



Board Meeting Date: 6-12-2023

Title: Pathways Update

Type: Report

Presenter(s): Dr. Randy Smasal, Assistant Superintendent; Dr. Anne Marie Leland, Director of Community Education and Strategic Partnerships; Jody De St Hubert, Director of Teaching and Learning; Daphne Edwards, Director of Marketing and Communications

Description: Pathways are opportunities that include focused areas of academic learning, related internship/micro-apprenticeship/job-shadowing (work based) learning and earned credentials.

THRIVE Pathways are one of the ways that Edina Public Schools is advancing ***Strategic Initiative A. Advancement of Excellence, Growth and Readiness:***

A.1 - Design and deliver curriculum, instruction and assessment focused on content rigor, critical thinking, student engagement and continuous improvement to assure academic achievement and student growth.

- To prepare all learners for college, career and civic life, curricula and instruction will be aligned to future ready competencies, and periodically audited as part of a continuous improvement process.
- Explore and create additional PreK-12 programming (e.g. STEAM, STEM, Immersion, Biomedical) that promotes authentic and engaging learning experiences to meet the needs of future ready learners and provide attractive educational options for families.

A.2 - Provide a coherent and differentiated educational experience that effectively engages, appropriately challenges every student academically.

- Articulate a system of flexible pathways that maximizes learner engagement to grow students' strengths and talents.

The report provides background information to accompany the Pathways slide presentation. Report elements include a scope overview of Phase I Pathways, Phase II Pathways, the Design Process and timeline, budget implications, potential success metrics and resources utilized by the Pathways Project Team. Phase 1 Pathways all represent experiences that are currently in our Edina 9-12 programming for students. In this report they are articulated in a way that can be replicated for future phases based on continued stakeholder feedback and school board direction.

Recommendation: No recommendation is being made at this time. This presentation is an informational update for the board.

Desired Outcome(s) from the Board: Please review materials in detail and bring forth questions you have for the presenters.

Attachment(s):

- See attached report

This board update report is organized into the following sections:

- Background Information
- Design Process and Timeline
- Phase I pathways
- Phase II pathways
- Budget Implications
- Draft Success Metrics
- Next Steps
- Resources

Background Information

Pathways Definition

Career pathways offer a clear sequence, or pathway, of grade level or course level learning, internships/micro-apprenticeships, job shadowing and earned credentials. This system learning approach supports the student development of the attributes of the Portrait of a Well-Rounded Edina Graduate. The learning model allows students to make connections and network with professionals in fields of interest, apply learning from school in a real world/work-integrated setting, and earn industry-recognized credentials making their skillset standout and overall more marketable. The Edina Pathways model is supported by evidence-based practices from Career Pathways Research (Workforce GPS, 2023) and includes six key elements for success as adapted from the US Department of Labor.

1. Build cross-stakeholder partnerships and clarify roles

Strong **School-Community Partnerships is critical to creating career pathways.**

High levels of engagement with community partners is essential to making career pathways successful. Partnerships include employers, workforce agencies, higher education, community members, and community-based organizations.

2. Identify sector or industry and engage employers

This is the critical connection to building **competencies and skills**, aligned with the **Portrait of a Well-Rounded Edina Graduate**. Work-integrated training strategies that include employers in the design have demonstrated better postsecondary employment and earnings outcomes than more traditional approaches. Successful pathways are designed using active employer involvement to ensure that students gain skills and

competencies that enhance their high school experience and meet the partnership outcomes.

3. Design education and career experience programs

This component requires the design of comprehensive **education and training programs** that are experienced by the student. This includes course sequences, as well as credentialing, curricula development, integrated secondary and employment training, career counseling, support services, and assessments.

4. Identify funding needs and sources

A career pathways approach braids and aligns services from a wide variety of resources to support a student's successful completion. To ensure system success for each and every student, innovative funding and resource acquisition from a variety of public and private sources are used.

