Competency-Based Education in Michigan: Survey Findings

Tara Kilbride, *Michigan State University*

Abigail Girardot

Jesse Nagel

October 2022

EPIC

Education Policy Innovation Collaborative
RESEARCH WITH CONSEQUENCE

ACKNOWLEDGEMENTS

DISCLAIMER

Competency-Based Education in Michigan: Survey Findings

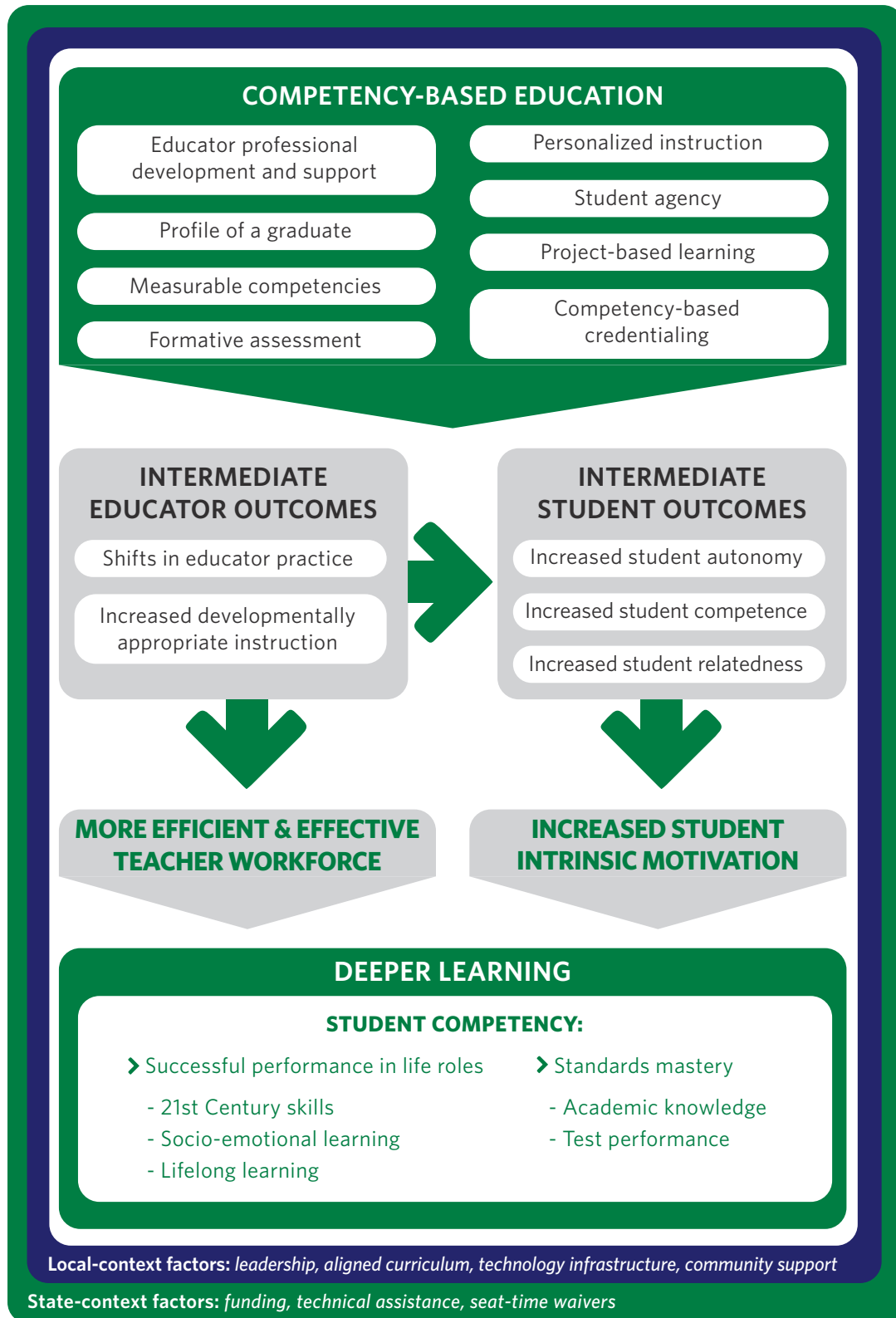By: Tara Kilbride, Abigail Girardot, and Jesse Nagel

The state of Michigan is increasing its commitment to deeper learning strategies to transform classroom instruction and learning through a competency-based approach to education. Competency-based education (CBE) is a school-based shift in teaching and learning designed to give students individualized support and opportunities to advance based on their own levels of mastery. Section 21j of the 2017-2018 School Aid Act allocated $500,000 in grants to seven pilot districts for the design and implementation of CBE programs, with an additional $500,000 in the 2018-19 school year. The pilot program afforded participating districts flexibility in instructional requirements, allowing them to implement CBE practices.

The Education Policy Innovation Collaborative (EPIC) at Michigan State University partnered with the Michigan Department of Education (MDE) to conduct a multi-year study of the implementation of CBE in the 21j pilot districts. In this brief, we present findings from surveys administered to teachers and students in the 21J pilot districts during the 2019-20 and 2020-21 school years.

THE THEORY OF CHANGE UNDERLYING COMPETENCY-BASED EDUCATION

Based on existing research and interactions with state and district leaders in Michigan, EPIC developed a Theory of Change that identifies core elements of CBE (shown in the top section of Figure 1), desired outcomes of CBE (shown in the bottom section), and mechanisms through which CBE should lead to the desired learning outcomes (shown in the grey sections in between the core elements and desired outcomes).

