JOHN C. DUNHAM STEM PARTNERSHIP SCHOOL
AT AURORA UNIVERSITY

EXTERNAL EVALUATION, 2019-2020

June 2020

External Evaluator
Tawanda Gipson, M.A./M.S.
tawandadgipson@hotmail.com

Table of Contents

EXECUTIVE SUMMARY

At the beginning of the 2019-2020 school year, an evaluator was brought in to examine the STEM Partnership school's progress toward its three long-term goals: (1) impact on internal practices, (2) secure external resources and knowledge dissemination and (3) encouragement of student engagement and advocacy.

Similar to prior years, the students' state standardized test scores indicate that they performed well above the state test scores for the 2018-2019 academic school year. 71% of ELA scores met and exceeded expectations as compared to 38% at the state level. Similarly, 78% of math scores met and exceeded expectations in comparison to 32% at the state level.

Overall, the school continues to achieve meaningful progress towards its three goals as indicated by feedback received from STEM Partnership School students, teachers, area district educators, student assessment data, parents, AU STEM faculty, AU students, community partners, and STEM Partnership School alumni. Several common themes emerged from the surveys and focus groups. These collaborations created some noteworthy achievements even through the challenge of remote learning during the fourth quarter.

- Teachers described changes in teaching practice such as ability to delve deeper into topics, freedom to make mistakes, and more student-driven/inquiry-based.
- More than 60 partner interactions occurred at the STEM Partnership School during the 2019-2020 academic year. Community partners reported being very impressed with the students' detailed questions, genuine interest in the topics, and practical abilities.
- STEM teachers attended and/or presented in conferences as well as in district professional learning events. AU faculty collaborated with STEM School faculty on several innovative teaching practices.
- Parents stated that their students' skills improved in STEM areas as well as presentation skills. STEM Partnership School alumni indicated having an interest in pursuing careers in the STEM field such as forensic science, engineering, and medicine.
- STEM Partnership School students participated in at least 6 national contests. An eighth-grade team won 2nd place in Toshiba/NSTA ExploraVision National Competition and a seventh-grade team placed silver in the Global Virtual Classroom contest.
- AU was awarded a National Science Foundation grant to prepare secondary teachers as a result of collaborations between STEM Partnership School and school district partners.

As the partnership continues to collect data on its goals, the Governing Board may want to consider identifying and defining objectives, methods and targets for the goals it has developed. The following report provides more detail on the examination of these goals along with further explanation on how to improve its data collection process.

INTRODUCTION

Following its inception in August, 2014, the John C. Dunham STEM Partnership School on the Aurora University campus has served approximately 200 elementary and middle school students spanning third through eighth grade from the following neighboring four public school districts: Batavia (101), East Aurora (131), Indian Prairie (204), and West Aurora (129). At the beginning of the 2019-2020 school year, an external evaluator was brought in to examine the following long-term goals deemed essential by the partnership.

1. How has the STEM Partnership School impacted the internal practice within Aurora University (AU) and within the partner school districts?
2. How has knowledge learned from the STEM Partnership School been disseminated in a larger setting to:
    a. secure new sources of external support for the STEM Partnership School and related initiatives and
    b. share among the district teachers through professional learning opportunities?
3. Has there been continued student engagement and advocacy in STEM areas for AU students and STEM Partnership School elementary and middle school students?

The following report will present and examine the evaluation of the above three goals and provide recommendations to the partnership as it moves forward.

METHODS

In order to examine the above evaluation goals, data was solicited and collected using the following methods:

1. **Surveys were sent to the following parties:**

Group	**Date of collection**
STEM Partnership School Alumni Students	Surveys emailed March 10th, 2020
STEM Partnership School Parents	Surveys emailed January 13th, 2020
Aurora University Student Participants	Surveys emailed March 10th, 2020
Governing Board Members	Surveys emailed April 8th, 2020

All surveys were conducted online (via Qualtrics). Most of the questions were open-ended. Please see Appendix A for the assessment questions.

2. **Focus group interviews were conducted of the following parties:**

Group	Dates
STEM Partnership School Teachers	April 17th, 2020
STEM Partnership School elementary and middle school students	April 15th, 2020
STEM Partnership School Partners	April 15, 17th &, & 20th 2020*
Aurora University STEM Faculty	April 17th, 2020

Note: Due to Covid-19, all focus group interviews were held online via Zoom.
*Two of the community partners were interviewed separately on April 17th and 20th.

Please see Appendix A for the assessment questions used to guide the discussions.

3. **Area district educator feedback** was collected from the STEM Partnership School. When area district educators visit the STEM Partnership School, they typically provide feedback on their experiences. Since this process was already under way, the school shared this de-identified feedback.

4. **Student achievement data** was collected from the STEM Partnership School. Teachers provided pre and post scores for each unit from their criterion-based assessments. In addition, aggregated Illinois Assessment of Readiness (IAR) summary data for 2018-2019 was collected.

Although much of the data collected from the assessment tools consisted of open-ended data, the questions were loosely aligned with specific goals. Below is a matrix which summarizes this linkage between the assessment methods which were utilized, and the program evaluation goals addressed by the methods. As the qualitative feedback was reviewed, it was determined that some methods addressed more than one goal.

Methods by Goal Matrix

Goal	Methods
Internal practice impact (Goal 1)	• STEM Partnership School Teachers (Focus Group questions) • Aurora University STEM Faculty (Focus group) • STEM Partnership School Partners (Focus group)
Knowledge dissemination (Goal 2)	• STEM Partnership School Teachers (Focus Group questions) • Area district educator feedback • STEM Partnership School Partners (Focus group)
Continued student engagement and advocacy in STEM (Goal 3)	• STEM Partnership School elementary and middle school students (Focus Group questions) • STEM Partnership School Parents (Survey) • STEM Partnership School Partners (Focus group) • Student achievement data • STEM Partnership School Alumni Students (Survey) • STEM Partnership School Teachers (Focus Group questions) • Aurora University STEM Faculty (Focus group) • Aurora University Student Participants (Survey)

STUDENT ASSESSMENT DATA

Criterion-based Assessments

Teachers assessed student's learning periodically through the use of criterion-based assessments. Students took similar assessments prior to and after each unit to demonstrate their growth in learning. These assessments varied by teacher and grade and included many different types of items such as computational (math), multiple choice, and written response. Analyzing results from the most recent academic year (2019-2020) indicates that students showed a steady progression in their learning for each unit as indicated by pre-post scores provided by teachers across each grade level. Below is an overall summary of their growth in scores across teachers, courses, and grade levels. All scores were first translated into percentages for comparison prior to being aggregated. Overall, scores increase from pre-test (M=29.42, SD=21.05) to post-test (M=85.57, SD=11.75) demonstrating growth in

student learning (see Table 1, Table 2, and Figure 1). Given the large variability of scores (i.e. standard deviations), the median scores are also provided. Some of the variance may be due to a large number of pre-score values of zero percentage points. Despite this, it still seems students have been engaged in their learning and demonstrated this by performing higher on their post-tests.

Table 1:
Criterion-based Assessment Summary: Number of Test Scores by grade

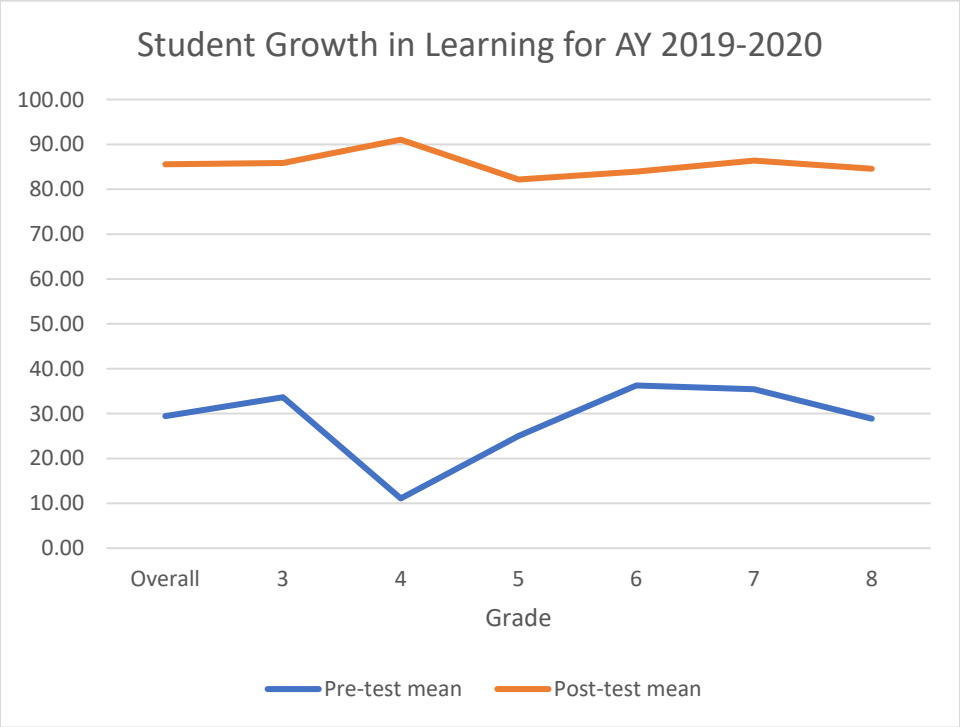
Grade	Number of Test Scores	Percent
3	186	15.12
4	170	13.82
5	143	11.63
6	263	21.38
7	217	17.64
8	251	20.41
Total	**1230**	**100.00**

Table 2:
Criterion-based Assessment Summary: Mean/Median scores across grades 3-8

Variable	Pre-test	Post-test
N (number of assessments)	1230	1230
Mean	**29.42**	**85.57**
Standard deviation	21.05	11.75
Minimum score	0.00	0.00
Maximum score	100.00	104.00
Median	**26.13**	**88.00**

Note: Scores of zero indicate students made an attempt but received zero points. Some assessments offered extra credit leading to scores higher than 100 percent.

