New Tech Network

Evidence of the Positive Impact of Interdisciplinary Curriculum and Integrated Instruction in New Tech Network

2022/2023

Description of NTN

New Tech Network (NTN) supports change makers at the school and district levels by shifting the way educational change happens. We are a national nonprofit dedicated to systemic and equitable change in education. We center schools as the units of change, and teachers and school leaders as the agents of that change. Partnering with districts and working closely with leadership teams makes change scalable and sustainable. After twenty years of change making, we have learned what works and can adapt quickly.

New Tech Network schools – now over 200 strong – are committed to college and career ready outcomes, supportive and inclusive culture, meaningful and equitable instruction, and purposeful assessment. The student experience is tied directly to deeper learning outcomes. Students gain skills and use their voice in ways that prepare them for life beyond school. Project-based learning in NTN schools allows students to engage with material in creative, culturally relevant ways, experience it in context, and share their learning with peers.

New Tech Network's whole school approach provides teachers, administrators, and district leaders with complementary yet distinct roles in implementation, and relies on shared leadership. NTN's experienced support staff do much more than train stakeholders. They support professional educators to lead, adapt to student needs and strengths, and amplify those strengths while adjusting what is needed to address challenges.

The approach

In 2022, New Tech Network designed a study to assess the positive impact of interdisciplinary and integrated curriculum. The study found that the New Tech Network school emphasized strong and inclusive school leadership, an innovative team of teachers engaged in constant improvement, and regular involvement of external partners. Students engaged in authentic, collaborative learning opportunities and interdisciplinary lessons. A culture of caring, support, and humanity is the foundation for the academics and life-long skills achieved by the students.

Data Analysis
Following the gap analysis, data was collected from a New Tech Network school using focus groups, interviews, observations, and quantitative data analysis to understand enacted and experienced interdisciplinary curriculum and integrated instruction.

School Snapshot

- Grades Served: **9-12**
- Student Enrollment in 2021-2022: **362**
- Teachers: **20**
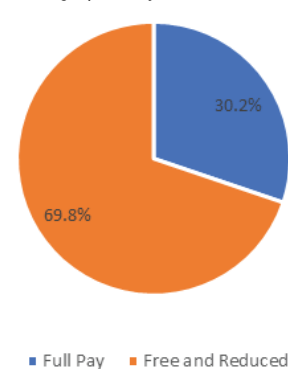- Opened as a New Tech Network school: **2009**

Integrated courses are taught collaboratively by two teachers, consist of roughly 50 students, and are blocked together for two class periods:

- 9th Grade: **World Studies**
- 10th Grade: **GeoCad and BioLit**
- 11th Grade: **American Studies**

School Demographics by Ethnicity/Race

- 1.0%
- 23.2%
- 14.9%
- 8.9%
- 4.0%
- 48.4%

Black | Hispanic | Multi-racial | Asian | White | American Indian
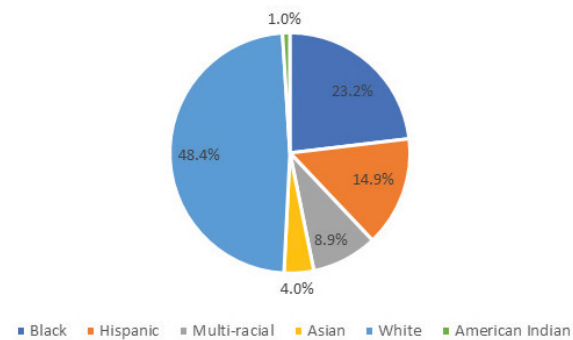
Demographics by Socioeconomics

- 30.2%
- 69.8%

Full Pay | Free and Reduced

Gap analysis documents strong alignment between the literature and the New Tech Network Design

Crosswalk of NTN and Integrated Curriculum Literature Review

K-12 Recommendation: Understanding performance assessment makes teachers more likely to design integration[1]. Assessment is more than literacy skills[2]

Intersection with NTN Model: **Performance-based assessments, asset-based feedback, and formative assessment provides opportunities for growth**