FIGURE 1. Michigan's Competency-Based Education Theory of Change

COMPETENCY-BASED EDUCATION

- Educator professional development and support
- Personalized instruction
- Student agency
- Profile of a graduate
- Project-based learning
- Measurable competencies
- Competency-based credentialing
- Formative assessment

INTERMEDIATE EDUCATOR OUTCOMES

- Shifts in educator practice
- Increased developmentally appropriate instruction

INTERMEDIATE STUDENT OUTCOMES

- Increased student autonomy
- Increased student competence
- Increased student relatedness

MORE EFFICIENT & EFFECTIVE TEACHER WORKFORCE

INCREASED STUDENT INTRINSIC MOTIVATION

DEEPER LEARNING

STUDENT COMPETENCY:

> Successful performance in life roles
  - 21st Century skills
  - Socio-emotional learning
  - Lifelong learning

> Standards mastery
  - Academic knowledge
  - Test performance

Local-context factors: *leadership, aligned curriculum, technology infrastructure, community support*

State-context factors: *funding, technical assistance, seat-time waivers*

The blue and green boxes surrounding the core Theory of Change depict the importance of local and state contextual factors in CBE implementation. Fundamental to the Theory of Change is the notion that CBE implementation is essentially a local enterprise, shown by the blue box labeled "local context." Successful CBE implementation relies on a favorable local context in the form of supportive local leadership, the use of aligned curriculum and materials, support from the surrounding community, and access to technology. Lastly, CBE implementation is facilitated by a supportive state context, including the 21j pilot program, technical assistance, and administrative flexibility (shown by the green "state context" box).

In a previous policy brief (Competency-Based Education in Michigan's 21J Pilot Districts: An Early Analysis of Implementation and Innovation), EPIC researchers used data from surveys administered in the 2019-20 school year to students, teachers, and administrators enrolled in 21j pilot districts to assess how each of the core components of CBE outlined in the Theory of Change were implemented in early stages of districts' CBE programs. In this brief, we extend our analysis to not only revisit how core CBE practices are being implemented after another year, but also to examine progress toward the intended intermediate and deeper learning outcomes.

SURVEY DESIGN AND SAMPLE

To understand CBE implementation in Michigan, EPIC partnered with Basis Policy Research to administer surveys to students, teachers, and administrators in Michigan's 21j pilot districts. Five pilot districts participated in these surveys in the fall of the 2019-20 school year, before the start of the COVID-19 pandemic. Four of these districts participated in the survey for a second time in 2020-21. In this brief, we focus on responses to student and teacher surveys from both the 2019-20 and 2020-21 school years. We compare responses across these two years not only to gain insight into the ongoing implementation of districts' CBE programs, but also to understand how the COVID-19 pandemic has affected learning and instruction in CBE classrooms.

We calculated response rates for the student and teacher surveys based on rosters provided by participating schools in each year prior to survey administration. Table 1 shows survey response rates across years and grade levels. The low response rate for high school students in the first survey year was primarily due to technical issues (such as server timeouts) that prevented students in some schools from completing the survey.

TABLE 1. Survey Samples and Response Rates				
	School Year	Target Population	Survey Participants	Response Rate
Teachers	2019-20	608	444	73%
	2020-21	514	404	79%
Elementary/Middle School Students (4th-8th Grade)	2019-20	4,208	3,019	72%
	2020-21	3,525	2,944	84%
High School Students (9th-12th Grade)	2019-20	4,202	2,014	48%
	2020-21	3,464	2,318	67%

Teacher surveys captured details about job satisfaction, instructional practices, and levels of support for CBE practices. Student surveys included questions about engagement, satisfaction, and perceptions about instructional practices and learning outcomes. Elementary and middle school students (4th to 8th grade) received a slightly different survey instrument than high school students (9th to 12th grade), as some questions were only relevant to one of these groups. We made a few slight changes to the survey instruments for the 2020-21 school year based on results and feedback from the 2019-20 surveys. We also added a set of new questions to address the unique challenges and changes educators and students were experiencing due to the COVID-19 pandemic. For more details about each survey instrument, please see EPIC's CBE Survey Technical Report.

For each multiple-choice survey question, we calculate the relative frequency of each possible response separately by school year (2019-20 and 2020-21) and survey population (teachers, elementary and middle school students, and high school students). To ensure that each participating district is weighted equally in the overall results and that the findings are not solely driven by the largest districts, we weight relative frequencies by the inverse of the total number of responses from a given district. Thus, we can interpret these results as averages across all participating districts. Where possible, we show results side-by-side for each year and each survey population that received the same question, allowing for comparisons over time or across groups.

FINDINGS

In this section, we discuss findings from the 2020-21 survey and compare responses to similar questions across the 2019-20 and 2020-21 surveys. The tables and figures throughout this section highlight select findings from a subset of survey questions.

We first discuss findings from some of the new survey questions about COVID-19 that we asked participants in 2020-21 only. These questions provide important context to help us interpret response patterns for the other questions that we asked teachers and students both before and during the COVID-19 pandemic. We then revisit findings from EPIC's previous policy brief about early implementation of core CBE components and discuss how these patterns have changed or continued into 2020-21. For the remainder of the section, we focus on survey questions pertaining to the intermediate and deeper learning outcomes in the Theory of Change to assess progress toward these goals. Throughout the section, we note findings that remained consistent over the two years as well as those that have changed and discuss possible ways that the COVID-19 pandemic may have influenced these patterns.

Teaching and Learning During the COVID-19 Pandemic

The ongoing COVID-19 pandemic has affected nearly all aspects of K-12 education. Educators have faced challenges in their day-to-day responsibilities while simultaneously experiencing increased levels of burnout (Baker et al., 2021; Pressley, 2021; Pressley et al., 2021; Dos Santos, 2021). Meanwhile, students have shifted between different learning modalities and adjusted to evolving COVID-19 mitigation protocols (Education Week, 2021; Ferren, 2021). The COVID-19 pandemic has also stressed education systems broadly and complicated school-community relationships (Carrión-Martínez et al., 2021; Gutierrez et al., 2020).

The four CBE districts that participated in our 2020-21 survey, like many others across the state, all started off the school year offering more than one mode of instruction (fully in-person, fully remote, or hybrid) to their students, and three of the districts changed their instructional modality offerings at least twice during the year. By the end of 2020-21, the majority of elementary and middle school students in these districts returned to fully in-person learning, but high school students in two of the districts never had the option to do so (Michigan's Center for Educational Performance and Information, 2021).

Given the nature of CBE instruction positioning teachers as the decision-makers regarding curricula, pace, and assessments, as well as its reliance on both local and state supports to implement these practices (Torres et al., 2015), implementing a competency-based system may have been particularly difficult to manage in 2020-21. On the other hand, the increased flexibility in content, differential pacing for students, and student-teacher collaboration in decision making inherent in CBE may have helped districts, teachers, and students in the 21j pilot districts to transition more smoothly to new modes of instruction. Here we focus on teachers' and students' perceptions of the ways in which the COVID-19 pandemic affected their abilities to teach and learn in a CBE setting.

