



EdSystems

EDUCATION SYSTEMS CENTER at
NORTHERN ILLINOIS UNIVERSITY

A Micro-Internship Model for Engaging High School Students

A Pilot of the Illinois Math Badging Initiative

July 2024





Education Systems Center (EdSystems) is a policy development and program implementation center within Northern Illinois University. Together with our strategic partners, we advance a shared vision for equitable educational and career success through our three focus areas: College and Career Pathways, Bridges to Postsecondary, and Data Impact and Leadership. We focus geographically on Illinois, where we collaborate at the state level to create ecosystem and policy change while simultaneously partnering at the local level to create organizational change. This unique bi-directional approach allows EdSystems to align local efforts to state policy while elevating local experiences and learnings to state tables. Learn more at edsystemsniu.org.

ACKNOWLEDGEMENTS

EdSystems would like to thank XQ Institute for its support of the Illinois Math Badging Initiative and its micro-internship.

AUTHORED BY

Dania Ibrahim
Innovation Manager

MISSION

EdSystems fosters collaborative partnerships to design, implement, and evaluate policies and practices that ensure successful transitions to and through postsecondary and career opportunities for students, with a particular emphasis on historically marginalized populations.

VISION

EdSystems helps create a world where students have clear, unambiguous paths to college and career opportunities that equip them for meaningful participation in the global economy.

Table of Contents

Introduction

<i>Illinois Math Badging Initiative</i>	1
<i>Micro-Internship Model Overview</i>	1

Micro-Internship Model

<i>Recruitment</i>	2
<i>Onboarding</i>	2
<i>Implementation</i>	3
<i>Final Project</i>	4
<i>Feedback and Lessons Learned</i>	5
<i>Applying the Model</i>	6

Appendices

<i>A. Recruitment Flyer</i>	9
<i>B. Orientation Meeting Presentation</i>	10
<i>C. Student-Facing Micro-Internship Timeline</i>	16
<i>E. Topic Ideas for Intern Journals</i>	17
<i>F. Math Badging Presentation</i>	19
<i>G. Final Course Goals and Project Description</i>	23



Introduction

Illinois Math Badging Initiative

The [Illinois Math Badging Initiative](#) (IMBI) is an initiative to develop an Illinois high school math badging system through the partnership of EdSystems, [XQ Institute](#), and [Student Achievement Partners](#).

The math badging system serves as an alternative credentialing mechanism aligned to Illinois Learning Standards and transitional math competencies. Badges allow students to certify learning acquired through various sources, such as coursework, independent study, summer school, and work-based learning. The badges can translate to credit for transitional math, high school math courses, and early college credit.

The initiative integrates with EdSystems' broader efforts to advance racial equity by prioritizing the elimination of disparities in education and employment outcomes for young people from historically marginalized populations.

Micro-Internship Model Overview

Aligned with IMBI's goals, EdSystems, together with the XQ Institute, conducted a 6-week, 30-hour, paid virtual micro-internship for 11 high school students in spring 2024. The interns explored real-world applications of math, developed recommendations for integrating math into various activities, and connected their findings to career interests and classroom learning.

Generally, micro-internships offer short-term, paid, professional tasks that allow aspiring professionals to showcase their abilities, explore career options, and expand their professional networks. They can take place during any time of the year and usually require students to commit 10 to 40 hours of work, with completion expected within a few days to a few weeks.

The IMBI micro-internship bridges fundamentals from traditional models with the principles of youth action research. Youth action research is a process for empowering students to engage in research that builds their own skills while also contributing to a topic of importance to them by engaging students in meaningful, community-focused research. The IMBI micro-internship empowers high school students to explore real-world applications of mathematical concepts through student-led inquiry and community impact. By engaging in investigative journaling, weekly presentations, and a final synthesis project, students connect their academic learning with practical challenges, gaining valuable research and presentation skills while contributing meaningfully to their communities.

The following document details the recruitment, onboarding, and implementation of the IMBI micro-internship, including the resources created, lessons learned, and best practices. Additionally, guidance on applying the model to additional contexts is included. It is intended for work-based learning coordinators, internship coordinators, employers, and other facilitators interested in implementing micro-internships.



Micro-Internship Model

Recruitment

EdSystems recruited students through existing partnerships with schools through the Illinois Math Badging Initiative. Partners were given the opportunity to opt their school into participation and nominate students who would be a good fit for the goals of the micro-internship. Schools shared a [flier](#) with the nominated students, to help them better understand the goals and logistics of the micro-internship.

Ridgewood High School, Charleston High School, and Illinois Math and Science Academy each nominated students; EdSystems accepted the nominations to form an 11-person cohort. The goal of involving students from a variety of schools was to encourage them to learn from each other's experiences and bring diverse perspectives to the table.