Figure 1:
Criterion-based Assessment Summary: Growth in mean scores across grades 3-8

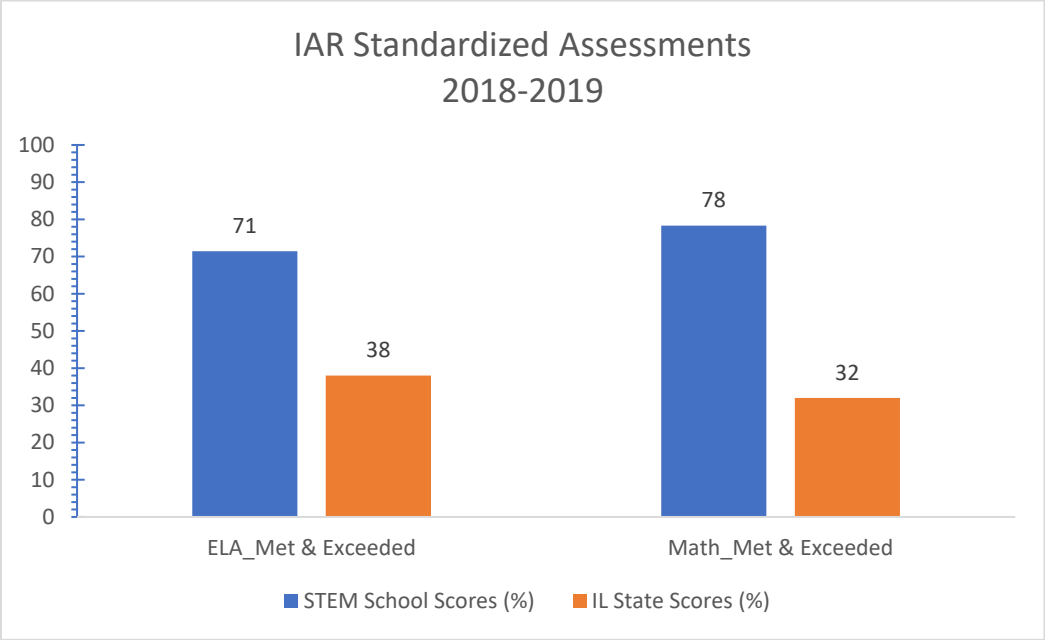


Note: See Appendix B for detailed scores.

Standardized Assessment Scores

Similar to prior years, the students' state standardized test scores show that they performed well above the state test scores for the 2018-2019 academic school year. 71% of STEM Partnership School scores met and exceeded expectations for ELA as compared to 38% at the state level. Similarly, 78% of STEM Partnership School scores met and exceeded expectations for math in comparison to 32% at the state level (see Figure 2). This demonstrates that students continue to remain engaged in their courses throughout the school year.

Figure 2: Standardized Test Scores



Note: Sample size for the STEM Partnership School is 189 across all grade levels. Two students were not able to test.

RESULTS

Detailed results will be presented as the evaluation questions are addressed in the following sections. Table 3 provides a brief summary of the sample sizes for each data collection method.

Table 3:
Survey response rates

Survey	# Surveys Sent	# of Responses (N)	Response rate
STEM Partnership School Alumni Students	17	16	94.1%
STEM Partnership School Parents	300	87	29%
Aurora University Student Participants	16	9	56.3%
Governing Board Members	5	1	20.0%
Area District Educators	N/A	7	N/A

Table 4:
Focus group sample sizes

Group	# Participants
STEM Partnership School Teachers	10
STEM Partnership School elementary and middle school students	4
STEM Partnership School Partners	5
Aurora University STEM Faculty	5

Note: Due to Covid-19, all focus group interviews were held online via Zoom.
Low participant numbers due to remote phase.

Table 5:
Student achievement data sample sizes

Method	Sample
Student standardized scores (IAR) 2018-2019	summarized across 189 students across all grades (3^{rd} – 8^{th})
Criterion-based assessment scores 2018-2019	aggregated across all grades (3^{rd} – 8^{th}). There were a total of 1230 assessment scores across 11 classes

EVALUATION QUESTION #1:

How has the John C. Dunham STEM Partnership School impacted the internal practices within Aurora University and the partner school districts?

As mentioned above in order to address this question, feedback was solicited from numerous parties. Although the focus was to examine the impact on teaching practices for both the STEM Partnership School Teachers and AU STEM Faculty, impacts to the community partner organizations were also examined.

- Several themes emerged in STEM Partnership School teachers' responses such as ability to delve deeper into topics, freedom to make mistakes, more student-driven/inquiry-based, teacher collaboration (interaction of subjects), community partner involvement, and increased use of technology.
- AU faculty reported incorporating more student-driven/inquiry-based practices, developing collaborations with community partners, and increased use of technology.
- AU faculty mentioned that formation of the Chemistry major has been influenced positively by the STEM Partnership model.
- The overall theme of community partner responses suggested a positive impact on professional development opportunities for their employees.

Below is a summary of comments along with several reflections taken directly from interviews.

STEM Partnership School Teachers:

STEM Partnership School Teachers were asked how the STEM Partnership School has impacted their internal practices. Teachers noted positive impacts. Teachers reported that the increased time they have with students allows them to plan lessons giving students more time to process materials. This additional time allows them to delve more deeply into topics. In addition, students have the freedom to make mistakes because there is time to address them. Teachers also express that their practices have become more student driven. Students are allowed (and encouraged) to ask questions, which drives instruction further. Teachers also reported that their practices are more collaborative in terms of collaborating with teachers in other subjects as well as community partners.

Reflections from teachers

- "One of the main ways that I would say that my practices have changed is the amount of processing time that the students have, so it allows me to structure lessons and activities and projects totally differently than I would in more of a traditional school. So since we have the students for three periods a day in STEM, we're really able to delve in deep into their learning and then make it really more authentic learning where they're presented with problems to solve and they really have that opportunity to have that critical thought and a lot of more in-depth learning than they would traditionally."
- "I think that my practice changed in that it's a lot more student driven than it was in the past. There's no pressure to be on a certain page on a certain day. We get to let the kids more organically drive where we go and what they study."
- "my teaching has changed… just having the time to follow through and, if we make mistakes or an experiment goes wrong, being able to redesign and revise. Generally, you don't have time for that in a traditional school. Also, just the interaction between all of the subjects is different because our team is so small… and I can really connect with what [other teacher] is doing in her class… She connects in my class, and she does that with others too… but that's one thing is that collaboration. We don't have a lot of time for that as teachers, but we still make it happen."

Aurora University STEM Faculty:

AU STEM Faculty were asked the same question. They also noted making similar positive changes to their teaching pedagogy. In addition to the impact to faculty's individual teaching practices, it was noted that the impact has also been seen at the academic degree program level. Similar to the STEM Partnership School, community

partners have been involved in the development of the curriculum for this program and assisted in providing opportunities for AU undergraduates.

Reflections from faculty

- "I am more flexible to change and adapt my curriculum based on students' needs in order to reach the majority of students."
- "Being involved in the STEM Partnership School has exposed me to multiple new technologies used in teaching. Specifically, I have incorporated two ideas: Virtual Reality/Augmented Reality and Merge Cubes to have students tell a story and Flipgrid to have students have asynchronous discussions."
- "The collaboration with the STEM Partnership School provided me with the opportunity to implement cutting edge technology into the classroom. I currently adopted and implemented the use of the PocketLab sensor for my Physics lab curriculum. I have gained valuable experience in how to adjust my instruction depending on the audience I am interacting with, whether it is a teacher, a STEM Partnership School student, or a college student."

Community Partner Feedback:

Community partners were interviewed and asked how their participation in the STEM Partnership School partnership impacted their internal practices.

Reflections from community partners

- "I think the impact to the organization is just the excitement that we get when we do get to go out there. We love being out with those kids as I said, because they do stay so engaged. It's nice to keep that relationship open… the meetings we have with teachers are very energizing. I will have to admit that."
- "I think it's really been a good growth opportunity … for some of our scientists and engineers… I can't think of a time when I've had somebody say no to a request to go talk to the STEM kids. I think they all come away feeling energized..."
- "I know for us we've certainly gotten more people engaged in that opportunity and I think it's always good. You always want people to be mindful of their audience and to tailor their presentations to that. So, I think there's that piece of it that's good for our engineers and there's just a strong passion for some of our younger engineers..."

EVALUATION QUESTION #2:

How has knowledge learned from the STEM Partnership School been disseminated in a larger setting to:

a) secure new sources of external support for the STEM Partnership School and related initiatives and

b) share amongst the district teachers through professional learning opportunities?

The STEM Partnership School has had over 60 interactions with the community partners during the academic year. Knowledge learned from the STEM Partnership School has been disseminated to the larger community through teacher presentations in school districts and shadowing opportunities for district teachers. District teachers reported appreciating the opportunity to meet with the STEM School teachers and learning about the different technology utilized in their classrooms.

- AU faculty, in collaboration with the STEM Partnership School director, has created and implemented professional development workshops for STEM Partnership School teachers (see Table 6).
- AU faculty connected with STEM Partnership School teachers to provide experiential learning opportunities for their students. Unfortunately, several had to be canceled due to COVID-19 remote instruction phase (see Table 7).
- STEM Partnership School teachers attended at least ten different conferences (see Table 8) to share knowledge and to continue to bring innovations in the classroom.
- STEM Partnership School teachers are also active in community teacher learning groups (e.g. seminars, social media), school events, and social media platforms.

Key Achievements

- AU was awarded the 2020-2021 Noyce Capacity Building grant #1949848 from the National Science Foundation's Division of Undergraduate Education for "Building Capacity to produce STEM Teachers at a Hispanic Serving Institution in Illinois."
- AU faculty, STEM Partnership School teachers, and partners have participated in the Chicago Public School North Lawndale project to replicate the STEM Partnership School model.

