CURRICULUM ALIGNMENT

Student Growth & Achievement:

ENSURE THAT ALL STUDENTS ARE ENGAGED IN A RIGOROUS EDUCATION RESULTING IN COLLEGE, CAREER AND LIFE READINESS.

Why is Curriculum Alignment the Focus of Goal 1 of the District's Strategic Plan?

District 86 has a long and proud tradition of excellence that was built on high standards and expectations, and has grown stronger thanks to the hard work of our students, the expertise of our staff, the dedication of our school board and the support of our community. Everyone's collective efforts have helped establish our district as one of the best in Illinois. However, in order to remain a leader in our state and continue meeting the unique and diverse learning needs of our students, we must strive for improvement that promotes progress, innovation and growth.

Our steadfast belief in and commitment to continuous improvement does not reflect the existence of a "broken" system that needs to be "fixed." Instead, its aim and purpose is to help us remain a Lighthouse District that offers ALL students access to rigorous college and career preparatory coursework.

The next few pages feature an update on our curriculum alignment work, as well as information that highlights the benefits and addresses some of the misperceptions and misinformation about the changes we are making to our science and math programs.

What is Curriculum Alignment?

There are several goals, strategies and activities that help define the focus and purpose of curriculum alignment, and highlight the positive impact it has on students, staff and families. These goals, strategies and activities include:

- Fortifying a continuous improvement model.
- Engaging teachers in conversation around common content, support systems, curriculum enhancements, instructional practices and assessment outcomes.
- Creating and clearly communicating the rigorous and consistent expectations for all courses.
- Expanding opportunities for credit bearing college classes (AP and dual credit).
- Increasing the number and availability of core and elective opportunities that support and promote career readiness.
- Expanding opportunities for community and career internships.
- Using the latest research to make data-driven decisions.
- Expanding options and opportunities to include academic models that are used in top-performing schools across the country and around the world.

"Without continual growth and progress, such words as improvement, achievement, and success have no meaning."

– BENJAMIN FRANKLIN

While it is important to articulate what curriculum alignment and a focus on continuous improvement can do for students, teachers and families, it is equally important to dispel the rumors, myths, fears and misperceptions that often accompany this work.

Curriculum Alignment Will NOT:

- Eliminate academic supports for struggling students.
- Compromise rigorous curriculum.
- Detrack all classes.
- Eliminate honors classes or college curriculum opportunities (e.g. AP and dual credit).
- Attempt to remediate "learning for all" curriculum changes (note: our curriculum has not changed or been impacted at all by the retired middle school initiative).
- Occur overnight - curriculum alignment is an ongoing and methodical process.
- Proceed without the guidance, leadership and support of our teachers, who are the experts in this work.

Our district's curriculum alignment process is tied directly to the work of our strategic plan, most notably the efforts we are undertaking to support student growth and achievement. While the graphic on the right reflects the critical role that our stakeholders play in this process, we want to highlight the responsibilities of our teachers and department chairs. These two groups are involved in every aspect of the work, including serving on the program team (reviews the curriculum in each content area, and collects research and data that will help drive any changes that are considered), the development team (leads revisions to the curriculum at the course level) and the writing team (leads revisions at the instructional/classroom level).

D86 CURRICULUM ALIGNMENT PROCESS

D86 Strategic Plan
Community Members • Parents
Students • Board Members • Administrators
Department Chairs • Teachers • Consultants

Program Team
Administrators • Department Chairs • Teachers

Development Team
Department Chairs • Teachers

Writing Team
Department Chairs • Content Teachers
Special Education Teachers
Sender Schools if Appropriate

STEM PROGRAMS IN D86

Science Program

During the course of several months, a team composed of educational leaders from across our district, including six science teachers, both science department chairs, both building principals, both assistant principals for curriculum and instruction, and the assistant superintendent for academics, spent hundreds of hours working on the development of a science program that will provide coherence and alignment between our two high schools. The result of their efforts was a recommendation to implement a vertically-aligned sequence of courses at the two schools that follows the ESS-integrated PCB sequence (ESS stands for Earth and Space Science; PCB stands for Physics, Chemistry and Biology), is fully aligned with the Next Generation Science Standards, and will have earth science serving as a common thread that is woven throughout it.