K-12 Recommendation: Ability to communicate and collaborate across teachers' enhanced integration[3]; Teachers who are more open to working on a team tended to integrate curriculum more frequently and effectively[4]

Intersection with NTN Model: **Adult learning is supported with structures to communicate and collaborate (i.e. critical friends)**

K-12 Recommendation: Combining subject matter areas: one class prompts prior knowledge and other class builds on that knowledge[5]; Know all the disciplinary standards for all subjects you are trying to address before planning lessons[6]

Intersection with NTN Model: **Subject matter areas are combined with PrBL and PBL. Problem-based mathematics enables students to justify their thinking and deepen writing skills**

K-12 Recommendation: Teachers make connections across content areas[7]; Teams foster integration rather than departments[8]

Intersection with NTN Model: **Team Teaching**

K-12 Recommendation: Learning goals focus on processes that students use to engage in the content over product[9]

Intersection with NTN Model: **21st century skills in PrBL and PBL.**

Emphasis on building student self-efficacy (voice, choice, and agency).

NTN emphasis on process over product (i.e. agency rubrics).

K-12 Recommendation: Instructional coaching over a long period of time was more effective in learning how to integrate instruction[10]

Intersection with NTN Model: **Instructional coaching over a long period of time through NTN**

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1 Newhouse, 2017

2 Brand & Triplett, 2012

3 Bull & Dupuis, 2014

4 Havnes, 2009

5 Jolley & Ayala, 2015

6 Moser, Ivy, and Hopper, 2019

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7   Shriner, Schlee, and Libler, 2010

8   Salami, Makela, and de Miranda, 2017

9   Margot & Kettler, 2019; Jamil, Linder, and Stegelin, 2018

10   Hassaram, Rieth, Raghavan, Kinzer, and Mulloy, 2012

Trust and respect are shared among staff and students

Students take on responsibility for their learning. As a teacher explained: **"Students self-reflect every day in their classes. They are not afraid to fail and they take failure as a learning experience."**

Teachers also recognized that they help students learn how to self-reflect because: **"Seniors take feedback better than the freshman and what they do with that feedback is more valuable."**

The teachers build this environment by building true relationships and being a trusted adult. As an administrator said: **"Here the trusted adults are all over the place. It is not just one or two who connect with students."**

The teachers are committed and the students recognize it. Many teachers reflected that it was nice to be in an environment where you feel cared for and it extends to the students.

Community is central and the school builds intentional structures so that nearly all students and teachers in the almost 400 person school get to know and interact with each other. One of the main community structures is "Families. " This advisory structure is intentional so that there is a variety of perspectives during discussions and the younger students see what the older students do when they look for jobs or apply for college.

School administration is flexible and autonomous: **"If you are going to be successful as a facilitator, you have to give the students the responsibility to learn, a productive struggle. I'm going to give away my power in the room and let the students learn. Leadership models the same thing."**

Integrated classes build authentic learning experiences

Integrating several subjects into coursework made the learning authentic and meaningful for students. One teacher explained: **"Interdisciplinary is better because it is more real. Students see the relevance of the content more when it is not in isolation."**

The co-taught and integrated classes take on big topics that meet the state standards, but give students opportunities to explore and arrive at divergent results.

Students plan their own learning: **"I go through each class period and see what is next. It helps me mentally prepare and know if you need to do something to go to the class…"**

"I learned how to create good livable spaces and I got to present to the board of operations at [Habitat for Humanity] and I saw that they used the same floor plans and the same software."

Parents articulated: **"When you take a project approach, you need those skills in order to complete the project. [My child] is making the connections even outside of the co-taught classes."**

School establishes and maintains relationships with the community and students see the relevance of their learning when **"the community gives us feedback."**

Teachers typically are directly in touch with community members in order to contribute to PBL lesson design and assessment. Many of the veteran teachers have a database of community members who have come in to consult on a PBL design or to be on the assessment panel to give feedback. This lends authenticity to the PBL lessons because students and teachers regularly collaborate with professionals in their community.