Onboarding

Week 1

Once ensuring that students had permission from their parents and schools to engage in the micro-internship, students attended an [orientation meeting](#) explaining the overall context of IMBI, as well as internship and intern goals. Sharing the internship goals, including the outputs and what the students will be producing, helped participants understand their contributions and the purpose behind them. By describing the goals for the interns themselves, youth understood the [essential employability skills](#) they will gain or improve upon through their work.

INTERNSHIP GOALS

Identify real-world situations that involve mathematical concepts

Apply appropriate investigative methods to better understand these scenarios.

Gather information on how math is applied in school activities outside of a traditional math classroom, as well as in various fields/ industries.

Determine opportunities for learning aligned to badges out of traditional courses

Develop recommendations for schools to capture math learning outside of the classroom.

INTERN GOALS

Develop research skills to explore and gather information on how math is applied in school activities outside of a traditional math classroom.

Develop strong reflection skills by critically analyzing researched concepts, and synthesizing insights into a coherent narrative.

Enhance ability to communicate mathematical concepts effectively by presenting insights and reflections in a clear, organized manner and engaging with peers.

During orientation, students were also provided with a full description of their weekly activities and deliverables, including a [timeline](#) to help track tasks each week. Finally, students were provided with a short training on how to engage in the investigative research and writing tasks they were assigned each week, and resources to help guide their steps.

Implementation

Weeks 2–5

After receiving training on the basics of online research and investigating a topic of interest, students engaged in four weeks of journaling activities, selecting a new topic to explore each week. They gathered information from various sources and reflected on how math concepts and skills were utilized in their chosen topics.

Students filled out a journaling template with the following prompt:

GENERAL GUIDELINES

For each week you will choose a topic to explore.

Feel free to use [these topic ideas](#) as a starting point. Think about what concept you are interested in exploring and whether there is a specific question you are interested in answering.

Gather information from various sources, such as books, articles, websites, and interviews that relate to your topic of interest. Feel free to make time to discuss with your teacher, librarian, parents, friends, work supervisor, mentor, volunteer leader, etc.

Bring together information from your chosen source(s) to reflect on how math concepts and skills are utilized in your topic of interest. Feel free to include pictures and links to enhance your explanation.

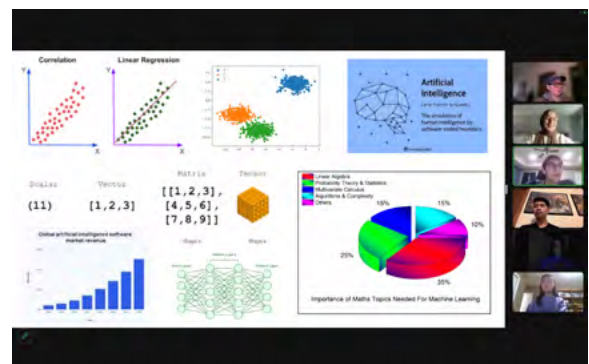
Optional extension: Can you think of any way that this topic or the skills you have shared can be tied to classroom learning?

At the start of each week, students convened to give a five-minute presentation of their insights, using one prepared slide, and engaged in discussions with their peers about their findings.

The internship coordinator prepared questions and comments to prompt discussion throughout the weeks. While the interns were timid at first, after several weeks of meetings, students began speaking up more and connecting their presented concepts and skills, demonstrating an ability to identify themes and connections across the math concepts and skills discussed.

Weekly Learnings

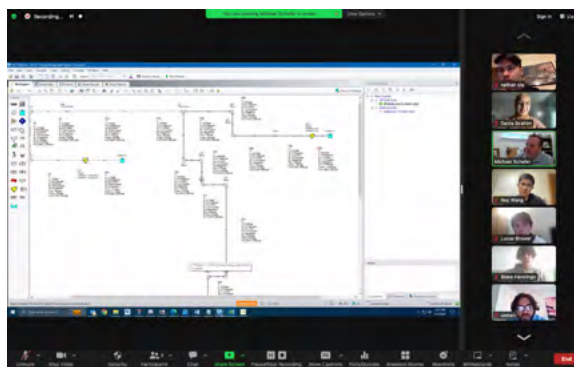
To continue providing beneficial learning beyond their weekly deliverables and presentations, convenings in weeks three to five dedicated fifteen to twenty minutes of the agenda to supporting our interns' professional development and engagement with the internship.



Intern presenting a prepared slide during a weekly convening

Week 3: Career Exploration

After learning about the interns' future aspirations, EdSystems planned a career week, inviting speakers from the three most common careers of interest to discuss how they utilize mathematics in their roles. These guest speakers supported the internship goal of encouraging students to explore where math is used outside of the traditional classroom while simultaneously acting as a career exploration activity for the interns. Presentations included the use of math in engineering, computer science, and medicine. Many conversations in subsequent group meetings highlighted the connections between the students' career interests and math.