Table 6:
Professional Development Created and Implemented by Aurora University STEM faculty

Date	Topic
Friday, Aug 16	Lab Safety (STEM)
Monday, Aug 18	Taking Informed Action (Education)
Tuesday, Oct 15	Probability and Variability in Supply Chain (Mathematics)
Tuesday, Nov 12	Inheritance Patterns and Ecosystems (Biology)
Friday, Jan 17	Social Emotional Learning (Social Work)

Table 7:
Experiential Learning Opportunities for STEM Partnership School students and AU students

AU Dept	Topic
Music	Performed opera and musical theater pieces for STEM School students
Theatre	Performed Shel Silverstein's work for elementary STEM students
Physical Ed.	Coordinated Heart Adventure Challenge for STEM School's health unit
Chemistry	Ethics of space exploration, 8th grade
History	US Constitution, 8th grade
STEM Eco club	A middle school group presented Light Pollution project to AU Eco Club
Recreation	Showcasing REC 3330 STEM exhibits to STEM elementary students (canceled)
Biology	BIO 1150 presented STEM projects to STEM elementary students (canceled)
English	Poetry workshop for 4th grade (canceled)

Table 8:
Conferences attended by STEM Partnership School teachers

Conference name
1. WozEd
2. TCEA,
3. Illinois Teacher Leader Summit
4. IL State of STEM Conference
5. Teacher Success Summit
6. AR/VR Virtual Summit
7. National Science Technology Association (NSTA) STEM Forum & Expo
8. Teacher Success Summit (online)
9. AR/VR Virtual Summit (online)
10. IDEAcon 2020
11. SXSW EDU Conference (online)
12. IPHERD Conference

Reflections from community partner

- "The [community partner] funded professional development for the teachers at the school at Dunham, but we also invited the science teachers from the four school districts to attend that as well. Because we don't like to just fund one school and see a huge impact at that one school, we look to fund things that can see a greater impact."
- "[Another community partner] has a team of employees working on the curriculum for North Lawndale, right? It's partially because we brought them to the table and they see the benefit of this. So, when I said earlier that we look for innovative programs, this sounded really innovative before we had any test results back. The concept proved out. As a funder that doesn't always happen. You want it to happen, but it doesn't always happen. But this was an example where it far exceeded our expectations."

Reflections from STEM Partnership School teachers

- "We've presented at a few different in-services. I know we presented in 204 one year during a teacher in-service day. So, a few of us presented engineering in the elementary classroom, and I know we presented in 129 also on a teacher in-service day about engineering in the classroom... A teacher from … came this year, and I was able to take her on a tour and explain how we go about with project-based learning and how we teach without textbooks. They've sent over several teachers this year who have been observing us and asking us questions, so we're able to start sharing that more ...."
- "My home school in my district … have a STEM night that they host once a year, and so we're in close contact... and so they always invite me along with my team of teachers to come for their STEM night and present or share something with the family and the kids in their community. So, [other teachers] have always gone with [me] each year, and we kind of share a different form of technology or a different activity and how we're incorporating engineering, or something related to STEM that we present to them at that night."
- "We meet with someone from the curriculum department in each of the districts on a regular basis, so that's one way that information gets shared back… We also host shadowing days where people from the four districts or other districts can come and shadow teachers. We also do that with future teachers. We also have offered professional development or professional learning sessions for partner districts or other districts. We've gone back and met with curriculum committees within the districts and shared some of what we're doing"

- "I still do maintain some friendships with people from my home school, so if I find something that I think fits for them, I will shoot an email to one or two of the teachers in whatever grade level I think it fits with just to share that way. Even just with this remote learning situation, I've shot a couple of things over their way and just have kept in contact that way and done the [STEM] night. If I go to classes, take classes in the summer, I'll do a couple of one- or two-day classes and kind of talk about ... People are interested in hearing how the model works and that sort of thing, so I've shared that way as well."

EVALUATION QUESTION #3:

Has there been continued student engagement and advocacy in STEM areas for STEM Partnership School elementary and middle school students and alumni and also for Aurora University students?

STEM Partnership School student engagement and promotion of advocacy was demonstrated and discussed by several groups. Students, parents, faculty, and community partners all had input regarding the current engagement of the STEM Partnership School elementary and middle school students.

- Student assessment data which demonstrates strong academic performance also further indicates student engagement.
- STEM Partnership School teachers felt that the STEM Partnership school's culture naturally encourages student engagement and advocacy since students learn that their voices matter and that their curriculum is catered to the students' interests.
- STEM Partnership School teachers encourage student advocacy through involving students in conferences and competitions (see Table 9), sharing their work publicly, encouraging collaborations and sharing of work among peers, catering lessons to student interests, and providing real-life simulations from their communities.

Table 9:
Student Competitions

Competition	Summary
1. Noetic Learning Contest	Elementary math contest
2. MathCOUNTS	8th grade students placed 24th out of 200
3. Scholastic Scope	Middle school writing contest
4. Toshiba/NSTA ExploraVision National Competition	"CO_2RS: A Cleaner Future," *8th grade group won 2nd place*
5. Global Virtual Classroom Web Design Contest*	The Global Virtual Classroom contest *7th grade classroom took silver place*
6. JASON ISRI Recycling Poster Contest	6th graders placed in the top 10

***** The Global Virtual Classroom (GVC) contest, 7th Grade class, in collaboration with students from St. Mark's Sr. Sec. Public School in New Delhi, India, created a website themed, "Reading is a Window to the World!", earned the Silver Award, placing second overall in their division.

STEM Partnership School Student engagement

Students were asked to share their favorite activities at the STEM Partnership school. They enjoyed activities related to biology, chemistry, engineering, conservation, and technology. Their engagement came across in their discussions. Below are few memorable reflections.

Reflections from STEM Partnership School elementary and

middle school students

- "I really liked dissecting and playing with the chemicals and stuff. But we did a really fun experiment this year, I think it was where we dyed the water in a plant and the water made the chlorophyll blue. So, it made the whole plant blue."
- "We did this very cool experiment where we got a jar of a bunch of different substances. It had iron, zinc, sand and salt. And we had to find ways to remove all of them from the jar."
- "We do engineering challenges, which is like we have a theme and we just try to engineer something. And then in fourth grade and fifth grade, near the end of the year we have a dissection."
- "My favorite part is probably also STEM, because there's a lot of cool experiments and learning advantages, I guess you could say. And it's just really fun to do different things and different experiments and learn something from it."

Parent perspectives:

Parents also provided feedback regarding their students' engagement with the STEM Partnership School. When asked to describe the impact of the STEM Partnership School on the students, several themes emerged involving current student engagement including: skill-enhancement, confidence, and interest in learning. Parents reported that their students' skills improved in STEM content areas as well as presentation skills. Parents were excited to see their students show an interest in learning and their confidence in their skills grow. A few parents expressed concerns over the long bus ride and lack of sports.

Reflections from parents

- "We have seen our child thrive academically at STEM this year! It has been good for him to be mentally challenged in his classroom. He is more curious than ever realizing that there is so much to learn!"
- "He has grown as an independent worker. He's exhibited autonomy. He continues his curiosity for learning. He researches topics of interest. His presentation skills have improved."
- "There are no words that can capture how life changing it has been for my son to attend STEM Partnership school. His love for learning has increased tenfold. He is finally being challenged in school and being appreciated for being smart."
- "Definitely he has more confidence in STEM… He has more confidence in experimenting and try again if one experiment fails."

Community Partner perspectives:

Community partners were asked to share their thoughts about their experiences with STEM Partnership School student engagement. Overall, they had positive views of the students. The partners seemed very impressed with the students' detailed questions, genuine interest in the topics, and practical abilities. Below are a few experiences that were shared.

Reflections from community partners

- "The kids at the STEM Partnership School are so receptive and so enthusiastic, and they ask the greatest questions because they're used to it. They're allowed to, that's what the school's all about."
- "I think anybody who goes there and sees the kids in action. The fifth graders were helping the third graders take apart hairdryers and put them back together and made them work again. I couldn't do that."
- "So, when you go to the school, you see … the eighth graders working with the fifth graders and the sixth graders working with the third graders. There is this sense of

community that exists at that school between the teachers, the students and the partners that you just don't see in other places."

- "I think the only thing about it is that these kids ask really probing questions and we're not necessarily accustomed to that. So, I know the first time we did one, everybody came back and said, 'Wow, we've got to be on our A-game for those kids."

STEM Partnership School Alumni feedback:

To examine the strength and longevity of STEM Partnership School student engagement, alumni were contacted and asked to provide their feedback via an online survey regarding their current STEM-related activities, courses taken since exiting the school, future career plans, and a description of how the school has impacted them. Although only a small handful of STEM-related extracurricular activities were listed (possibly due to school offerings), STEM Partnership School alumni reported taking a plethora of STEM-related courses including Advance Placement (AP) math and science courses. Alumni also reported having an interest in pursuing careers in the STEM field such as forensic science, engineering, and medicine. When asked about the impact of the STEM Partnership School, STEM Partnership School alumni had a lot to say. Many felt the STEM Partnership School prepared them well for high school (and beyond) and helped spark their career interests in the STEM field. Their decisions to pursue courses and careers in STEM indicate evidence of their continued engagement.

Reflections from STEM Partnership School alumni

- "The STEM Partnership School had a great impact on me. The curriculum and different projects I was exposed to taught me a lot about STEM in general. It sparked an interest in STEM in me. What I learned at the STEM Partnership School has helped me do well in my academics so far in high school, too. The biggest impact, however, was the fact that I was exposed and had the opportunity to learn about a variety of careers. Overall, I am grateful for attending the STEM Partnership school, as it has exposed me to the whole world of science, technology, engineering, and math."
- "It opened my eyes to how many science fields there are."
- "For one thing STEM had steered me in the direction of wanting a math-based career. It has also provided me with more opportunities to explore careers in the real world."
- "It introduced me to tons of new careers and let me see how STEM can apply to other things I already enjoy, such as sports."

STEM Partnership School Student advocacy

Teachers discussed ways they encourage student advocacy, which can be viewed as an extension of their academic engagement.