5. Align policies and programs

This is a critical component of horizontal and vertical alignment. Career pathways programs require intentional alignment among higher education, local businesses, and EPS courses to ensure that a student will move seamlessly into their postsecondary experience (whether college or career) with real-life and in-demand credentials. The alignment of policies and practices:

- Serve to ensure each and every student is able to fully participate in programs.
- Creates a foundation that allows for funding procurement and blended funding models.
- Supports the professional development of staff necessary to support career pathway approaches.

6. Measure performance

This component ensures intended outcomes are met for each and every Edina Public Schools student. Performance measures are based on:

- Establishing metrics that will be used to monitor implementation of pathways model,
- Identifying data to be collected, tracked and shared,
- Creation of process for analyzing data and assessing progress made toward achieving outcomes.

Design Process and Timeline

A project planning team has met weekly since the fall of 2022-23 to develop a plan for implementing Edina Thrive Career Pathways. The project team members include: Dr. Anne Marie Leland, Director of Community Education and Strategic Partnerships; Dr. Randy Smasal, Assistant Superintendent; Jody De St Hubert, Director of Teaching and Learning; and Daphne Edwards, Director of Communication and Marketing.

Jodi Ramirez, EHS Engineering Teacher and Shannon Seaver, EHS Engineering Teacher/CTE Advisory Committee Co-Chair have deeply supported the design work.

Other individuals and or Committees impacting the Edina Pathways design include:

- Elem STEAM Design Team (n=30)
 - > 20 Edina Teachers
 - Edina Administrators
- Special Education Advisory Council (n=20)
 - Edina Teachers and Administrators
 - Edina Parents
- Community Education Advisory Council (n=10)
- South View Content Area Leaders (n=10)
 - SV Teachers and Administrators
- Valley View Content Area Leaders (n=11)
 - VV Teachers and Administrators
- Edina High School Content Area Leaders (n=13)
 - EHS Teachers and Administrators
- 9th grade student career interest survey
 - ~700 9th grade students participated
- Career and Technology Education Advisory Committee (n=30)
 - Edina Students, Teachers and Administrators
 - Business Leaders and Higher Ed Partners
- World's Best Workforce Committee (n=25)
 - Edina Students, Teachers and Administrators
 - Business Leaders and Higher Ed Partners
- K-12 Principals
- Edina Cabinet Members
- Teaching and Learning Board Committee

The [Perkins Collaborative Resource Network](#) notes that a “Career Pathways System is about the coordination of people and resources.” The aforementioned 6 Key Elements have been adapted to develop the Edina Public Schools.

An additional resource that has also been an integral part of the design process is the Minnesota Career Fields, Clusters & Pathways [tool](#), or career wheel. The MDE tool organizes the foundational knowledge and skills, career fields, career clusters, and career pathways in a cohesive framework.

Phase 1 Pathways:

Phase 1 Pathways all represent experiences that are currently in our Edina 9-12 programming for students. In this report they are articulated in a linear way that allows students and families to see connections and purpose. This structure can also be replicated for future phases based on continued stakeholder feedback and school board direction. The four phase 1 articulated

pathways are Programming and Software Development, Engineering, Aviation and Environmental Sustainability/Service Systems.

Programing and Software Development Pathway (Arts, Communications and Information Systems Career Fields and Information Technology Cluster)



Programming and software development is, in the simplest terms, creating a series of instructions for a computer to execute. Computer programming is a fundamental skill in our world today and used for so many different applications from bringing food directly to our homes, to ordering transportation to get us from one point to another. Programming and software development is literally all around us.

Learning computer programming and software development ensures that students have access to the creative, fast-paced world that relies on machine connections. Students can apply these skills to a wide variety of industries and disciplines as they interact in their immediate world, as well as look to their future. MOOC.Org

Below are descriptions of the linear pathway experiences available to Edina Public Schools for each level of programming in the Programming and Software Development Pathway.

Early Learning Center:

ELC staff design experiences that involve expanding critical thinking skills, analysis, problem solving, and identifying and examining details of a situation—all skills that are precursors to programming. Instruction around this is embedded into daily routines. Visual supports are used to scaffold sequencing skills and to support children of all abilities. Classroom and table top activities are designed to support skills development. The skills include following directions, problem solving and sequencing. Through the Creative Curriculum “studies” children are

making observations, identifying and describing details, making predictions and analyzing differences, similarities as well as determining cause and effect.

