

## DigitalCommons Report 2022-2023: *#imsascholars #worldleaders* Illinois Mathematics and Science Academy

This report represents a summary of activity from July 2022 thru May 2023

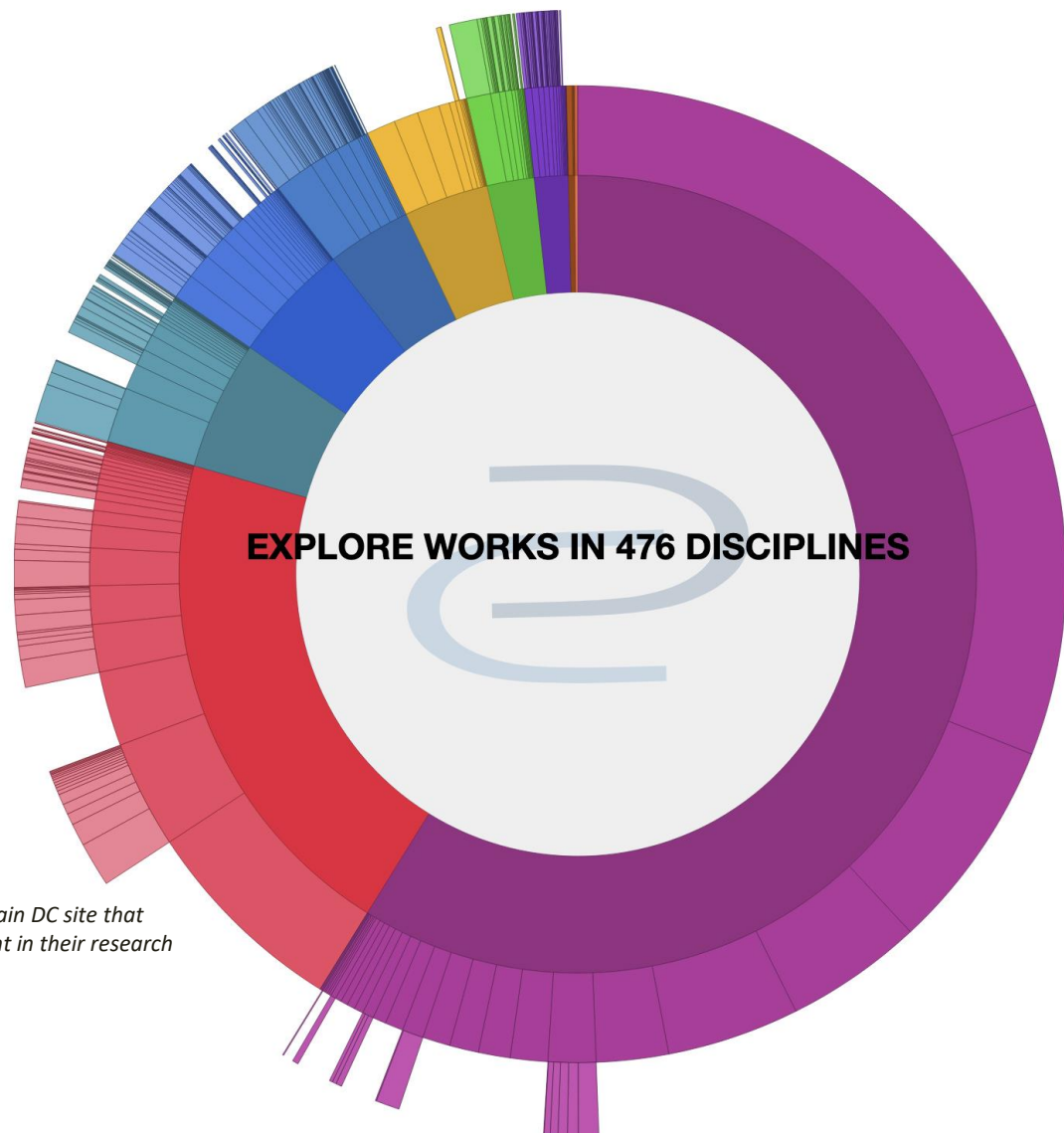
Digital Commons Manager: [Jean Bigger](#)

Digital Commons [Users Guide](#)

Digital Commons [Website](#)

Digital Commons [Email](#)

Digital Commons [Site](#)



*An interactive Discipline Wheel is located on the main DC site that allows researchers to browse for and access content in their research discipline. Read more on pg. 15*

