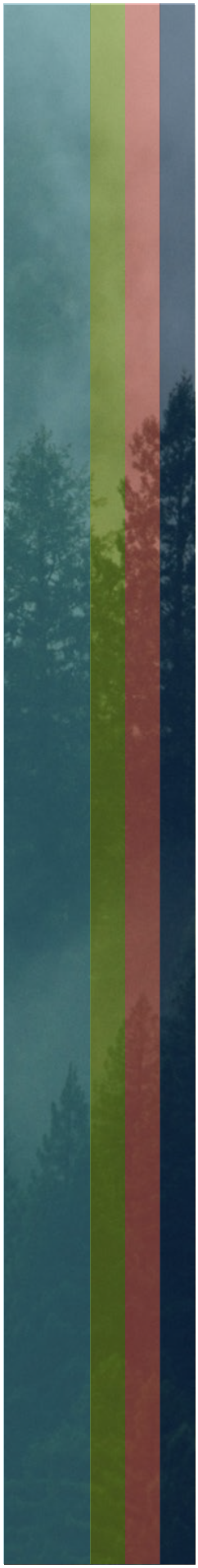

Kent Strategic Vision for Advancing STEM

Full Report – March 2024

Report prepared by KINETIC WEST

KENT SCHOOL DISTRICT
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PROJECT OVERVIEW

BACKGROUND

Kent School District has a vision to produce graduates who are globally competitive learners through high quality academic, social and applied learning. Applied learning is an established priority of the district, particularly in high-demand Science Technology Engineering and Math (STEM) fields driving the local economy. Ensuring equitable access remains a concern and the Covid pandemic further limited opportunities for KSD students to experience real-world and hands-on contexts for academics and technical training. Simultaneously industry and community partners were experiencing their own challenges.

To respond to these converging needs, the City of Kent and Kent School District came together to engage local consulting firm Kinetic West utilizing American Rescue Plan Act funds to support development of a strategic vision for advancing STEM through Career & Technical Education (CTE), Career Connected Learning (CCL) opportunities, and partnerships. Development of the strategic vision leveraged extensive engagement of Kent School District leaders, educators, staff as well as community and industry partners and youth. A strategic vision and well-defined priorities help keep efforts across the district and the city organized, efficient, prioritized, and positioned to bring on-board more resources.

FOUNDATIONAL DEFINITIONS

While STEM education is the focus of the strategic plan, the three areas of STEM, CTE and CCL are highly complementary and often overlap. All three share a common goal of seeking to make a student's education applied, hands-on, and relevant to the "real world" while connecting them to postsecondary education and future high-demand careers.

STEM Education: The interdisciplinary, hands-on learning of Science Technology, Engineering and Math.
Career Technical Education (CTE): 7th-12th grade programs that provide 21st century, academic and technical skills for all students.
Career Connected Learning (CCL): The K-12 range of activities and education that support career awareness, exploration, preparation, and launch. Examples include, job fairs, in-class speakers and go beyond high school and into early adulthood including internships, Registered Apprenticeships, etc.[1]

Note: Career Connected Learning is the language used by Washington state, but these same activities are often referred to as "work-based learning (WBL)" activities in other contexts and places.

PROJECT TEAM

The Project Team represented an exciting partnership between the City of Kent (City) and Kent School District (KSD) and included three staff members from each organization. The team was charged with guiding the overall project to develop the strategic vision by informing research questions, sharing relevant materials and background information, supporting connections and engagement with stakeholders, and helping to review drafts.

CITY OF KENT

- Bill Ellis, Chief Economic Development Officer
- Lori Guilfoyle, Senior Human Services Coordinator
- Michele Wilmot, Economics Development Manager

KENT SCHOOL DISTRICT

- Carol Cleveland, Executive Director of Community Partnerships
- Jon Rismiller, K-12 Science & STEM Coordinator under Teaching and Learning
- Lori Paxton, Director of Career & Technical Education

[1] Definition and examples provided by Career Connect Washington

DESIGN PROCESS

The Strategic Vision for Advancing STEM in Kent began in August 2023 with the assembling of a cross-partner project team. The project continued through February 2024 and included three key phases: 1) Discovery, 2) Design, and 3) Development.

PHASE 1: DISCOVERY

The City of Kent and KSD came together to begin developing this vision and bring something to the community to address the challenges around STEM education and post-high school opportunities for KSD students, as well as industry engagement with KSD students. While KSD will lead and oversee the implementation of this vision and work, it's imperative to recognize this work as collaborative and requiring a collective effort from community partners, industry partners, families, and community members who care about the success of KSD students and the region. This vision cannot be achieved by KSD alone and will only have the greatest impact if everyone is involved in moving the work forward. As such, it was critically important that the strategic vision be developed with the input of a broad range of stakeholders.

At the beginning of the project, we wanted to learn:

- Current Landscape – What is happening today and who is doing what?
- Community Aspirations & Needs – What do educators, students, and community partners want and need?

To inform these questions, the project collected background information from many data sources and feedback from a wide range of stakeholders:

- **Document Review:** Reviewed key documents submitted by Project Team members to gain background on the district and region, key partners, and the STEM, CTE, and CCL landscape. Materials included a list of community, industry and employer partners, past surveys of youth and employers, and overview documents.

- **Surveys:** Created and administered three distinct surveys to learn about current STEM, CTE and CCL offerings, experience with district partnership, and aspirations for advancing STEM.
    - Educator and school staff survey (136 completed)
    - Community partner survey (25 completed)
    - Employer survey (21 completed)

- **Interviews:** Interviewed other key community partners with knowledge of STEM, CTE and CCL space.

- **Additional Desk Research:** Conducted online research to access information about the Kent School District, Kent Valley economy, student outcomes, and local programs to supplement other sources.

The Kinetic West consultant team compiled the information and drafted a Current State Assessment that outlined the current landscape, community aspirations and needs, and key findings related to advancing STEM in KSD (see Appendix 1).