Below are some of the ways this program, which was implemented at the start of the 2020-21 school year, benefits students:

Coherence: It builds sequentially from course to course, which enhances the content knowledge and skills of our students.

Interdisciplinary: It emphasizes the interconnectedness of the sciences by progressively sequencing courses, and integrating relevant earth science topics within each core course.

Maximize Core Science Experience: It provides students with the opportunity to experience four core sciences (earth science, physics, chemistry and biology) over a three-year period. The Illinois Science Assessment, which assesses a student's knowledge and skills in all four content areas during the spring of their junior year, highlights how important it is for our students to have a well-rounded base in science.

Alignment with Math Courses: Our district's physics courses are algebra-based. As a result, students who are enrolled in Algebra or Math 1 are able to apply the skills from those courses to their physics class. This enables them to see algebra "in action." In addition, students who have already mastered algebra are able to use their math skills in new and more advanced applications in Physics Honors.

Increased Access to Rigorous Courses: By using math as the readiness indicator for enrollment in honors-level science, more students have the opportunity to take Physics Honors their freshman year. The sequential nature of the program also increases access to AP courses during junior and senior year.

Progressive Complexity: The concrete nature of its core concepts, its application and reinforcement of algebra and graphing skills, and the opportunities for hands-on experimentation make physics a great fit for freshmen. As students progress through our district's science sequence, they build on their experiences by having a deeper and more nuanced understanding of the concepts they encounter in earth science, chemistry and modern biology.



We encourage people to visit the Academics page on our website (d86.hinsdale86.org) to learn more about the work we have done and will be doing to advance the development and alignment of our science curriculum.

There are a few topics we want to address to help clear up some of the misperceptions and misinformation about our program.

Myth: Teaching physics to freshmen is untried and unpiloted.

Fact: A Physics-Chemistry-Biology (PCB) curriculum that includes an earth science-integrated physics course for freshmen has been the standard at Hinsdale South for over a decade. In addition, many highly regarded schools in Illinois (e.g., Walter Payton College Prep, Proviso Mathematics & Science Academy, Loyola Academy, etc.) and throughout the country have implemented a PCB sequence.

Myth: All support systems for struggling students have been eliminated in the PCB sequence.

Fact: Students who need academic support have and will continue to receive it in a number of ways, including through co-taught classes, Essential (special education) classes and science interventionists who are available every period of the school day.

Myth: Freshman families at Hinsdale Central who have the option of enrolling in physics or biology are not selecting physics.

Fact: Nearly 50% of Hinsdale Central's incoming freshmen have selected Physics in the Universe as their first science course for the 2021-22 school year.

Myth: These courses won't be accepted by colleges.

Fact: Colleges and universities accept high school science credits based on the course, not the sequence.

Myth: Freshman physics is just physical science and does not use math.

Fact: The physics courses that are featured in the district's PCB sequence are algebra-based. In addition, our recommendations for a student's science course are based on the results of their math placement.

Below is what the science curriculum development and writing teams have either completed or are currently working on:

Physics: The newly revised Physics in the Universe (PITU) curriculum was launched at both campuses during the 2020-21 school year. Thanks to the outstanding efforts of our teachers and the strength of the curriculum, the implementation of PITU has been successful despite the challenges of the pandemic and remote instruction.

Chemistry: The revised chemistry curriculum is scheduled for implementation during the 2021-22 school year. The physics and chemistry teams are working together to ensure there is a smooth transition.

Biology: The biology team is currently working on its curriculum, which is scheduled to be implemented during the 2022-23 school year.

Math Curriculum

The District 86 Math Pathways Team, which is composed of the department chairs for math, building-level administrators, and individuals who teach all levels and courses of math at Hinsdale Central and Hinsdale South, spent eight months working on the alignment of the district's math curriculum.

This work included:

- Conducting a pre-decisional SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the district's math programs.
- Developing a mission statement and program goals that are aligned with the district's strategic plan.
- Researching potential course options and pathways. These efforts were focused primarily on the exploration and assessment of the traditional math pathway (Algebra, Geometry, Algebra II/Trig) and an integrated math pathway (weaves algebra, geometry and statistics into all of its courses).
- Collecting feedback from math teachers, counseling and special education departments, the Parent-Teacher Advisory Committee, the Principal-Student Advisory Council and the district's feeder schools.