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## Summary

DigitalCommons@IMSA (DC) was created in furtherance of IMSA's 2007 Strategic Plan:

- 2007 Strategy 4: *We will generate scholarship that discovers, integrates, applies and transfers knowledge produced by our work.*
- 2011 Strategy 4 Revision: *We will generate scholarship that demonstrates the effectiveness of our practices and transfers knowledge produced by our work.* \*

Digital Commons supports IMSA's Mission and its Illinois State legislative charge, connects the academy to a global community of scholars, and has become the home of the collected scholarship and creative works of the Illinois Mathematics and Science Academy faculty, staff, students, alumni, and their collaborators from around the world:

*Digital Commons 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.*

*This full-text, multimedia database links to open-access articles, conference proceedings, teacher resources, image and audio files, as well as provides references to books and other creative works not fully accessible online.*

*Digital Commons 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."*

\* "Scholarship is the creative intellectual work that is communicated, validated and used by our peers"

- [Digital Commons Report: 2013 Board of Directors](#)
- [Scholarship & Innovation: an Inquiry, 2018-2019](#)

### *Goals of Digital Commons*

- Disseminate and promote academic, innovative, and creative achievements of the faculty, staff, and students of the Illinois Mathematics and Science Academy
- Ensure preservation of and persistent access to said work
- Provide a publishing platform for open access content from the Illinois Mathematics and Science Academy
- Document and record IMSA's history and progress
- Foster scholarly collaboration between colleagues

# Highlights

The open source materials shared through Digital Commons were created by IMSA faculty, staff, students, and alumni and reflect the scholarly, innovative, and pedagogical culture of the Illinois Mathematics and Science Academy.

IMSA's institutional repository was launched on 11.4.10 with a total of 14 published articles. Since then, it has grown to over 12,870 works that include, but are not limited to:

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

Digital Commons contains work by: all academic programs and centers, most academy departments, and every IMSA student beginning sophomore year.

## *Innovation and Impact throughout the State in "Teaching & Learning"*

Digital Commons also supports IMSA's 2022-2023 Strategic Plan and Operational Dashboard \*

Pillar: *Innovation and Impact Throughout the State in Teaching and Learning*

- Indicator: *Number of contributions from IMSA colleagues to any a body of knowledge (e.g., digital commons) with a lens on advancing teaching and learning.*
  - Target: 75
  - To Date: 124
- Indicator: *Access numbers of IMSA colleague presentations, materials and publications in person and online.*
  - Target Downloads: 23,600
  - To Date: 15,983

[FY23 comprehensive list of IMSA Faculty/Staff: Advancing Teaching & Learning](#)

\* *The Operational Excellence Dashboard is a tool used by the IMSA Cabinet to gauge progress over the academic year.*