PHASE 2: DESIGN

After reviewing the stakeholder feedback, three extended working sessions were held with the Project Team and additional KSD staff to develop the vision statement, strategic priorities, and implementation details. Between sessions, participants had "homework" to advance the work.

- **Session 1, October 16:** Understand and summarize the strengths, challenges, and needs via the Current State Assessment, begin to draft the vision statement, and develop criteria for strategy selection
- **Session 2, November 8:** Finalize the vision statement and develop draft strategic priorities
- **Session 3, December 8:** Finalize strategic priorities and develop implementation details like strategy milestones and roles and responsibilities

PHASE 3: DEVELOPMENT

The final phase of the Strategic Vision process was to draft the final report given the inputs from the Current State Assessment and Design Sessions. The Project Team provided multiple rounds of edits and consulted with other staff, as needed to finalize details of the report.

CURRENT STATE ASSESSMENT LEARNINGS

KSD teachers and staff highlighted a wide variety of STEM, CTE and CCL programs that take place at their schools to implement STEM education. Individual efforts of staff, educators, district leaders, employers, and community-based partners are laudable. However, across all stakeholder groups common issues persist that limit opportunities and program impacts.

ISSUE AREAS:

STEM Education and CCL Opportunities are not consistent across schools or grade levels

- 69% (20/29) of elementaries offered STEM activities (as they define them) before or after school. However, many elementary school teachers lack access to STEM activities during the school day.[2] Examples include:
  - About 40% (12/29) of elementary schools do not offer additional STEM opportunities outside of their regular curriculum
  - Minecraft or coding are offered at 28% of elementary schools (8/29)
  - Makerspaces were the other most common STEM activity, with 24% (7/29) of elementary schools offering them
- KSD teachers want to see more STEM curriculum throughout a student's K-12 education, and they want each year to build upon lessons and skills from the prior years
- Survey results on where CBOs provide STEM and CCL programming, also shows an uneven distribution across schools[3]
- Lastly, there is a call for consistent definitions and outcomes to track. This plan and its appendix will address this issue.

CBOs don't feel there are clear structures and policies to support partnership around their STEM/CCL programs[4]

- More than 65% of CBO respondents said they felt neutral or disagreed on the following statements regarding their experience with KSD when it comes to:
  - Ease of promoting and recruiting students (68%),

[2] KSD Elementary STEM Survey March 2023. Note: Counts were based on current offerings, not predictions of potential offerings for the next school year.
[3] Results from KSD Community Based Organizations (CBOs)
[4] KSD STEM Vision Community/Education Partner Survey

- Clarity on finding ways to connect with teachers and principals (88%), meeting regularly with school and district staff to discuss programs (69%)

Employer partners have a positive experience partnering with KSD, but like CBOs, feel there is a lack of policies and structure[5]

Employers are willing to support a variety of CCL if it was clearer how best to work with KSD – one-time school events and job training programs are top on their list, especially with 11th and 12th graders[6]

KSD Teachers and Staff want more effective STEM instruction aligned to Career Connected Learning

- Teachers and staff are unsatisfied with STEM opportunities at their schools
- Teachers and staff want more professional development
- High school teachers find STEM instruction effective, while middle school and elementary teachers are less sure

Students want greater alignment between instruction and career interests and career preparation

KSD High School students are thinking about the careers they want, but need more support planning for their futures[7]

- 9th-12th graders across Kent's four high school's report having ideas for the career or field they want to pursue (~76-82%) and thinking about the future career that they want (~85-92%) at high rates
- But fewer students have a plan for what they want to do after high school (~66-75%) Or a detailed plan for getting into an apprenticeship, 2-year, or 4-year college (~40-55%)
- Across all four comprehensive high schools "Requirements to be admitted into apprenticeship programs" was the career/college knowledge area students knew the least about

When asked about how staff can more creatively share college and career information, students recommend:

- Identify and align support to student interests
- Share individualized resources or provide 1:1 support
- Provide guided college-going and/or career planning support (all grade levels, sequential, applicable)

VISION STATEMENT

The vision statement developed through this project compliments KSD's mission and vision while also reflecting the collective work required to advance STEM. The vision serves as the foundation for the strategic priorities.

FINAL VISION STATEMENT

"The Kent School District, the City of Kent, and community and industry partners will collaborate to provide Kent students high-quality, applied, and engaging STEM education at every grade level. This will ensure that each student is equipped for post-high school STEM pathways in the region and beyond that lead to living wage careers and a thriving community."

[5] Results from KSD Employer partners
[6] Results from KSD Employer partners AND local areas polling via the City of Kent
[7] College and Career Climate Survey for four Kent high schools

STRATEGIC PRIORITIES

Informed by the Current State Assessment and robust discussion, the Project Team developed a total of nine strategic priorities to advance STEM over the next five years with two priorities focused on the overall system that can enable the scaling of high-quality STEM partnerships and programs, and seven additional priorities targeting the programmatic level.

The Project Team identified key criteria for selecting a narrowed set of impactful strategic priorities. All STEM priorities should:

- Increase equity, including equitable access across K-12, across Kent schools, and for all student populations
- Focus on making STEM engaging and hands-on
- Be sustainable
- Leverage partnerships
- Be scalable

The resulting system-building and programmatic strategic priorities to focus Kent's work to advance STEM education are outlined below. This strategic vision guides the work for the next five years (2023-2028).

SYSTEM-BUILDING STRATEGIES

1. **Partner Management and Communication:** Build system to formalize and improve STEM partner management and communications.
   - Phase 1: Build and implement a process for partnership management and communications with a clear process, requirements, onboarding, and expectations for continued engagement.
     - Identify or hire a district-level staff person that oversees the KSD partnership experience from initial outreach/connection to ongoing engagement and school-partner relationships
     - Establish directory of STEM education and industry partners currently engaged with KSD
     - Identify data to be collected from partners to demonstrate progress and impact
   - Phase 2: Develop Communications Plan for sharing partner impact and available STEM and CCL partner opportunities with students, families, educators, and partners.

