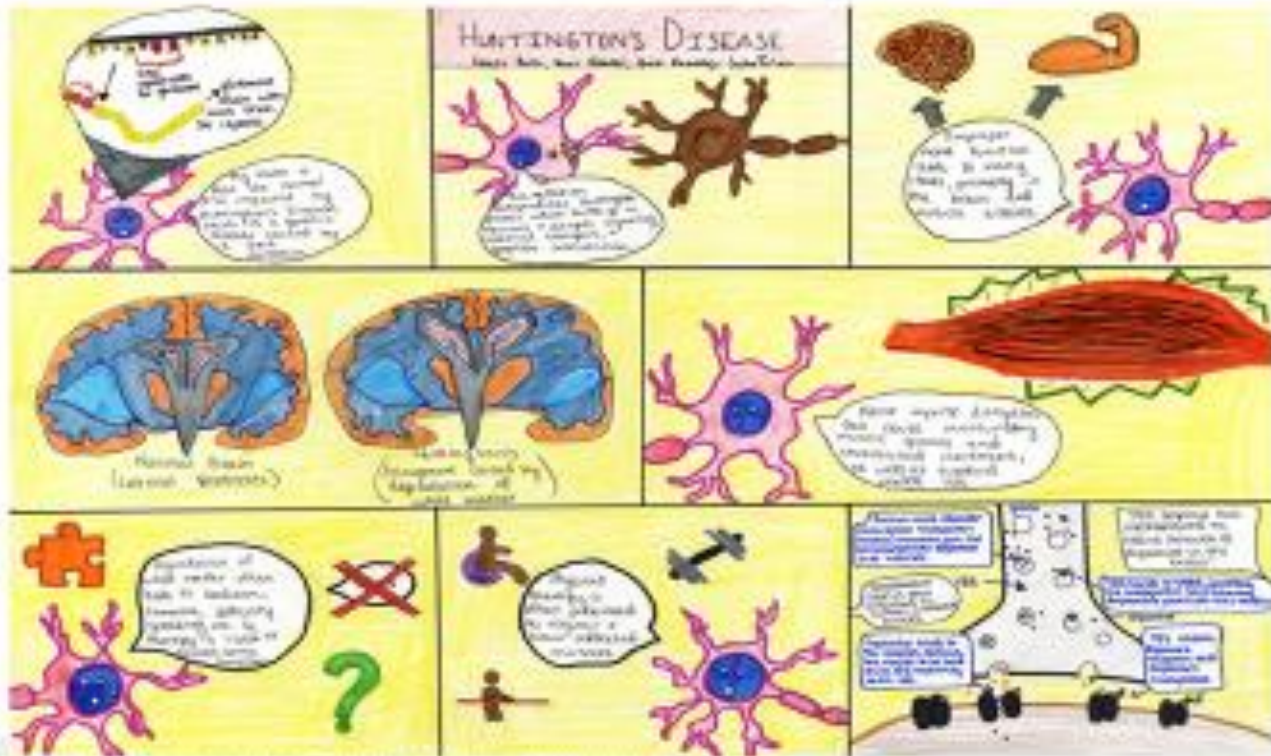
Graphic Novel Project:

Was introduced as a novel replacement for oral presentations because many students do not pay attention when classmates are presenting.

Students in this class:

- Are encouraged to choose any two organ systems not studied in class and research two diseases of each system
- Work together in groups of 2-3, draw graphic novels of the diseases they have chosen
- Reflect on their work in terms of disruption of homeostasis and how the body strives to maintain equilibrium
- Have an opportunity to apply what they have learned and extrapolate it to real life examples

Student Graphic Novel Example 1



Testing Efficacy of the Projects:

- Student feedback
- Reflection
- Quantitative – pre and post quizzes on the relationship between the structure and function of the heart

Reflection:

- Students are required to reflect on their models and graphic novels to identify problems, describe how they solve them and how they would modify their design for future purposes.
- I also reflect on how the assessments help students better articulate comprehension, and also how I can refine the assessments based on student feedback.

Class projects on Digital Commons:

Student projects are selected for publication in Digital Commons:

- Based on fulfilling the requirements of the project rubric
- Their permission

Making it possible for students to build Student Portfolios that frequently begin with Exemplary Classroom Work.

SIR projects on DigitalCommons:

Student projects are selected for publication in Digital Commons:

- Based on fulfillment of SIR requirements
- Permission from research advisor

SIR students are also able to include conference posters/presentations and published articles in their portfolios.

Capturing student work in DigitalCommons & Creating Student Portfolios

Jean Bigger (she/they)

Head of Technical Services | DigitalCommons Manager
| Archives Liaison

What kind of existing resources do you have at your schools that support and recognize research and publication?

Libraries

Academic courses

Institutional programs

Career counseling

Marketing

DigitalCommons includes some of our best work by:

- All of the academic teams
 - All of the academy centers / programs
 - Almost all of the academy departments
 - Every student beginning sophomore year

DigitalCommons connects IMSA with a global community of scholars.

Furtheres IMSA's Mission:

" To ignite and nurture creative, ethical, scientific minds that advance the human condition"

And supports its Legislative Charge:

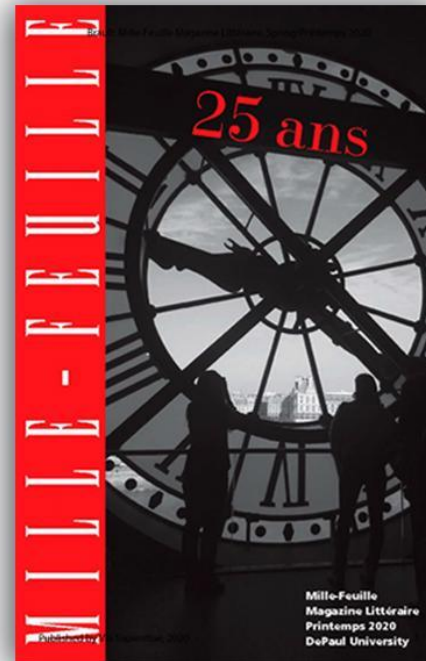
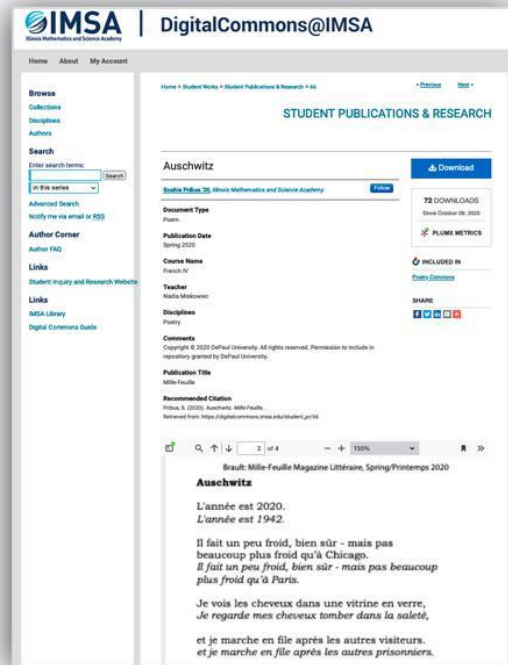
<https://www.ilqa.gov/legislation/ilcs/ilcs3.asp?ActID=1030&ChapterID=17>