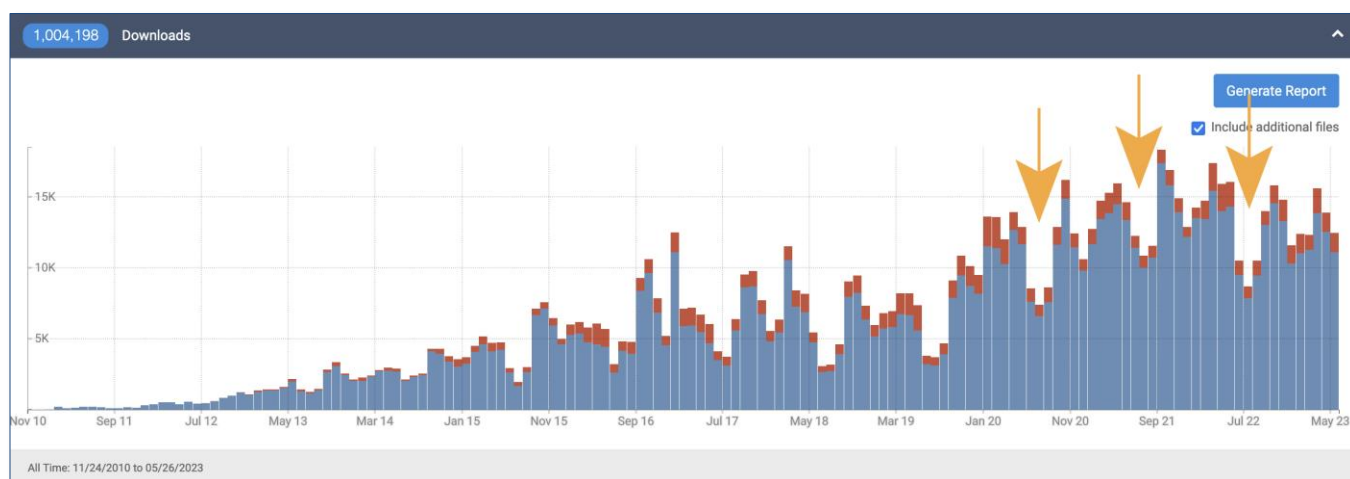


## By the Numbers

Digital Commons has continued its exponential growth registering over 142,012 full text downloads in 198 Countries since July 1, 2022.

FY23 full text downloads by 6,212 Institutions – *primarily within Education*:

- NSW Department of Education
- Northwestern University
- University of Illinois
- North Carolina Research and Education Network
- Georgia Department of Education
- Department of Education
- Colorado Community College System
- Kentucky Department of Education
- University of Missouri - DBA the Missouri Research and Education Network
- Utah Education Network



*The dip in each year's downloads, indicated by the arrow, corresponds with June – August, when school is not in session*

FY23 activity has also included:

- 709 Streams
- 62,622 Metadata Page Hits
- 1,069 new records
- 17 new collections
- 51 new Teacher Resources
- 1 Alumni Doctoral Dissertations
- 269 faculty/staff and student publications and conference papers/presentations
- 3 new faculty/staff portfolios and 8 new student portfolios
- 3 hosted conferences: Institute Day 2023, the 2023 IMSAloquium Student Investigation Showcase, and the 2023 Student Leadership Exchange (SLX)



# Equity in STEM and Accountability to our Mission

IMSA recognizes and acknowledges the historical underrepresentation and marginalization of culturally, linguistically, and economically diverse groups, both universally, and particularly, in STEM education and professions.

In 2022, Digital Commons was asked to provide evidence of “Equity in STEM, and Accountability to our mission.” To meet this objective, Digital Commons focused on these Strategic Plan Year 1 Action Steps:

- Develop new pathways for research and independent projects for CLED students
- Focus on engagement and collaboration between colleagues of the reconfigured academic team consisting of faculty, SEI and IN2, IRC, ITMC, and CACs

## *Increase awareness of existing research opportunities and support*

- Develop [Student Research-to-Publication Toolkit](#): FY22 Innovation Grant, *with Dr. Sowmya Anjur*  
*This interactive toolkit provides links to existing Opportunities for students at IMSA that are supplemental to the Academic Program and support student research and scholarship. \* STEM / CLED Focus*
- Design and implement training and workshops to support CLED students on a Research-to-Publication Pipeline, *with FY23 Intern Raven McKelvin*:
  - Communicate existing opportunities, and new pathways, for research and independent projects to CLED students, *with Amberly Carter: DEI Office*
    - Student Inquiry and Research: [IMSAloquium 2023](#)
    - Internship Program: [2023 Internship Presentations](#)
    - Independent Study: [2023 Independent Study Presentations](#)
  - Incorporate concepts of research and scholarly publication, Digital Commons, and Student Portfolios into IMSA’s Core curriculum, *with Emma Wilson and LEAD facilitators*
  - Develop training and workshops to support CLED students on a Research-to-Publication Pipeline
  - Create [Digital Commons Resources for IMSA Students](#)
- Design and deliver targeted presentations to:
  - LEAD Facilitators
  - Brotherhood Sister/Circle (BHSC)
  - College and Academic Counseling (CACs)
  - Student Council

## *Develop new pathways for research & independent projects for CLED students*

- Create new collections that showcase the work of IMSA’s DEI faculty/staff, students, and alumni for example:
  - [Science: External Research Opportunities](#)
  - [Methods in Scientific Inquiry \(MSI\)](#)
  - [The Preferable Podcast: Season 3: Episode 16: Spotighting The Legacy Of African Americans](#), DEI Podcast: *with Amberly Carter and IMSA students*
  - [HBCU Panel Discussion](#)

Continued

- Expand existing DEI collections:
  - [Equity and Excellence: Publications & Research](#)
  - [Annual MLK Celebration](#)
  - [Cultural Read-Ins](#)

### *Connect IMSA students to a global community of scholars*

- [“Building and Supporting a Research to Publication Pipeline”](#)