Teachers Believed the COVID-19 Pandemic Affected Their Ability to Teach and Connect With Students

Nearly 90% of teachers agreed or strongly agreed that COVID-19 affected their ability to teach the way they wanted. Similarly, when asked whether they found it more challenging to connect with their students because of COVID-19, over 80% of teachers agreed or strongly agreed that it did. This common perspective across teachers highlights the challenges teachers faced during the COVID-19 pandemic.

FIGURE 2. Teacher Perspectives of COVID-19 Pandemic Effects on Education
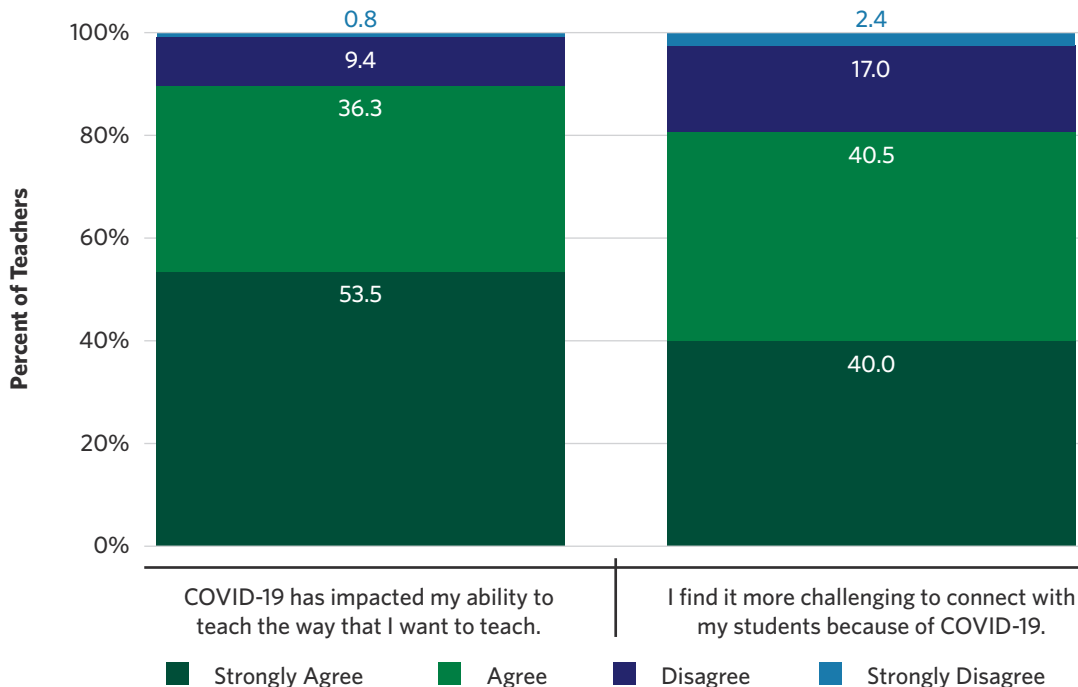

Note: Teachers were asked to indicate their level of agreement with following statements.

Students Also Felt the Effect of the COVID-19 Pandemic on Their Learning Experiences, but to a Lesser Extent Than Teachers

Although teachers expressed substantial concern about their ability to teach and work with students during the COVID-19 pandemic in ways that would make CBE implementation difficult, students responded less negatively. In response to the statement, "I am unable to get the attention that I need from my teachers because of COVID-19," 63% of elementary and middle school students and 55% of high school students said this was not at all true. Most of the remaining students felt it was only somewhat true 22% and 28% of elementary/middle and high school students, respectively, while relatively few felt it was mostly true (8% and 10%) or very true (7% and 8%).

Still, the majority of students (58% and 75% of elementary/middle and high school students, respectively) indicated that it was at least somewhat true that they felt less connected to their teacher(s) compared to the previous year before the COVID-19 pandemic school closures. For elementary and middle school grade levels in particular, this suggests less uniformity in how students felt about their ability to connect with their teachers during the COVID-19 pandemic, compared to teachers' perceptions about their ability to connect with students. Teachers' tendencies to respond more negatively than students about these topics may reflect the increased stress and burdens on teachers during the COVID-19 pandemic (e.g., learning new technologies when instructional modalities shifted while also enforcing and practicing COVID-19 mitigation strategies).

FIGURE 3. Student Perspectives of COVID-19 Pandemic Effects on Education, by Grade Level
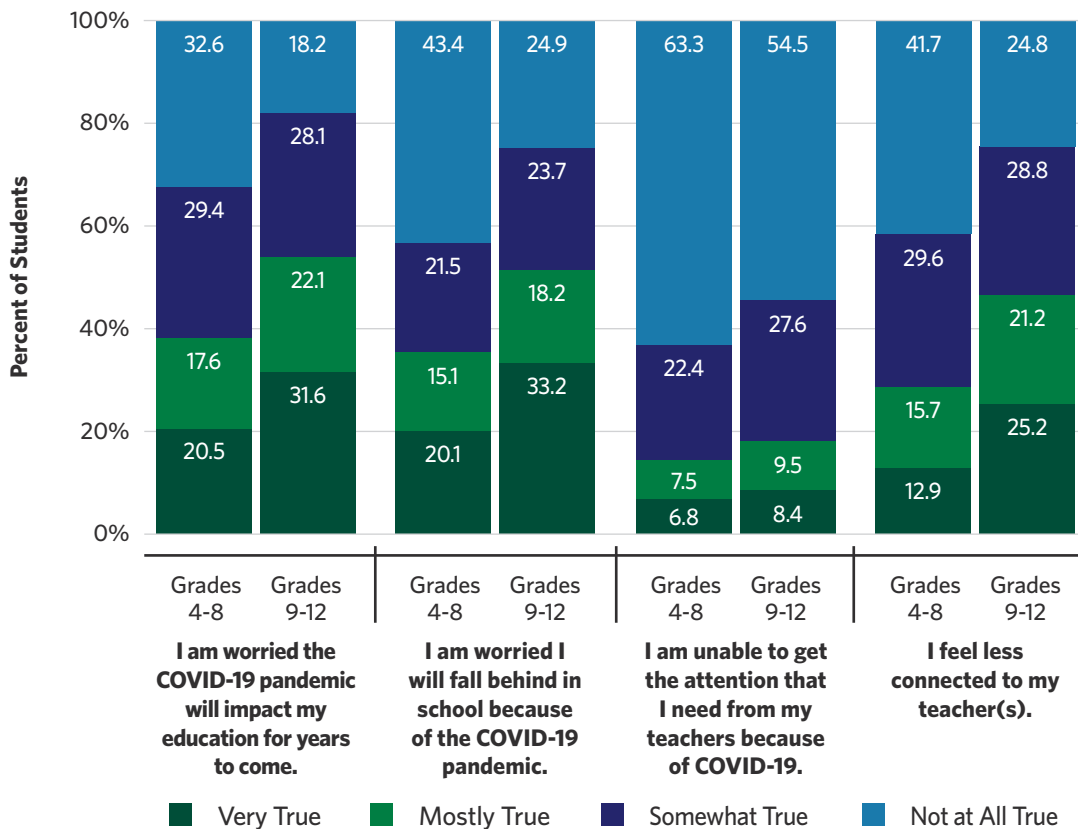
Note: Students were asked to indicate how true each of the following statements is for them.