**So what have we
discovered?**

IMSA students have mentors at these universities and together they are publishing and presenting:

- Washington State University: https://digitalcommons.imsa.edu/student_pr/77/
- Mississippi State University: https://digitalcommons.imsa.edu/student_pr/45/
- Mississippi State University: https://digitalcommons.imsa.edu/student_pr/43/
- Illinois State University: https://digitalcommons.imsa.edu/student_pr/30/
- Loyola University: https://digitalcommons.imsa.edu/student_pr/15/

Our students are publishing in college/university online journals:



Our faculty and staff have a masters thesis or dissertation from one of these colleges/universities:

Georgia State University

ScholarWorks @ Georgia State University


Middle and Secondary Education Dissertations Department of Middle and Secondary Education

Spring 5-13-2016

A case study exploring the effects of using an integrative STEM curriculum on eighth grade students' performance and engagement in the mathematics classroom

Norman Robinson

Our teacher resources are being published in open access textbooks:

 **Hostos** Community College

Hostos Community College Library / LibGuides / ZTC/OER Textbooks / EDU 111 - Teaching Math & Science to Young Children - Textbook / Chapter 9: Teaching Math Content

EDU 111 - Teaching Math & Science to Young Children - Textbook

- Chapter 1: Early Learning
- Chapter 2: Math & Science Connections
- Chapter 3: Theory & Teacher Effectiveness
- Chapter 4: Special Needs
- Chapter 5: Standards & Assessment
- Chapter 6: Lesson Planning
- Chapter 7: Centers & Environment
- Chapter 8: Teaching Science Content
- Chapter 9: Teaching Math Content**

Chapter 9: Teaching Math Content

9.1: Myths of Early Math

9.2: Five Principles of Extraordinary Math Teaching

9.3: Should Kindergartners Do Tougher Math?

9.4: Remaking Math Education for

Chapter 9: Teaching Math Content




9.5: Back to Basics: Mathematical Play

9.5: Back to Basics: Mathematical Play

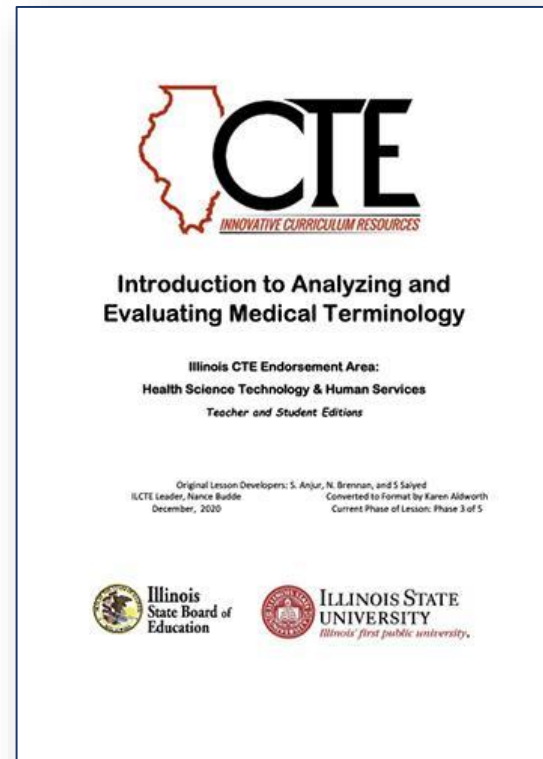
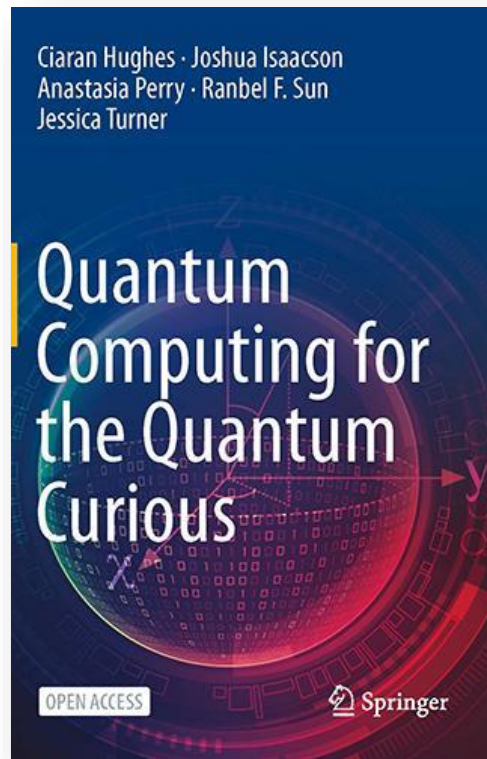
"Back to Basics: Mathematical Play" and associated resources by Lindsey Herlehy. Copyright © 2018 Illinois Mathematics and Science Academy. All rights reserved. Used with permission from IMSA.

Our youngest students are curious and creative with the skills and practices needed to be successful mathematicians. Engaging in play, students naturally take risks and pursue their own questions. Research shows this practice is beneficial for all students, regardless of grade level. So, let's play!

Continue reading the full PDF and access teaching resources:

-  [Back to Basics: Mathematical Play](#)
-  [Conferring During Play](#)
-  [Mathematical Play Items](#)

And our faculty are publishing open access textbooks:



Our students are attending these colleges and universities, interning at their institutions, and applying for jobs at their companies.

AND

They're coming with an understanding of the importance and benefit of being connected to a global community of scholars.

Accountability:

We are able to show a return on investment to our stakeholders

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: [\(105 ILCS 305/\) Illinois Mathematics and Science Academy Law](#)

The primary role of the Academy shall be to offer a uniquely challenging education for students talented in the areas of mathematics and science. Both high school and college levels of instruction will be provided in order to assure appropriate linkage with higher education. Other programs deemed necessary to assure the elements of a strong general education required of creative scientists will be provided.