Elementary:

Elementary students specifically engage in programming experiences in Math, Science and Technology. The **K-5 Edina Math** concepts aligned with MDE standards and directly related to building programming skills include:

- **Patterns and Relationships:** Math in Focus emphasizes the identification and understanding of patterns beginning in primary years. Recognizing patterns is an essential skill in coding. Elementary math includes activities and exercises that involve identifying and extending patterns, which can help develop the foundation for understanding algorithms and logical sequences.
- **Logical Reasoning:** Math frequently emphasizes logical reasoning and critical thinking skills. These skills are also central to coding, as programmers must think logically and anticipate how different pieces of code will interact and produce specific outcomes.
- **Problem Solving:** Math encourages students to solve problems using a systematic approach. Similarly, coding involves breaking down complex problems into smaller, more manageable parts and applying step-by-step strategies to find solutions.
- **Geometry and Spatial Reasoning:** Math in Focus includes a focus on geometry and spatial reasoning, which can indirectly support coding. Geometry concepts involve visualizing and manipulating shapes, which align with programming tasks such as designing graphical interfaces or working with coordinate systems. Developing spatial reasoning skills can enhance students' ability to visualize and understand code structures.
- **Data Analysis:** Some basic data analysis concepts, such as collecting, organizing, and interpreting data. These skills are relevant to coding, as programmers often work with data and use it to make informed decisions and develop algorithms.

In **K-5 Science**, Edina students will develop programming skills by learning and engaging with the Next Generation Science Standards (NGSS) which are the backbone of the newly adopted Mystery Science curriculum. K-5 Mystery Science will specifically teach:

- **Computational Thinking:** The NGSS emphasizes the development of computational thinking skills, which are essential for programming.. Computational thinking involves problem-solving, logical reasoning, and algorithmic thinking. By engaging with the NGSS, students can develop these foundational skills, which are directly applicable to coding.

- **Analytical Skills:** Science education, as supported by the NGSS, encourages students to analyze data, make observations, and draw conclusions. These analytical skills are valuable in programming, as programmers often need to analyze and interpret data, identify patterns, and make logical decisions based on the information at hand.
- **Experimental Design:** The NGSS promotes hands-on, inquiry-based learning, which includes designing and conducting experiments. This process mirrors the iterative nature of programming, where programmers test and refine their code to achieve desired outcomes. By engaging in experimental design, students develop problem-solving skills and an understanding of the importance of iteration and debugging in coding.
- **Systems Thinking:** The NGSS encourages students to explore and understand complex systems, such as ecosystems or physical systems. Programming often involves creating and manipulating systems, whether it's designing algorithms, creating software applications, or working with hardware systems. The ability to think systematically and understand how different components interact is beneficial in coding.
- **Technology Integration:** The NGSS recognizes the importance of technology in scientific inquiry and exploration. Programming is a technology-driven field, and learning the NGSS can expose students to various scientific technologies and tools. This familiarity with technology can make the transition to coding smoother and provide a solid foundation for understanding how technology can be leveraged in coding projects.

All Edina students are fortunate to have regular interactions with Elementary Media Specialists. Edina Media Specialists focus on the International Society for Technology Education ([ISTE](#)) standards. Programming experiences K-5 students are engaged in during **Media** include:

- Block Coding in K-2 which includes designing robot movement and digital animation lessons.
- Coding for problem solving in 3-5 which includes basic programming as well as programming more detailed tasks for robots to complete.

Middle School:

Middle school students have the opportunity to dive deeper into the world of programming through several elective course options. In 6th grade, students take Engineering Exploration where they learn about CAD, 3D printing, fabrication and coding. In 7th grade, students enroll in Design & Modeling/Robotics and Automation. In these classes students learn about information structures, energy transfer, machine automation and computer control systems. Students may also take Coding 7 where they are exposed to several coding languages for web page design, app and game development. Lastly, in 8th grade students continue their middle school coding journey in Coding 8. In this course they are exposed to app

design, artificial intelligence and machine learning, physical computing and game design.