**High School Students Expressed Greater Concerns About the Effect of the COVID-19
Pandemic on Their Education, Compared to Elementary and Middle School Students**

Eighty-two percent of high school students indicated that it was at least somewhat true that they were worried that the COVID-19 pandemic would affect their education for years to come, compared to 67% of elementary and middle school students. Similarly, three-quarters of high school students said it was at least somewhat true that they were worried about falling behind in school because of the COVID-19 pandemic, compared to 57% of elementary and middle school students. These differences may not be unique to students in districts implementing CBE. Rather, they may reflect a greater awareness among older students of the potential long-term effects of the COVID-19 pandemic, or might suggest that the higher stakes associated with high school (graduation, college matriculation, etc.) placed greater stress on high school students.

Continued Implementation of Core CBE Practices

EPIC researchers previously found that in 2019-20, districts were still relatively nascent in their implementation of CBE practices. Specifically, teachers consistently reported providing students with a set of specific learning objectives or competencies for each course, personalizing their instruction to meet individual students' needs, and using project-based assessments and learning activities in their classrooms. However, teachers did not always require students to demonstrate mastery in order to progress through course content, students generally had little agency in decisions about their learning, and class projects were rarely cross-disciplinary in nature. Although teachers were generally satisfied with the professional development they received and reported ample opportunities to collaborate with their colleagues through professional learning communities, relatively few reported having opportunities to observe or be observed by other teachers. In this subsection, we revisit each of these findings and discuss how they have evolved as of 2020-21.

> **Nearly all teachers indicated that students are given a specific set of learning targets or competencies.**

**In 2020-21, Most Teachers Once Again Reported That Students Are
Provided a Set of Measurable Competencies but Not Always Required to
Demonstrate Mastery Before Progressing to the Next Topic**

Central to CBE is establishing and adhering to a set of measurable competencies that determine what students must know a set of measurable competencies that determine what students must know or be able to do prior to advancing to the next topic and eventually through the educational system. In both years, nearly all teachers indicated that students in their classrooms are given a specific set of learning targets or competencies for the course at least some of the time, with more than 80% saying this happens at least most of the time and about half saying it happens all of the time.

However, students are not always required to show that they've met these targets before moving along to the next topic. While few teachers (7%) said they *never* require students to demonstrate mastery before moving on, only 11% of teachers in 2019-20 and 8% in 2020-21 said they *always* require students to do so. Thus, while CBE districts are establishing and communicating measurable competencies for their courses, they do not consistently adhere to the idea that students must master a given competency before progressing.

FIGURE 4. Teacher Perspectives on the Implementation
of Measurable Competencies Over Time
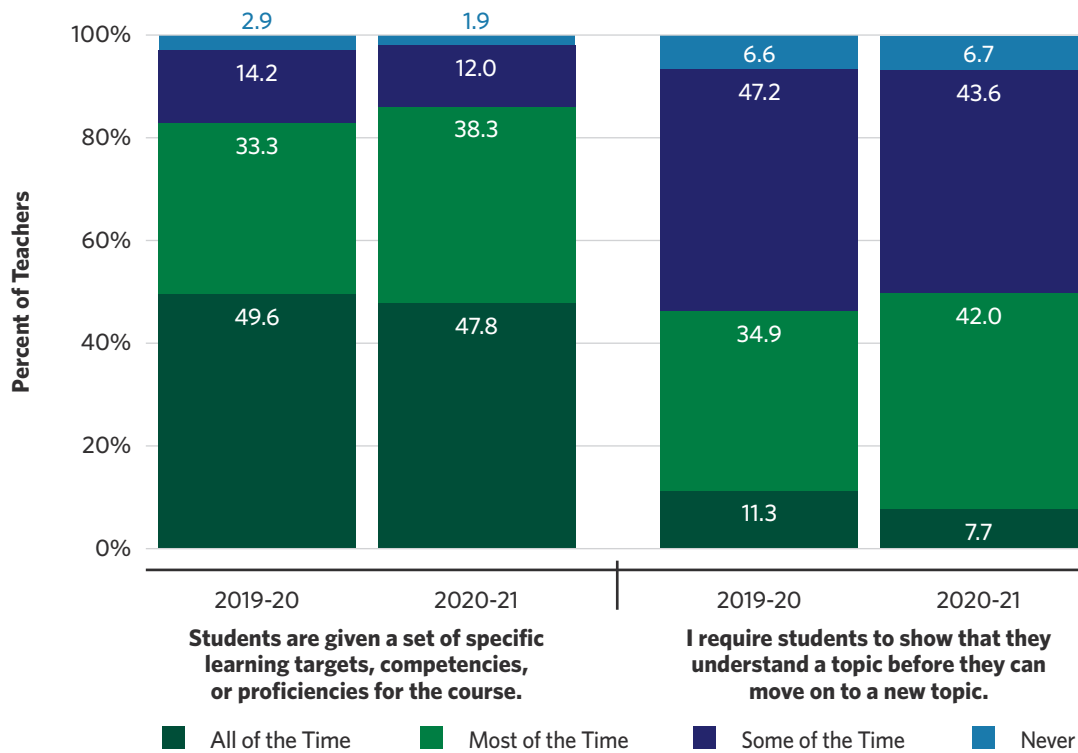
Note: Teachers were asked to indicate how often they use the following practices in their classroom.