2022 NCSSS Professional Conference: *with Dr. Sowmya Anjur and Joyce Symoniak*

*Participants in this session will learn how IMSA is generating and disseminating scholarship and incorporating students into its research to publication pipeline.*

*We will also be discussing the benefits of including our student’s best work in Digital Commons; students having the opportunity to own a publication before leaving high school and inspiring other students to do the same, witnessing their own growth in critical thinking and written communication skills, developing student portfolios, and graduating with an understanding of the importance and benefit of being connected to a global community of scholars.*

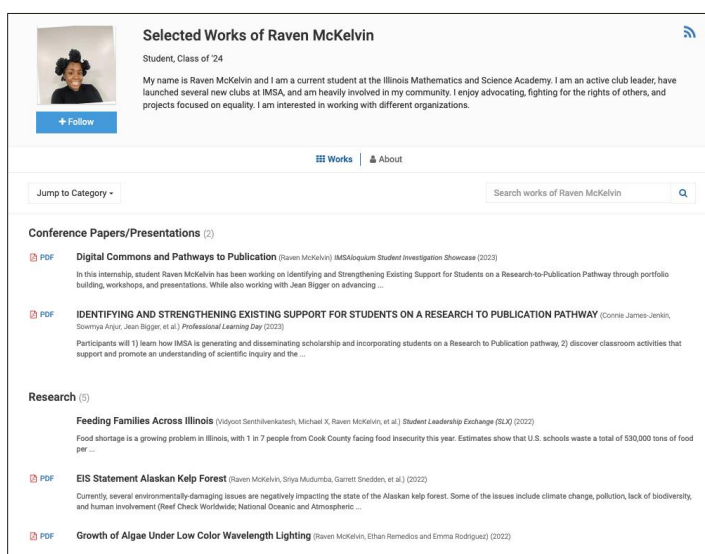
- [“Identifying and Strengthening Existing Support for Students on a Research-to-Publication Pathway”](#)

2023 Institute Professional Day presentation: *with Connie James-Jenkin, Dr. Sowmya Anjur, Amberly Carter, and Raven McKelvin ’24*

*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.*

- Develop [Student Portfolios](#) for CLED students that support college applications, scholarships, internships, and jobs, *with FY23 Intern Raven McKelvin ’24*

IMSA began using Digital Commons for Student Portfolios in early 2020. Since then, an interdisciplinary project team, including students from LEAD, STUDCO, and BHSC have been working to introduce sophomores to the concept of Student Portfolios and research opportunities through the LEAD curriculum, *with Emma Wilson, Student Life, and Amberly Carter, DEI Office*



The screenshot displays a Digital Commons profile for Raven McKelvin, a student in the Class of '24. The profile includes a bio stating she is a current student at the Illinois Mathematics and Science Academy, an active club leader, and someone interested in equality and social justice. Below the bio, there are sections for 'Works' and 'About'. The 'Works' section is filtered to show 'Conference Papers/Presentations (2)' and 'Research (5)'. The first two conference papers listed are 'Digital Commons and Pathways to Publication' and 'IDENTIFYING AND STRENGTHENING EXISTING SUPPORT FOR STUDENTS ON A RESEARCH TO PUBLICATION PATHWAY'. The research section includes 'Feeding Families Across Illinois', 'EIS Statement Alaskan Kelp Forest', and 'Growth of Algae Under Low Color Wavelength Lighting'.



# Top Collections

Collections in Digital Commons are located within the departments or programs that created them, as with most institutional repositories.

Many of these materials have also been auto-collected into featured collections that support IMSA's legislative charge, further its mission and institutional priorities, and engage with its alumni/ae.



## *Faculty / Staff Publications & Research – total full text downloads = 109,581*

Digital Commons contains Publications & Research by all of the academic programs/centers and many academy departments, for example:

- [Science: Faculty Publications & Research](#)
- [Center for Teaching & Learning / SEI: Publication & Research](#)

Top downloads are primarily within Education, and include: Northwestern University • University of Illinois • Department of Education • Palo Alto Unified School District • University of Chicago

## *Student Works – total full text downloads within these collections = 50,407*

*The primary role of the Academy shall be to offer a uniquely challenging education for students talented in the areas of mathematics and science.*

These collections represent some of IMSA's best student work:

- [Student Publications & Research](#)
- [IMSAloquium Student Investigation Showcase](#): includes Independent Study and Internships
- [Student Leadership Exchange \(SLX\)](#)
- Distinguished Student Work within Academic Programs/Academy Departments, for example: [Science: Distinguished Student Work](#)

Continued

There is an indication of student growth in critical thinking and written communication skills over 3 years.