High School:

When students arrive at Edina High School the opportunities in the programming pathway are expanded. Below is a table highlighting existing experiences in the Programming and Software Development Pathway available to students in grades 9-12.

	Gr. 9	Gr. 10	Gr. 11	Gr. 12
Related Required Courses	Algebra 1 and Algebra 2			
Pathway Courses	AP Computer Science Principles and AP Computer Science JAVA, Independent Language Design (Certification and College Credit Option)			
Additional Pathway Elective Courses	Web Coding 1 & 2 (Java), Introduction to Game Design, Cybersecurity			
Clubs	Robotics & Coding			
Internship / Apprenticeship/ Job Shadow			To Date of this Report: Genesys Works Target City of Edina	
Certification options	Computer Programming I, Computer Programming II (C#), Computer Programming II (C++), Computer Programming II (JAVA), Computer Programming II (Python), Computer Programming Advanced, and Computer Science Principles			

Programming Certifications earned by EHS students in the spring of 2023.

- Computer Science Principles
- Computer Programming 1
- Computer Programming 2 Python
- Computer Programming 2 JAVA
- Advanced Programming JAVA
- Web Development
- Game design
- Computer programming 2 C#

EHS administered 290 certification tests. 223 students passed their test and earned certifications this spring (~77% passing rate)!

Engineering Pathway (Engineering, Manufacturing, and Technology Career Field and STEM cluster)



Science, technology, engineering, and mathematics (STEM) subjects are gaining popularity throughout all education systems. The [World Economic Forum](#) stated, “65% of children entering primary school today will ultimately end up working in completely new job types that don’t yet exist.” With this in mind it is critical for all students to increase their STEM skills by engaging in critical thinking, problem solving, resiliency, planning, and creativity. Even if a student is not going into a STEM job in the future, developing these key skills will have many benefits for them throughout their lives. [StemSports](#)

Below are descriptions of the Engineering pathway experiences available to Edina Public Schools for each level of programming.

Early Learning Center:

ELC staff design experiences that develop questioning, imagining, planning, creating, adapting, and recreating skills that are many of the critical precursors to engineering.

The following are four unit examples:

- Buildings: This unit includes creating buildings out of different materials, learning about parts of buildings, using the 3 little pigs as a literature grounding to then build stronger house kits.
- Wheels: This unit involves exploration with a variety of types of wheels and a variety of surfaces. Students explore which wheel type goes the

fastest on what type of surface, asking questions and testing out hypotheses along the way.

- Box Creation: This is a unit taught in the 3 year old classroom and involves students creating anything they can imagine from a box. As students design they observe other innovations and redesign their own.
- Cameras: This unit is made possible through family camera donations of a variety of camera's (Polaroid, digital, disposable, ect). The unit begins with teachers sharing how cameras work and how to use a camera. Students then have an opportunity to practice using the cameras, taking pictures, adapting their techniques based on the results, and planning a new way of using the camera to get better results.

Elementary:

The Edina Mystery Science curriculum was adopted in 2023 and will be implemented at various stages in K-5 classrooms during the 2023-2024 school year. Mystery Science is aligned with the Minnesota State Standards, as well as Next Generation Science Standards (NGSS). Each lesson is aligned to a topic, performance expectations, science and engineering practices, disciplinary core ideas, and crosscutting concepts.

The following are examples of engineering lessons provided in Mystery Science:

- In "Force and Engineering" in Kindergarten students enjoy a read aloud of The Monster Trap and are challenged to imagine how to design a good monster trap, and then pretend to be sneaky monsters. This read aloud is the conclusion of a "Force Olympics" unit.
- In "Erosion and Engineering" 2nd grade students compare multiple solutions for preventing erosion. They design and test ways to keep water from washing away a hill modeled out of cornmeal.
- In "Invisible Forces" 3rd grade students investigate the effects of balanced and unbalanced forces, the pushes and pulls of bridge structures, and the effects of friction on the motion of objects

Middle School:

Engineering design is used throughout the Amplify Science curriculum. In each unit, students are introduced to a real-world problem that requires them to use their engineering skills to design a solution. Students work through the engineering design process, which includes:

1. Identifying the problem
2. Researching possible solutions
3. Generating ideas
4. Building and testing prototypes

5. Evaluating and improving solutions
6. Communicating their solutions

By working through the engineering design process, students learn how to apply their science knowledge to solve real-world problems. They also learn how to work collaboratively, communicate effectively, and think critically. The following are examples of engineering lessons provided in Amplify Science.