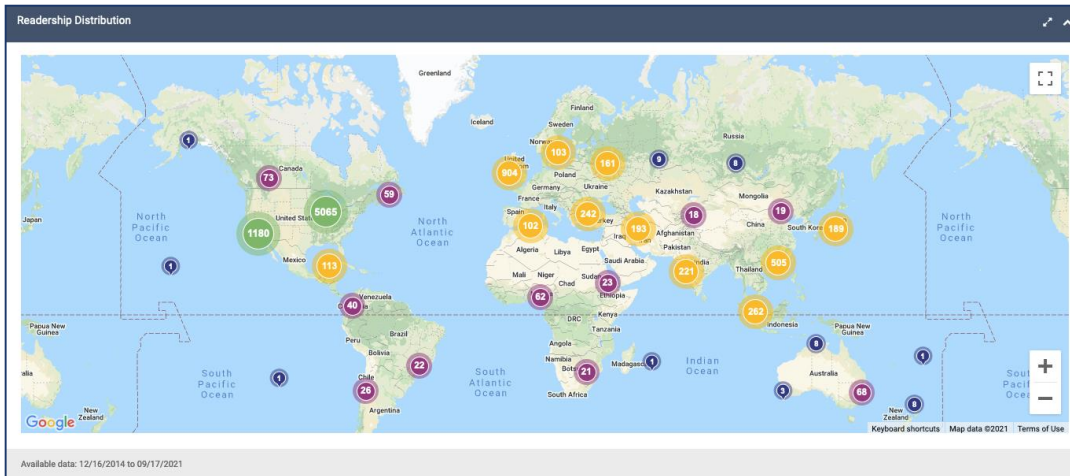
Primary Source Evidence of ROI: *all student work included in DC is approved by faculty/staff*

- **Student Publications & Research** - published articles and conference papers/presentations
- **Independent Study** - year-long research, approved by administration - final report approved by faculty
- **Distinguished Student Work** - external competitions: math, science, arts, humanities
- **Exemplary Student Work** - project work that exceeds expectations - approved by faculty or staff advisor

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: ([105 ILCS 305/](#)) [Illinois Mathematics and Science Academy Law](#)

The primary role of the Academy shall be to offer a uniquely challenging education for students talented in the areas of mathematics and science. Both high school and college levels of instruction will be provided in order to assure appropriate linkage with higher education. Other programs deemed necessary to assure the elements of a strong general education required of creative scientists will be provided.



Student Publications & Research:

17,029 Full text downloads

1,121 Institutions

- Northwestern University
- University of Illinois
- University of Illinois, Chicago
- Stanford University
- Argonne National Laboratory
- Yale University
- University of Chicago
- Boston University
- University of Southern California

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: ([105 ILCS 305/](#)) Illinois Mathematics and Science Academy Law

The Academy shall also carry a responsibility to stimulate further excellence for all Illinois schools in mathematics and science. That responsibility may be exercised through any or all of the following means:

1. Stimulating curriculum development and revisions through the collaborative efforts of the interacting institutions involved in the Academy including: universities, secondary schools, the industrial sector and national laboratories

Primary Source Evidence of ROI:

Open Educational Resources: open-access textbooks, manuals, teaching units, and lesson plans that are free to use, have no access restrictions, and can be remixed and adapted

- **Teacher Resources:** created by faculty, staff, and IMSA's Center for Teaching & Learning
- **Kane County Professional Learning Day:** hosted through DC / includes lesson plans also teacher and student handouts

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: ([105 ILCS 305/](#)) [Illinois Mathematics and Science Academy Law](#)

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Open Educational Resources:

178,454 Full text downloads
7,207 Institutions

- North Carolina Research and Education Network
- Georgia Department of Education
- Department of Education
- Indiana Department of Education
- Kentucky Department of Education
- Alabama Supercomputer Network
- WV Department of Education
- State of Arkansas

Stakeholders: Illinois Taxpayers

Legislative Charge: Excerpt from: ([105 ILCS 305/](#)) [Illinois Mathematics and Science Academy Law](#)

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Professional Learning Day:

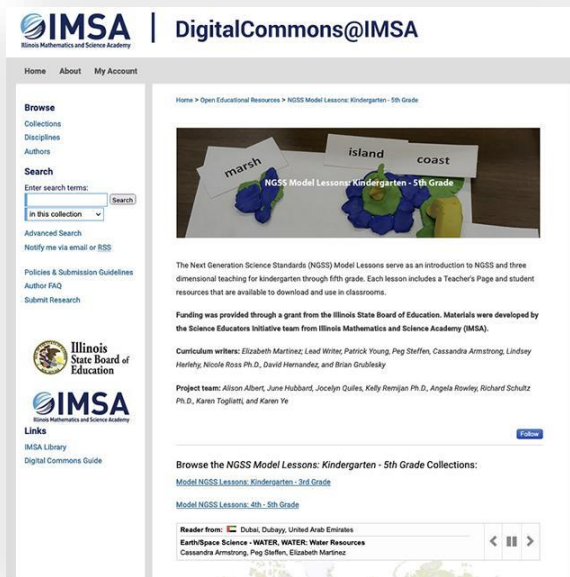
88,472 Full text downloads
2,810 Institutions

- City of Aurora
- Department of Education
- Washington School Information Processing Cooperative
- University of Denver
- Virginia Polytechnic Institute and State Univ
- Multnomah Education Service District
- North Carolina Research and Education Network

Grantors:

Next Generation Science Standards (NGSS) Model Lessons:

Funding was provided through a grant from the Illinois State Board of Education. Materials were developed by the Science Educators Initiative team from Illinois Mathematics and Science Academy (IMSA).



Next Generation Science Standards (NGSS) Model Lessons:
25,108 Full text downloads
1,197 Institutions

- Central Community Unit School District
- Chowan University
- Illinois Principals Assn
- University of Denver
- OFallon School District
- North Carolina Research and Education Network
- Kentucky Department of Education
- Reed Custer Unit School District
- University of Missouri

Think about what kind of stakeholders do your schools have?

Mission

Community / taxpayers

Students/parents

Grantors

Board of Trustees

Institutional Benefit:

- ❖ Collections within DigitalCommons are aligned with IMSA's Legislative Charge and its Mission, and front site navigation reflects its Institutional Priorities
- ❖ Customized reports are prepared for external program reviews and reports to the Board of Trustees, and statistics are provided for state appropriations
- ❖ Annual reports are prepared for several departments/programs
- ❖ Download statistics shared with Cabinet
- ❖ Spreadsheet of new additions shared with Cabinet
- ❖ DC stats are included within the annual State Appropriations
- ❖ Department heads have access to the Dashboard for collections in their areas and they receive monthly download for the purpose of analyzing and reporting
- ❖ Support staff and administrative/executive support receive monthly download statistics for the internal publications they create and maintain, such as course catalogs and conference booklets
- ❖ Project team members are recognized within collection Descriptions

Reflects Institutional Priorities

Equity and Excellence

The screenshot shows the DigitalCommons@IMSA website interface. The header includes the IMSA logo and the text 'DigitalCommons@IMSA'. Below the header are navigation links for 'Home', 'About', and 'My Account'. A left sidebar contains sections for 'Browse' (Collections, Disciplines, Authors), 'Search' (with a search bar and 'in this repository' dropdown), 'Advanced Search', 'Notify me via email or RSS', 'Author Corner' (Policies & Submission Guidelines, Author FAQ, Submit Research), 'SelectedWorks' (Log into SelectedWorks), and 'Links' (IMSA Library, Digital Commons Guide, Featured Exhibits). The main content area features a featured article titled 'Computational Prediction of Mutagenesis in Glycine max Rubisco Activase Monomer for Increased Thermal Stability' by Hamza Haq, Vasanth Ramesh, Jaden Wang, and SIR Advisor Dr. Angela Ahrendt. Below the article is a 'Browse Research, Scholarship and Creative Work' section with a 'Follow' button and sub-sections for 'Departments, Centers, and Programs', 'Conferences and Events', 'Open Educational Resources', 'Archives and Special Collections', 'Equity and Excellence', 'Faculty & Staff Author Profiles', 'Student Works', and 'Student Portfolios'. A paragraph of text describes the repository's goal to share the intellectual output of IMSA and increase visibility and impact through worldwide access. At the bottom, there are links for 'At a Glance' and 'Work of the Day'.