2. **Data Tracking System:** Develop data tracking system for STEM and CCL activities and experiences.
   - Establish data collection processes and tools for measuring student participation and outcome measures in school-connected STEM and CCL activities.

PROGRAMMATIC STRATEGIES

ALL GRADE LEVELS

3. **Industry Guest Speakers:** Establish career and industry "Speaker's Bureau," including creating a recruitment plan for engaging industry contacts and utilization process, to enable educators to access guest speakers to promote career awareness.
4. **STEM Student Clubs and Challenges:** Consistently offer and support STEM student clubs and challenges across the district at all schools (e.g., First Robotics Lego League, E-sports, etc.).

ELEMENTARY / MIDDLE SCHOOL

5. **STEM Lessons:** Identify specific STEM curriculum and lesson plans across elementary and middle school grade levels (K-8) aligned to state learning standards to support teachers to teach STEM, implement project-based learning, and integrate STEM career exploration into their classrooms.
6. **STEM Professional Development:** Provide relevant and impactful STEM PD to K-8 educators that is aligned with curriculum to prepare them to teach current STEM topics and career pathways, while providing a STEM option for meeting clock hour requirements.
7. **Middle School CTE Electives:** Offer CTE electives focused on high-demand industries across all middle schools that align to high school CTE pathways.

HIGH SCHOOL

8. **Core Plus:** Implement complete Core Plus Aerospace curriculum with fidelity to provide the knowledge, hands-on learning, and transferable skills needed to prepare students for high-wage jobs in aerospace.
9. **High School Career Connected Learning:** Expand high school career connected learning opportunities focusing on four key industries (aerospace/outer space, advanced manufacturing, IT, and healthcare) and career prep opportunities (pre-apprenticeships and internships).

STRATEGIC PRIORITY DETAILS

Below is a deep dive into each strategic priority.

1. PARTNER MANAGEMENT AND COMMUNICATIONS

WHY THIS STRATEGIC PRIORITY

Employer partners and community-based organizations agree there is a greater need to systematize processes within KSD to support their engagement. Partners want to contribute to the district's vision of providing equitable access to STEM education and CCL to all students but need clearer pathways to connect with schools.

LEAD DEPARTMENT

KSD Community Partnerships. Point person Executive Director Community Partnerships.

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Review best practices for partnership processes from exemplar districts
- Update a menu of opportunities for employer and community partner recruitment
- Create descriptions of opportunity types leveraging "best practices" to create common language and some standardization of quality expectations
- Identify legal requirements and paperwork required for participation of volunteers in each type of opportunity
- Develop process and flow chart for each opportunity type
- Set-up software platform to track partnerships across the district and test with a small number of existing partners
- Finalize external-facing process for recruiting partners
- Test partnership process using the new system for 2-3 different types of one-time and ongoing events (e.g. school STEM night, worksite tours or in-class guest speakers)
- Set a baseline for the number of partnerships and volunteers supporting STEM activities in each building

LONG-TERM (1-5 YEARS)

- Sustain 1-3 STEM-related community or industry partnerships for every school, deep partnerships with community and/or industry partners
- Develop an evaluation to learn about partner experience working with the district and educator experience accessing partners
- Partners express greater satisfaction with working with the district through evaluation
- Educators express greater clarity on how to maximize partnerships in their buildings and increase use of STEM programming through evaluation
- The number of partnerships and volunteers in each school building increases beyond the baseline set in year 1

BEST PRACTICE LEADERS

PARTNERSHIP PRACTICES

Kinetic West conducted a review of partnership web pages for the top 20 largest school districts in Washington state. Through that review, Highline Public Schools stands out for having public-facing partnership guidance that is clear and accessible, and comprehensive in approach. Very few clicks are required to identify their partnership page, the page is detailed in the steps required, they categorize partners into focus areas, and have a Tableau dashboard that maps programs offered by school.

Highline is also one of the only districts that has a "Career Partners" web page that highlights opportunities for industry partners and is linked from their "Get Involved" page. Highline has an alternative contact from their college and career department that coordinates those partnerships.

Lastly, Highline communicates about their partnership work through multiple channels, including written and video program highlights.

https://www.highlineschools.org/get-involved/community-partnerships
https://www.highlineschools.org/get-involved/career-partners
https://www.highlineschools.org/get-involved/community-partnerships/community-partnership-report

2. DATA TRACKING

WHY THIS STRATEGIC PRIORITY

Currently there is not a strong data tracking mechanism for many of the STEM and CCL activities to understand what is taking place where, which partners are involved, which students are participating, and the outcomes. For example, at the high school level CTE certificate completion is well-tracked while student participation in worksite tours, internships and other career connected learning activities are tracked in different ways by schools, but not easily shared with the district. Similarly, there have been ad hoc surveys to collect student clubs and STEM activities taking place at schools, but nothing consistent. Overall, there is an opportunity to connect better data tracking to the improved partnership management process noted above so that KSD can better measure equitable access to STEM Education and CCL opportunities.

LEAD DEPARTMENT

Executive Director of Performance Outcomes (lead) in partnership with Community Partnerships.