Reflections from STEM Partnership School teachers

- "When current events come up, we have the time to talk about them and have students explore a little bit so that they learn about them in different ways. It might be an NPR recording, and then if they want to learn more about it, they'll ask questions and I'll see the interest, so then I'll look up a video clip or loop up more about it, and we kind of do a little mini unit on something like that. The other way around too, they'll bring something to my attention, and I'll be ... 'Yeah. Never heard of that,' and I'm like, 'Email me the link and I'll share it with everybody.' Just the fact that their voice can be heard, even in that simple way, is a way for them to feel like they're making an impact teaching other kids about something."
- "There was a group of students that did a project on light pollution that they then went back and taught a lesson about light pollution through video conferencing in their elementary schools. Then that has continued to be a passion of theirs, so they presented to the university ecology club this winter, and they wanted to do a lights-out day across the campus and share information about light pollution. So that gives them a real-world impact, I think, on something that they started learning or studying that they started with in class."
- "I was listening to what everybody was saying. Something just came to me. So, we were talking a lot about responsiveness to the kids and adapting instruction to meet their needs and things like that, and I think that the kids now at the STEM Partnership School ... They expect that responsiveness, so I feel like they advocate for themselves very naturally, because they know now after being there for a while that if they approach us with an idea, we're most likely going to be like, "That's really cool. Let's do it." You know what I mean? So, I feel like there's this natural air of advocacy in the building across subject areas and across the grade levels just because that's the culture that we've kind of created as teachers."

Aurora University Student engagement and advocacy

Aurora University faculty discussed ways they engage and encourage advocacy for their own STEM students. Students are given guidance about career paths in STEM, encouraged to do outreach with local students (including within the STEM Partnership school), encouraged to join student STEM groups, and given information about current topics and issues in the field. In addition, as mentioned earlier, many faculty have altered their teaching styles to be more student-inquiry based. This encourages student engagement as well as advocacy in their

fields. Aurora University students working within the STEM Partnership School are guided by the faculty as they engage with STEM Partnership School elementary and middle school students either as student teachers or student nurse practitioners. Student STEM School teachers create their own curriculum and receive valuable feedback from the STEM School students, which is an exciting and useful experience for them. These student teachers and practitioners shared that this experience has helped them improve their ability to communicate and work with elementary and middle school students and provided them with valuable practical skills that will help them in their careers as they move forward.

Reflections from Aurora University STEM faculty

- "Student advocacy as chair of the department entails career awareness, career path processes, and professional development opportunities. 1) The first goal is to aid students to be aware of the range of professions out there and 2) how to reach success in those professional fields through preparation at the undergraduate level building both academic and co-curricular experiences that ready them for the next level and 3) organize opportunities for students to realize and practice skills necessary for transition to the next level (resume workshops, cover letter writing, interview skills, and networking opportunities)."
- "I advocate that STEM students do outreach to local elementary, middle, and high schools. I also discuss current issues in STEM in my courses so students are aware of how the compounds we discuss in Organic Chemistry can be harmful if used incorrectly."
- "I do my best to discuss chemistry job opportunities when applicable and encourage students to join student-led groups including: Mu Sigma Pi (health science student service organization), AUSO (AU Science Organization), or other university student groups."
- "I engage students in my classroom and via individual communication by showing how topics in Physics (for example) extend to other STEM areas."

Reflections from Aurora University students

- "Being involved in the STEM Partnership School has been a wonderful experience! I am gaining valuable experience working with students in a different way than in my elementary education methods classes. Supervising lunch, as well as helping students resolve conflicts at recess will make me a better future educator."
- "Rewarding experience serving pediatric population. I can apply this to my future career and education. I am able to practice assessments and interventions (medication administration, pain management, anxiety management, etc.). I also

have improved on my communication skills with pediatric populations to increase health literacy among the students and families. This was a great opportunity to experience public health nursing."

- "My nursing and communication skills have grown immensely since I have been working as a student nurse at the STEM Partnership school."
- "Loved it. Gained experience with the kids, helped me manage time, had me practice my critical thinking and communication skills."

DISCUSSION AND NEXT STEPS

The vision of the John C. Dunham STEM Partnership school is
"Arising from innovation and collaboration, the John C. Dunham STEM Partnership School is a nationally recognized model inspiring students to transformative academic achievement in science and mathematics employing the community as a laboratory to create leaders of tomorrow and improve workforce development."

In alignment with this vision, it has three goals:

Goal 1: To impact the internal practices within Aurora University (AU) and within the partner school districts.

Goal 2: To disseminate knowledge learned in a larger setting to a) secure new sources of external support for the STEM Partnership School and related initiatives b) share among the district teachers through professional learning opportunities.

Goal 3: To examine continued student engagement and advocacy in STEM areas for Aurora University students and STEM Partnership School elementary and middle school students.

Overall, sufficient data was collected which supports previous findings that students in third through eighth grade who attend the John C. Dunham STEM Partnership School are reaping the benefits of this program. All of the goals are being addressed as indicated by STEM Partnership School students, teachers, area district educators, student assessment data, parents, STEM faculty, Aurora University students, community partners, and STEM Partnership School alumni. As the partnership continues to collect data on its goals, it may want to consider identifying and defining objectives, methods and targets for the goals it has developed. What types of results would the partnership like to understand? This would help clarify the methods and interpretation of the results. Assessment plans can be altered as things change, but it helps to have a "map" to follow so it's easier to know where things fit. For instance, what types of impact on internal practices is the partnership looking to accomplish? Creating measurable objectives will help the next evaluator obtain a better picture of what types of methods are needed and how to cater the methods to pull the

specific information desired. Developing targets will assist with interpreting how well each objective and goal is met.

Overall, the evidence provided indicates that the John C. Dunham school is continuing its mission successfully and helping to develop future STEM scholars both within the STEM Partnership School and throughout the districts. Taking the above suggestion into consideration as it moves forward is optional but may help inform important decision-making processes which impact the STEM Partnership School partnerships.

APPENDIX A – Assessment Tool Questions

Surveys

- STEM Partnership School Alumni Students
- STEM Partnership School Parents
- Aurora University Student Participants
- Governing Board Members
- Area district educators
    - *Area District Feedback Data (from forms already completed and will be shared)*

Focus Groups

- STEM Partnership School Teachers
- STEM Partnership School elementary and middle school students
- STEM Partnership School Partners
- Aurora University STEM Faculty

Assessment Tool Questions:

- STEM Partnership School Alumni Students (Survey)
    1. Do you participate in STEM extracurricular activities? Please list these activities.
    2. What are the STEM courses that you are taking/have taken in high school/college? (i.e. PLTW, computer science, mathematics, etc.)
    3. Do you plan to pursue a degree/certification in a STEM Field? Please explain.
    4. Describe the impact that attending the STEM Partnership School had on you.
- STEM Partnership School Parents (Survey)
    1. What grade is your child in? What district is your child enrolled? How many years has your child been a student at the STEM Partnership School?
    2. In which STEM extracurricular activities does your child participate?
    3. Describe the impact that attending the STEM Partnership School has had on your child.
- Aurora University Student Participants (Survey)
    1. What degree are you seeking? What is your current status within this program?
    2. Describe your involvement with the STEM Partnership School.
    3. What impact has this involvement had on you?

- Governing Board Members (Survey)
    1. Why does your school district continue to be involved with the STEM Partnership School?
    2. What impact has this involvement had within your school district?
- Area district educators (Survey)
    - *Area District Feedback Data (from forms already completed and will be shared)*
        1. *Select school district.*
        2. What is the date of the event that you attended organized through the STEM Partnership School?
        3. What event organized through the STEM Partnership School did you attend?
        4. Please provide a brief description of the event.
        5. What is one take away that you could see incorporating into your class this semester?
        6. What is something that you heard about today on which you would like more information?
- STEM Partnership School Teachers (Focus Group questions)
    1. How many years have you taught? How many years have you taught at the STEM Partnership School? If you chose to reapply for a STEM Partnership School teaching position after your initial placement, what were the reasons?
    2. How have your teaching practices evolved during your tenure at the STEM Partnership School? What were the catalysts for these changes?
    3. How have you shared your STEM knowledge/practices with other educators? (i.e. presenting at conferences, talking with other educators, etc.)
    4. What STEM conferences/professional learning opportunities have you attended during your tenure at the STEM Partnership School?
    5. Describe how you engage students and encourage student advocacy in STEM areas.
- STEM Partnership School elementary and middle school students (Focus Group questions)
    1. What grade are you in? What district are you enrolled? How many years have you been a student at the STEM Partnership School?
    2. What types of activities in your classroom(s) which you feel helps you to learn new concepts? (i.e. working with a partner, hands-on, lab, using technology, etc.)
    3. Name a memorable activity that you completed during your time at the STEM Partnership School.

- STEM Partnership School Partners (Focus group)
    1. Why does your organization continue to be involved with the STEM Partnership School?
    2. What impact has this involvement had within your organization?
- Aurora University STEM Faculty (Focus group)
    1. How many years have you taught overall? How many years have you taught at the Aurora University? How many years have you been involved in the STEM Partnership School? Describe your involvement.
    2. How have your teaching practices evolved as a result of the partnership with the STEM Partnership School?
    3. How have your shared your STEM knowledge/practices with other educators? (i.e. presenting at conferences, talking with other educators, etc.)
    4. What STEM conferences/professional learning opportunities have you attended during your tenure at Aurora University?
    5. Describe how you engage students and encourage student advocacy in STEM areas.