Parents discussed the impact that communicating with community professionals had on their child. One parent expressed: **"I have a freshman. I could not be happier with the way he has transitioned to high school. He has already interacted with the Mayor's office."**

Benefits of co-teaching

Teachers reported that they have developed professionally as a result of their collaborations as a coteacher.

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Teachers also discussed summer professional learning opportunities with excitement. All of the veteran co-teachers had attended New Tech Network training in the summer and in interviews discussed that they wished they could attend again to refresh their knowledge.

Not all co-teaching pairings are a success but through communication structures and shared expectations, pairs navigate the challenges and at times pairs are rematched. The Director also acknowledged that there have been some matches that have not worked out.

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"We operate on the 48 hour rule if you have a problem. You may not want to emotionally meet in 24 hours, but have to meet in 48 hours to work it out."

Evidence from the literature on the impact of Interdisciplinary Integration

• Positive student attitudes, motivation to learn, and communication skills[1]

• Increased problem solving and reasoning skills and content knowledge[2]

• Improved student engagement and 21st century skills[3]

• Increased content knowledge, student interest, and student cooperation[4]

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1   Criscan, 2014; Ferguson- Patrick, Reynolds, & Macqueen, 2018; Newhouse, 2017

2   Grouws, Tarr, Chavez, Sears, Soria, & Taylan, 2013

3   Dowden, 2007; Thomas et al., 2012

4   Alghamdi, 2017

Problem and project-based learning (PBL) is foundational

Teachers describe their classrooms as: **"student-centered, student driven, student choice, student ownership, student exploration, authentic, goal-oriented, and productive struggle."**

Teachers consistently described the **six non-negotiable elements in Project-Based learning** from New Tech Network when engaging with planning or teaching PBL in the classroom:

The Driving Question
Used to initiate and focus the inquiry of the project. This question, which should be continually referred to while students are working on the project, should be succinct and open-ended.

The Entry Event
Outlines what students need to do in order to complete the project. Entry events have a real-world context, use real-world processes, and tools to be connected to student concerns or interests.

Need-to-Knows
Provides students a list of questions aligned with selected key knowledge and skills. The list should allow students to generate more questions, find resources and develop their own answers.

Group Contract
Assists all students in managing the group over the course of the project. It should be constantly updated throughout the course of a project.

Formulative and Summative Assessment
Aims to give teachers information about student progress and students information about their own learning. Formative assessments should provide feedback to students regarding progress to their end product. Summative should evaluate the students' end product.

The End Product
Explains the response students should have to the entry event. It is the culminating event when students share the product, receive feedback, and celebrate their learning.

Students experience agency and autonomy in interdisciplinary classes

The older students noted that they had a great deal of choice within the parameters of the projects.

Students also spoke about building resilience and flexibility in their co-taught courses: **"In a business project, I was with my friend and we had a really good hook, and it worked on the first try but not in the second. We had to learn how to adapt by crunching the numbers [data gathered in the project]."**

Group roles and collaboration support student 21st-century skills and build relationships