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Create a district-wide tracking system to collect and track student and partner participation in STEM education, clubs and challenges, and other CCL and CTE activities
- Identify tracking and evaluation tools needed, including both quantitative (e.g., student participation in clubs) and qualitative (e.g., experiences of partners working with KSD)
- Roll out data tracking process and tools
- Train staff on data input and data usage
- Clean data (i.e., remove duplicate currently tracked information)
- KSD will set district-wide and school-level goals based on the information provided in this data system

LONG-TERM (1-5 YEARS)

- Connect the STEM and CCL participant data to post-high school plans identified by students in their High School and Beyond Plans to measure pathway successes and challenges
- Add evaluation tools to measure student satisfaction, especially student enjoyment and whether program participation improves career decision-making for a student
- After 3 years, have a robust, real-time system capturing participation in STEM, CCL, and CTE activities, and then tracking impacts on high school graduation rates, post-high school plans students identify in HSBP, and postsecondary and registered apprenticeship enrollment rates
- Provide data literacy and trainings for district staff to use and browse through platform to understand post-graduation outcomes

BEST PRACTICE LEADERS

PARTNERSHIP DASHBOARDS

Sharing which organizations a district partners with through a data dashboard is a valuable tool for educators within districts, community partners that refer students, and students and families. Highline Public Schools, Seattle Public Schools, and Oakland Unified School District are all examples of districts that have this type of tool. Other districts, like Spokane Public Schools provide lists of their community partners by support areas, which can be a good first step.
https://www.highlineschools.org/get-involved/community-partnerships/community-partnership-dashboard
https://sps.communitypartnerplatform.org/
https://www.ousd.org/community-partnerships/partnership-tools.
https://www.spokaneschools.org/domain/195

STUDENT CAREER CONNECTED LEARNING DATA

While it is an area of growth for most, some school districts and states are starting to track student's participation in CCL or work-based learning. Often these are internal data dashboards, but sometimes there is external reporting. Although it is at the state level, Iowa provides one example where you can see high school participation in activities like apprenticeships, internships, and CCL credit. Clear descriptions of the different types of activities are in the state's WBL Guide and they have specific WBL course codes which support strong data collection.
https://iowastudentoutcomes.com/WBL_outcomes
https://educate.iowa.gov/media/5501/

3. INDUSTRY GUEST SPEAKERS

WHY THIS STRATEGIC PRIORITY?

Guest speakers in STEM support student career awareness and exploration at all grade levels to help students learn about STEM careers and the skills used in them, while also creating connections and awareness of local industries.

Guest speakers are already being leveraged across KSD, but inconsistently and efforts to recruit them are typically led by individual teachers or organizations. This approach is time consuming and can result in individuals or businesses getting tapped by multiple people from the district while others are left unengaged.

Sometimes community organizations provide access to guest speakers. Based on the 25 survey responses from community-based organization partners, 42% of respondents stated that they currently offer guest speakers to KSD students.[8]

[8] KSD STEM Vision Community/Education Partner Survey

When reviewing survey responses from 21 employer partners, they noted they're willing to support a variety of career connected learning opportunities. When asked which types of programming they were most interested in supporting, guest speakers ranked highest, with 57.9% of employer respondents selecting this as one of the ways they'd like to engage.[9]

Both community-based organizations and employer partners are currently offering or interested in engaging with students as guest speakers to build awareness around the different subjects and career opportunities within STEM. However, employers and community-based organizations have experienced a level of bureaucracy or process that makes this type of engagement challenging.

> "[Kent School District] need[s] to be more inviting to guest speakers. Don't say no so often. Seems that "policy and procedures" supersedes what benefits students"
>
> – Aerospace Employer Partner

By making this a strategic priority, KSD hopes to streamline the recruitment process and better leverage industry-connect partners like the Kent Chamber of Commerce, to better enable teachers to bring in guest speakers to build career awareness among their students. Crucial to success is concierge service to guests and consistent protocol so that companies and guest speakers are welcomed, supported logistically, and encouraged to come back or recommend the experience to others.

LEAD DEPARTMENT

KSD Community Partnerships Department

LEAD PARTNER

City of Kent Economic and Community Development - Economic Development Division

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Implement district-wide partnership process that includes tracking guest speakers (see Strategic Priority 1 – Partnership Management)
- Develop streamlined recruitment process for guest speakers that meets teacher needs
- Collaborate with the Kent Chamber of Commerce, WABS and Puget Sound ESD to build pipeline of guest speakers as well as industry associations most representative to Kent's employment base, including but not limited to the Center for Advanced Manufacturing Puget Sound and Pacific Northwest Aerospace Alliance
- Work with local college partners and apprenticeship programs to create a common employers table and enlist business leaders drawn from local south King County communities in recruiting speakers drawn from local industry and representative to Kent community
- Stand-up a formal CBO advisory group to seed the Speakers Bureau with potential speakers, especially from the key high-demand industries identified, including aerospace/outer space, advanced manufacturing, IT, and healthcare

LONG-TERM (1-5 YEARS)

- Sustain 1-3 STEM-related community or industry partnerships for every school, deep partnerships with community and/or industry partners
- Grow guest speaker list to multiple employers in each industry identified for the Speaker's Bureau and committed to recurring speaking engagements. The number of partnerships and volunteers in each school building increases beyond the baseline set in year 1
- Teachers and classrooms can find guest speakers from industry when they give at least one month's notice

[9] KSD STEM Vision Employer Partner Survey

Note: A big capacity barrier currently exists, establishing a clear point of contact within KSD will offer consistent and organized communications.

BEST PRACTICE LEADERS

GUEST SPEAKER SUPPORT TOOLS

Guest speaker presentations are widely used to support career awareness. There are several districts that provide additional tools to help with speaker recruitment, preparation, and evaluation. They also include reflection activities for students. New York City Public Schools and Chicago Public Schools both have extensive toolkits that are useful resources.
http://wbltoolkit.cte.nyc/guest-speaker/
https://www.cps.edu/academics/work-based-learning/toolkit/guest-speaker/

There are also toolkits that share the many different ways that employers can engage with students. The Montana Work-based Learning Collaborative Employer Toolkit is a great example that defines different CCL activities including worksite tours, job shadows, internships, and apprenticeships, and then provides tools to help employers get started.
https://www.reachhighermontana.org/fileadmin/Resources/WBL_MT/Guides/WBLMT_Toolkit_Employer.pdf

4. STEM STUDENT CLUBS AND CHALLENGES

WHY THIS STRATEGIC PRIORITY

Across all grade groups there are varying levels of STEM student clubs and challenges for students to participate in. For elementary school students, there has been inconsistency in what dedicated STEM activities are available to students. While 20 out of the 29 elementary schools (69%) offered before or after school STEM activities at some point, teachers often noted that some are no longer available to due to various challenges such as staffing capacity, no space in the school building or a lack of partners and volunteers to oversee the STEM activities.[10]

All four high schools and at least two middle schools in KSD offer STEM-related student clubs or challenges.[11] However, they vary in subject and number. This means that students have inconsistent experiences when it comes to joining STEM student clubs or challenges at their respective school. While schools should host clubs and challenges most relevant to student interest, we believe it's imperative to provide some level of consistency across schools. This ensures that students can explore and engage in STEM learning via different topics such as auto shop, horticulture, programming, etc.