APPENDIX B – Criterion-based Assessment Data

Criterion-based Assessment Results

Third grade

Variable	Pre-test	Post-test
N (number of assessments)	186	186.00
Mean	**33.64**	**85.87**
Standard deviation	19.95	12.44
Minimum score	2.25	30.77
Max score	86.67	100.00
Median	**32.45**	**87.04**

Fourth grade

Variable	Pre-test	Post-test
N (number of assessments)	170	170
Mean	**11.09**	**91.05**
Standard deviation	14.79	9.73
Minimum score	0.00	55.00
Max score	60.61	100.00
Median	**2.94**	**94.14**

Fifth grade

Variable	Pre-test	Post-test
N (number of assessments)	143	143
Mean	**25.02**	**82.18**
Standard deviation	19.17	14.00
Minimum score	0.00	0.00
Max score	81.00	100.00
Median	**20.00**	**83.00**

Sixth grade

Variable	Pre-test	Post-test
N (number of assessments)	263	263
Mean	**36.26**	**83.92**
Standard deviation	23.10	12.07
Minimum score	0.00	44.00
Max score	100.00	104.00
Median	**32.00**	**86.00**

Seventh grade

Variable	Pre-test	Post-test
N (number of assessments)	217	217
Mean	**35.42**	**86.40**
Standard deviation	17.60	9.07
Minimum score	0.00	52.00
Max score	84.00	100.00
Median	**33.00**	**88.00**

Eighth grade

Variable	Pre-test	Post-test
N (number of assessments)	251	251
Mean	**28.88**	**84.56**
Standard deviation	19.12	11.55
Minimum score	0.00	8.00
Max score	96.00	102.00
Median	**24.00**	**86.00**

APPENDIX C – Reflections

Reflections

STEM Partnership School Teachers:

STEM Partnership School Teachers were asked what made them apply and what makes them stay at the STEM Partnership school. Overall, many STEM Partnership School teachers enjoy the freedom they have at the STEM Partnership School to teach at the pace of the students as opposed to more standardized structures. Teachers often take the 'backseat' and enjoy allowing their students to guide their own learning. They also enjoy the collaboration amongst their teacher peers and the technology made available to them that they may otherwise not have access to. It also seemed that the positive culture of the school plays an important role in their reasons for remaining at the school.

Teacher's Academic Freedom

- "Since coming to STEM, I mean, it's a totally different world than an elementary classroom in my district. So, I'm much more comfortable ... When I think about when I came in, I was very stressed. I was used to having a textbook for every subject. I was used to knowing what the district expectation was. They were so structured that I knew what page I had to be on on what day of the year when I left."
- "… and then not being tied to a curriculum or a text is very freeing for creativity for not only myself, but for the kids. I don't have to limit them in how much time we take on a project. I don't have to limit them in the mode they choose to show they're learning."
- "… that just having more time to go through a project and an investigation and not feeling as much of the pressure to keep going through and reaching certain things. Just having the time, especially in STEM, to really investigate something has been cool, I think… It kind of felt like there was a limitation on some of what I could do at my previous school, but at the STEM Partnership school, it really feels like there's not really a limit. It's kind of like the limit is your own maybe ability and desire to do certain things… "
- "There's a new level of responsiveness where the teacher does formative assessments, reads what the student needs, and then lets them drive some of the instruction as well, so it's just a whole new level of flexibility and being able to respond to their needs that I had never experienced before, because there is no pressure to be on a certain page."

Teacher Collaboration/ Technology

- "Our … team is very close, and we do have a co-teaching model. So just having that close relationship with them and sharing students with them and having a couple periods during the day where we're helping each other has been really rewarding for me and, I think, for the students too."
- "… I'd prefer to be at the STEM Partnership School just for the creativity, the collaboration, being able to try new things, particularly new technology, and it's just really project-based learning compared to what I would have to do in my district."
- "… and also the technology. We have access to virtually anything we want, and we're pushed in a basically good way to try it out and get it out to the kids and see what works. So, I've grown a lot that way."
- "… just having every student have technology in front of them and being able to take that home ... and so I kind of feel like I've been stretched to just incorporate different technologies… and just not do things maybe just the way that I had been doing..."

Student-paced learning

- "… it's just ever evolving. As the students' needs change, I change to make sure that I'm meeting their needs as well as collaborating with the teachers to meet the students' needs."
- "Now I'm much more comfortable putting learning in the hands of the learners, so putting them in charge of their learning. I have a much better grasp and understanding of project-based learning now"
- "… it's just much more interactive, it's much more engaging for both the students and myself, and the learning that's taking place is just much more valuable in my opinion. The kids actually have a chance to take ownership and to master concepts and show off what they've learned and teach each other what they've learned. So, for me, that was the biggest turnaround from what I came from..."
- "Well, the focus on student collaboration really looks and sounds different than in a traditional classroom. It can be kind of messy too, so I don't think I could ever go back to a room where the expectation is that the teacher is doing most of the talking and controlling the learning environment. I've really learned to turn that over to the kids, and part of that is building relationships with the students. So, I guess the way I've changed my style is that I've learned to put myself more in the background and let students take on that leadership role in the classroom."
- "The way that we teach and the format that we are allowed to teach in is just transformable in terms of the kids, the teachers, and the community. So, I love it…"

Teachers felt that they have the power to make decisions.

- "I love the flexibility and the small-school feeling that we have, and I feel that we're really trusted as professionals to make decisions that we feel are best for the students, so that's something that really pulls me back to the school."

Teachers just seemed to really enjoy working in the STEM Partnership School environment. Most of them made comments about the positive culture. It sounds like it impacted their morale as teachers in the districts.

- "I love the professionalism of the staff, the students. It's just a really beautiful model."
- "I like the team that I work with. We work really well together, and I also like the small feel and getting to see the kids from third grade all the way up and really get to know them and work with them. The school tends have more academic challenges to deal with than as much of the behavior, in my opinion, so that's more my cup of tea is to figure out those kinds of academic issues rather than as much of the behavior, which isn't to say we don't have them, but it's, I think, more one way than the other."
- "I think it's kind of cool that the school has elementary and middle school in one close environment, and the middle schoolers can be peer teachers sometimes to the elementary students. I think that's a pretty unique and beautiful thing, and I love the collaborative nature of the assignments with our assignments relating so closely to the curriculum. That's been kind of a new and neat challenge, especially with the technology piece to it. I think the fact that we're on a college campus is just an incredibly cool thing and to utilize college resources with the kids. Also, the fact that they come from different districts and then they're their own district, I think they have a lot of pride at being part of the school. That's cool."

Most noted a positive change in their teaching practices.

- "One of the main ways that I would say that my practices have changed is the amount of processing time that the students have, so it allows me to structure lessons and activities and projects totally differently than I would in more of a traditional school. So since we have the students for three periods a day in STEM, we're really able to delve in deep into their learning and then make it really more authentic learning where they're presented with problems to solve and they really have that opportunity to have that critical thought and a lot of more in-depth learning than they would traditionally."
- "I think that my practice changed in that it's a lot more student driven than it was in the past. There's no pressure to be on a certain page on a certain day. We get to let the kids more organically drive where we go and what they study."
- "my teaching has changed… just having the time to follow through and, if we make mistakes or an experiment goes wrong, being able to redesign and revise. Generally,

you don't have time for that in a traditional school. Also, just the interaction between all of the subjects is different because our team is so small… and I can really connect with what [other teacher] is doing in her class… She connects in my class, and she does that with others too… but that's one thing is that collaboration. We don't have a lot of time for that as teachers, but we still make it happen."

- "The other thing is it's really pushed me. At my home school, it was always, "Hey. The community wants to be involved. You should reach out to the community and get some partnerships going on," and we all always want to do that, but then the school year starts and things take over. But at the STEM Partnership school, the expectation was so high. That is what we are. We are a partnership school, so now having had that experience, it's very natural to reach out to any of our partners or make new partners everywhere I go. "Hey. I teach my kids about that."
- "I would say that personally working at the STEM Partnership School has pushed me… to ... explore all these different texts and all this different material, and I don't think I would have ever had that opportunity had I not come to the STEM Partnership school, because you just kind of churn them in and churn them out all day. So, doing so many different things has, I feel, enlightened me in a lot of ways."
- "I ended up revamping the entire… curriculum to make it more aligned with the ideas of the STEM Partnership school, more inquiry based and projects less lecture, PowerPoint, notes type of stuff. So, I feel like I've learned a lot… and being able to kind of have space to align my curriculum better with the ideas that the STEM Partnership School stands for."
- "Coming from the district I came from, science was not an area in which we had any real stress at all, and kids were lucky to get 20 minutes to 30 minutes of science a week. So just coming into this environment having the opportunity to really engage in science ... I mean, it's allowed me to grow as a scientist itself, and then the use of the technologies that we have available for the kids is just ... There's so much available and it complements my teaching styles, so I really appreciate that I've been able to continue to grow in that aspect."

Aurora University STEM Faculty:

- "I am more flexible to change and adapt my curriculum based on students' needs in order to reach the majority of students."
- "Being involved in the STEM Partnership School has exposed me to multiple new technologies used in teaching. Specifically, I have incorporated two ideas: Virtual Reality/Augmented Reality and Merge Cubes to have students tell a story and Flipgrid to have students have asynchronous discussions."
- "The STEM Partnership model has influenced the formation of the Chemistry major at AU. For this reason, we have incorporated partners in the development of the

curriculum as well as providing opportunities for our undergraduates. This can be seen with our Applied Learning Experience (ALE) program where AU undergraduates get industry experience by working with partners. This also provides students with valuable experience to see what a chemistry major can do."

- "The collaboration with the STEM Partnership School provided me with the opportunity to implement cutting edge technology into the classroom. I currently adopted and implemented the use of the PocketLab sensor for my Physics lab curriculum. I have gained valuable experience in how to adjust my instruction depending on the audience I am interacting with, whether it is a teacher, a STEM Partnership School student, or a college student."

Community Partner Feedback:

Community partners were interviewed and asked why their companies decided to participate in the partnership and what keeps them involved. Future STEM worker pipelines, growing the mission, belief in the model, professional development opportunities, and their own intrinsic motivations, or just being excited to partake in such a successful endeavor with promising results seem to be the main reasons for their involvement. These reasons also seem to demonstrate a positive impact to their organizations.

Future STEM worker pipelines:

- "So, for the company, I'm just realizing and understanding how difficult it is sometimes to recruit people with STEM careers in our area and that we do have to relocate and recruit outside of the area sometimes. So, anything that would be able to bring more of those skill sets locally, we would certainly prefer to do that. Not only from a money, the cost of recruiting, but that's just what you want. And then obviously we want the best for the communities in which we live in and just think that this model works really well."
- "When people ask me, I always talk about it in terms of the supply chain and I feel like corporations are one of the consumers of the education process and so that we should be involved. If we're not pleased with the candidates that we're getting in and if we feel like we need to train and educate them once they get into the workplace, we should be involved with correcting that so that that's not the case. And so that they're able to enter the workforce ready to go. So, I think those are the key drivers that got us involved."
- "STEM is very important to what we do as a company, so anything we can do to create kids who are more interested in STEM helps us build our job pipeline possibly for the company. But even if they go work for other companies that are STEM-related, that's good too because I think they're going to see about a 39% increase in

STEM jobs over the next five years. So, I think the school's doing the right thing at the right time."