- In the 6th grade unit on "Forces and Motion," students design a roller coaster that meets specific criteria.
- In the 7th grade unit on "Electricity and Magnetism," students design a robot that can complete a series of tasks.
- In the 8th grade unit on "Chemical Reactions," students design a new type of battery.

The Amplify Science curriculum provides students with the opportunity to use their engineering skills to solve real-world problems. This helps students develop the skills they need to be successful in college, careers, and life.

In addition, Middle school electives provide opportunities for students to explore engineering opportunities at a deeper level. In 6th grade, students take Engineering Exploration where they learn about CAD, 3D printing, fabrication and coding. In 7th grade, students can pursue Design & Modeling/Robotics and Automation. In these classes students engineer solutions related to information structures, energy transfer, machine automation and computer control systems.

High School:

When students arrive at Edina high school the opportunities for learners in the engineering pathway are extended. Below is a table highlighting existing experiences available to students in grades 9-12.

	Gr. 9	Gr. 10	Gr. 11	Gr. 12
Related Required Courses	Algebra 1	Algebra II	PreCalc*	Calculus*
	Physical Earth Science	Chemistry	Biology	*Physics
Pathway Courses	Introduction to Engineering Design and/or Principles of Engineering Aerospace Engineering, Digital Electronics, Civil and Architectural Engineering			

	Engineering Design and Development		
Clubs	Robotics, Coding, ACE: Architecture Club		
Internship / Apprenticeship/ Job Shadow			To date of this report: Genesys Works Xcel Energy Inherited Stories
Certification options	Cad Mechanical Design I, Cad Mechanical Design II, Cad Mechanical Design III Electronics I, Electronics II, Electronics Principles Engineering Principles II, Engineering Technology		

Aviation/Aerospace Pathway (Career Field is Engineering, Manufacturing and Technology and Career Cluster is Transportation)



Humans are on the precipice of commercial space travel. Opportunities for pilots, mechanics, dispatchers, and industry business leaders provides for a rich pathway design in the area of Aviation and Aerospace. With eager partners nearby and a job market with high demand, this pathway provides a unique opportunity for our Edina students. Many lessons in the Edina school system provide students with understanding of flight and space concepts. A few of those experiences are described below.

Early Learning

ELC staff design experiences that introduce students to career opportunities in transportation. One of the many rich Literacy units students engage in in the 4 year old classes is titled transportation and includes read-alouds and discussion on aviation. In another unit on buildings there is a lesson on who works in an

airport. Finally students of all ages create paper airplanes to explore how design impacts flight.

Elementary

There are three different types of opportunities offered within Mystery Science to explore topics related to the Aviation/Aerospace Pathway. They include full units, core lessons and mini-lessons. At the 3rd grade level there is an entire unit that is on Weather and Climate. Within this unit the Anchor Phenomena that students work with is Modeling Weather Patterns which has a critically important connection to aviation. In addition there is a core 3rd grade lesson on balanced and unbalanced forces in motion. Included as part of this lesson is work with the concept of the impact of friction on the motion of objects. Finally, there are several mini-lessons that any teacher at the elementary level can use. They include the following; The Wright Brothers (history of flight), The Principles of Flight, Different Types of Aircraft, Women in Aviation, Airplane Design, and Space Exploration. These lessons are all short introductory lessons that can be used to help pique student interest in the topic.

Through partnership with the Edina Ed Fund, Edina students are able to participate in the Student Spaceflight Experiment Program. Students in grades 5-12 have the opportunity to design an experiment to test the impact of microgravity on a variable of their choice. The competition pushes students to incorporate many aspects of science and engineering for this Aerospace challenge.