The screenshot shows the DigitalCommons@IMSA website interface, specifically the 'Equity and Excellence' collection page. The header includes the IMSA logo and the text 'DigitalCommons@IMSA'. Below the header are navigation links for 'Home', 'About', and 'My Account'. A left sidebar contains sections for 'Browse' (Collections, Disciplines, Authors), 'Search' (with a search bar and 'in this collection' dropdown), 'Advanced Search', 'Notify me via email or RSS', 'Author Corner' (Policies & Submission Guidelines, Author FAQ, Submit Research), 'Office of Diversity, Equity & Inclusion Website', and 'Links' (IMSA Library, Digital Commons Guide). The main content area features a large group photo of people with the text 'Equity and Excellence' overlaid. Below the photo is a paragraph of text stating: 'The Academy's commitment to diversity, equity and inclusion is evidenced by the Board of Trustees' adoption of an Equity and Excellence policy. This critical policy "institutionalizes" equity work so that, regardless of leaders and other employees who may come and go, "equity", and its attendant required outcomes, remains intact. I invite you to read our policy to understand the depth and breadth of the Academy's focus on the "intentional integration of Cultural Competence, Diversity, Equity, Equity-Minded Frame, Excellence and inclusion into every facet of the Academy, with the understanding that it is an active and ongoing process involving structures, processes and people and not an isolated initiative.' Below the text is a 'Follow' button. At the bottom, there is a section titled 'Browse the Equity and Excellence Collections:' with links for 'Diversifying STEM Think Tank', 'Equity and Excellence Plan', 'Publications & Research', and 'STEM Talks'.

Customized department reports:

For Board of Trustees and external program reviews.

IMSA

DigitalCommons Report to the English Team
5.3.21

The English team has been creating and disseminating content through two primary collections within IMSA's institutional repository, DigitalCommons, since 2011.

Both collections generate their own statistics and support IMSA's legislative charge: [ISS ILCS 3065 Illinois Mathematics and Science Academy Law](#):

1. English Team general collections: Faculty Publications & Research, Roundtable discussion, Exemplary Student Work, etc. <https://digitalcommons.imsa.edu/eng/>
2. English Teacher Resources, open-access teaching units / lesson plans: https://digitalcommons.imsa.edu/eng_tu/

To date, within Faculty Publications & Research, etc. there have been:

- 13,940 Full-text Downloads
- 6,100 Metadata Page Hits



Researcher Info: Available date: 12/16/2014 to 5/4/2021

By 905 Institutions – top downloading institutions, include:

- City of Aurora
- University of Alabama
- Texas Southern University
- Delaware State University
- Indian River State College
- Alabama Supercomputer Network
- Indiana Department of Education
- Tennessee State University
- Auburn University
- Oxford University

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In 128 Countries – the top downloading countries include:


- United States (the highest number of downloads in the US are in Washington, Florida, and Illinois)
- United Kingdom
- China
- Philippines
- India
- France
- Canada
- Germany
- Australia
- Singapore

1. "The Academy shall also carry a responsibility to stimulate further excellence for all Illinois schools in mathematics and science. That responsibility may be exercised through any or all of the following means:

1. Stimulating curriculum development and revisions through the collaborative efforts of the interacting institutions involved in the Academy including: universities, secondary schools, the industrial sector and national laboratories."

To date, within English Teacher Resources there have been:

- 110,177 Full-text Downloads
- 14,191 Metadata Page Hits



Researcher Info: Available date: 12/16/2014 to 5/4/2021

IMSA

By 5,317 Institutions – almost all of the top 100 downloading institutions are within Education:

- North Carolina Research and Education Network
- Georgia Department of Education
- City of Aurora
- Department of Education
- Indiana Department of Education
- University of Missouri – DBA the Missouri Research and Education Network
- Trinidad State Junior College
- Kentucky Department of Education
- Washington School Information Processing Cooperative
- Alabama Supercomputer Network

In 183 Countries – top downloading countries include:

- United States (the highest number of downloads in the US are in California, Texas, New York, and Illinois)
- Canada
- Philippines
- United Kingdom
- India
- Russian Federation
- China
- Germany
- Australia
- France

In addition, the English team contributes content through various IMSA programs that maintain their own statistics:

- Presenters at [Professional Learning Day / K-12, County Institute Day](#)
- Advisors for SRP students presenting at: [IMSAPopover](#)

They also feature a collection of Distinguished Student Work through the [Award for Excellence in Expository Writing](#)

IMSA

Faculty and Staff:

2007 Strategic Plan:

Strategy 4: *We will generate scholarship that discovers, integrates, applies and transfers knowledge produced by our work*

Good News: We do!

The DigitalCommons@IMSA repository was implemented to share scholarly works by IMSA faculty, staff, and students. The repository is a source for both external educators and researchers seeking articles and teacher resources. Content includes, but is not limited to:

Electronic versions of full text scholarly works • Published, peer-reviewed literature • Author's accepted manuscripts • Books and book chapters • Conference papers, posters, and presentations • IMSA-hosted conference papers, posters, and presentations • Creative works (art, photography, mixed media, music, and videorecordings) • Classroom/teacher resources: lesson plans, teaching units • Lectures, keynotes, speeches, and talks • Podcasts and webinars • Working papers and technical reports • Unpublished scholarly and creative works • Unpublished studies and interviews

Individual Benefit:

Action taken on recommendations from the Scholarship and Innovation Committee

- ❖ Faculty and staff are recognized for academic and creative achievement through IMSA's social media, *regardless of the status in DigitalCommons*
- ❖ The President and Cabinet are included on email confirmations to authors and presenters at the point their content has been published in DigitalCommons – so that they can also recognize them
- ❖ Annual Leon Lederman Scholar Award
- ❖ Author designation on all work we contribute to, which makes portfolios possible
- ❖ Expert Gallery
- ❖ Stipends

Students:

We're recognizing some of their best work: content includes, but is not limited to:

- ❖ Publications & Research
- ❖ Independent Study
- ❖ Distinguished Student Work
- ❖ Exemplary Project Work
- ❖ Leadership Roles
- ❖ Service Learning

Good News: It's possible to build portfolios for all students on a foundation of their best work, beginning sophomore year.

Individual Benefit:

Aligned with individual benefits for faculty and staff:

- ❖ Students are recognized for academic and creative achievement through IMSA's social media, *regardless of the the status in DigitalCommons*
- ❖ Creative Commons licensing
- ❖ Student Portfolios
- ❖ Stipends

And we can see an indication of student growth in critical thinking and written communication skills.