Growing the mission:

- "One of the things that does keep us involved is that we have math and science learning labs that we take out to area schools. And so, we like to try to continue to do learning labs in the STEM Partnership School and kind of keep trying to grow that program a little bit."
- "The concept is great. I'm also working with [another person] on doing the North Lawndale Partnership School too. So, the partnership continues. Even though we still partner at Dunham, I'm also working with the North Lawndale too."
- "So, we do a fair amount of work in Aurora. This was a way for us also to have sort of a bigger footprint in our STEM education by being a partner at the Dunham School… So, we had a meeting ... They heard about a group in North Lawndale that was looking to put a STEM Partnership School there, or STEAM school, that one will be, and like the stars aligned and that project took off ..."
- "We do a lot with Aurora. So, it was a great way for us to really expand our community footprint in Aurora. I would say that we support organizations in Aurora with contributions or with an executive serving on the board. But I would say that this is probably the longest term engagement we've had in Aurora with one particular organization. In engagement, I mean it's just not like, "Hey, let's get together and figure out what the grant is and give them the check and leave until next year." I mean engagement by having [a colleague] who works with the teachers at the school or myself working with [another person] and this other North Lawndale Project or whatever [another person] needs at the school as well. So, I think it's been more of that than anything else."

Belief in the model:

- "What keeps us there is the success of the program. … it's just enjoyable being there with the kids. And it's always great to be involved with a successful effort that is just a win-win on so many levels. So that's what keeps us there as a company and keeps me involved as an individual."
- "So, one of the reasons we got involved early on was that we thought the model was very innovative. All right. Bringing students together from four different school districts focused on STEM in third to eighth grade. We've seen a ton of research that shows that's the perfect age group to get students involved in STEM and excited about STEM. Once they get into high school, sometimes it's just too late. They're afraid of the math. They're afraid of the science. ... the model was new, brand new model. I'm sure you've seen the testing results, they're unbelievable, right?"

- “when we look to fund STEM education, we look to fund innovative STEM education. So, we didn't know the model would do so well when we made the grant, but we're glad it's doing better than expected. I think the other thing that I liked about this program was it was taking an innovative approach to STEM education by involving partners in the development of the framework, the development of the curriculum, and bringing the voice of corporate America to the table when they think about curriculum, that doesn't happen very often, right? It's usually the teachers get together, they figure out what they need based on common core standards or the next generation science standards and they move forward. Being able to sit in a Starbucks with a group of teachers and a nonprofit partner and a corporate partner, was really an interesting and very much a learning experience for me.”
- “We do a lot of STEM education work at the company and work with a couple of different nonprofit education partners. So, I was able to bring in hands-on energy experiences to help the teachers get the points across that they wanted to make in the curriculum. So, I felt the whole process was just extremely collaborative. The other thing I liked about it was bringing the teachers together and having them at the school for a two or three or four-year period and then having them go back to their school districts. So, having that ability to take what they learned at the Dunham School and put that in learning in the school districts was also an important part.”
- “I think it just grows in them in the time that they spend there. I think one of the things that's great is that these kids are getting a great education. The test scores show that fact, right? But if a student went in interested in STEM and maybe isn't quite into STEM when they leave or when they graduate, that's okay because these kids got just such a strong solid education foundation that they'll be able to go into high school and do well and whatever subject they want to do well in.”
- “It's a great model and if you have the patience and the ability to collaborate and manage it, it can really do great things. I think that's why when [another person] calls, you know and says, "Hey, we're thinking of another school, can you help," you have the data from Dunham that proves that the model works. Not only does it work well for all the partners, but it works really well for the students and the staff having that data.”

Professional Development:

- “So, but it's just one of those things that you kind of hone your craft after a while. And I realized I figured out once I could talk to kids about, these are very complex subjects that I'm trying to communicate. And once I figured out how to talk to kids about it, it made it so much easier to talk to adults because I couldn't rely on lingo.”
- “So it's really great for our scientists and everybody on staff to be able to go out and have that opportunity to speak to kids of all languages… in reality we're all educators because we're all in community outreach and we're all out there to spread the

message that we're trying to spread. So just having that opportunity is really helpful."

- "I think the impact to the organization is just the excitement that we get when we do get to go out there. We love being out with those kids as I said, because they do stay so engaged. It's nice to keep that relationship open… the meetings we have with teachers are very energizing. I will have to admit that."
- "So, I think it's really been a good growth opportunity and that for some of our scientists and engineers and that to get out and talk with the kids too and it just kind of snowballs. Like people, I can't think of a time when I've had somebody say no to a request to go talk to the STEM kids. I think they all come away feeling energized and we're kind of excited that we have our first, one of our employees actually has a child attending the school now. So, we were always waiting for that day and one of them got picked. So, there's just that extra connection in that now too."
- "I don't know if the organization has changed much from being involved. I know we do a lot in education already, so I think we've had one of the eighth-grade groups actually went and toured one of our nuclear stations a couple of years back. But we do that stuff all the time. So, I think the company as a whole has already done a lot in education… it did a lot in regards to me professionally. It really opened my network of peers and other stakeholders in the Aurora market. So that was definitely a benefit to me and that was not just in the education community, but other nonprofits, other corporate folks who I had no connection to previously, like Cabot Microelectronics and Caterpillar and others. But it also gave me the connection to some of the political folks into that community as well too. So, a company as a whole, we've always done a lot in education. So, there was no difference there. But for me personally it really allowed me to grow my network of community leaders and stakeholders. Frankly, it allowed for the company to get a lot of, not only positive press but just positive recognition amongst those groups of people."
- "I know for us we've certainly gotten more people engaged in that opportunity and I think it's always good. You always want people to be mindful of their audience and to tailor their presentations to that. So, I think there's that piece of it that's good for our engineers and there's just a strong passion for some of our younger engineers... And the old saying is if you think you know something, teach. So, I think it really helps people kind of go back and really get down to the basics and stuff of what they're doing."

Intrinsic motivations:

- "Personally, …I kind of have this like STEM kind of mindset anyway. So, I know that I've done a lot of programs with the kids, … also going and talking about STEM careers. And I've talked about ways that science and design can all be integrated

through these STEM technologies. So personally, I get really excited about going to the STEM Partnership School and talking to all ages... I love it. And personally, I'm just super excited anytime I get to go talk to kids about STEM. And I do think that we try to reach out as a conservation foundation. We try to reach out to as many of these STEM related events as possible."

- "The kids at the STEM Partnership School are so receptive and so enthusiastic, and they ask the greatest questions because they're used to it. They're allowed to, that's what the school's all about."

STEM Student perspectives:

Students were asked to share their favorite activities at the STEM Partnership school. They seemed to enjoy activities related to biology, chemistry, engineering, conservation, and technology.

Biology/Chemistry

- "Dissecting and science experiments where we work with chemicals and stuff…"
- "Dissecting a frog was really fun."
- "I really liked dissecting and playing with the chemicals and stuff. But we did a really fun experiment this year, I think it was where we dyed the water in a plant and the water made the chlorophyll blue. So, it made the whole plant blue."
- "So, in fourth grade we did a frog, and in fifth grade we haven't done it yet, but we were supposed to do a dog shark I believe."
- "Probably the hands-on learning, like the dissection, because it gives us a good visual of what we're actually learning about or talking about."
- "Probably the hands-on learning because it gives a better visual of what we're learning about, like the dissection."
- "Probably because it's a little bit more challenging than most of our other old schools. And I like the kind of hands on kind of feel to it."
- "We did this very cool experiment where we got a jar of a bunch of different substances. It had iron, zinc, sand and salt. And we had to find ways to remove all of them from the jar."
- "Probably it was this year, and we made slime in STEM."

Engineering

- "We do engineering challenges, which is like we have a theme and we just try to engineer something. And then in fourth grade and fifth grade, near the end of the year we have a dissection."
- "I remember doing this magnetic track, where we built the track out of paper that we folded and stuff like that. And then we used a magnet to move this object around the course to the end."

- “My favorite part was also the magnetic unit that we did in third grade. That was also the funnest part for me.”

Conservation/Technology

- “Oh, I also do like coding pretty good. Coding's probably one of my favorite classes out of the whole day, so I really enjoy that.”
- “We took a field trip to waste management. And well they've come in before, but they gave a really great presentation on how recycling works and how they burn the trash in a way so it doesn't spread to the wildlife.”

General STEM

- “STEM is definitely a challenge, but it's also a fun challenge. I like it.”
- “My favorite part is probably also STEM, because there's a lot of cool experiments and learning advantages, I guess you could say. And it's just really fun to do different things and different experiments, and learn something from it.”
- “No, just anything in the science.”

Parent perspectives:

Parents were asked to list the activities their students were participating in. Below is a list:

- Art club
- French club
- Math club
- Chess club
- Ukulele club
- Jr. Service Club
- 3D printing club
- National Junior Honor Society
- Yearbook Club
- National Geographic Geo-Challenge
- Spanish club
- Various Engineering challenges

Many parents commented on the engagement of their students.

Environment/Experience

- “He feels more comfortable and safe in this setting. He always has a place he can go if the classroom gets too loud.”

- "She has always liked school since preschool years... but her entry at 7th grade into this program has really opened up the horizon of absorbing the total knowledge experience. Very interesting and engaging way of learning. Not participating in the typical non-STEM middle school would've diluted her now very vast concentrated level of retained unique knowledge and learning process."
- "She has had opportunities to get greater attention from her teachers. She has clear focus in areas when before school just seemed to run together."
- "The school has put our child into a better position for learning, a few of the teachers have raised the bar for accountability being put on the student and not the parent which is how it should work. She is very active in public speaking and conducting presentations which is going to be a great skill for the future."
- "The curriculum provides a good challenge. They provide a well-rounded experience in social studies - current events and tying ELA, social studies and science together. The focus on presentations and speaking in front of larger groups is a lifelong skill they will all benefit from."
- "He is developing an appreciation for different cultures and races that he wouldn't have gotten at his very WASP population home school. He has matured tremendously with the discipline his 3rd grade teacher instilled."
- "The impact was positive. He has always been very interested in learning new things. He feels supported by his teachers and very excited about what he will do in the future."