Michael Shafer, a project manager and mechanical engineer from Lanier and Associates, shares how he uses math in his position today.

Week 4: Presentation Preparation

To prepare students for their final reports and presentations, this session included a deep dive into final project requirements and a share of best practices for verbal, digital, and written communication from the internship coordinator.

Week 5: Math Badging

In an effort to provide interns with greater context on how their work ties to the goals of IMBI, one week of sessions focused on explaining math badging in student-friendly language. The [presentation](#) likened math badging to “digital stickers that you earn...proficiency in a particular area of math” and describes how math badging works, as well as how it ties to the internship goals and activities. In particular, this session prepared students to tie math badges into their final project reports and presentations.

Final Project

The final project required students to synthesize the insights they gathered about math outside of the traditional classroom, using examples from their journaling activities. Interns were also asked to connect their presented topics and skills to classroom learning and choose one or more math badges that best related to their final project topics.

There were three components to the final project: a final report detailing insights, a five-minute digital presentation to be shared at a final showcase, and a self-reflection on student experiences and skills gained.

Students were provided a [full final project description](#) at orientation to begin thinking about how their weekly activities would tie into their final deliverable.

Interns were given the opportunity to customize their final reports in a manner that best reflects their postsecondary goals. For example, they could opt out of a written report should they validate that another portfolio item would be more useful for their goals.

Final Project Showcase

- The full cohort presented their final projects in a [virtual showcase presentation](#) to their peers and guests.
- Two interns shared their final projects and answered questions about their experiences in a [public webinar](#).
- EdSystems published a selection of [final project papers](#) detailing insights interns gathered on capturing math outside the traditional classroom.

Feedback and Lessons Learned

Student Feedback

As a part of their final project, students were asked to reflect on internship objectives and their experience with the internship, including the experience of working virtually with students from other schools. The following student quotes highlight some beneficial outcomes and recurring themes across students:

“After the internship, my primary improvement would likely be my expository skills to an audience not already familiar with many of the math terminology or concepts I am familiar with.”

“I feel my mindset has shifted from only being able to see math used in the classroom to start being able to see connections with math in the real world. I feel stronger about being able to identify scenarios that use math and solve those scenarios.”

“It’s easy to say, ‘I use math every day!’ but during this internship, we went more in depth on how our hobbies, our work, and other daily things really use math. I can apply all these things I’ve learned and researched when I take a photo, when I cook, or when I plan to travel again!”

“I enjoyed doing weekly journals about different math topics and found it interesting how the further into the internship I got I started realizing how all my topics correlated together whenever it seems like the topics have nothing in common.”

Lessons Learned

Through evaluation of our programming and continual discussions with the students, we identified the following challenges in implementing the micro-internship:

- **Time of year:** We held our first micro-internship cohort in March and April. Students reported that spring was a very challenging time for them to engage due to competing activities, and many felt that another time of year would have allowed for better engagement with the internship.
- **Weekly timing:** Students from different schools had conflicting schedules, making it difficult to find a single meeting time that worked for everyone. As a result, we held 2–3 meeting times per week, which limited cross-school collaboration. Students also wished they had more group time to become more comfortable with each other and engage more readily in discussions.
- **Assignment flexibility:** While students appreciated the open-ended nature of the tasks and enjoyed learning from each other, they sometimes struggled to strike the right balance of explanation and understanding of each other’s content.
- **Explanation of math badges:** We delayed giving the full context about how the students’ work ties to math badging. However, providing better explanations of badging and the broader context of student work earlier on would have benefited the interns. This highlights the importance of providing interns with greater context earlier in the program to enhance their understanding and overall engagement.

Applying the Model

The described micro-internship structure can serve as a work-based learning resource for engaging students in internships and connecting various subjects to real-world applications.

Work-based learning coordinators and employers interested in implementing similar programs can adapt this model by identifying key challenges relevant to their context, recruiting a diverse group of students, and designing activities that allow for students to engage in impactful investigation that benefits their communities while also gaining essential skills.

WHAT	A six-week, 30-hour, fully virtual, paid internship that engages students in gathering insights for a key challenge.
WHO	High school students across schools
KEY PLANNING ACTIVITIES	Identify a challenge or topic that you could utilize student insight or voice. Edit our existing micro-internship resources to match your tasks of interest. Recruit students and plan weekly meetings.
OVERALL STRUCTURE	Students receive an onboarding explaining the overall goals of the internship and proposed student objectives. Students receive training in their required tasks. Students engage in weekly investigative journaling activities. Students engage in weekly meetings with short student presentations and discussions. Students provide a final report including a synthesis of insights, and present their insights to their peers and key stakeholders.

This model is a career development experience in which students gain critical thinking, research, and synthesis skills that are required in many careers.