When surveying 4,372 middle school students, over half of respondents said they may be interested in joining a club if it was offered at their school.[12] Students surveyed were also asked to rank different types of clubs with a Gaming club as the 2nd most popular option and Robotics as the 4th most popular option.

In the survey sent to community-based organizations, STEM skill-building programs were the most offered type of programming to students, along with STEM-related field trips and when asked if they had the capacity to expand their

[10] KSD STEM Vision Community/Education Partner Survey
[11] KSD STEM Vision Community/Education Partner Survey
[12] KSD student surveys

programming, 58% responded "Yes".[13] This shows that not only is there interest and need from students, there's also capacity for existing community-based organizations to expand their current programming to support more students.

Note: KSD is currently in discussion with Parks & Recreation and the City of Kent about alignment between school offerings and summer programming.

LEAD DEPARTMENT

Co-managed by Athletic & Activities Department (overseeing e-sports) and Teaching & Learning – Digital Learning, Science, Math, and Learning Supports (overseeing all other clubs and challenges and providing teacher/facilitation support).

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Develop a list of target schools to begin implementation of STEM student clubs and challenges
- Assess which existing programs can be expanded to more schools vs adding completely new programs, especially at elementary schools
- Create a clear process to gauge school administrator/teacher interest in adding programs and whether volunteers/mentor support is needed
- Evaluate potential and feasibility to increase in-school and library makerspaces, as well as options to partner in community
- Explore new partnership opportunities (i.e., continue talks with City of Kent Parks & Recreation for class offerings outside of school partnerships)

LONG-TERM (1-5 YEARS)

- Pull together elementary school principals to address how to best bring a greater number of STEM clubs and challenges to K-5 because this is where the greatest gap exists right now. As a part of this effort, bring in other organizations to share specific best practices and brainstorm together for specific disciplines (ex. STEM Pathways Innovation Network)
- All 44 schools at the end of a 5-year period will have a STEM related club or challenge, at least one at each school
- Roster of cross-sector mentors and experts who are willing and able to support/guide STEM student clubs and challenges. Connect this roster with the guest speakers database, many volunteers may fall in both categories

BEST PRACTICE LEADERS

FIRST WASHINGTON

Kent School District already partners with First Washington, but there could be opportunities to expand on that partnership to get their First Lego League happening in more elementary and middle schools.
https://firstwa.org/

5. STEM LESSONS

WHY THIS STRATEGIC PRIORITY

From the Teacher and Educators survey for this project, over 30% of elementary teachers disagreed that the STEM instruction provided at their school was highly effective in preparing students.[14] Across all grade groups, at least 30% of teachers are

[13] KSD STEM Vision Community/Education Partner Survey
[14] KSD STEM Vision Staff and Teacher Survey

unsatisfied with the STEM opportunities offered at their school but for elementary school teachers, it's much higher – at 55%.[15]

These findings highlight the importance of identifying new, or modifying current, lessons and curriculum that provide K-8 students with adequate STEM education within the classroom that is supported by out-of-classroom learning experiences.

LEAD DEPARTMENTS

- For K-5 and middle school non-CTE classes, Teaching & Learning
- For middle school CTE classes, CTE department
- In partnership with Community Partnerships

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Audit current curriculum and resources to uncover any gaps and areas of improvement
- Audit Project Lead The Way (PLTW) work in KSD – this is a community-based organization that supports STEM education, to assess how KSD educators are experiencing PLTW and determine if PLTW should be expanded to other schools
- Develop clear criteria of what constitutes STEM education and lessons for K-8 students, across subjects

LONG-TERM (1-5 YEARS)

- Creating and maintaining an accountability system to ensure STEM lessons occur in every classroom at every grade level

BEST PRACTICE LEADERS

PEER EDUCATOR DEVELOPED STEM LESSONS

Washington Alliance for Better Schools (WABS), a primary STEM partner of the Kent School District offers robust problem-based learning lessons that were created by educators in their Instructional Leadership programs. The lessons which are across grades K-12, align with Common Core and/or Next Generation Science Standards.
https://wabsalliance.org/what-we-do/for-educators/curriculum-units.html

The Arizona STEM Acceleration Project (ASAP) maintains a library of STEM lesson plans that are contributed by Arizona teachers. ASAP has over 500 teacher fellows that are a part of their work who receive extensive STEM professional development and are required to submit at least four lesson plans. While the lesson plans are aligned to Arizona Academic Standards, they can provide ideas.
https://stemteachers.asu.edu/stem-lesson-plans

The Tennessee STEM Innovation Network (TSIN) offers a number of STEM modules and lessons plans that were developed by their Tennessee Department of Education Leadership Council and teachers in partnership with TSIN.
https://www.tsin.org/curriculum-and-lesson-plans

[15] KSD STEM Vision Staff and Teacher Survey

6. STEM PROFESSIONAL DEVELOPMENT

WHY THIS STRATEGIC PRIORITY

To align with the strategy to focus on STEM education during school hours, educators requested greater STEM professional development.[16] Both in the curriculum development and the connected careers available to students. Providing relevant and impactful STEM PD to K-8 educators that is aligned with curriculum to prepare them to teach current STEM topics and career pathways, while providing a STEM option for meeting clock hour requirements.

LEAD DEPARTMENTS

KSD Teaching & Learning Department in partnership with Community Partnerships and Professional Development Office.

