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Biology

DigitalCommons Report

Illinois Mathematics and Science Academy Library

This report represents a summary of activity from November 2010 thru May 2022

DigitalCommons@IMSA reflects the scholarly, innovative, and pedagogical culture of the Illinois Mathematics and Science Academy. The goal of this institutional portfolio is to share the intellectual output of IMSA and to increase visibility and impact through worldwide access.

DigitalCommons@IMSA furthers 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."

Jean Bigger

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[DigitalCommons Users Guide](#)

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Publications & Research

DigitalCommons@IMSA was created to collect and disseminate scholarly works by IMSA's faculty, staff, and students. It is a source for both external educators and researchers seeking open access articles and teacher resources. DigitalCommons supports IMSA's Legislative Charge, furthers its Mission, and connects IMSA to a global community of scholars.

The Biology faculty has been receiving global recognition for their advancement of science teaching, contributing peer-reviewed scholarship to Science Publications & Research since 2005:

https://digitalcommons.imsa.edu/sci_pr/

Contributions from the Biology team to Science Publications & Research include in-field published articles, book chapters, professional conference papers/presentations, and workshops on: innovative and equitable assessment, student-centered engagement, and culturally responsive classrooms.



A view of the Readership Map for Science Publications & Research

Cumulative Statistics for Science Publications & Research:

- 56,835 Full-text Downloads
- 3,431 Institutions (primarily within Education)
- 176 Countries

Members of the Biology team also maintain professional profiles in IMSA's [Expert Gallery](#).

Teacher Resources

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.

Biology is one of several academic teams that have been at the forefront of sharing teacher resources with other educators through DigitalCommons: https://digitalcommons.imsa.edu/sci_tr/

* Advanced Biological Systems, Unit 1: Evolution is currently being featured within Open Educational Resources: https://digitalcommons.imsa.edu/abs_unit_1/

These resources include open-access lesson plans and teaching units that are free to use and have no access restrictions.



A view of the Readership Map for Biology Teacher Resources

Cumulative Statistics for Biology Teacher Resources:

- 15,164 Full-text Downloads
- 207 Countries
- 1613 Institutions (primarily within Education)

Many of these educator resources are being disseminated through the [bepress TeachingCommons](https://bepress.com/teachingcommons/).

The Biology team also supports IMSA's Professional Learning Day by leading STEM sessions for educators: <https://digitalcommons.imsa.edu/proflearningday/>

Exemplary Student Work

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

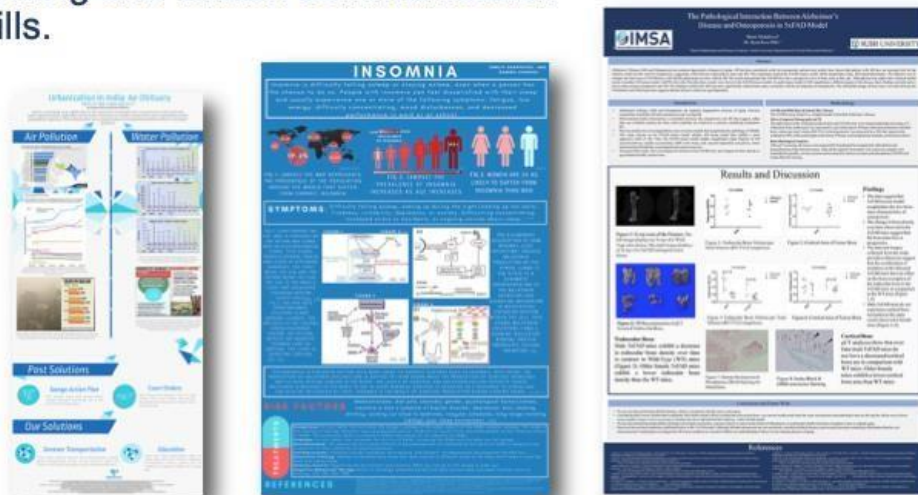
The primary role of the Academy shall be to offer a uniquely challenging education for students talented in the areas of mathematics and science. Both high school and college levels of instruction will be provided in order to assure appropriate linkage with higher education. Other programs deemed necessary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

The purpose of the Science Program of the Illinois Mathematics and Science Academy is to provide a personalized, competency-driven, inquiry-based, problem-centered, and integrative learning environment which promotes scientific habits of mind and gives students a firm knowledge base in the fields of biology, chemistry, and physics.

The Biology team has been collecting and sharing Exemplary Student Work through DigitalCommons for several years: https://digitalcommons.imsa.edu/sci_students/

This visionary step has made it possible for IMSA to collect primary source evidence of student growth and has lead to an exciting new initiative, Student Portfolios: <https://works.bepress.com/siddharth-tiwari/>

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



This slide represents some of the best work from one student over three years at IMSA:

[DigitalCommons, IMSA's Institutional Portfolio: how inclusion is creating a win-win for stakeholders](#)

The science Exemplary Student Work

The Science program aims to immerse students in inquiry, beginning with more teacher directed activities in class and progressing to student driven inquiry, which often culminates in SIR or independent study work.



A view of the Readership Map for Biology: Exemplary Student Work

Cumulative Statistics for Biology: Exemplary Student Work

- 20,291 Full-text Downloads
- 149 Countries
- 1,406 Institutions (primarily within Education)

The Biology team also supports Student Inquiry & Research (SIR): team members have lead the SIR program and acted as SIR advisors: https://digitalcommons.imsa.edu/sir_presentations/