Students consistently noted they liked to work in groups, because they enjoyed seeing the different perspectives, as one student noted it can take time to learn to appreciate group projects: **"Sometimes I have a tunnel vision and it expands that. I started to like group work. I always liked to take leadership roles and now I can take on other roles. I try to fill in what qualities are needed in the groups."**
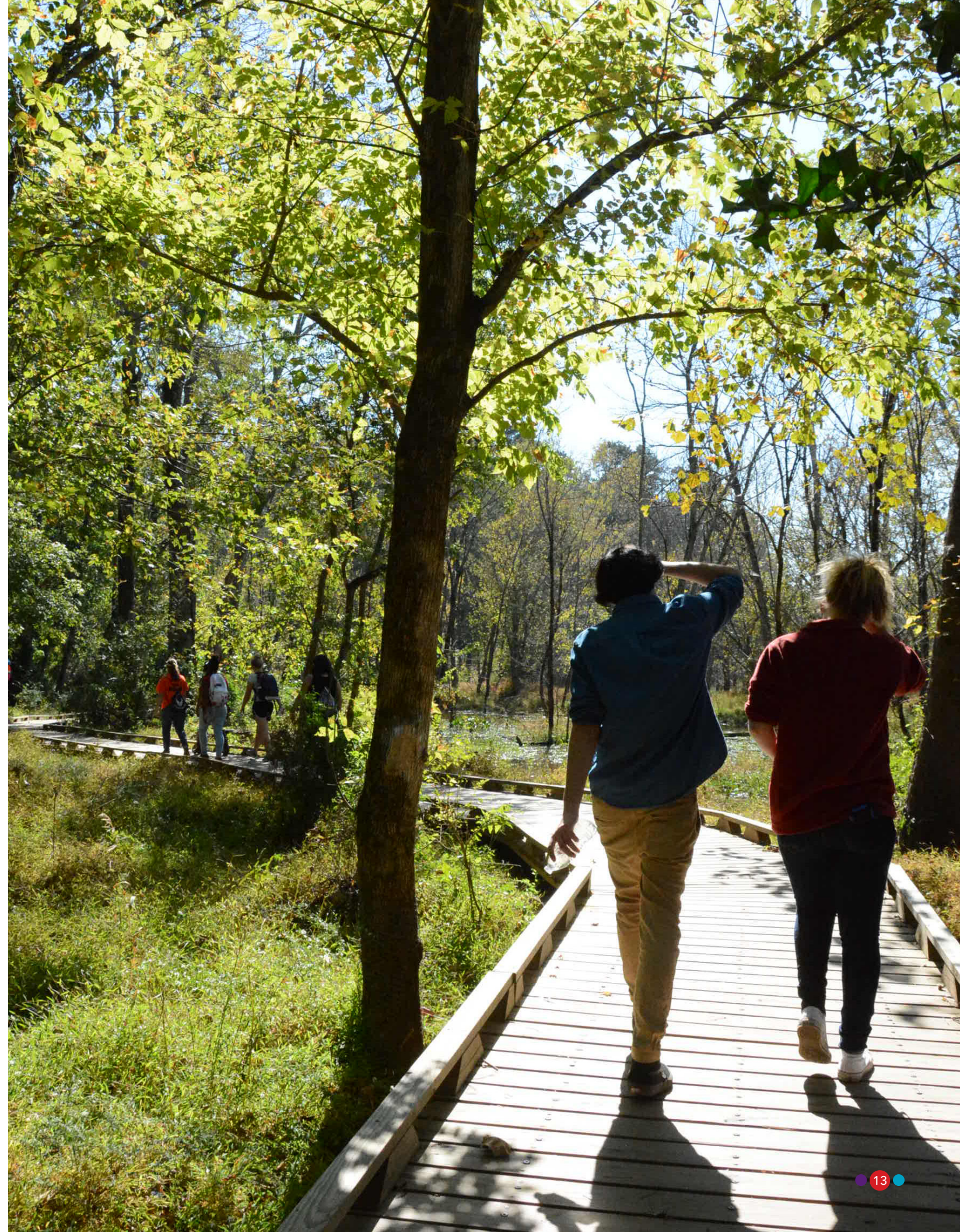
# Teachers collaborate and are open to innovation and continual learning

Teachers collaborate using a **three-phase Critical Friends structure provided by New Tech Network**. During Critical Friends teachers and co-teachers share their lessons in one of the three phases of completion:

1 PHASE ONE
IDEATION

2 PHASE TWO
PROJECT PLANNING

3 PHASE THREE
STUDENT WORK FEEDBACK

Positive impact of interdisciplinary learning

Research conducted at an NTN school within a school documented the positive impact of interdisciplinary courses on the learning environment and academic outcomes. NTN students consistently out-performed their main campus peers on high school graduation rates.