Urbanization in India: An Obituary

India is urbanizing very rapidly due to the concentration of people from rural areas to urban cities for better opportunities. India has not been the exception as more to less the rapid urbanization of the population appears. This urbanization has tremendous problems with air, water and noise pollution.

Air Pollution

The most common pollutant in the atmosphere is particulate matter (PM). In India, air pollution is a major problem, especially in cities. It is caused by various sources such as factories, power plants, and vehicles. The main pollutants are carbon monoxide, sulfur dioxide, and nitrogen dioxide. Air pollution causes various health problems such as asthma, bronchitis, and lung cancer. It also causes acid rain and global warming.

Water Pollution

Water pollution is a major problem in India. It is caused by various sources such as industries, agriculture, and domestic sewage. The main pollutants are heavy metals, pesticides, and fertilizers. Water pollution causes various health problems such as cancer, kidney failure, and liver disease. It also causes various environmental problems such as eutrophication and global warming.

Death by Bad Air

Bad air is a major killer in India. It causes various health problems such as asthma, bronchitis, and lung cancer. It also causes various environmental problems such as acid rain and global warming.

Past Solutions

- Ganga Action Plan:** This was the first major water conservation project in India. It aimed to clean up the Ganges river by installing sewage treatment plants and controlling industrial discharges.
- Court Orders:** The Supreme Court of India has issued several orders to protect the environment. These orders have led to the closure of polluting industries and the installation of pollution control devices.

Our Solutions

- Greener Transportation:** Encouraging the use of public transport, bicycles, and electric vehicles to reduce air pollution.
- Education:** Educating the public about the importance of environmental protection and encouraging sustainable living practices.

INSOMNIA

SHRUTI BHARTHAR, AND SAMERA CHAKRABORTY

Insomnia is difficulty falling asleep or staying asleep, even when a person has the chance to do so. People with insomnia can feel dissatisfied with their sleep and usually experience one or more of the following symptoms: fatigue, low energy, difficulty concentrating, mood disturbances, and decreased performance in work or at school.

FIG 1. (ABOVE) THE MAP REPRESENTS THE PERCENTAGE OF THE POPULATION AROUND THE WORLD THAT SUFFER FROM CHRONIC INSOMNIA

FIG 2. (ABOVE) THE PREVALENCE OF INSOMNIA INCREASES AS AGE INCREASES

FIG 3. WOMEN ARE 2X AS LIKELY TO SUFFER FROM INSOMNIA THAN MEN

SYMPOMS:

Difficulty falling asleep, waking up during the night/waking up too early, tiredness, irritability, depression, or anxiety, difficulty concentrating, increased errors or accidents, or ongoing worries about sleep.

FIG 1. LIGHT ENTERS THE EYE AND IS CAPTURED BY THE RETINA AND TURNS INTO AN ELECTRONEURAL SIGNAL. THIS SIGNAL TRAVELS SEVERAL FEET AND STOPS AT DIFFERENT SWITCHES. THE FIRST BEING THE SCN AND THE SECOND BEING THE VMH. THE SCN IS THE BODY'S CLOCK THAT REGULATES CIRCADIAN RHYTHM (SLEEP CHOLEX).

FIG 2. THE HPA AXIS (HYPOPHYSARY-PITUITARY-ADRENAL GLANDS), THE HPA AXIS IS THE CENTRAL STRESS RESPONSE SYSTEM. THE PINEAL GLAND OFFICES THE NEGATIVE FEEDBACK LOOP BY CONVERTING TRIPTOLIN INTO MELATONIN.

FIG 3. ELABORATE DESCRIPTION OF HOW MINIMAL LIGHT (NIGHTTIME) INDUCES MELATONIN PRODUCTION BY THE PINAL GLAND (PI) FIG 3 THIS IS A SCHEMATIC REPRESENTATION OF THE MELATONIN SECRETION AND SIGNALING MECHANISM IN MAINTAINING CIRCADIAN RHYTHM WITHIN THE CELL. THIS SHOWS MELATONIN RECEPTORS 1 AND 2, GUANINE NUCLEOTIDE BINDING PROTEIN (ADENYLATE CYCLASE INHIBITORS).

FIG 4. TANNIC ACID PHENYLPIPERYL TRAP (TRAP) STAINING FOR OXYDALIN

FIG 5. SUDAN BLACK B (SBB) STAINING FOR MELATONIN

FIG 6. SUDAN BLACK B (SBB) STAINING FOR MELATONIN

FIG 7. TANNIC ACID PHENYLPIPERYL TRAP (TRAP) STAINING FOR OXYDALIN

FIG 8. SUDAN BLACK B (SBB) STAINING FOR MELATONIN

RISK FACTORS:

Medications, diet pills, steroids, gender, psychological factors (stress, depression is also a symptom of bipolar disorder, depression, etc), smoking, drinking, working out close to bedtimes, irregular schedules, long-range traveling (jetlag), poor sleep environment, etc.

TREATMENTS:

Exercise, diet, and sleep hygiene: regular exercise, healthy diet, and consistent sleep schedule. Cognitive Behavioral Therapy: works to challenge unhealthy beliefs and fears about sleep and teach relaxation techniques. Medications: melatonin, serotonin, and dopamine. Antidepressants: regulate the HPA axis. Hormonal therapy: replacing the environment and sleep medicine in different parts of the body which helps to ease the body and induce sleep. Sensory Deprivation: reducing the environment and noise (what you do to fall asleep or wake up). Cognitive Behavioral Therapy: works to challenge unhealthy beliefs and fears about sleep and teach relaxation techniques. (1), (2), (3), (4), (5), (6)

REFERENCES:

The Pathological Interaction Between Alzheimer's Disease and Osteoporosis in SxFAD Model

IMSA
Interdisciplinary Materials Science Academy

Shrutti Bhattacharjee,
De Ryam Rana PhD,[†]

RUSH UNIVERSITY

Abstract

Alzheimer's Disease (AD) and Osteoporosis are common degenerative diseases of aging. AD has been associated with a risk for osteoporosis and previous studies have shown that patients with AD have an increased risk for fractures which can be the result of osteoporosis, suggesting a link between reduced bone mass and AD. This experiment tested the SxFAD mouse model which recapitulates many Alzheimer's pathologies. The objective was to compare the bone mass of SxFAD mice with AD-like phenotype to mice without AD. The results demonstrate that SxFAD mice have a significant loss of bone mass as they age. Although previous papers have identified results in mouse AD model, 2016, this is the first time that mice with AD in the SxFAD mouse model. As each mouse model of AD recapitulates a different aspect of the disease, these findings can help determine which mouse model recapitulates AD and Osteoporosis. The findings confirm that AD mice have significantly reduced bone mass, consistent with the relationship between AD and osteoporosis. The substantial change in bone mass over time between the SxFAD mouse and Wild-type mice suggest that the disease affects bone metabolism.