> "Students need to see mathematics as an integrated whole, with connections across the content domains, and they need to experience some of the applications and uses of mathematics before they transition to college."
>
> **- FORMER NCTM PRESIDENT J. MICHAEL SHAUGHNESSY**

Following a comprehensive review and assessment of its research and data, the team unanimously recommended and the board of education approved the move to an integrated math pathway starting in the fall of 2022.

Below are some of the ways in which this move will benefit students:

Connections: An integrated curriculum enables students to connect all branches of math together, and see how common topics relate to each other.

Context. Reordering the sequence of skills makes it possible to integrate and contextualize the study of statistics and data analysis into scientific and real-world situations in a more meaningful way.

Problem Solving. Increased ability to develop problem solvers through the application of content.

Depth of Understanding. Exploring the content in greater depth allows students to increase their understanding of key concepts.

Less Redundancy. The reorganization of topics leads to fewer redundancies in the curriculum.

Less Memorization. There is less time spent memorizing facts and algorithms, which allows for greater focus and emphasis on meaning and connections.

Coherence. Integrating functions, numeracy, algebraic representations, statistics, modeling and geometry in each course mirrors what our students experience in conjunction with the K-8 math standards.



Similar to the science program, we have included detailed information about our work on the integrated math pathway on the Academics section of our website. We have also used the space below to address several of the more common misperceptions about this pathway and the impact it will have on our schools and students.

Myth: Students will not experience a robust curriculum under an integrated model.

Fact: All current Illinois math standards and practices are part of the integrated math curriculum.

Myth: Teaching an integrated curriculum has been adopted by very few districts.

Fact: Many of the top math and science schools in the country are using an integrated math curriculum, including:

1. Northside College Prep (ranked second in the state by U.S. News & World Report)
2. Jones College Prep (ranked third in the state by U.S. News & World Report)
3. Brooks College Prep (ranked 10th in the state by U.S. News & World Report)
4. Illinois Math and Science Academy
5. Maine Township High School District 207
6. Community High School District 99 in Downers Grove
7. Lemont Township High School District 210
8. Lockport Township High School District 205
9. Consolidated High School District 230 (Sandburg, Stagg and Andrew)
10. Community High School District 117 (Antioch, Lakes)
11. Proviso Mathematics & Science Academy
12. Thomas Jefferson High School for Science and Technology in Virginia (ranked by U.S. News & World Report as the top school in the nation)
13. Central Magnet School in Tennessee (ranked by U.S. News & World Report as the number five school in the nation in 2019)
14. All districts in North Carolina, West Virginia and Utah
15. Some districts in California (San Diego Unified and Sacramento Unified), Tennessee (Nashville Unified) and Georgia

Myth: The integrated curriculum is a "one-size fits all" approach to instruction.

Fact: Every high-level math class will still be available to all students. The district's five AP classes and honors core courses will also continue to be offered. In fact, the integrated curriculum will enable more of our students to take rigorous courses that they did not have access to prior to high school. In addition, our math teachers will be developing more course options for students who do not plan to pursue a STEM-related field.

Myth: All support systems for struggling students have been eliminated from the integrated pathway.

Fact: Students who need academic support have and will continue to receive it in a number of ways, including through co-taught classes, Essential (special education) classes and math interventionists who are available every period of the school day.

Myth: An integrated curriculum lowers test scores.

Fact: There is no empirical data that shows a correlation between a school's math curriculum and the scores its students earn on the SAT. In fact, the data we collected from other schools in the area showed that standardized test scores rose and declined regardless of the math pathway (i.e., traditional or integrated) they offered.

Below is information about what the math curriculum development team is currently working on.

The team is reviewing the Illinois Learning Standards for Mathematics, and discussing the unit outlines for Math I, II and III.

Course teams for College Prep Math, AP Calculus, AP Statistics and AP Computer Science have been working to align content across the district based on the Illinois Transition Math and College Board Standards.