Middle School

The Amplify Science curriculum provides opportunities for middle school students to learn about concepts of flight, through an introduction to weather, cycles, and physics.

The following are examples of topics that are part of Amplify Science that are related to aviation and aerospace:

- The History of Flight: Students learn about the history of flight, from the early days of gliders to the modern era of jet travel. They also learn about the contributions of key figures in the field of aviation, such as the Wright Brothers and Amelia Earhart.
- The Principles of Flight: Students learn about the basic principles of flight, such as lift, drag, and thrust. They also learn about the different forces that act on an aircraft in flight.
- Different Types of Aircraft: Students learn about the different types of aircraft, such as airplanes, helicopters, and rockets. They also learn about the different features and capabilities of each type of aircraft.
- Space Exploration: Students learn about the history of space exploration, from the early days of rocketry to the modern era of space travel. They

also learn about the different space programs, such as NASA and the Soviet space program, and the many missions that have been sent into space.

These topics provide students with some base knowledge that can serve as foundation for further study at Edina High School.

In addition, the Middle school 8th grade elective called Flight, Space and Electrons provides opportunities for students to explore opportunities at a deeper level. The purpose of this unit is to introduce the students to aeronautics, space, and electronics. They learn about Newton's Laws of Motion, forces, rockets, propulsion, and what makes things fly. In 7th grade, students can pursue Design & Modeling/Robotics and Automation to learn about information structures, energy transfer, machine automation and computer control systems.

High School

When students arrive at Edina high school the opportunities for learners in the Aviation/Aerospace pathway are extended. Below is a table highlighting existing experiences available to students in grades 9-12 and potential future pathways opportunities.

	Gr. 9	Gr. 10	Gr. 11	Gr. 12
Related Required Courses	Core classes in Mathematics, English, Social Studies			
	Physical Earth Science	Chemistry	Biology	*Physics
Pathway Courses	Aerospace Engineering, Digital Electronics			
Clubs	Robotics, Coding,			
Internship / Apprenticeship/ Job Shadow			Opportunities available as of date of this report: Thunderbird Academy: Aviation Mechanic ***Thunderbird Aviation Sun Country Airlines *** Flying Cloud Airport	
Certification				Hours toward

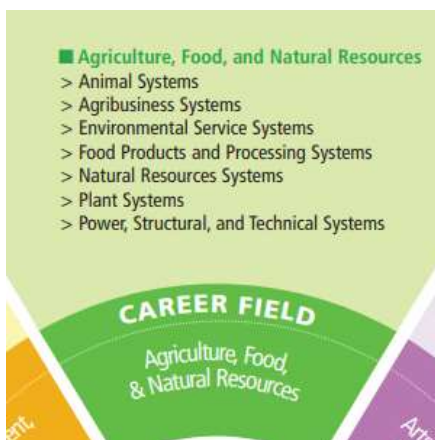
options				Aviation Mechanic **FAA Exam (Written Pilots Test) **Pilot ** UAV Operator **Dispatch **Aviation Business
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** = Next phase development

*** Many Field Trips to the Flying Cloud Airport and Thunderbird Aviation will be available to students where they can learn about many facets of the Aviation business.

- Tower / Club Jet - understand control of airplanes on ground and in the air; view airplanes being deconstructed
- Aviate - airplanes, helicopters, avionics
- Premier Jet Center - airline transport pilot program, sell, deconstruct, paint, and refurbish airplanes
- Thunderbird Aviation / FlyWise Aviation - flight training, maintenance, insurance (FlyWise)
- Executive Aviation - dispatch, charter, medical, maintenance

Environmental Sustainability Pathway (Career Field is Agriculture, Food and Natural Resources and the Cluster is Agriculture, Food and Natural Resources)



The United Nations defines sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainability of environmental resources will ensure that humans have clean water, healthy food and stable housing; something that is challenging for many. The Environmental Sustainability pathway will help learners develop knowledge and skills to become stewards of environmental sustainability.