Introduction

- Alzheimer's Disease (AD) and Osteoporosis are common degenerative diseases of aging. Previous studies have shown that patients with AD have an increased risk for fractures which can be the result of osteoporosis, suggesting a link between reduced bone mass and AD. This experiment tested the SxFAD mouse model which recapitulates many Alzheimer's pathologies. The objective was to compare the bone mass of SxFAD mice with AD-like phenotype to mice without AD. The results demonstrate that SxFAD mice have a significant loss of bone mass as they age. Although previous papers have identified results in mouse AD model, 2016, this is the first time that mice with AD in the SxFAD mouse model. As each mouse model of AD recapitulates a different aspect of the disease, these findings can help determine which mouse model recapitulates AD and Osteoporosis. The findings confirm that AD mice have significantly reduced bone mass, consistent with the relationship between AD and osteoporosis. The substantial change in bone mass over time between the SxFAD mouse and Wild-type mice suggest that the disease affects bone metabolism.

Methodology

SxFAD and Wild-type Control Mice: The SxFAD mouse model is a conditional mouse model of familial Alzheimer's Disease. Micro-Computed Tomography (µCT): Trabecular bone architecture was assessed at a proximal region. Primary trabecular parameters included bone volume fraction, trabecular thickness, trabecular spacing, trabecular number, and trabecular length of the bone. Primary cortical parameters included cortical area (mm²), porosity, and cortical thickness.

Results and Discussion

Figure 1: X-ray scan of the Femurs. The left image displays an X-ray of a Wild-type mouse femur. The right image displays an X-ray of a SxFAD transgenic mouse femur.

Figure 2: 3D Reconstruction of µCT Scanned Trabecular Bone.

Figure 3: Trabecular Bone Volume per Total Volume (BV/TV) Comparison.

Figure 4: Trabecular Bone Volume per Total Volume (BV/TV) Comparison.

Figure 5: Cortical Area of Femur Bone.

Figure 6: Cortical Area of Femur Bone.

Figure 7: Tannic Acid Phenylpyperyl (TRAP) Staining for Osteolysis.

Figure 8: Sudan Black B (SBB) Staining for Melatonin.

Findings

- The data suggest that SxFAD mouse model recapitulates the low bone mass characteristics of osteoporosis.
- The change in bone density over time observed in the SxFAD mice suggest that the bone mass loss is progressive.
- The data and images collected from the study provide evidence to suggest that the combination mutations in the diseased SxFAD mice have an effect on the bone resorption of the trabecular bone in the SxFAD mice in comparison to the WT mice (Figure 1-5).
- Male SxFAD mice do not experience cortical bone resorption at the same extent observed in female mice (Figure 5, 6).
- µCT analyses show that over time male SxFAD mice do not have a decreased cortical bone area in comparison with WT mice. Older female SxFAD mice exhibit a lower cortical bone area than WT mice.

Conclusions and Future Work

- The ongoing generation of AD pathologies, which is a model of AD, is observed.
- Considering other mouse models that recapitulate AD-like effects of trabecular and cortical bone, our current model could show the same mechanism and pathologies that are driving the effect seen in these mouse models. Future work is necessary to verify the effect of AD on the bone.
- We are also performing Sudan Black staining to investigate osteoporosis in a proximal region of the femur, to understand whether the bone resorption due to cellular aging.
- There have been few studies that investigate the relationship between AD and osteoporosis, but our current mouse model recapitulates AD and osteoporosis. Our current mouse model recapitulates AD and osteoporosis. Our current mouse model recapitulates AD and osteoporosis. Our current mouse model recapitulates AD and osteoporosis.

References

Engaging and supporting our CLED students

Amberly Carter, M.Ed, CDE

Coordinator of Diversity Equity and Inclusion | Advisor
for Brotherhood Sister Circle (BHSC)

Pronouns: She, Her and Hers

acarter@imsa.edu

Why do educational equity gaps exist?

Inadequate training for educators who work with underperforming subgroups of students

The exclusive use of standardized tests, which reflect middle-class, majority values and do not reflect the exceptional abilities, experiences, and cultural styles, and values of minoritized students

Systemic bias in the design and implementation of programs for advanced learners

Attitudes about high achievement potential

Fewer environmental opportunities that enhance intellectual achievement

and so much more...

Educational Equity Model for Equity & Excellence at IMSA

FIGURE 7 | Equality vs. equity in the short and long term



In this first image, it is assumed that everyone benefits from the same support. They are being treated **equally**.



Individuals are given different support to make it possible for them to have equal access to the view. They are being treated **equitably**.



All three can see the view without any support because the cause of inequality was addressed. The systemic barrier has been **removed**.

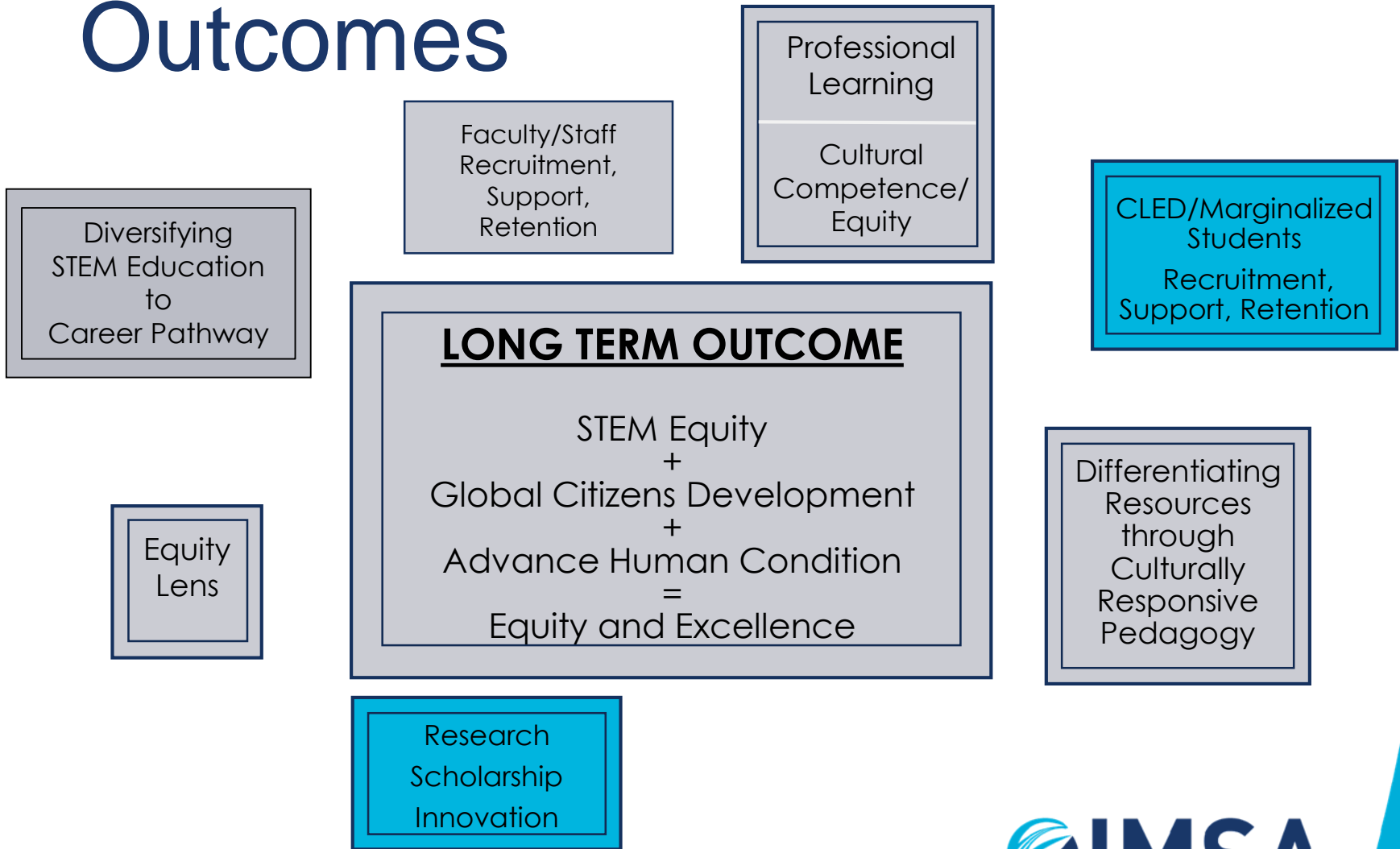
Deloitte Insights | deloitte.com/insights