Curriculum/Skill-enhancement

- "Provided him with hands-on contextual learning, enhanced his problem-solving and critical thinking skills, communicating logic and reasoning..."
- "Different opportunities, more in-depth opportunities... great science curriculum with labs; extended math curriculum. Ukulele lessons!"
- "School has a very positive impact on her. She has improved in all aspects including academics and behavioral. The way of teaching at STEM has helped her a lot and she is getting better at all levels."
- "She has had a unique opportunity to attend a school that is gearing her in the direction of the ever-growing technology industry."
- "Has open my student's eyes to such wide variety of opportunity that exist outside of standard non STEM curriculum."
- "A chance to learn in a way that is more out of the box, creative and collaborative. Exposure, confidence and love of math and science has definitely grown."
- "My daughter has been able to excel in her studies."

- “She has become comfortable with project-based learning, group collaboration and presenting her ideas in front of audience.”
- “Thank you. It has had made my child more hands on.”
- “His analytic skills and problem-solving skills improved.”
- “He feels he has learned more in science while attending STEM.”
- “He has grown as an independent worker. He's exhibited autonomy. He continues his curiosity for learning. He researches topics of interest. His presentation skills have improved.”
- “Positive impact on his intellectual and social/emotional growth.”
- “He works well with others—of all ages and backgrounds. He asks a lot of questions and searches for the answers. He speaks well in public.”
- “She is learning different ways to problem solve. Math seems to be clicking for her. Creative thinking in order to problem solve has had a very positive impact.”
- “I believe it has helped my child to develop strong critical thinking abilities”
- “We have seen our child thrive academically at STEM this year! It has been good for him to be mentally challenged in his classroom. He is more curious than ever realizing that there is so much to learn!”
- “Attending STEM has given my child a hands-on learning approach to science, has promoted their presentation skills and taught them how to approach problems and solve them.”
- “He has become a very keen observer, very hands-on kid and gets excited to try and learn new technology.”
- “He has continued to perform at high levels in math and science and has significantly improved his reading and ELA test scores because he is constantly challenged.”
- “… the group discussions and presentation opportunities he is getting in school helped him to improve his skills in those areas.”
- “STEM has taught him how to look at things in a different light and how to problem-solve with a group.”
- “She is developing her metacognitive skills, as well as solving problems.”
- “My son loves everything that has to do with science and mathematics, and when he entered STEM he has improved a lot in mathematics and he can learn and observe more about nature ... he is more mature with all topics about technology...he loves this school”

Confidence/Interest in learning

- “He's not afraid to ask questions.”
- “… interest in learning overall has been sustained. Individual attention. Less distractions when compared to a typical public school. Help establish long term relationships with peers and teachers.”

- "My child now describes herself as a problem solver. She loves school and enjoys all of the hands-on group activities."
- "My child is excited about learning! He was bored in his home school, but he is eager every morning to come to STEM because of more hands-on methods of learning."
- "It has given her more confidence through moving to a new school and having new experiences."
- "More interested and engaged in learning. Confident in his abilities. Accepting of his speech deficits."
- "She has really enjoyed the hands-on approach to much of her learning experience. She loves engineering, science, math, art, music, etc., and it's wonderful that she gets to dive into the (especially the STEM) subjects in such an integrated manner."
- "He develop great interest in STEM and more likely to become an engineer in the future."
- "Yes it helped him to show more interest towards science And Boosting his interest towards it."
- "There are no words that can capture how life changing it has been for my son to attend STEM Partnership school. His love for learning has increased tenfold. He is finally being challenged in school and being appreciated for being smart."
- "He has become overall very confident."
- "It has helped her confidence grow - she's more willing to take chances"
- "Keeps him excited and learning about stem subjects. Opportunity for hands on stem learning. Public speaking and working in groups/ collaborating."
- "She enjoys the hands-on science activities and her teachers. She's also doing well in math."
- "He loves all the STEM projects and applies learnings to everyday life / situations…"
- "My son is obsessed with STEM as a whole so we and also my son were very happy when he got accepted. He is flourishing there as the excellent labs and tools they are using keeps his motivation always high. I feel he is way more challenged which keeps him engaged. I feel that at a regular school he would be bored, and it couldn't fulfill his need for more knowledge and also applying it."
- "Definitely he has more confidence in STEM… He has more confidence in experimenting and try again if one experiment fails."

Community Partner perspectives:

Community partners were asked to share their thoughts about their experiences with STEM Partnership School student engagement. Overall, they had positive views of the students. The partners seemed very impressed with the students' detailed questions, genuine interest in the topics, and practical abilities. Below are a few experiences that were shared.

- “The kids at the STEM Partnership School are so receptive and so enthusiastic, and they ask the greatest questions because they're used to it. They're allowed to, that's what the school's all about.”
- “I think anybody who goes there and sees the kids in action. The fifth graders were helping the third graders take apart hairdryers and put them back together and made them work again. I couldn't do that.”
- “So, I'll go into just a couple that have been recent this year. So, when they were studying matter and energy, they were talking about sound, light and waves. We took one of our young, I mean he looks like he should be in high school to me, but he's one of our PhD scientists went out with them and did this experiment with a laser and a split, like where you can show how light waves and actually measured the diameter of a hair to do people's hair and compare that. And just show them how a scanning electron microscope works. And the kids were really engaged with it... just the concept that you can really tell that they were grasping the concept and that it was something that they could do right there was pretty cool.”
- “So, the kids were working with these real little plastic things and they said, ‘You can take it, the metal and just spread it out.’ And like take the motor apart with them and then put it back together. That certainly gets the concepts across a lot more. We've provided the temperature indicators for inside their greenhouses when they do their greenhouse design so that they can get a temperature profile of day and night and compare. Then we download the data form and they get it back and they can compare the temperature profiles of different designs and things like that. So, doing some of that data analysis... We've taken apart a cell phone, deconstructed an iPhone … talked about the metals that are inside and some of the materials and how you would dispose of those.”
- “The other one is, I went out there last school year, I believe it was on a career day. And they had some panels with the kids talking to the kids about different careers ... They have, again, a lot of good questions. They were very interested, especially in finding out that there's informal things that you can do when you have a STEM education. The museum is all informal education. So, I think some of them were surprised to find out that you don't have to teach or actually work as an engineer, which there's nothing wrong with that, but there's other avenues to go as well.”
- “I got to develop a program for one in the middle school classes. And that was really, really fun for me, because it was really interesting to see how you give the same program and the same kind of design challenge and like some kids really kind of grasp onto it and have this really great idea. And others were just basically like, ‘I'm not going to do this, I'm going to do it my way.’ It was just really kind of interesting to see the breadth of experience that they brought to it. And especially at that age level you can get into these more abstract ideas like design, especially with these kids and these STEM Partnership School kids. I feel like they can kind of grasp onto it more so

than some of the other experiences that I've had. So that to me was really, really fun and I enjoyed it."

- "We've been doing these learning labs for almost 30 years at this point, so there was no challenge. I think the only thing about it is that these kids ask really asking probing questions and we're not necessarily accustomed to that. So, I know the first time we did one, everybody came back and said, "Wow, we've got to be on our A-game for those kids."
- "So, when you go to the school, you see … the eighth graders working with the fifth graders and the sixth graders working with the third graders. There is this sense of community that exists at that school between the teachers, the students and the partners that you just don't see in other places."
- "It's a super special learning environment in a way that just benefits these kids dramatically. This isn't come with a GPA and if you're super smart, you'll get into this school. It's not how it works. It's our kids interested in STEM and then it's a lottery from those students. So, you're not working with the brightest and the best that you might get at IMSA, which is down the road from there. But it doesn't matter. Right? It doesn't matter. These are kids who are passionate about STEM. So that passion exists there when they walk in the door."

STEM Alumni feedback:

To examine the strength and longevity of STEM student engagement, alumni were contacted and asked provide their feedback via an online survey regarding their current STEM-related activities, courses taken since exiting the school, future career plans, and a description of how the school has impacted them.

STEM-related activities.

Only a few alumni reported currently participating in STEM-related activities.

- "Anti-Cruelty Society Veterinary Mentoring Program"
- "I volunteer at the Morton Arboretum where I participate in things that concern nature science."
- "Mini-medical school"
- "Field museum internship"
- "I volunteer at the Morton Arboretum and I teach math at One in Math."

Other activities:

- GROW
- Ukulele club
- Yearbook club
- Book club

STEM Courses

Most alumni who responded are taking various level courses in STEM areas.

- Algebra (honors algebra 2 trigonometry)
- Anatomy
- Astronomy
- Biology (honors and AP, marine biology)
- Chemistry (honors)
- Computer science
- Engineering (e.g. engineering and design, civil engineering and architecture, principals of engineering)
- Environmental Science (AP)
- Genetics
- Geometry (honors)
- Physics (honors)
- Physiology
- Precalculus (honors)
- Psychology
- Sociology

Career plans

Most respondents indicated a desire to continue learning more about STEM. Several seem to be committing to future careers in STEM-related fields.

- "I plan on going to college to learn forensic sciences."
- "I want to get a degree in either civil or environmental engineering."
- "I'm going to pursue a bachelor's degree in Animal Science with a pre-veterinary medicine emphasis with the goal of getting a DVM."
- "An environmental engineer."
- "I plan on either going into computer science or pursuing something [related]; either one is STEM."
- "I would like to complete the EMT program my senior year then go to nursing school to become a nurse practitioner and work in the ER."
- "I like science and math."
- "I would like to be a surgeon or a psychologist."
- "I think the STEM field is a good fit for me in the future, especially with the knowledge I've gained at the STEM Partnership school. There are many interesting careers to choose from."
- "Medicine"

- “In the future, I plan to pursue a STEM-related major. My experience at the STEM Partnership School has sparked an interest in me to pursue a STEM-related career. I do not know which major or career I want to pursue exactly; however, I am certain that I want to pursue a STEM career.”
- “I’d like to pursue a degree in athletic training, which has a strong science base with a fair amount of mathematics.”