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Audit of Science Teacher Leadership Cadre work to support STEM awareness within STEM subjects
- Design and facilitate high-quality STEM PD for classroom teachers – start with a sample group to test new PD (ex. Washington Space Consortium (UW), City of Kent, KSD, and Green River College piloted a project like this on the space industry theme)

LONG-TERM (1-5 YEARS)

- School administrators and principals take the lead on PD at their respective schools
- School administrators and principals actively empowering non-STEM teachers to recognize how they may already be teaching STEM
- All classroom teachers will have STEM-focused PD that connects STEM to main subjects, CTE pathways and possible future careers

BEST PRACTICE LEADERS

EXPANDING WORK WITH CURRENT PARTNERS

Kent School District already works with a number of organizations that could support them in expanding their professional development of educators or development of STEM lessons:

- Code.org, offers self-paced professional learning modules to support computer science education, as well as in-person workshops for educators.
  https://code.org/educate/professional-development-online
- WABS offers some STEM professional development that is clock-hour eligible.
  https://wabsalliance.org/what-we-do/for-educators/educator-professional-learning-resources.html
- Washington State Scholastic Esports Association offers a conference each year with professional development opportunities.
  https://wssea.games/
- STEAMboat Studio, a Kent School District partner often supports school districts with lesson and curriculum development aligned to Next Generation Science Standards.
  https://steamboatstudio.com/education-partners/

[16] KSD STEM Vision Staff and Teacher Survey

7. MIDDLE SCHOOL CTE ELECTIVES

WHY THIS STRATEGIC PRIORITY

The Project Team knows they want to help students start their excitement about STEM and CTE fields before high school. The middle school grades were identified as an area where there was a need for increased programming in the Current State Assessment[17], particularly to build student awareness of high-demand industries in the Kent region before they are selecting high school pathways. Growing middle school CTE electives focused on skills needed to succeed in high-demand industries across all middle schools in KSD is a way to address this gap in offerings and improve the continuity of pathways in high school.

LEAD DEPARTMENTS

The KSD Teaching and Learning Department in partnership with KSD Community Partnerships.

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Conduct an assessment to understand current CTE elective offerings available across KSD middle schools
- Realign middle school CTE electives by building to complement their future high school pathway options and the industry partners that high school works with
- Determine challenges to making these shifts, such as changing course offerings
- Identify potential new courses to offer by school

LONG-TERM (1-5 YEARS)

- Improved alignment between CTE offerings at middle schools and their respective feeder high schools with a focus on the four priority "high demand" industries including Core Plus and programming

BEST PRACTICE LEADERS

The state of Tennessee provides a good example of what CTE can look like at the middle school level. Tennessee provides introductory CTE coursework in middle school that is intended to provide a foundation for success in high school CTE courses. The state has outlined courses and how they align to the career clusters at the high school level. Courses leverage grant support rather than CTE funds.

- https://www.tn.gov/education/educators/career-and-technical-education/career-clusters/middle-school-cte-standards.html
- https://portal.ct.gov/-/media/SDE/CTE/Best-Practices-in-Middle-School-Career-and-Technical-Education-Expansion.pdf (page 18-20)
- https://careertech.org/wp-content/uploads/sites/default/files/files/resources/BroadeningPathFINAL.pdf

8. Core Plus Implementation

WHY THIS STRATEGIC PRIORITY

KSD has made Core Plus available to students in small ways; this strategy is about bringing Core Plus access availability to each high school student. Employers across industries and sectors—especially many in the highest wage sectors in south

[17] KSD STEM Vision Staff and Teacher Survey

King County communities— want KSD to focus on Core Plus because it is a known, robust curriculum that builds STEM skills that can be useful for many industries and builds preparedness for youth apprenticeships.

Core Plus also has a wide range of professional development opportunities. One community-based organization said, "We host multiple professional development events each year and have not seen many KSD instructors yet for Core Plus Aerospace. Folks in automotive, robotics, engineering, machining, etc. should all come."

LEAD DEPARTMENT

Partnership between KSD CTE team and Community Partnerships. Point person, KSD Director of CTE.

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Tour 2-3 successful Core Plus programs in the surrounding area to ask specific questions such as how another school district approaches their master schedule decisions
- Build an itemized list of costs associated with this work in the short term and partner with the City of Kent on fundraising opportunities
- Use existing best practices from OSPI
- Update CTE state-approved framework and submit to OSPI for approval
- Once approved, add course(s) to KSD's offering list
- Work with school and district leaders to build buy-in for Core Plus implementation, specifically around location, commitment to modifying master schedule to accommodate the program, considering travel, and staffing needs
- Expand partnership with Boeing to include Core Plus and connect with aerospace sector intermediary lead

LONG-TERM (1-5 YEARS)

- All KSD high school students can participate in Core Plus and earn any associated credentialing, regardless of their high school

BEST PRACTICE LEADERS

CORE PLUS AEROSPACE IMPLEMENTERS

Core Plus is a two-year, standardized, skill-based manufacturing high school curriculum created by industry that uses the power of hands-on learning to better integrate academic and career-based education. Core Plus enables students to earn industry-recognized credentials and prepares them to be hired into the workforce. It is housed at OSPI and available for free to educators. The OSPI contact can help share the curriculum and framework, and funding is available to support implementation.
https://coreplusaerospace.org/
https://core-plus.org/contact/

Several school districts in the state are leaders, including:
- Renton School district – Core Plus Aerospace is available at all three comprehensive high schools
- Puyallup School district – Core Plus Aerospace is available at all four comprehensive high schools
- West Valley High School - Yakima – Core Plus Aerospace is available at their only comprehensive high school

All three of these school districts also work with AJAC, whose Youth Apprenticeship (YA) programs seamlessly align with Core Plus Aerospace. High school students who complete at least one year of CorePlus develop foundational manufacturing skills and in return, increase their eligibility to participate in AJAC's YA programs.
https://www.ajactraining.org/programs/youth/educators/

9. Expand High School Career Connected Learning

WHY THIS STRATEGIC PRIORITY

The goal of this work is to build upon the work KSD has already undertaken to provide students with access to career connected learning in the last few years. This priority calls upon KSD to work with industry partners to find career connected learning in core industries outlined in this report. The goal is for students to learn about in-demand, high wage professions. CCL in this case is different than giving credit for their work experience, instead this is about getting students access to career pathways and linking those opportunities to the STEM education.