Equity and Excellence at IMSA

“The Academy recognizes and acknowledges the historical underrepresentation and marginalization of culturally, linguistically, and economically diverse groups, both universally, and particularly, in STEM education and professions. These disparities also exist in the representation of the Academy’s workforce.

We are committed to advancing equity in STEM education and representation and creating a diverse, inclusive community of global citizens who can realize their full potential, and execute our mission to advance the human condition, through a model of Equity and Excellence.”

IMSA's Equity and Excellence Outcomes



Equity & Excellence Defined

Equity

Access for **Culturally, Linguistically and Economically Diverse and Marginalized students** to differentiated academic and social-emotional supports and interventions that create opportunity for them to participate in educational programs and co-curricular activities that are capable of closing the excellence gaps in student experiences, success and retention.

Excellence

The expectation and standard that whatever the Academy does in teaching and learning, research, innovation, student and workforce development, institutional functioning, and participation in local and global communities, is of the highest quality, is on the cutting edge, rigorous, nourishes critical and creative thinking, is responsive to stakeholders and advances equity.

IMSA's CLED and Marginalized Students

Culturally, Linguistically and Economically Diverse

The historically underrepresented populations at IMSA (Black, Latinx, rural, low-socioeconomic status).

Marginalized

Those groups who traditionally lack access to rights, resources, and opportunities, and are often socially excluded, including but not limited to LGBTQIA+, undocumented, female and twice exceptional.

Black@ISMA



Make IMSA an Equitable Environment for Black People



Being Black at IMSA is knowing you are walking the halls and living with individuals who want to inflict fear and physical harm on you solely because of your race. Being Black at IMSA is knowing that if something does happen that outwardly degrades, terrorizes, or insults me nothing will be done. Time and time again IMSA has proven that they do not value each of their students at the same level. These posts should show everyone that IMSA has failed the Black community. All they do is silence us and cover up situations so that they can save their public image. IMSA ... your time is up. Our "home away from home" needs to be rid of the racist administrators, faculty, staff, and students. Our lives matter. Stop releasing meaningless statements and start putting action behind your words.



- CLASS OF 2020

Equity and Excellence Plan Policy Outcome #2

Equity and Excellence Plan Policy Outcome #2

Implementing strategies to recruit support and retain Culturally, Linguistically and Economically Diverse groups and support and retain Marginalized groups.

<i>Rationale</i>	<i>Strategies</i>				<i>Scorecard</i>
	<i>#</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	
Based on findings from the Equity Context Analysis Process, approximately 1/3 of students feel unsafe at IMSA because of their race or sexual orientation. It was further reported that racist and homophobic remarks were regularly heard at IMSA, and when adults were present, nearly 50% of the time, they do not intervene. During the school building walk-through, 30% agreed/strongly agreed that the building climate is not student and family centered, nor does it facilitate a safe and inclusive learning environment. The Theory of Change data suggested that IMSA needs to create a welcoming and inclusive environment that creates equity focused support plans. Based on the IMSA Student Diversity Climate survey which states that over four years of data, approximately 1/3 of Black students do not feel safe on campus because of their race, along with 30 years of stories shared on Black at ISMA by IMSA students, alum, current and former staff/faculty that discuss an institutional culture of racism at IMSA, an anti-racist student education agenda is being put forth.	2.1	Recruitment: Examine and revamp the Admissions Recruitment Strategy through an equity lens and with representation goals.	Recruitment: Implement equity-minded and differentiated recruitment strategy, being intentional about equitable access.	Recruitment: Monitor and measure CLED recruitment progress through an equity lens.	Blueprint for Enrolling a Diverse Student Body, Establishing Admissions Criteria that balances Experiences, Attributes, and Metrics (EAM) Developmental Cycle, STEM Equity Program Evaluation Rubric
	2.2	Support: Create a comprehensive, equity-minded educational program that is rooted in social justice and develops cultural competence, with an intentional focus on anti-racist education.	Support: Implement equity-minded educational program for students that is rooted in social justice and develops cultural competence, with an intentional focus on anti-racist education.	Support: Continue to implement equity-minded educational program and evaluate student growth.	Student Diversity Climate Survey/Trauma Responsive School Implementation Assessment/Centering Equity in Social Emotional Learning/Bias Incident Review
	2.3	Retention: Reduce the number of CLED and other marginalized students who do not feel safe on campus by developing a plan to assist them in transitioning into and through IMSA.	Retention: Implement process to assist CLED and other marginalized students in transitioning into and through IMSA.	Retention: Monitor and evaluate process to assist CLED and other marginalized students in transitioning into and through IMSA.	

Equity and Excellence Plan Policy Outcome #4

Equity and Excellence Plan Policy Outcome #4

Supporting research, scholarship and innovative expression of staff, including faculty as well as external partners that either address or promote the Equity and Excellence Model.