Students Had More Flexibility to Set Their Own Pace and More Agency in Their Learning Experiences in 2020-21

In a CBE framework, student advancement is based on demonstrating content or skill mastery instead of instructional time, so it is imperative that instruction is personalized for each student (e.g. Sturgis & Casey, 2018; Torres et al., 2015). Teachers can provide personalized learning experiences by differentiating content, delivery, or pacing to meet individual students' needs. Student agency, another core component of CBE, is closely tied to personalized instruction. Opportunities for students to choose their own learning activities, set their own learning goals, or set their own pace help them to develop a sense of agency and ownership over their education.

In both years, teachers consistently reported individualizing instruction to meet their students' needs. For example, nearly all teachers believed they provided students with additional supports to adapt content to fit their individual needs, and the majority reported that students could choose their own learning activities from a set of options. However, it appears that teachers were less able to assess where individual students experienced greater challenges during the COVID-19 pandemic; 7.7% of teachers did not agree with the statement, "I understand which learning objectives in this course are more difficult for each student" in 2019-20, increasing to 13.3% in 2020-21. Moreover, teachers were more lenient during the 2020-21 school year in allowing students to move on to the next topic regardless of whether they had achieved mastery. Together, these data points suggest that teachers worked to continue personalizing instruction during the COVID-19 pandemic but struggled to do so to the same extent as the year prior.

## FIGURE 5. Teacher Perspectives of Personalized Instruction Over Time
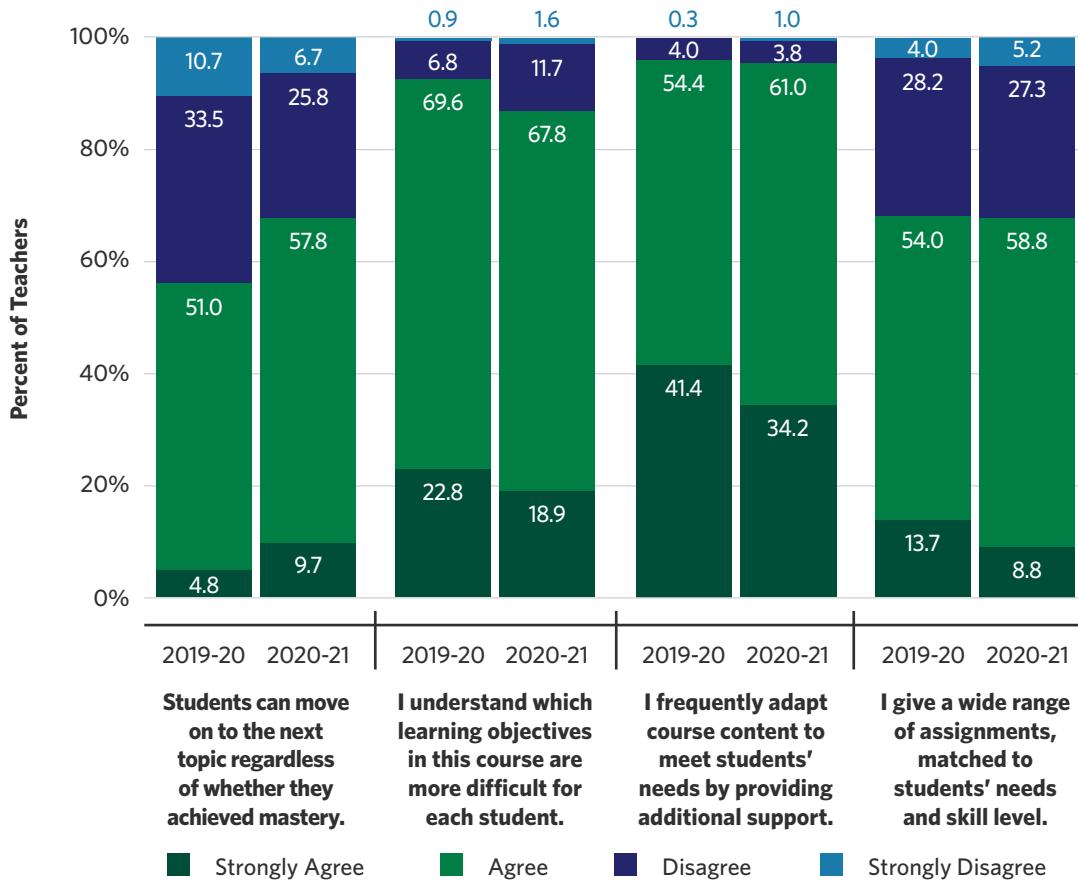
Note: Teachers were asked to indicate their level of agreement with the following statements about their instruction.

Students, however, perceived that they had far more agency over their learning trajectories during the 2020-21 school year, and reported more flexibility in pacing—a key component to personalized instruction. For instance, in 2019-20, 79% and 72% of elementary/middle and high school students, respectively, felt it was at least somewhat true that they were able to set their own learning goals, increasing to 90% and 88% in 2020-21. Most students reported that it was at least somewhat true that they had flexibility to work at their own pace in both years, either by moving ahead to a new topic before other students were ready or by taking extra time to finish a topic after other students have moved on. However, students were far more likely in 2020-21 than in 2019-20 to indicate it was very true that they had this type of flexibility.

While at least partially attributable to the continued implementation of CBE instruction, it is also possible that COVID-19 pandemic-related changes afforded students increased flexibility in their pacing with class materials. For instance, shifting instructional modalities altered not only teachers' lesson plans and their delivery of instruction, but also affected students' mode of learning beyond the changes already in place as part of their districts' CBE programs. Thus, some unforeseen effects of the COVID-19 pandemic may include facilitating more differential pacing and allowing students to develop their own goals rather than imposing structured or set goals given the uncertainty and evolving circumstances at the time.