LEAD DEPARTMENT

This priority has some phased work. The pre-work and preparation to establish the norms and expectations would sit within the Community Partnerships and Learning teams. Once those are put into place the ongoing management of this strategic priority will be with the following departments:

- The CTE team, especially in managing student needs and supports. Point person, KSD Director of CTE will receive support from Worksite Learning Specialists.
- Community and industry partners, especially the City of Kent, can help the CTE team identify CCL opportunities including location, student capacity, and requirements. Ultimately the outreach to these partners for increasing access to CCL will reside in the CTE team at KSD.

LEAD PARTNER

City of Kent

KEY MILESTONES

SHORT-TERM (WITHIN 12 MONTHS)

- Develop the criteria for what is considered high quality and accessible CCL opportunities for KSD students in targeted industries (e.g., aerospace/outer space, advanced manufacturing, IT, and healthcare)
- Simplify the system best as possible
- Catalog the existing CCL opportunities for students across the district and identify one district staff member or small team to publicize these opportunities and maintain the catalog
- Before the 2024-25 school year, develop a system that aligns with the partnership engagement work in prior strategic priorities
- Set goals for how many new opportunities to recruit in the next year

LONG-TERM (1-5 YEARS)

- Permanently establish greater capacity at KSD to recruit, monitor, and hold partners accountable. Note: A big capacity barrier currently exists, establishing a clear point of contact within KSD will offer consistent and organized communications. This point of contact would manage incoming partners, develop, and set up the process and would likely be funded by flexible funding if available.
- Establish a system for managing industry partnerships and student participation in CCL opportunities including but not limited to internships and pre-apprenticeships. Note: there needs to be a clear process flow of steps and expectations for paid internships that includes the process for industry partners hosting internships, KSD-involved staff and students who are participating in these internships.
- Expand the existing KSD employer advisory committee. This priority is another prime example of the need for deep collaboration. Note: The City of Kent, PNAA, WABS, Renton Tech, CAMPS, First Washington, STEM Paths Innovation Network (SPIN) have meaningful industry and funder connections that could truly enhance this work.

BEST PRACTICE LEADERS

SCALING CCL OPPORTUNITIES THROUGH COMMUNITY PARTNERSHIP

There are several strong examples where outside workforce development organizations, intermediary agencies or city governments, partner with a district to provide career connected learning (work-based learning) opportunities or summer jobs at scale.

- Partner in Employment has youth programs that help immigrant and refugee youth ages 16 to 24 to find jobs, skills trainings, and educational opportunities through deep mentorship and employment assistance.
- Greater San Antonio Texas is an economic development agency in San Antonio, Texas that has identified seven high-demand industries of focus. Through their initiative SA WORX they've run a robust Summer Internship program for eight years. This past summer 2023, 150 high school interns were placed at 30 employer sites and paid throughout their experience.
  https://greatersatx.com/sa-worx/programs/internships/
- AJAY MT (American Jobs for America's Youth Montana) is a nonprofit that coordinates with several city governments, Chambers of Commerce, and school districts to run Summer Jobs Programs (SJP) in four separate communities. In SJP, high school students and recent graduates ages 16-19 receive paid work placements from early June to mid-August. Students receive onboarding, work training, and have the option to participate in free credit-based college courses on work skills.
  https://www.americanjobs4youth.org/sjp
- One other example of innovation to increase and expand the number of CCL opportunities for students is the state of Colorado's Work-based Learning Incentive (WBLI) Program. In May of 2022, the Colorado State Legislature passed Senate Bill 22-140, to create the program which provides monetary incentives to Employers to create new, or enhance existing, WBL programs. While this is a state-level example, temporary grant or philanthropic funding could be used by a city government, workforce intermediary, or philanthropy to offer similar incentives.
  https://www.arvadachamber.org/wblip/
  https://fortcollinschamber.com/wp-content/uploads/2021/01/WorkBasedLearningIncentiveFlyer_ENGLISH.pdf

FOCUSED CCL RECRUITMENT

Highline Public Schools, which were previously mentioned with reference to their strong partnership management, is also a good example of a district that prioritizes the recruitment of career partners for activities like worksite tours, internships, etc. Highline defines specific CCL opportunities they are seeking for their students and also has district staffing capacity based out of their central office that supports recruitment of career partners. This helps to streamline asks to employers so that employers are not getting separate asks from each high school. Highline focuses on equitable access and has signature college and career events at each grade level. During the 10th grade year, all Highline students go off-campus to visit a career site.

- https://www.highlineschools.org/get-involved/career-partners
- https://www.highlineschools.org/get-involved/career-partners/our-approach

HIGH-QUALITY CCL TOOLKITS

There are dozens of CCL (work-based learning) toolkits that can be references for employers or educators looking to implement new programs or expand existing ones.