<i>Rationale</i>	<i>Strategies</i>				
	<i>#</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Scorecard</i>
According to the Equity Context Analysis Data Process, 58% of staff and 67% of administration do not agree that evidence-based support systems are implemented to increase the likelihood of successful implementation of innovations, and are perceived by building leadership and staff to be helpful. This suggests that there needs to be structures in place to collect, hold, and disseminate data. In addition, the Theory of Change discussed the need to remove barriers that interfere with students and staff, including faculty engaging in research, scholarship and innovative expression.	4.1	Develop and strengthen the resources and infrastructure to support the highest level of equitable and inclusive research, scholarship and innovative expression that addresses issues of diversity, equity, inclusion and anti-racism.	Provide on-going support for the creation and sharing of research, scholarship and innovative expression that addresses issues of diversity, equity, inclusion and anti-racism.	Increase IMSA's presence and leadership in national and international research, scholarship and innovative expression groups and publications.	Contributions to the Body of Knowledge
	4.2	Examine current IMSA research, scholarship, and innovative expression offerings (e.g. SIR, Internships, etc.) for students through an equity lens and reimagine accordingly.	Institutionalize research, scholarship, and innovative expression experiences, so that CLED and other marginalized students have access to said experiences.	Evaluate the experiences of CLED and other marginalized students while engaged in research, scholarship, and innovative expression.	SIR and IN2 CLED student participant data

Brotherhood Sister Circle



Last semester, The Coordinator of Diversity, Equity and Inclusion facilitated a collaboration between BHSC and Jean Bigger (DigitalCommons Manager) to create a pipeline of support and peer mentorship for publishing and portfolio development and showcase through DigitalCommons.

Next month BHSC Retreat's will feature a student-led workshop on portfolio building for CLED students in DigitalCommons w/ Raven McKelvin '24.

BHSC is a program developed to give our Black and Latine students an opportunity to celebrate and enhance their strengths, creativity, intelligence, promote networking, community involvement, financial literacy, resources, and academic success.



My experience as an IMSA Intern and DigitalCommons student liaison



Raven McKelvin '24

Black Woman | FY23 IMSA Intern | Active Club Leader |
Junior at IMSA

Highlights of my Internship

- Building student portfolios
 - Creating Workshops
- Advancing IMSA's digital commons
- Leading pathways for CLED students
 - Internal Presentations

My Passions

Social Justice

Advocating for Disabilities

Policy

Arts

MAKING THE WORLD A BETTER PLACE

Portfolio

- Mission Statement (if you have one)
 - Presentations
 - Honor Rolls
 - Jobs
 - Service works
 - Projects
 - Achievements
 - Art work
 - College entry Exams
- Anything important in your HIGHSCHOOL years



Example Student Portfolio

Selected Works of Raven McKelvin
Student, Class of '24

My name is Raven McKelvin and I am a current student at the Illinois Mathematics and Science Academy. I am an active club leader, have launched several new clubs at IMSA, and am heavily involved in my community. I enjoy advocating, fighting for the rights of others, and projects focused on equality. I am interested in working with different organizations.

Works | About

Add Work | Jump to Category | Manage Categories | Search works of Raven McKelvin

Conference Papers/Presentations (1)

- PDF **IDENTIFYING AND STRENGTHENING EXISTING SUPPORT FOR STUDENTS ON A RESEARCH TO PUBLICATION PATHWAY** (Leann Biggar, Soemnya Jenit, Corne James-Jenkins, et al.) Professional Learning Day (2022)
Participants will 1) learn how IMSA is generating and disseminating scholarship and incorporating students on a Research to Publication pathway, 2) discover classroom activities that support and promote an understanding of scientific inquiry and the ...

Internship (3)

- PDF **DigitalCommons: Supporting Excellence & Inclusion** (Raven McKelvin and Jean Biggar) DigitalCommons: Resources for IMSA Students (2022)
- PDF **Annotated Student Portfolio Checklist** (Raven McKelvin and Jean Biggar) DigitalCommons: Resources for IMSA Students (2022)
- PDF **DigitalCommons: IMSA's Institutional Portfolio - LEAD Facilitator Meeting** (Raven McKelvin and Jean Biggar) DigitalCommons: Resources for IMSA Students (2022)

Research (2)

- Feeding Families Across Illinois** (Vidhyut Senthilvelkatesh, Michael X. Raven McKelvin, et al.) Student Leadership Exchange (SLE) (2022)
Food shortage is a growing problem in Illinois, with 1 in 7 people from Cook County facing food insecurity this year. Estimates show that U.S. schools waste a total of \$30,000 tons of food per ...
- PDF **Growth of Algae Under Low Color Wavelength Lighting** (Raven McKelvin, Ethan Remedios and Emma Rodriguez) (2022)

Interviews | Social Activism (3)

- Link **Marchers rally to mark anniversary George Floyd's death** (Bob Skolnik) (2021)
"We all have to make a change together," McKelvin said. "What we can do as a community is when you see things that don't look right, tell people."
- Link **Black students at RBHS call for inclusion, anti-racism training** (2021)
RBHS freshman Raven McKelvin address the District 208 Board of Education during the school board meeting on April 14. | RBTV

Selected Works of Raven McKelvin
Student, Class of '24

My name is Raven McKelvin and I am a current student at the Illinois Mathematics and Science Academy. I am an active club leader, have launched several new clubs at IMSA, and am heavily involved in my community. I enjoy advocating, fighting for the rights of others, and projects focused on equality. I am interested in working with different organizations.

Works | About

Positions

- 2021 - Present **Board Member, Illinois Math and Science Academy - Learning and Disabilities Matter**
- 2021 - Present **Director / President, Illinois Math and Science Academy - CHEER Club**
- 2021 - Present **Vice President, Illinois Math and Science Academy - Black Student Union (BSU)**
- 2020 - 2021 **President, Riverside Brookfield High School - Minority Empowerment Club**

Curriculum Vitae
Download

Disciplines
Law and Social Justice

Research Interests
social justice, disability advocacy, civil rights, human rights, and social action

Grants
Add information about your grant-funded research here.

Professional Service and Affiliations
2022 - Present **Intern, IMSA DigitalCommons: Student Portfolios**

Honors and Awards
Testified at the 2023 Illinois State Appropriations
Musical performance at IMSA's 2023 Martin Luther King Celebration

How is this best for the IMSA Community?

- Students can learn the skills of building a portfolio when first coming in
- This benefits college experiences and job opportunities
- Encourage students to take a leadership role and build on what they already have
- Progress from Sophomore to Senior Year
- Can add the artifacts from freshman year
- Can put your greatest achievements and accomplishments on your portfolio

Community Impacts

We are giving all students the opportunity to create a student portfolio. We are giving Culturally, linguistically, and Economically Diverse (CLED) Students the first hand opportunities

How has my Internship helped me

Documentation
Opportunities
Communication
Make New Connections

Takeaways

Learning Education and Development (LEAD)

New Workshops

Professional Presentation (Staff and Faculty)

My Own Student Portfolio

Updates In Digital Commons

New Opportunities

Dream Big ... we do!

- **Host peer-review journal:** could be the **IMSA STEM Journal of High School Research:** *To provide another opportunity for local high school students to experience peer-review publishing, for instance: <https://ijhighschoolresearch.org/>*
- **Collaboratorium for Teacher Resources:** *focused around something like the UNSDGs*
- **“Drop box”** *approach for including Student Work*
- **Research support prior to publication:** *survey to determine whether faculty/staff or students are utilizing library, IN2, or Writing Center resources*

Acknowledgements:

IMSA colleagues & students – your work inspires ours!

Questions?