Top downloads are primarily within higher Education, and include: Northwestern University • Emory University • University of Illinois • Stanford • Yale • University of Chicago • Southern Illinois University

*Teaching Resources – total full text downloads within these collections = 370,642*

*The Academy shall also carry a responsibility to stimulate further excellence for all Illinois schools in mathematics and science.*

These collections contain open-access textbooks, manuals, teaching units, and lesson plans that have no access restrictions and can be remixed and adapted:

- [Open Educational Resources \(OER\)](#)
- [Professional Learning Day](#)

Top downloads are primarily within K-12 Education, and include: North Carolina Research and Education Network • Georgia Department of Education • Department of Education • Kentucky Department of Education • Indiana Department of Education • City of Aurora • WV Department of Education

New collections:

- [Future Highway: STEM Curriculum](#)
- [Scientific Illustration: Teacher Resources](#)

Note: Several of the series within SEI Teacher Resources were developed by IMSA's Curriculum and Professional Development Specialists and are being maintained by Angela Rowley, Director of State and Federal Educator Outreach

*Equity and Excellence – total full text downloads within these collections = 25,126*

*By 2022, IMSA is a Recognized Global Leader and Catalyst in Equity and Excellence in STEM Teaching and Learning, Innovation and Entrepreneurship.*

The Equity and Excellence collection brings together a wide range of research and resources that are centered on the issues of racial justice and gender equity in education:

- [Publications & Research](#)

Continued

- [Diversity, Equity, and Inclusion: Initiatives](#)
- [Equity and Excellence Plan](#)

Top downloads are primarily within Education, and include: Los Angeles Unified School District • University of California Irvine • University of Illinois • Department of Education • North Carolina Research and Education Network • University of Southern California • Northwestern University • Aurora University

### *Archives & Special Collections – total full text downloads = 60,722*

*The Archives serves IMSA and the larger community by collecting, preserving and making available materials relating to the history and ethos of the Illinois Mathematics and Science Academy.*

The Digital Collections contain a significant portion of the material currently in the Physical Collection as well as content unique to DC:

- [IMSA Founders](#): materials by or about: Dr. Leon Lederman, James R. Thompson, Dr. Stephanie Pace Marshall
- [IMSA Alumni](#): Doctoral Dissertations, Masters Theses, IMSA Speeches, and reunion materials
- [Oral Histories](#): ongoing project, funded in part by a grant from the Hansen-Furnas Foundation
- [Publications](#): Annual Reports, Examples of Student Diversity, IMSA Math Journal, IMSA Profile
- [Academics](#): Course Catalogs, IMSAloquium Abstract Booklets, Intersession Catalogs

Top downloads are within Education, Organization, and Commercial, and include: Northwestern University • University of Illinois • Argonne National Laboratory • University of Chicago • Fermi National Accelerator Laboratory • Harvard University • Massachusetts Institute of Technology



In addition to curating collections and providing access to them both physically and digitally, IMSA's Archives also creates various exhibits from its collections for engaging with the IMSA community, and it provides programmatic support to the larger community through its popular exhibits at the annual alumni reunion as well as short-term exhibits for special occasions and events.

[Archives' Exhibits](#) is a new collection in Digital Commons that captures a partial record of these displays and exhibits, recognizing the IMSA community and alumni donors who have made them possible.

Note: This collection was developed, and is being maintained, by Christian D. Nøkkentved, PhD., IMSA History Team Emeritus | Archivist.

## Feedback

Below are comments from users – also submitted to a DC feedback form.

*Digital Commons provides an OER platform that is an incredible resource to our educators across the state. Teachers are able to access innovative lesson plans, unit outlines, practical pedagogy and more. It provides a service to the state of Illinois and beyond as an easy and professional place to house so many educational materials. We can also immediately see the data of who the work is serving and the trending topics locally, nationally, and globally. I find myself using digital commons for resources and inspiration. The collection is outstanding!*

– Angela Rowley, Ed.D, Director of State and Federal Educator Outreach

*Digital Commons has made a significant difference in teaching and learning across the academy. Students love seeing their best work published on DC, and this inspires other students to pursue research opportunities of their own. Being able to work toward a publication has changed the perspective of many students at the academy, who now have a focused interest in working toward a successful goal.*