One Step Further: Utilizing the Principles of Youth Action Research in Micro-Internships

Youth action research involves a series of structured steps aimed at empowering young people to investigate and address issues important to their communities. It begins with organizational preparation, assessing capacity and resources, and ensuring mentors are available. Students are then onboarded with foundational training in research, academic literacy, and critical thinking. Throughout the research process, students engage in continuous reflection and connection of their work to broader community contexts, maintaining ethical standards and equity considerations. They are encouraged to take ownership of their projects, connect with community stakeholders, and utilize their skills to support ongoing community decisions, ensuring their voices contribute meaningfully to local development and

solutions.

The IMBI micro-internship model empowers high school students to explore real-world applications of mathematical concepts, mirroring the youth action research model's emphasis on student-led inquiry and community impact. Through investigative journaling, weekly presentations, and a final synthesis project, students actively participate in a research process that connects their academic learning with practical, real-world challenges. This hands-on approach encourages a dual-impact approach by teaching students valuable research and presentation skills while contributing research to people and causes important to them.

Additionally, the focus on math badging as an alternative credentialing mechanism aligns with the youth action research model's objective of validating and recognizing learning that occurs through non-traditional means, thereby promoting a more equitable educational landscape. Incorporating elements of career exploration and professional development, the IMBI micro-internship further extends the benefits of youth action research by preparing students for future academic and career endeavors. Guest speakers and professional development sessions expose students to potential career paths and the practical applications of math in various industries. This holistic approach not only supports students' current educational goals but also equips them with the skills and knowledge necessary for long-term success, mirroring the dual-impact approach of youth action research in fostering both personal growth and community contribution.

Appendices



A. Recruitment Flyer

The following one page flyer was shared with nominated students to provide context for the micro-internship.

MATH INTERNSHIP



Do you like helping others and using math in your daily life? We're looking for high school students in Illinois who want to **make a difference in how math is taught in schools.**

As an intern, you will team up with students from different schools across Illinois. Together, we'll brainstorm ways to make learning math more exciting and practical at your school. **Your voice matters, and we want your ideas to shape the new math badges program!**

If you're interested in making math more fun and meaningful for everyone, come join us in this exciting opportunity!

- >> **10 internship spots** are available!
- >> This is a **virtual opportunity**. You will work **30 total hours** over 6 weeks, doing independent work + a 1-hour meeting each week.
- >> Key activities include blogging/ journaling, group discussions, and a final project.
- >> No special math skills required.
- >> Receive a **\$500 stipend** when you complete internship!

Wait, what are math badges?

Math badges are like special awards or digital stickers that you earn as you get better at math. Each badge is for a different math skill. To collect one, you have to do well in math challenges that match the badge. Your teacher will check your work, and if you did great, you get the badge! Math badges give you a clear goal to aim for and can make you feel proud of what you can do – plus you earn rewards for your hard work!

How can I apply?

If you've received this flyer, it means your teacher has recommended you for the math internship opportunity. **All you have to do is say yes!** Let your teacher know you're in, and they will get you enrolled.

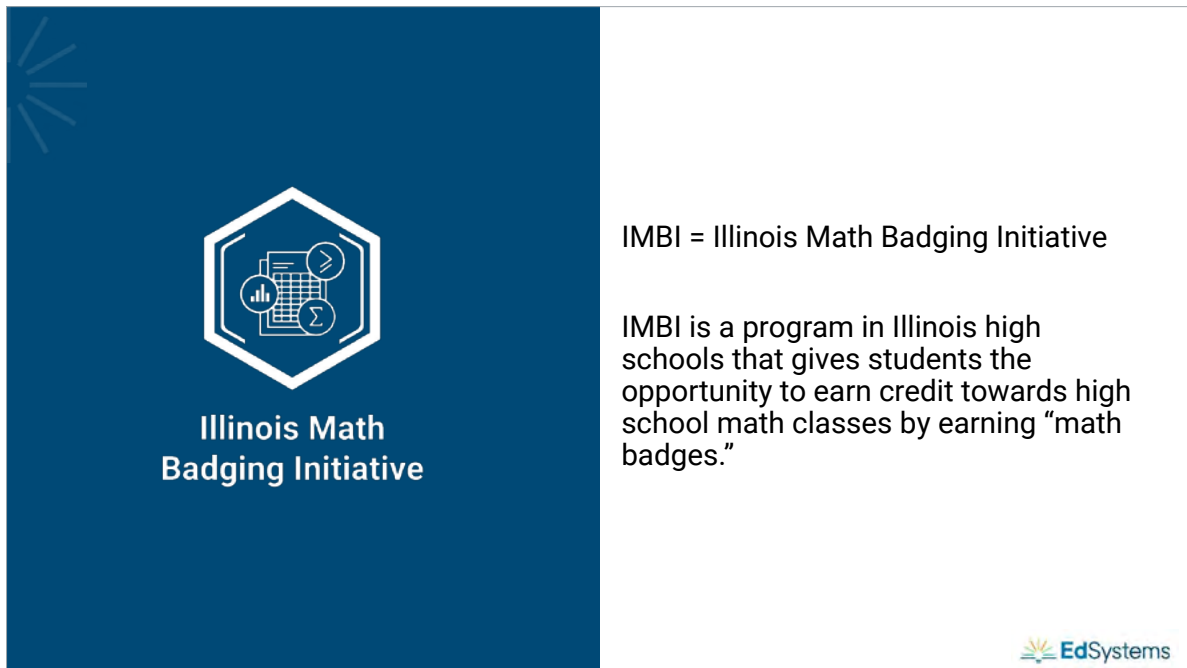
Teacher's Info:

B. Orientation Meeting Presentation

The following slides were shared with micro-internship participants as part of their orientation.



This slide features a dark blue background on the left and a white background on the right. On the blue background, there is a white hexagonal icon containing a bar chart, a calculator, and a sigma symbol. Below the icon, the text reads "Illinois Math Badging Initiative" and "Micro-Internship Orientation". On the white background, there is the EdSystems logo, which consists of a stylized sunburst above the word "EdSystems" and the text "EDUCATION SYSTEMS CENTER at NORTHERN ILLINOIS UNIVERSITY" below it.



This slide features a dark blue background on the left and a white background on the right. On the blue background, there is a white hexagonal icon containing a bar chart, a calculator, and a sigma symbol. Below the icon, the text reads "Illinois Math Badging Initiative". On the white background, there is a definition of IMBI: "IMBI = Illinois Math Badging Initiative" and "IMBI is a program in Illinois high schools that gives students the opportunity to earn credit towards high school math classes by earning 'math badges.'". The EdSystems logo is located in the bottom right corner of the white background.

Math Badges: A Brief Introduction

Math badges are like digital stickers that you earn.

Badges representing proficiency in a particular area of math.

To collect one, you have to do well in math challenges/performance tasks that match the badge.

Your teacher will check your work, and if you did great, you get the badge! After collecting a certain amounts of badges, you will be awarded class credit.

Offers personalization of math learning and potential to capture math learning outside of the traditional classroom.



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Internship Goals

- Identify real-world situations that involve mathematical concepts.
 - Apply appropriate investigative methods to better understand these scenarios.
- Gather information on how math is applied in school activities outside of a traditional math classroom, as well as in various fields and industries.
- Determine where there are opportunities for learning aligned to badges out of traditional courses.
- Develop recommendations for schools to capture math learning outside of the classroom.

 EdSystems

Intern Goals

- Develop research skills to explore and gather information on how math is applied in school activities outside of a traditional math classroom, as well as in various fields and industries.
- Develop strong reflection skills by critically analyzing researched concepts, and synthesizing insights into a coherent narrative.
- Enhance ability to communicate mathematical concepts effectively by presenting insights and reflections in a clear, organized, and engaging manner, enhancing, and engaging with peers.



Internship Overview: Weekly

Each week you will:

- **Engage in** a journaling prompt.
 - There are many opportunities for exploring different topics of interest.
 - I will be checking these each week and providing feedback.
- **Reflect on:**
 - How math is used in diverse situations.
 - How insights from each week are connected.
 - How what you are learning may be related to the classroom.
- **Present** these thoughts to your peers with **1 prepared slide** and engage in discussion.



Internship Overview: Final

At the end of the internship you will:

- **Have completed 4 journals.**
 - We will meet to discuss journal prompts on weeks 2, 3, 4, and 5.
- **Synthesize your understanding** of how math is applied in diverse situations and in the world around you.
- Utilize highlights from your journal and your growing understanding of math in diverse understandings to **complete and present a final project.**
 - You will present your final project on week 6.



Investigating Math Around Us

Step 1: Select a topic

Think about your interests, after school activities, career goals, hobbies, etc.

The journaling prompts will also help you narrow your topics of interest.



Investigating Math Around Us

Step 2: Define your research question

Think of which question you are interested in. This will help you identify how you want to explore it.

For example:

“How is math used in designing bridges?” or

“What mathematical patterns exist in popular music?”



Investigating Math Around Us

Step 3: Gather Information

Gather information from various sources, such as books, articles, websites, and interviews that relate to your research question.

Feel free to make time to discuss with your teacher, librarian, parents, friends, etc.





Investigating Math Around Us

Step 4: Reflect

Bring together information from your chosen source(s) to reflect on how math exists in your topic of interest.

Answer your journal prompt and be prepared to share with the group about what you learned.



Investigating Math Around Us

Step 5: Synthesize


At the end of our 6 weeks together, you will gather insights from across your reflection topics and present.



C. Student-Facing Micro-Internship Timeline

The following timeline was shared with micro-internship participants as part of their orientation.

MICRO- INTERNSHIP



Illinois Math Badging Initiative

Before we begin...