When asked about the impact of the STEM Partnership school, alumni had a lot to say. Many felt the STEM Partnership School prepared them well for high school (and beyond) and helped spark their career interests in the STEM field.

Preparation for high school

- “It has made high school much easier for me. The classes I am currently taking mostly go over things I have learned at the STEM Partnership school, but a little more in depth. The workload at the STEM Partnership School was about the same, if not a little more, so I'm used to the amount of work we are receiving. Also, the presentation portion of high school seems to have lower standards then at the STEM Partnership school, so my presenting is above what the teachers expect from the students.”
- “… developed my presentation skills, allowed me to learn a lot about working as a team.”
- “STEM Partnership School taught me how to think critically and creatively in order to solve a problem. STEM Partnership School taught me to persevere through complex problems. STEM Partnership School taught me lab skills and techniques that I wouldn’t have the opportunity to experience in my traditional high school, and provided a valuable precursor to topics that would be covered in many of the advanced science courses.”
- “My attendance at STEM helped shape the person that I am now, it helped me establish a good work ethic, and I have a better understanding of high school course work than I would have if I hadn't attended STEM.”
- “I have a much higher work ethic and higher standards for my quality of work.”
- “I believe I am more capable of learning things in depth because of the way I learned at the STEM Partnership school.”
- “Attending the STEM Partnership School has only impacted me positively. It has prepared me for higher education, introduced me to many STEM career fields, and has given me an experience unlike any other.”
- “Being in the STEM Partnership School was a great experience because it was a very different environment than normal schools. It was more hands-on with new equipment and just the surrounding was very professional, being part of a college campus. It had a positive effect education-wise because, through the hands-on activities, the study material was understandable.”

- “It made me realize that I have to put effort into things to achieve them I can't just coast by.”

Career exploration

- “It helped me to learn about the careers and classes I’m interested in…”
- “It opened my eyes to how many science fields there are.”
- “For one thing STEM had steered me in the direction of wanting a math-based career. It has also provided me with more opportunities to explore careers in the real world.”
- “Attending the STEM Partnership School has only impacted me positively… introduced me to many STEM career fields, and has given me an experience unlike any other.”
- “The STEM Partnership School had a great impact on me. The curriculum and different projects I was exposed to taught me a lot about STEM in general. It sparked an interest in STEM in me. What I learned at the STEM Partnership School has helped me do well in my academics so far in high school, too. The biggest impact, however, was the fact that I was exposed and had the opportunity to learn about a variety of careers. Overall, I am grateful for attending the STEM Partnership school, as it has exposed me to the whole world of science, technology, engineering, and math.”
- “It introduced me to tons of new careers and let me see how STEM can apply to other things I already enjoy, such as sports.”

STEM Student advocacy

Teachers discussed ways they encourage student advocacy, which can be viewed as an extension of their academic engagement. In general, teachers felt that the STEM Partnership school’s culture naturally encourages student advocacy since students learn that their voices matter and that their curriculum is catered to the students’ interests.

- “I feel like students have more control over their learning than they would in a traditional setting, so they're up speaking in front of each other and sharing what they've learned with each other, collaborating with each other. So, I think that self-advocacy develops maybe quicker at a younger age than I would have seen it in elementary back in my old school. So, they're active participants in their learning. They're not sitting there while we're pouring information onto them. They're actively engaged and digging in and trying to find the answers to those questions that we've posed.”
- “So, I think we're just naturally set up to involve them in their learning more than I had done in the past in my home school. So, I feel like they are better advocates for themselves in what they need and what they want to try, and they're very willing and open to try new things, because there's no fear of failure. Once we get through the first half of third grade, they realize that it's not failing when something doesn't

work. It's just a chance to try a different way. Having third through fifth in one room, I get to see that progression, I get to see them grow and take more risks and try new things."

- "It really comes down to building the relationships with the kids and getting them to understand the whole concept of SEL and going through that. I do a great deal of focus on social emotional learning, and with that it builds into that whole concept of self-advocacy and they feel safe in the environment that they're in, and that's just building relationships with myself and then also building the relationships within the kids. So, I mean, that pretty much sums it up for me."
- "Well, I think just fostering independence. It's one thing to say you have high expectations, but then scaffolding that so students can meet those expectations is what we do. So, students are expected by fifth grade to know, even during … remote learning … 'Okay. My responsibility is I check my email. I check Google Classroom.' Everything we do is kind of working towards that independence, so I think students just feel safe in that environment and understand the expectations, and that's why they're so successful."
- "I think one way that a lot of us do is through contests. Because we have the extra time with the students, we're able to let them choose to participate in contests. Sometimes in the past it's been where everyone does or we actually allow them to select whether or not this contest or this contest, that kind of thing, and it's very authentic. A couple examples are I know a lot of us participated in naming the Mars rover, so that was something that we did at a variety of grade levels. I know [other teacher]'s done the challenge for National Geographic. I did a Toshiba NSTA challenge this year, and we have students that have come to nationals ... or actually regionals, and then are in place for nationals. So that's one way that we definitely engage them is through real-world applications."
- "When current events come up, we have the time to talk about them and have students explore a little bit so that they learn about them in different ways. It might be an NPR recording, and then if they want to learn more about it, they'll ask questions and I'll see the interest, so then I'll look up a video clip or loop up more about it, and we kind of do a little mini unit on something like that. So again, that has to do with the time and flexibility that we have that we can allow kids to learn things."
- "The other way around too, they'll bring something to my attention, and I'll be ... 'Yeah. Never heard of that,' because I don't watch TV. So, they'll see something on TV or something like that, and if it's something interesting, I'm like, 'Email me the link and I'll share it with everybody.' Just the fact that their voice can be heard, even in that simple way, is a way for them to feel like they're making an impact teaching other kids about something."

- “Well, I think I do it by displaying their work, so it's either displayed in the building or a collaborative project where they work together but other people see it, other grade levels see it. They know everything they do is going to get seen by a bigger audience, and that's cool for them.”
- “Another thing just with some science units, setting it is a community learning. For example, in seventh grade we start the year with a river unit, and it's sort of like a simulation. They get a letter from the mayor of Batavia looking for help on assessing the health of the Fox River and whether or not the dam should come out of the river, and so then they're learning about a real issue that is in their community and it's right down the street from the school, let alone where most of them live. So, making their learning authentic by putting that problem-based learning focus on units as we can I think helps as well.”
- “This year, the older kids had younger buddies or peer partners, and so in sixth grade we had a couple of museums or forums in our forum area where the third graders could come see the sixth graders' projects, and we invited parents to come view those too. So it was a fun experience... there's some contests that we always enter, and I've tried various ones, but it was cool, because even though we're not in the building, I was able to share some results with some students that they made the top 10 for some contest thinking about recycling in the future. So… we definitely try to do a variety of opportunities like that.”
- “There was a group of students that did a project on light pollution that they then went back and taught a lesson about light pollution through video conferencing in their elementary schools. Then that has continued to be a passion of theirs, so they presented to the university ecology club this winter, and they wanted to do a lights-out day across the campus and share information about light pollution. So that gives them a real-world impact, I think, on something that they started learning or studying that they started with in class.”
- “I was listening to what everybody was saying. Something just came to me. So, we were talking a lot about responsiveness to the kids and adapting instruction to meet their needs and things like that, and I think that the kids now at the STEM Partnership School... They expect that responsiveness, so I feel like they advocate for themselves very naturally, because they know now after being there for a while that if they approach us with an idea, we're most likely going to be like, "That's really cool. Let's do it." You know what I mean? So, I feel like there's this natural air of advocacy in the building across subject areas and across the grade levels just because that's the culture that we've kind of created as teachers.”

Faculty discussed ways they encourage advocacy for their own AU STEM students.

- "Student advocacy as chair of the department entails career awareness, career path processes, and professional development opportunities. 1) The first goal is to aid students to be aware of the range of professions out there and 2) how to reach success in those professional fields through preparation at the undergraduate level building both academic and co-curricular experiences that ready them for the next level and 3) organize opportunities for students to realize and practice skills necessary for transition to the next level (resume workshops, cover letter writing, interview skills, and networking opportunities)."
- "During advising (formally and informally). Also, I promote the STEM Partnership School during talks with prospective candidates."
- "I have just become the faculty cosponsor of the AU Science Organization. As such I advocate that STEM students do outreach to local elementary, middle, and high schools. I also discuss current issues in STEM in my courses so students are aware of how the compounds we discuss in Organic Chemistry can be harmful if used incorrectly."
- "I do my best to discuss chemistry job opportunities when applicable and encourage students to join student-led groups including: Mu Sigma Pi (health science student service organization), AUSO (AU Science Organization), or other university student groups."
- "I engage students in my classroom and via individual communication by showing how topics in Physics (for example) extend to other STEM areas."

Aurora University students provide feedback regarding their experiences.

AU students participating in the STEM Partnership School as student teachers and student nurses comment on their experiences.

- "I loved the experience I gained and the connections I was able to make, not only with the students but my coworkers as well."
- "It has been extremely enriching to work with the students and staff."
- "It is [an] excellent school with incredible people working there."
- "Being involved in the STEM Partnership School has been a wonderful experience! I am gaining valuable experience working with students in a different way than in my elementary education methods classes. Supervising lunch, as well as helping students resolve conflicts at recess will make me a better future educator."
- "It has taught me more about how to work with kids, especially the older kids."
- "Rewarding experience serving pediatric population. I can apply this to my future career and education. I am able to practice assessments and interventions (medication administration, pain management, anxiety management, etc.). I also have improved on my communication skills with pediatric populations to increase

health literacy among the students and families. This was a great opportunity to experience public health nursing."

- "My nursing and communication skills have grown immensely since I have been working as a student nurse at the STEM Partnership school."
- "Loved it. Gave experience with the kids, helped me manage time, had me practice my critical thinking and communication skills."
- "I have really enjoyed working with the students as well as the staff. Everyone cares about the students' safety and success."