	Graduation Rates	
Graduation Year	New Tech Network	Main Campus
2015	99%	81%
2016	100%	86%
2017	99%	94%
2018	100%	76%
2019	99%	96%
2020	100%	96%
2021	95%	90%
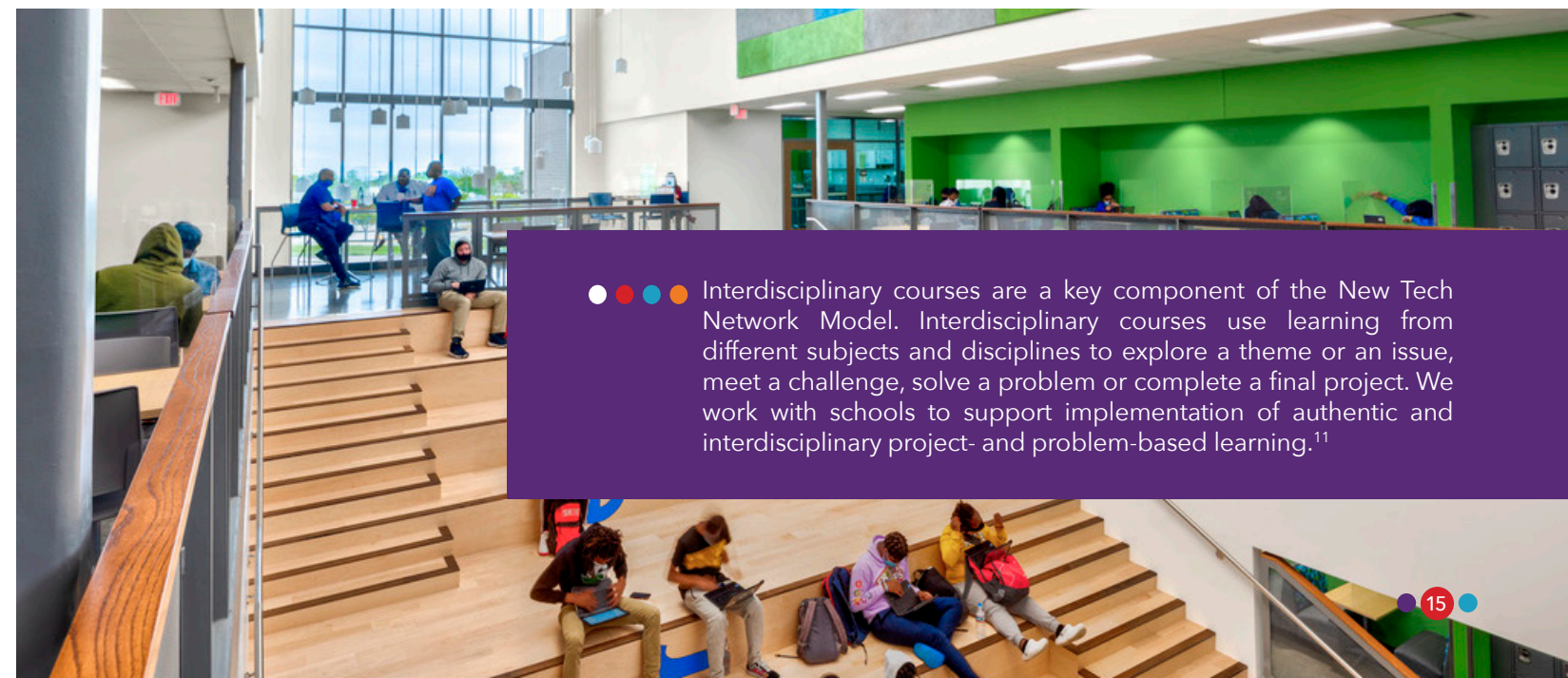
Interdisciplinary courses are a key component of the New Tech Network Model. Interdisciplinary courses use learning from different subjects and disciplines to explore a theme or an issue, meet a challenge, solve a problem or complete a final project. We work with schools to support implementation of authentic and interdisciplinary project- and problem-based learning.[11]

Citations

1. This summary was prepared in June 2022 by New Tech Network. To cite the full report please use the following: Peters-Burton, E. & Holincheck, N. (2022). Evidence of the Positive Impact of Interdisciplinary Curriculum and Integrated Instruction in New Tech Network. Fairfax, VA, George Mason University.

Photo Credit

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