- Make sure you are receiving emails from dibrahim@niu.edu.
- Make a [Zoom account](#) if you do not already have one.
- Download the [Zoom app](#) if you do not have it downloaded.
- Fill out the poll to determine group meeting times.

Week 1

Get organized!

- Make sure you can access [Google Drive](#).
- Make sure you can edit the journaling template and copy the template into your own Google Drive (we will go over this).
- Place all weekly meetings and journal due dates in a calendar or planner.

Weeks 1–5

Get busy!

- Complete the daily journal. (Yes, that's one each day.)
- Attend weekly meetings and be prepared to share 2 highlights from your journals.

Week 3

Get paid!

- Complete the W-9 and Independent Contractor forms and send to dibrahim@niu.edu.

Week 4

Keep the end in sight!


- Begin working on final project (link description, rubric).

Week 6

Present & reflect!

- Complete the learning objective reflection.
- Complete the internship survey.

If you have any questions, please contact:
Dania Ibrahim, Innovation Manager | dibrahim@niu.edu



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E. Topic Ideas for Intern Journals

The following information was shared with micro-internship participants as part of the weekly journaling assignments.

The following topic ideas and skills are here for you to brainstorm what you would like to explore in your weekly journaling prompt.

- **DO** feel comfortable using and building upon these topics and skills.
- **DON'T** feel limited by these topics and skills! If you have a topic of interest that you don't see below, you are welcome to explore it.

Topic Ideas


- **Math in School Activities:** Reflect on the math involved in school activities outside of math class. This could include sports statistics, budgeting for school events, or analyzing data for a science project. How does math play a role in these activities?
- **Math in Technology:** Think about the technology you use every day. How is math involved in its design and function? Consider things like algorithms, data analysis, and coding.
- **Math in Social Issues:** Research a social issue that involves math, such as poverty rates, healthcare statistics, or environmental data. Discuss the math behind the issue and its implications.
- **Math in History:** Explore a historical event or period where math played a significant role. Describe the math concepts involved and their impact on the outcome.
- **Math in Art:** Examine a piece of art and identify any mathematical elements, such as symmetry, patterns, or proportions. Discuss how math is used to create or analyze the artwork.
- **Math in Architecture:** Study a building or structure and analyze its architectural design. Identify any mathematical principles used in the design and construction of the building.
- **Math in Travel:** If you have traveled recently or plan to travel, consider the math involved in your journey. This could include calculating distances, planning routes, or budgeting for expenses.
- **Math in Music:** Explore the connection between math and music. Consider concepts like rhythm, scales, and frequencies. How is math used in music theory or the production of musical instruments?
- **Math in Engineering and Robotics:** Investigate how math is applied in engineering and robotics. Discuss concepts such as calculations for building structures, programming robots, or designing mechanical systems.
- **Math in Postsecondary Options:** Research the role of math in different postsecondary options, such as college majors or career paths. How is math used in fields like engineering, economics, or computer science? How might your math skills benefit you in these areas?
- **Math in the News:** How is math utilized in the news? (e.g., statistics in a sports report, budgeting in a financial news article).
- **Math in Nature:** Go outside and observe the natural world. Look for patterns, shapes, and other mathematical elements. Describe what you see and how math is present in nature.
- **Math in Your Hobbies:** Consider your hobbies or interests. How is math used in those activities? For example, if you enjoy cooking, think about the measurements and proportions involved in recipes.

Skills

- **Basic arithmetic:** Addition, subtraction, multiplication, and division.
- **Number sense:** Understanding the relationships between numbers and their magnitudes.
- **Numerical fluency:** Quick and accurate mental arithmetic.
- **Estimation:** Approximating quantities and values.
- **Problem solving:** Applying mathematical concepts to solve real-world problems.
- **Logical reasoning:** Making deductions and inferences based on mathematical principles.
- **Spatial reasoning:** Understanding and manipulating shapes, sizes, and spatial relationships.
- **Measurement:** Determining the size, length, volume, or area of objects using standard units.
- **Geometry:** Studying shapes, angles, lines, and their properties.
- **Algebra:** Manipulating symbols and equations to solve for unknown variables.
- **Statistics:** Analyzing and interpreting data using statistical methods.
- **Graphing and plotting:** Representing data and functions graphically.
- **Probability:** Understanding the likelihood of events occurring.
- **Ratio and proportion:** Understanding and comparing quantities relative to each other.
- **Percentages:** Expressing fractions of a whole as parts per hundred.
- **Financial literacy:** Understanding concepts like interest, loans, budgets, and investments.

F. Math Badging Presentation

The following slides were shared with micro-internship participants to provide context on how their work ties into the Illinois Math Badging Initiative.




Illinois Math Badging Initiative



How Do Math Badges Work?

Students can certify learning from a broad range of sources:

- Coursework
- Independent study
- Summer school
- Work-based learning, etc.