– Sowmya Anjur, PhD., Science Faculty, Lead Student Inquiry & Research (SIR) Program Coordinator

*Digital Commons has allowed IMSA to share diversity, equity, and inclusion models, frameworks, and strategies with educators on a national and global level. Being that IMSA is focused on advancing the human condition, Digital Commons has provided educators with research-driven, innovative ideas to advance equity in STEM and education. As a Black scholar, Digital Commons also allows me the opportunity to showcase DEI research, especially articles that IMSA students contributed to. Digital Commons is a great tool to share scholarship and impact the global world. -Director of Diversity, Equity, and Inclusion.*

– Adrienne Coleman, Ed.D., Director of Diversity, Equity, and Inclusion

*The Digital Commons is an invaluable resource to IMSA students and scholars both on our Aurora campus and throughout the world. In History of the Environment, during the fall 2022 semester, my students and I collaborated on a book, specifically a bioregional history of the Fox River in Wisconsin and Illinois. To my knowledge, this is the only academic history of this particular watershed in existence. Without IMSA's Digital Commons, this might have remained a provincial assignment, available only to myself, my talented students, and perhaps our immediate families. One of the greatest benefits of the IMSA's Digital Commons, therefore, is its commitment to open access. By showcasing student research and artistic efforts, IMSA's digital repository ensures that innovative scholarship is much more democratic, while providing a platform for our students to earn well-deserved recognition for their work.*

– Shawn Bailey, PhD,  
IMSA History and Social Science Faculty

*Digital Commons has been a great tool to house and showcase the educational resources I have created over the years for educators. I have also enjoyed seeing my monthly report of digital downloads across all of my digital commons files; knowing educators are using these resources is not only fun, but it validates the work I have done to support the work that they do.*

– Dr. Christine Moskalik, B.S., M.S., Ed.D, Curriculum and Professional Development Specialist



*For IMSA's Archives, Digital Commons is essential. Digital Commons disseminates materials from our digital collections to alumni and other individuals, as well as to educational and other institutions all over the world as our download statistics so clearly indicate. Special collections like the Oral Histories and Alumni Dissertations promote the work of students, faculty, staff and, of course, our alumni. Indeed, the history and ethos of IMSA is available to all through the many-curated collections of documents, images and videos, like the most recent "Archives' Exhibits" and so many other galleries and special collections indexed in the Finding Aid. Without Digital Commons IMSA's Archives would not have the community and global presence it now enjoys.*

– Christian D. Nøkkentved, PhD., IMSA History Faculty Emeritus | Archivist

*I have a vast appreciation for the Digital Commons platform, as it presents a unique opportunity for our students. dynamic platform not only serves as an archive of information from the IMSA community but also empowers our students to actively contribute to its growth, enabling them to have a significant global impact. The ability to participate in expanding this knowledge is invaluable for IMSA students and it fosters a culture of collaborative learning within our community. When paired with the LEAD program, Digital Commons becomes an even more notable resource. It serves as one of the first platforms for our sophomore students to feature their work, with the ultimate goal of developing comprehensive portfolios throughout their IMSA careers. It provides an opportunity for IMSA students to showcase their talents, accomplishments, and growth while building their confidence and encouraging their continued inquiry of excellence. This duo preps students with the tools necessary to maneuver the landscape of knowledge but also instills a sense of agency, partnership, and global impact.*

– Emma Wilson, Coordinator of Student Leadership and Service Student Life

*Digital commons serves as an important and valuable resource for educators for so many reasons. By hosting and distributing reports, presentations, papers, and publications in Digital Commons, we are able to promote equitable access to innovative and impactful resources by removing geographic barriers and reaching educators throughout the world. As a writer, I value the depository as I am able to share my knowledge with others during conferences and workshops while also utilizing it to locate new ideas and methods contributed by my colleagues and other educators. Also, on a professional level I appreciate the digital portfolio that Digital Commons naturally provides and often reference it while reflecting on my development as a Curriculum Writer and Professional Development Specialist.*

– Lindsey Herlehy, Curriculum and Professional Development Specialist

# Update on Current Projects & Goals

The Digital Commons Advisory Group is instrumental in establishing annual goals for Digital Commons that align with IMSA's institutional priorities.