FIGURE 6. Student Perspectives of Personalized Instruction and Student Agency, by Grade Level Over Time
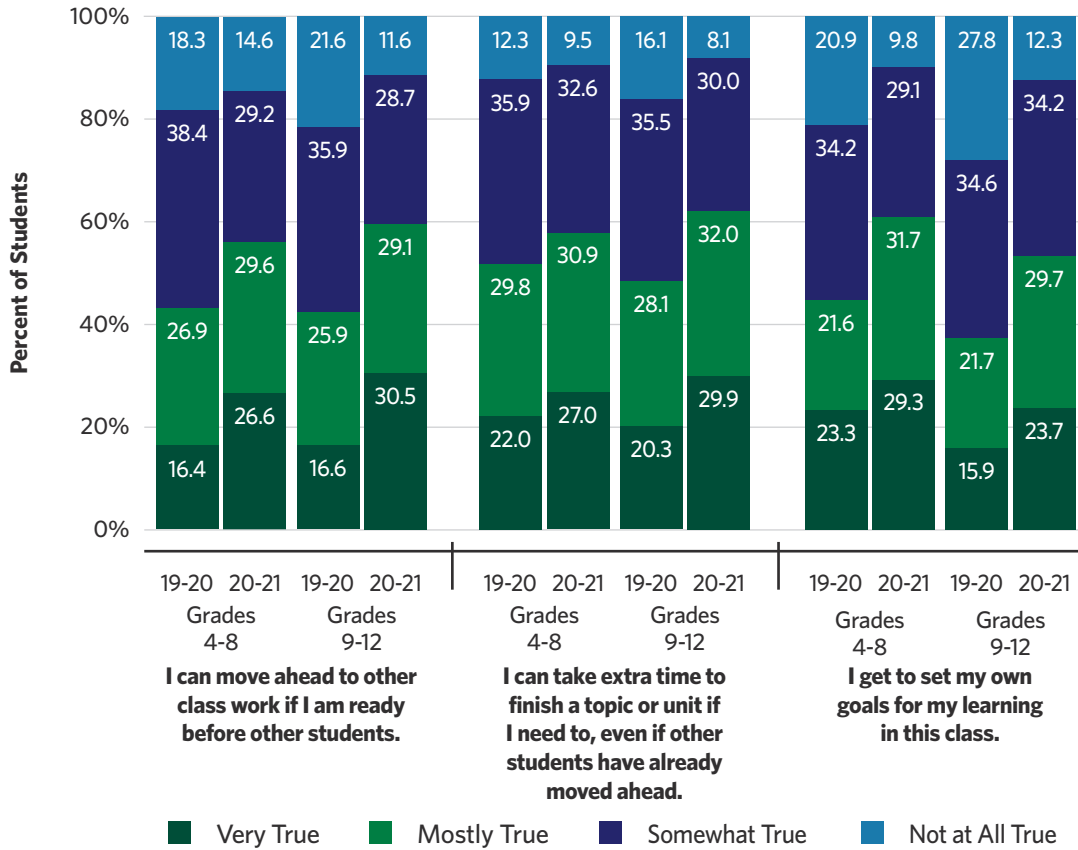
Note: Students were asked, "To what extent do the following statements describe what you think about this class?"

Class Projects in 2020-21 Were More Likely to be Cross-Disciplinary in Nature, but Students Rarely Played an Active Role in Choosing the Topics or Deliverables of Their Projects

Within CBE, project-based learning serves as a tool to increase student engagement and students' sense of ownership over their learning. By engaging students in performance tasks that emphasize the application of skills across disciplines, teachers can monitor a range of competencies and promote student autonomy (Spady, 1977).

We find evidence that project-based learning is occurring in 21j districts. In both years, 87% of teachers indicated that reviewing students' progress in completing a long-term project is at least somewhat important to their instruction, with a plurality of teachers saying this practice is very important. However, our 2019-20 survey responses surfaced questions about the kinds of project-based learning occurring in CBE classrooms, showing that projects were generally limited in scope and did not require students to apply cross-disciplinary knowledge or skills (Nagel et al., 2021). To delve deeper into this finding and better understand how teachers and students in CBE classrooms are engaging in project-based learning, we introduced several new questions about this topic in the 2020-21 surveys.

While more teachers assigned interdisciplinary projects that cut across subjects or courses during the 2020-21 school year than the year prior, such assignments were still relatively uncommon.

Eighty-two percent of teachers indicated that students in their class at least occasionally participate in projects that combine more than one subject, but only 29% said they do this most or all of the time. In other words, fewer than one-third of teachers regularly assigned projects that engaged students across disciplines, a staple of project-based learning. This represents a 9 percentage-point increase from 2019-20 (Nagel et al., 2021). Still, only about half of all students felt it was mostly or very true that they could use ideas they learned in other classes in their projects, suggesting that while projects may be increasingly cross-disciplinary, students are not always making the linkages across courses.

FIGURE 7. Teacher Perspectives of the Importance of Reviewing Students' Progress on Long-Term Projects Over Time
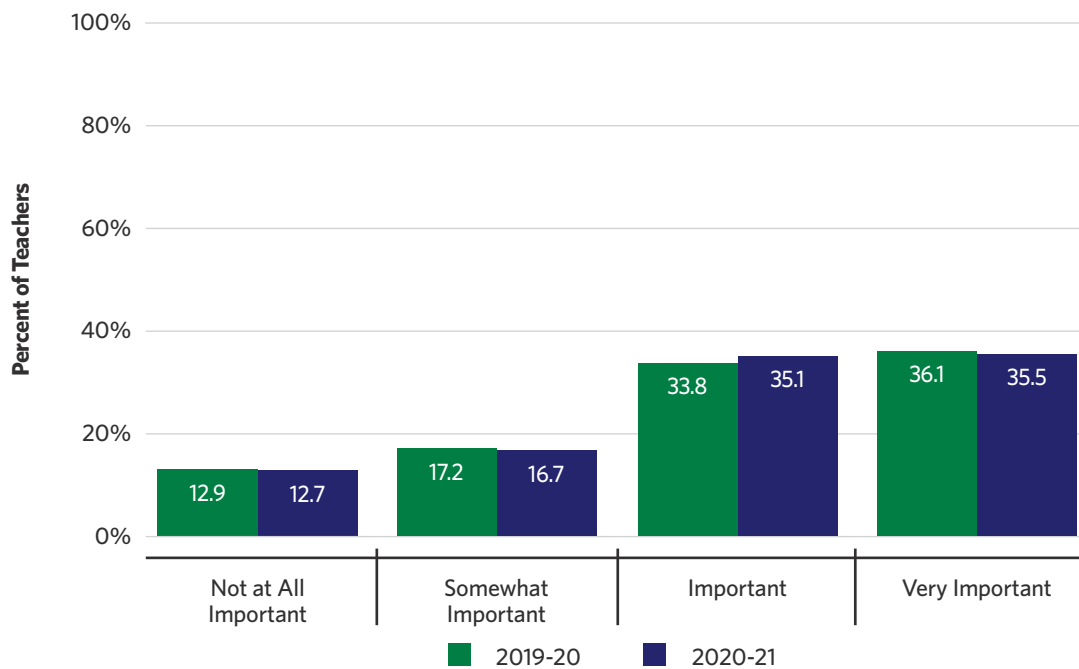
Note: Teachers were asked, "How important are the following assessment practices to your instruction?" Statements included, "Reviewing students progress in completing a long-term project."