Illinois Math Badging Initiative

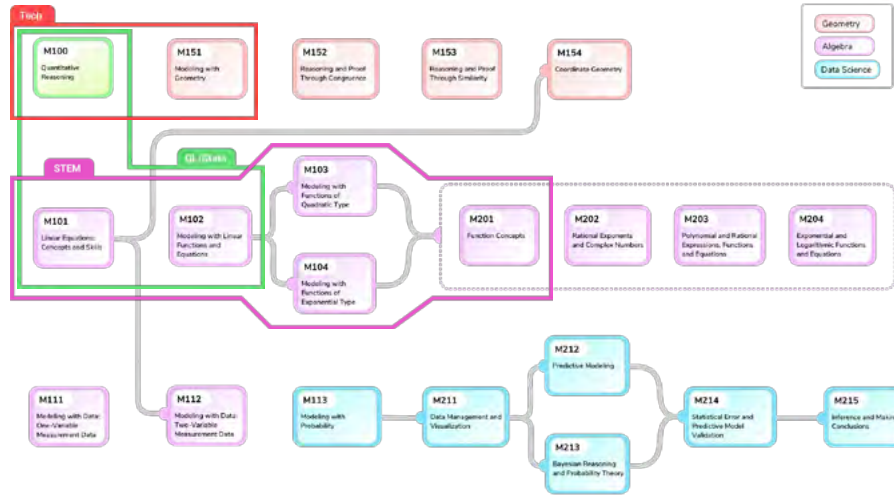


Why Math Badges?

Improve math outcomes and advance racial equity through:

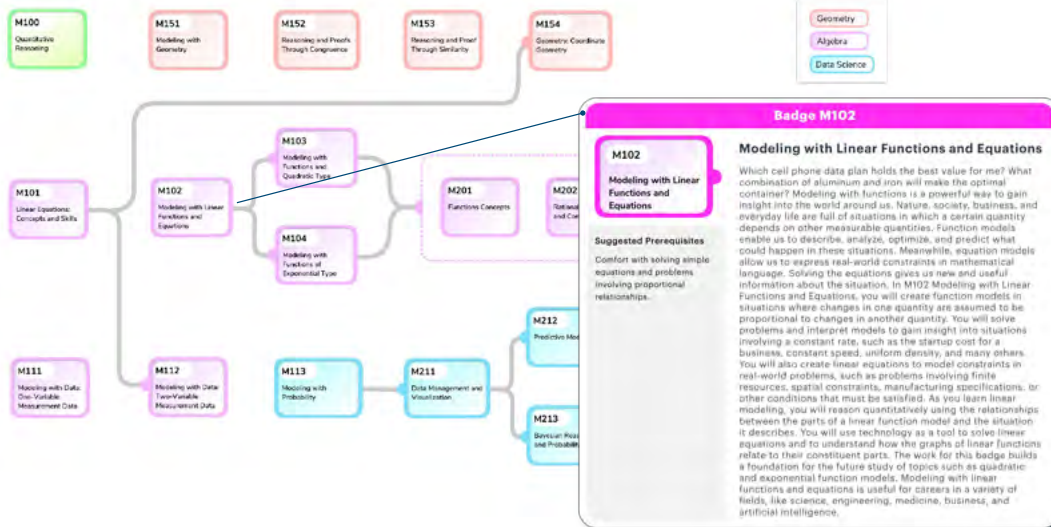
- Stronger **alignment** to math needed for secondary, postsecondary, and career success
- Students **demonstrate knowledge** not captured by grades
- Opportunities to **develop and reinforce** math knowledge and skills
- **Validate learning** outside of the classroom through work-based and other applied learning.
- **Customization** engages students with math directly related to college and career interests





Alignment to Illinois Transitional & Dual Credit Coursework

XQ High School Math Badging System



Deep Dive

M102- Content and Practice Expectations



102.a	Engage in the modeling cycle.
102.b	Interpret linear functions and equations that arise in applications in terms of the context.
102.c	Analyze linear functions using different representations.
102.d	Build linear functions that model relationships between two quantities.
102.e	Analyze and solve linear equations and pairs of simultaneous linear equations to draw conclusions.
102.f	Interpret expressions for linear functions in terms of the situation they model.
102.g	Solve linear equations and inequalities in one variable.
102.h	Create equations that describe linear relationships.
102.i	Understand the relevance of modeling with linear functions.
102.j	Use a linear function model to determine values of interest in a real-world problem.



Deep Dive

(Three types of) Evidence of Learning



Portfolio of Evidence

A set of artifacts collected throughout the students' work on a badge course of study.

Concept and Skills Assessment

The Concepts and Skills Assessment provides evidence of the range of content and practice expectations for the badge.