Below are descriptions of pathway experiences available to Edina Public Schools for each level of programming in the Environmental Sustainability Pathway.

Early Learning Center:

ELC staff design lessons that teach students about the environment and embed opportunities for discussion on and engagement in the importance of safeguarding water, saving energy, reducing waste, and recycling.

The following are unit examples:

- Trees: Students participate in a unit about trees, develop questions, and explore the importance of trees to the environment.
- Clothes: Students learn about how animals can give wool, how the wool is processed, dyed and reused.
- Pets Exploration: Students learn about wild animal preservation. They also learn about pets and how to take care of them.

Elementary:

The Edina Mystery Science curriculum was adopted in 2023 and will be implemented at various stages in K-5 classrooms during the 2023-2024 school year. Mystery Science is aligned with the Minnesota State Standards, as well as Next Generation Science Standards (NGSS). The new MN state standards are more inclusive of environmental education. They are also clustered into content strands. Each of the content strands of the standards (physical science, earth science and life science) now has a substrand on “human interactions”. These substrands have standards on human interactions with the environment.

The following are environmental sustainability lessons provided in Mystery Science:

- In “Energize Everything” 4th grade students analyze the advantages and disadvantages of different sources of energy, including burnable fuels and alternative (renewable) energies. They gather and compare information about wind energy, solar energy, and water energy and use the information to determine the best alternative energy sources for a town called Boulderville.
- In “How Much Water is in the World?” 5th grade students use estimation and graphing to discover the surprising difference in the amounts of fresh and saltwater on Earth. Then students calculate and graph how much of

each type of water is present on the planet and discuss water conservation.

- In “How Can We Protect Earth’s Environments?” 5th graders learn about what happens in unbalanced ecosystems and how that can lead to an overabundance of algae and harmful algal blooms. In the lesson students play a game in which they obtain and combine science ideas in order to help a community respond to and prevent harmful algal blooms.

Middle School:

Amplify Science addresses environmental sustainability in the middle school curriculum through a variety of ways, including:

Incorporating environmental sustainability concepts into the science content: The Amplify Science curriculum covers a wide range of science topics, many of which have environmental implications. For example, students learn about the water cycle, the carbon cycle, and the effects of human activity on the environment.

The following are examples of how environmental sustainability is addressed in the Amplify Science curriculum:

- In the 6th grade unit on "Earth's Systems," students learn about the water cycle and the carbon cycle. They also learn about the effects of human activity on the environment, such as pollution and climate change.
- In the 7th grade unit on "Energy," students learn about different types of energy and the environmental impact of each type. They also learn about the importance of conserving energy.
- In the 8th grade unit on "Ecology," students learn about different ecosystems and the relationships between organisms in those ecosystems. They also learn about the threats to ecosystems, such as pollution and habitat loss.

The curriculum provides students with the knowledge and skills they need to be environmental stewards, and it provides teachers with the resources they need to teach environmental sustainability effectively.

High School:

When students arrive at Edina high school the opportunities for learners in the Environmental Sustainability pathway are extended. Below is a table highlighting existing experiences available to students in grades 9-12.

	Gr. 9	Gr. 10	Gr. 11	Gr. 12
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Related Required Courses	Core classes in Mathematics, English, Social Studies			
	Physical Earth Science	Chemistry	Biology	*Physics
*Elective Courses			*Environmental or AP *Environmental Science	
	Rotary Global Scholar Program			
Clubs	Project Earth, Rotary Interact Club			
Travel Based Learning	Operation Wallacea Environmental Trip (Ex. Madagascar-2023)			
Internship / Apprenticeship/Job Shadow			Opportunities available as of date of this report: City of Edina	
Certification Options	Salt Conservation, AFS Global Competence			

Phase II pathways examples

Phase II potential pathways have been identified based on feedback collected from the 9th grade student career interest survey, committee member's input (Design Process and Timeline section of report) and conversations with business leaders.