Not only should CBE-oriented project-based learning be cross-disciplinary, but it is also intended to be student-driven, enabling students to have agency. However, this does not appear to be the case in Michigan's 21j districts. Ninety percent of teachers said they design the focus of deliverables for at least some of their classroom projects, and 63% said they did so most or all of the time. Accordingly, when asked whether teachers set the guidelines for the projects they work on in class, over 80% of both elementary/middle and high school students said this was mostly or very true.

Although project-based learning is an important component of CBE, it does not appear to be commonly used by teachers in 21j CBE districts in Michigan—at least not in the interdisciplinary, student-driven ways that are markers of CBE implementation. However, teachers do report increased project-based learning usage during the 2020-21 school year, which suggests that CBE practices may be deepening as districts gain more experience with them, or that the COVID-19 pandemic necessitated shifts in practice that allowed teachers to rely more on projects than traditional assessments.

TABLE 2. Teacher and Student Perspectives on Project-Based Learning, 2020-21					
Teacher Perspectives					
Please indicate how often you use the following practices in your classroom?		**Never**	**Some of the Time**	**Most of the Time**	**All of the Time**
Students work on projects that combine more than one subject (e.g., science and math).		17.8%	53.0%	25.2%	4.0%
I assign projects that extend over several weeks or months.		23.2%	37.0%	26.6%	13.2%
I design the focus and deliverables for each project.		10.0%	26.9%	47.2%	15.9%
Student Perspectives					
To what extent do the following statements describe what you do during this class?		**Not at All True**	**Somewhat True**	**Mostly True**	**Very True**
I can take ideas I have learned in other classes and use them on my projects in this class.	4th-8th	13.4%	34.5%	29.5%	22.6%
	9th-12th	12.5%	36.4%	31.0%	20.1%
My teacher sets the guidelines for the projects I work on in this class.	4th-8th	4.0%	15.0%	35.8%	45.2%
	9th-12th	3.9%	13.9%	37.3%	45.0%

Teachers Received Professional Development in a Broader Range of Topics in 2020-21 but Did Not Always Find it Useful. Opportunities for Peer-to-Peer Observations and Feedback Remained Limited

Because CBE represents a substantial shift in the provision of education, it is crucial that educators receive ongoing professional development and support. This is particularly true for CBE even as compared to other instructional reforms because many decisions that are traditionally made at the building, district, or state level now fall on instructors' shoulders (Torres et al., 2015).

In both years, we asked teachers about the professional development they received, if any, in 15 different topics relevant to CBE. Teachers were more likely in 2020-21 than in 2019-20 to report having received professional development in each of the 15 areas, with three-quarters or more teachers reporting receipt of professional development in 14 of the 15 areas. As might be expected, over 90% of teachers reported receiving professional development on integrating technology to facilitate learning and implementing learning management systems during the 2020-21 school year, both sharp increases over the year prior.

In 2019-20, teachers reported having relatively few opportunities to observe other teachers' lessons or have their own lessons observed by others. These opportunities remained limited in 2020-21 and some kinds of development opportunities became even more constrained during the COVID-19 pandemic; in 2020-21, there was a 17 percentage-point increase in the share of teachers reporting that they were never given release time to observe their peers. In both years, most teachers reported that they had opportunities to work with a mentor or coach, as well as opportunities to work in common planning groups. Common planning time was even more prevalent in 2020-21 than in the year prior.

However, while opportunities for professional development increased in the 2020-21 school year, teachers did not always perceive these activities to be useful. In both years, approximately half of teachers reported that they found the professional development they received to be mostly or very useful. However, in the 2020-21 school year, 15% of teachers said their professional development was not at all useful, compared to just 8% in 2019-20.

TABLE 3. Teacher Perspectives of the Topics and Usefulness of Professional Development Received Over Time						
Professional Development Topic	**School Year**	**Received PD**	**Usefulness of Professional Development Received**			
How useful were the following topics in your professional development this year?			**Not at All**	**Somewhat**	**Mostly**	**Very**
Setting Personalized Learning Goals for Students	*2019-20*	67.7%	4.6%	47.3%	39.0%	9.1%
	2020-21	74.6%	13.1%	40.7%	28.8%	17.5%
Strategies to Challenge High-Achieving Students	*2019-20*	45.8%	3.0%	55.1%	36.2%	5.7%
	2020-21	68.6%	20.8%	41.5%	23.3%	14.4%
Strategies to Support Low-Achieving Students	*2019-20*	74.4%	5.2%	41.2%	40.2%	13.4%
	2020-21	85.8%	8.9%	38.1%	33.9%	19.1%
Strategies for Teaching Socio-Emotional/Non-Academic Skills	*2019-20*	73.2%	4.7%	37.1%	36.4%	21.8%
	2020-21	86.1%	12.6%	35.7%	25.3%	26.5%
Implementing Learning Management Systems	*2019-20*	63.4%	20.2%	41.7%	27.1%	11.0%
	2020-21	91.0%	15.2%	33.5%	27.3%	24.1%
Learning New Approaches to Instruction	*2019-20*	72.1%	6.7%	36.8%	44.5%	12.0%
	2020-21	87.0%	10.8%	31.1%	29.7%	28.4%
Differentiating Instruction	*2019-20*	64.7%	5.6%	41.7%	47.1%	5.5%
	2020-21	83.1%	12.0%	37.8%	34.8%	15.3%
Using Assessment Data to Identify Students' Learning Needs	*2019-20*	69.9%	9.0%	38.2%	44.3%	8.5%
	2020-21	80.0%	17.9%	28.8%	34.2%	19.0%
Classroom Management	*2019-20*	51.5%	4.7%	38.0%	48.0%	9.3%
	2020-21	75.6%	19.9%	29.4%	34.1%	16.6%
Teaching State Standards	*2019-20*	46.1%	14.4%	46.9%	31.7%	6.9%
	2020-21	74.5%	18.0%	35.7%	27.8%	18.4%
Project-Based Learning	*2019-20*	68.2%	9.3%	39.1%	35.6%	15.9%
	2020-21	78.0%	18.1%	30.3%	30.6%	21.1%
Scaffolding Instruction and Assignments	*2019-20*	57.1%	6.1%	40.0%	45.8%	8.0%
	2020-21	80.7%	13.6%	28.8%	39.9%	17.7%
Integrating Technology to Facilitate Learning	*2019-20*	70.2%	7.4%	40.3%	40.6%	11.6%
	2020-21	92.3%	8.3%	24.2%	30.9%	36.6%
Strategies for Promoting Student Autonomy	*2019-20*	67.0%	11.7%	38.5%	37.0%	12.9%
	2020-21	81.6%	15.1%	30.9%	34.6%	19.4%
Developing Performance Assessments	*2019-20*	67.4%	10.3%	49.4%	29.3%	11.1%
	2020-21	76.6%	22.1%	33.6%	29.8%	14.5%