Performance Assessment (Modeling Badges Only)

Performance Assessments ask students to demonstrate their learning specific to the particulars of badges that center mathematical modeling and application





Possible Use Cases

- Summer bridge
- Stackable for honors credit
- Advocate for placement
- Geometry in Construction
- Integrated STEM courses



What Does This Mean for This Internship?

- Badges allow you to demonstrate your math learning
 - Can we identify places that math learning can be captured outside of the traditional classroom?
- For your final projects:
 - Choose a badge or badges that most relate to your final project topics. Reach out to teachers if needed.



G. Final Course Goals and Project Description

The following information was shared with micro-internship participants as a guide for their final projects.

Student Objectives

If a student successfully engages in this internship and completes this project...

- Students will have shown that they can synthesize their understanding of how math is applied in diverse real-world situations.
- Students will learn to identify real-world situations that involve mathematical concepts and apply appropriate investigative methods to better understand these scenarios.
- Students will develop research skills to explore and gather information on how math is applied in school activities outside of a traditional math classroom, as well as in various fields and industries..
- Students will have demonstrated strong reflection skills by critically analyzing researched concepts, and synthesizing their insights into a coherent narrative.
- Students will have presented their insights and reflections in a clear, organized, and engaging manner, enhancing their ability to communicate mathematical concepts effectively.
- Students will have enhanced their verbal communication skills by effectively presenting their findings and insights in a clear, articulate manner.
- Students will have improved their written communication skills by composing a well-organized report or presentation that effectively conveys their understanding of math in real-life scenarios.
- Students will have demonstrated digital communication skills by effectively using technology to create and present their project, such as creating a digital presentation or using multimedia elements to enhance their message.

Overview

For your final project, you will synthesize your understanding of how math is applied in diverse situations and in the world around you. Throughout the past 5 weeks, you have engaged in experiential learning through weekly journaling activities, researching math concepts and applications to the world around you, and identifying instances of math learning outside a traditional classroom. This project will allow you to showcase your newfound insights and skills in recognizing and understanding math in diverse real-world contexts, emphasizing learning beyond the confines of a traditional math classroom.

Project Requirements

Written report: Write a report that synthesizes the insights you've gathered about math outside of the traditional classroom. Use examples from your journaling activities to illustrate your points. Choose a math badge or badges that most relate to your final project topics. Reach out to teachers if needed.

- Note: If you are interested in a postsecondary option/career that would value something other than a written report (for example, a digital art display) please reach out to me about different project options! We want you to create something that would be valuable to you outside of the context of this project.
- Minimum length: 4 pages double-spaced
- Format: Use the format and style that fits what is best for your future goals. For example, if you are going into the humanities, use MLA style. If you are interested in going into psychology or any other social science, use APA style.
- Please write this in 3rd person.

Presentation: Create a 5 minute digital presentation where you discuss the contents of your report. During the final week of the micro-internship each person will present their insights and the group will have 3 minutes for questions/comments.

Self-Reflection: Share about your experience in the micro-internship. How was your experience with the work that you did? How was your experience working with students from other schools? How was your experience in a virtual internship? Did you see your mindset or skills grow? Did you gain or improve upon any of the learning objectives above?

- This can be written in any format, it's just a way for us to hear your thoughts on this process. No length or style requirements. This will be sent in separately from your written report.
- Please write this in 1st person.

Assessment Criteria: Your project will be assessed based on the following criteria:

- Reflection: How well does your project reflect your understanding of how math is applied in diverse situations? Can you think of any way that this topic or the skills you have shared can be tied to classroom learning?
- Insights: Does your project showcase newfound insights into the role of math beyond the traditional classroom?
- Skills: How effectively do you demonstrate the skills required to engage in math in real-life scenarios?
- Presentation: How well is your project organized and presented?

Submission Details:

- Email your final report and final presentation slides to dibrahim@niu.edu by Tuesday 4/23/24 @ 11:59 pm CST.
- Please send in your self-reflections by Friday 4/26 @ 11:59 CST.
- You will be asked to share your final presentation at our showcase on 4/24/24 4:30-6:30 pm.
- Note: This project is an opportunity for you to showcase your understanding and creativity. Have fun exploring the world of math in your everyday life!

Reminders for the final presentation:

- Be sure to write out an outline and/or notes for yourself! You should not be reading what you wrote on your report verbatim.
- Focus on the main points! You will only have 5 minutes to present, so be sure to focus on the most important aspects of your reflections that answer the required questions above. Feel free to share about your journal examples in this presentation, but only as they relate to the final questions. Your examples should always tie back to a larger point you are trying to make.
- Practice and time yourself! Practice will help you feel more confident and ensure that you are sharing what you would like to say in your 5 minute time period. We will be timing you and making sure you don't go too far over, so please practice your presentation with a timer handy.
- Do a tech rehearsal! Sign on to Zoom and practice sharing screen, making sure that your slideshow is on full screen and that you are comfortable switching between slides. Remember to unshare after you finish.



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