- Health Sciences
- Business/Entrepreneurship
- Education

Budget: A pathways model is generally developed and launched with existing courses and structures. By articulating the relationships amongst courses, students are able to have clarity in learning purpose, and make connections to their post secondary aspirations. Designing pathways in phases allows the school district to leverage what is already in place and collaborate to plan for program investments at a reasonable pace. Pathways articulation will have minimal costs when they consist of opportunities that currently exist. Future pathways development costs may include additional courses, curriculum development, materials and equipment, training, certification costs and transportation support for internships and micro-apprenticeships. Budget funding sources for pathways refinement and development include:

Edina Public Schools: Community Education and General Education Funding

- Community Education and Strategic Partnerships Funding: \$90,000 - \$115,000

- Allocated Teaching and Learning Capital, Curriculum Development and Professional Development Budgets >\$700,000 annually
- Perkins Funding: 22-23: \$14,000; 23-24: est. \$14,000
- CTE Levy Funding: 22-23: \$112,230; 23-24: \$112,320

Other Financial Sources/Partnership:

- MN Department of Labor Youth Skills Training Grant: \$100,000 over two years to develop community partners for internships and micro-credentials
- Rotary: \$56,000 over four years to support the Rotary Global Scholar Program
- Edina Education Fund: \$20,000 over four years to support the Rotary Global Scholar Program

Draft Success Metrics

The implementation of pathways and the impact on learners will be monitored using identified metrics. The following metrics will be used to provide a measurement of baseline data, annual targets to reach the 2027 vision (opportunities for each and every) and opportunities for continuous improvement feedback.

Implementation:

- Percent/number of stakeholders involved in pathways development
- Number of pathways offered to students
 - Number of student internships/micro-apprenticeships/job shadows

Impact:

- Student engagement ratings
- Satisfaction ratings of internship/micro-apprenticeship experience by students, staff and employers
- Number of credentials/certifications achieved each year by Edina students

Next Steps:

Edina School Board feedback will be critical to designing the next steps in the Pathways implementation. The Youth Skills grant will fund a two year coordinator position. This individual will be responsible for coordinating the development of internships and micro-apprenticeships in partnership with local businesses. Infographics for next year's registration guide will need to be created in order to help communicate the current Thrive pathways experiences more clearly.

Design work for additional pathways will require significant stakeholder feedback. Additional school board updates will provide status and progress checks as well as opportunity to provide feedback on future pathway design options. Any proposed new courses will follow the typical course design approval process and timeline culminating with school board presentation for approval.

More specific budgeting details will provide cost estimates toward design of future pathways. Baseline metrics will be collected to ensure that the pathways implementation can be monitored for impact.

Timeline for Phase Completion for Vision 2027

<i>Phase Completion Dates</i>	<i>January 2024</i>	<i>January 2025</i>	<i>January 2026</i>
<i>Phase I Pathways</i>			
<i>Phase II Pathways</i>			
<i>Phase III Pathways</i>			

All marketing infographics and new courses

Resources

The list of resources below have and will continue to serve the pathways project planning team for the design work in Edina.

Local:

- [EPS Career Pathways Posters](#)
- [IEM Inspire Conference U of MN](#)
- Internships/Apprenticeship Programs:
 - [STEM Internships and Programs for Teens](#)
 - [MN State Careers Youth Apprenticeship Program](#)
 - [Best Internships for High School Students in Minnesota](#)
- Careers
 - www.Fairview.org/careers

State:

- [MN College and Career Cluster Wheel](#)
- Youth Skills Grant MN Department of Labor
- [MN Bilingual Seals Program](#)

National:

- [Pilot Training](#)
- Micro-credentials/Certifications Programs:
 - [Cherry Creek Microcredential Program](#)
 - [Cherry Creek Microcredentials](#)
- [Incremental Credentialing Framework](#)
- [Digital Promise Microcredentials](#)
- [High School Students Publishing Research](#)
- [Perkins Collaborative Resource Network](#)
- [Rethinking High School Graduation Requirements: Project and Microcredentials](#)
- [The Rhode Island Initiative](#)

- [Workforce GPS, Navigate to Success](#)

International:

- [World Leadership School](#)
- [Sustainable Development Goals](#)