- Arvada Chamber of Commerce: https://www.arvadachamber.org/wbltoolkit/
- New York City Public Schools: http://wbltoolkit.cte.nyc/
- Dallas Virtual Internship Toolkit: https://careertech.org/resource/dallas-virtual-internship-toolkit/
- Montana Work-based Learning Collaborative Employer Toolkit:
  https://www.reachhighermontana.org/fileadmin/Resources/WBL_MT/Guides/WBLMT_Toolkit_Employer.pdf

GUIDE TO SUCCESSFUL IMPLEMENTATION

To successfully implement the priority strategies, the right conditions must be met. This work is not only about funding, these strategies require good organization and consistency. Here is a summary of the internal actions that can foster success:

- Leadership buy-in to STEM Strategic Vision from the Board, the KSD Superintendent, district administrators and school principals. School districts administrators have a lot of competing priorities.
- Building capacity to support partnerships so that more employers and community-based organizations can contribute to the STEM strategic vision and priorities.
- Leveraging in-kind resources and professional expertise.
- Willingness to track progress and student outcomes requires investment in data systems and processes.
- Leveraging external expertise and resources.
- Allowing for teacher leadership and individual actions without cumbersome barriers for KSD district staff. Teachers can be entrepreneurial and creative with STEM, system-building should support them and not add additional barriers. Avoid stifling existing efforts as the system moves towards greater alignment.
- Commit to cross-departmental collaboration, nearly every strategy takes more than one department.
- Proactively pursue partnerships and partnership alignment. There are many partners that want to work with KSD, but communicating the STEM plans and other district needs proactively can ensure KSD enters into mutually beneficial partnerships that meet gaps that have been. identified. For example, many districts share areas where they need community support (e.g., student support services, STEM after school programming, etc.).

APPENDIX 1: DEVELOPING A SYSTEM FOR STEM OPPORTUNITY PARTNER ENGAGEMENT

STEP 1

Develop an "a la carte" menu of opportunities for employer and community partner recruitment.

	Opportunities	About	Grade Levels
1.	Career Fairs & STEM Nights	Description: One-time, career related, school-wide events	K - 12
		Example: Science Fair and STEAM Night at Meridian Elementary	
2.	Guest Speakers	Description: Guests brought on-site to school site to speak to student group(s) or classroom(s)	K - 12
		Example: Classroom speaker from a leading aerospace company as part of a physics lesson plan	
3.	Worksite Tours & Career Field Trips	Description: Students visit worksite under supervision of KSD teachers and staff	Grades 9 & 10
		Example: WABS worksite tours such as their King County Department of Natural Resources teaching students about flood planning	
4.	Student Clubs	Description: At school clubs focus on a STEM skills and/or related career paths	Grades X - 12
		Example: First Robotics	
5.	Internships	Description: Paid and unpaid opportunities for a student to have repeat work experiences at a single worksite	Grades 11 & 12
		Example: Summer internship	
6.	Youth Apprenticeships (including Pre-App)	Description: A series of education and experience that put a student on a path to a specific STEM related career	Grades 11 & 12
		Example: Pre-apprenticeship in Construction	
7.	After School Programs	Description: Recurrent after school STEM programs run at school sites by community-based partners.	K-12
		Example: A STEM Club like this one at Madison High School in Seattle	

STEP 2

- Create descriptions of opportunity types leveraging "best practices" to create some standardization of quality expectations
- Identify legal requirements and paperwork required for participation of volunteers in each type of opportunity (e.g., a one-time guest speaker would not require a background check, but an internship supervisor may need one)

STEP 3

- Compile existing opportunity lists (e.g., annual career fairs, STEM nights, WABS worksite tours, etc.) and relevant "lead contact" number for each opportunity
- Create a partner or guest speaker request form for educators to determine needs district wide (may want to pilot with smaller number of schools initially or focus on school-wide events first)

STEP 4

Develop process and flow chart for each opportunity type, this should include any contacts (roles and responsibilities), permission required, paperwork, and data submission requirements. There should be clear instructions outlined for:

1. Host (e.g., educator leading or hosting the opportunity)
2. Guest (e.g., employer or nonprofit partner that is participating)

3. School District Admin (e.g., central office leadership)
4. School Admin (e.g., building principal)

STEP 5

Communicate the updated process to schools, community partners, and existing industry partners

APPENDIX 2: STEM EDUCATION DEFINITION

The Project Team identified the following simplified definition of STEM Education for the purposes of the Strategic Vision Report:

STEM Education: The interdisciplinary, hands-on learning of Science Technology, Engineering and Math.

In order to advance the strategic priorities focused on STEM lessons and professional development, additional work will likely need to be done by KSD's Teaching and Learning department to further define high-quality STEM education. Despite the prioritization of STEM education in Washington's state, agencies and organizations like the Office of Superintendent of Public Instruction and the STEM Alliance do not currently provide a definition of STEM education to align with. The nonprofit organization Washington STEM does have a definition of "quality STEM," and other national organizations and states provide strong STEM education examples which are shared below, which Kent may choose to build from.

WA STEM
Washington students have a civil and legislative right to graduate STEM literate so they can thrive in an ever-changing world and have equitable opportunities for economic self-sufficiency in our state. STEM literate individuals are critical thinkers and consumers of information, able to use concepts from science, technology, engineering, and mathematics to understand complex problems and to solve them with others. Foundational STEM literacy is critical in addressing the STEM skills gap that prevents equitable economic opportunity for young people in Washington and in meeting employer and workforce needs. These learning opportunities should begin in early learning settings, build through every year of K-12, and extend through postsecondary with relevance to chosen career and life pathways.

National Science Teaching Association
A common definition of STEM education [...] is an interdisciplinary approach to learning where rigorous academic concepts are coupled with real-world lessons as students apply science, technology, engineering, and mathematics in contexts that make connections between school, community, work, and the global enterprise enabling the development of STEM literacy and with it the ability to compete in the new economy.

Texas Education Agency
STEM (Science, Technology, Engineering, and Mathematics) education is a method of hands-on teaching and learning where students learn to apply academic content by creatively solving real-world problems with innovative design-based thinking to prepare students for future career opportunities.

California Department of Education
K–12 STEM education encompasses the processes of critical thinking, analysis, and collaboration in which students integrate the processes and concepts in real world contexts of science, technology, engineering, and mathematics, fostering the development of STEM skills and competencies for college, career, and life.

Ohio Department of Education & Workforce
STEM education is a learner-centered approach to teaching providing students with a problem-based, transdisciplinary, and personalized learning experience. STEM education uses the foundational practices and skills essential to the core disciplines of Science, Technology, Engineering, the Arts and Humanities, and Mathematics.

APPENDIX 3: CURRENT STATE ASSESSMENT