Current Goals/Objectives:

- 100% Student Participation
- 20% increase in Faculty/Staff profiles in the Expert Gallery
- Prepare content within Digital Commons for annual data collection and an annual report.
- 76 new faculty/staff contributions that advance teaching & learning

## *New/Updated Documentation and Publications & Research*

*The Digital Commons Collection Policy and various procedures are reviewed and modified by the Digital Commons Advisory Group, as needed:*

- [Digital Commons Website](#)
- [Digital Commons Users Guide](#)
- [Digital Commons Documents](#)
- [2010-2021 Digital Commons Report](#)
- [“Digital Commons, IMSA’s Institutional Portfolio: how inclusion is creating a win-win for stakeholders Building and Supporting a Research to Publication Pipeline”](#)

## *Increased Opportunities for Student Participation*

*Digital Commons has been achieving a goal of 100% Student Participation since 2018. Initial opportunities for including student work are achieved through the annual Student Leadership Exchange (SLX). During junior and senior year, approximately 1/3 of IMSA students also participate in the Student Inquiry & Research program and present their research annually through IMSAloquium, which has been online through DC since 2016.*

*New opportunities for students to include their work in Digital Commons:*

- History of the Environment: [Following the Current: A Bioregional History of the Fox River from the Pleistocene to the Present](#)
- Spanish III: [CUENTOS DE CIENCIA FICCIÓN](#)
- Spanish V: [“CuentoSLAM”](#)
- President’s Office: [Exemplary Student Work](#)
- [External Student Research Opportunities](#)
- DEI Office: [Podcasts](#)

## *Improved Faculty / Staff & Student Recognition*

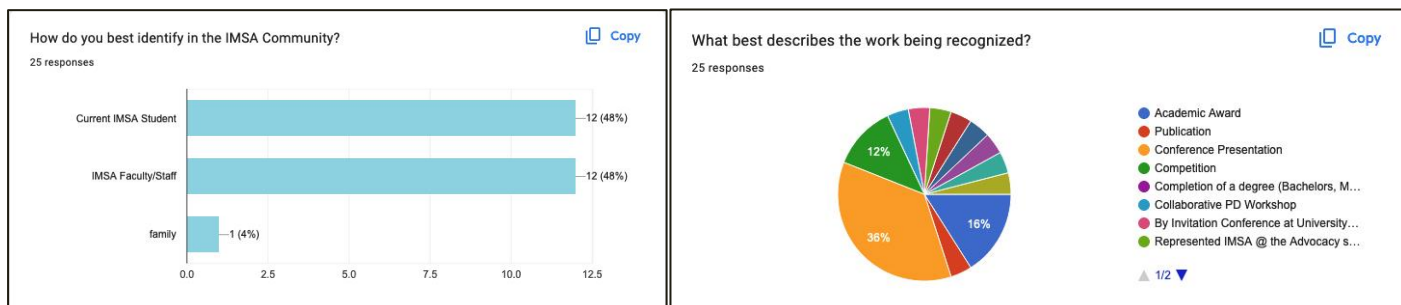
*Based on community feedback to the 2019 Scholarship & Innovation Committee:*

- [Faculty/Staff Expert Gallery profiles](#)
- [Student SelectedWorks portfolios](#)



Continued

- Leon Lederman Scholarship Award for faculty/staff
- IMSA social media posts that recognize academic achievement, *with Alex Johnson, Marketing*
- [Academic Achievement Submission Form](#) for community members who would like to be recognized through an IMSA social media for an academic achievement or award



Since July 1, 2022, there have been 25 submissions, primarily: Conference Presentations, Academic Awards, and Competitions.

### Enhanced Data Collection and Reporting

Digital Commons provides stats for the annual State Appropriations, monthly stats of full-text downloads and items added to the IMSA Administration and Board of Directors, and comprehensive reports for program reviews.

These steps have been taken to improve our ability to collect and communicate quantitative and qualitative data:

- Assign at least one Discipline to each record
- Group and feature collections by type – such as Open Educational Resources and Equity and Excellence
- Implement forms for Feedback and [Comments](#) at the series and item level 🗨️ Comments?
- Reactivate the Discipline Wheel

The Discipline Wheel offers researchers a visually engaging and interactive way of discovering IMSA's scholarly content. The wheel is displayed on the homepage of the repository, allowing researchers to browse through the wheel to access their research discipline. The Wheel provides visitors a clear visual overview of the breadth of research in the repository. As the repository continues to grow, the Discipline Wheel will continuously update to reflect that growth.