FIGURE 8. Teacher Perspectives of Professional Development Opportunities Over Time
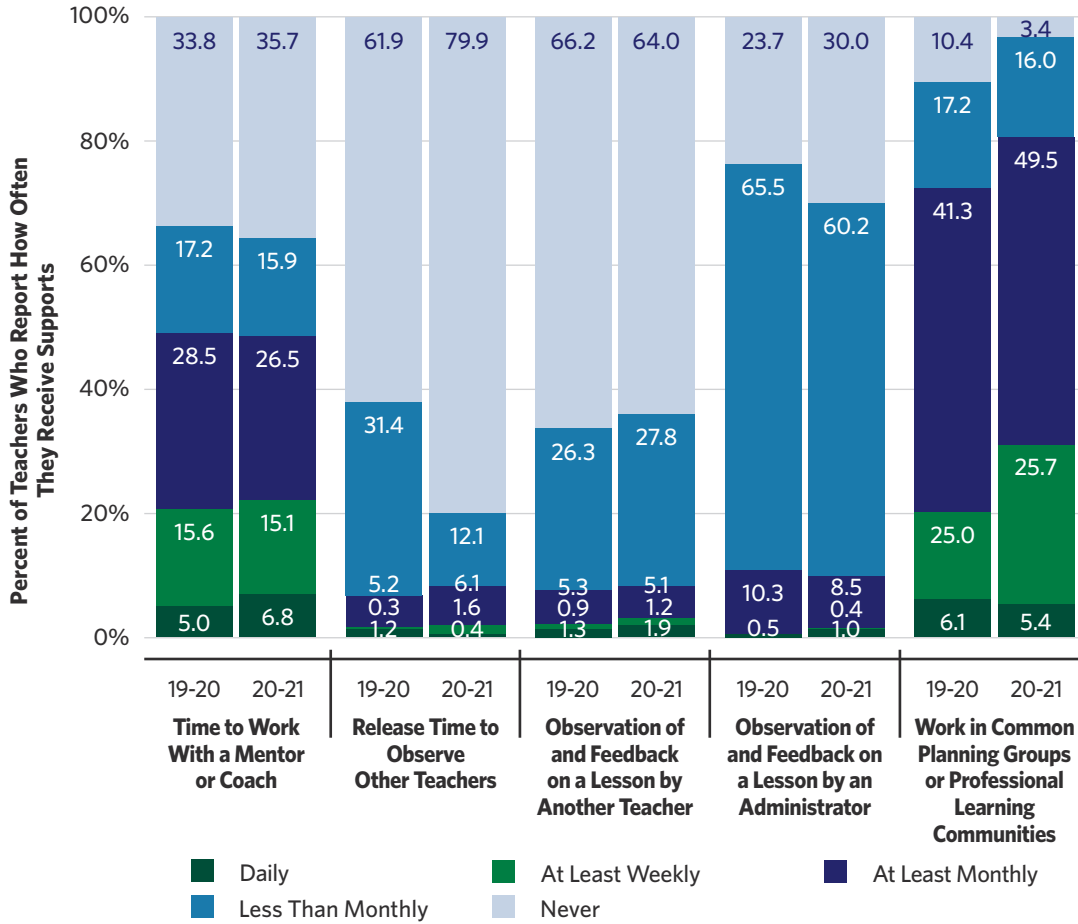
Note: Teachers were asked to indicate how often they received each of the following supports this school year.

Intermediate Educator Outcomes

Implementing the core aspects of CBE requires fundamental changes in how teachers work, which in turn must change the ways that students encounter and engage with their learning. The student-centered and personalized nature of CBE requires teachers to learn to translate standards and content into competencies taught using potentially unfamiliar methods, at varying paces, and to differing degrees of depth. These shifts in practice may come in the form of increased collaboration across classrooms, departments, or grade levels, reconfiguring and reconceptualizing learning plans based on the specific needs of their students and developing formative assessments to accurately measure where students are and when and how to help them progress. These shifts in practice will also likely include changes in teacher engagement and ownership (Sizer, 1984).

Teachers in CBE Districts Report Having Substantial Autonomy
Over Classroom Operations and Instructional Design

Teachers in CBE districts perceive that they have substantial autonomy. In both years, more than 60% of teachers reported having moderate or a great deal of control over each of the following areas: selecting instructional materials; selecting content, topics, and skills to be taught; selecting

criteria for determining students' grades; disciplining students; determining how much homework to assign; and how they use their time within the classroom.

Teachers reported particularly high levels of control over how they use their time within the classroom and how much homework they assign, with over 90% indicating they have at least moderate control and the far majority claiming a great deal of control in each of these areas. On the other hand, only 61% to 73% of teachers reported having at least moderate control in selecting instructional materials; selecting the content, topics, and skills to be taught; or choosing the criteria for determining students' grades. Twenty-seven percent to 39% felt they had little control or no control at all. Thus, although the majority of teachers reported having considerable autonomy in these areas, there is also a substantial portion of teachers who did not; as a result, it may have been more difficult for the latter group of teachers to successfully implement core components of CBE in their classrooms.

## FIGURE 9. Teacher Perspectives of Educator Autonomy Over Time
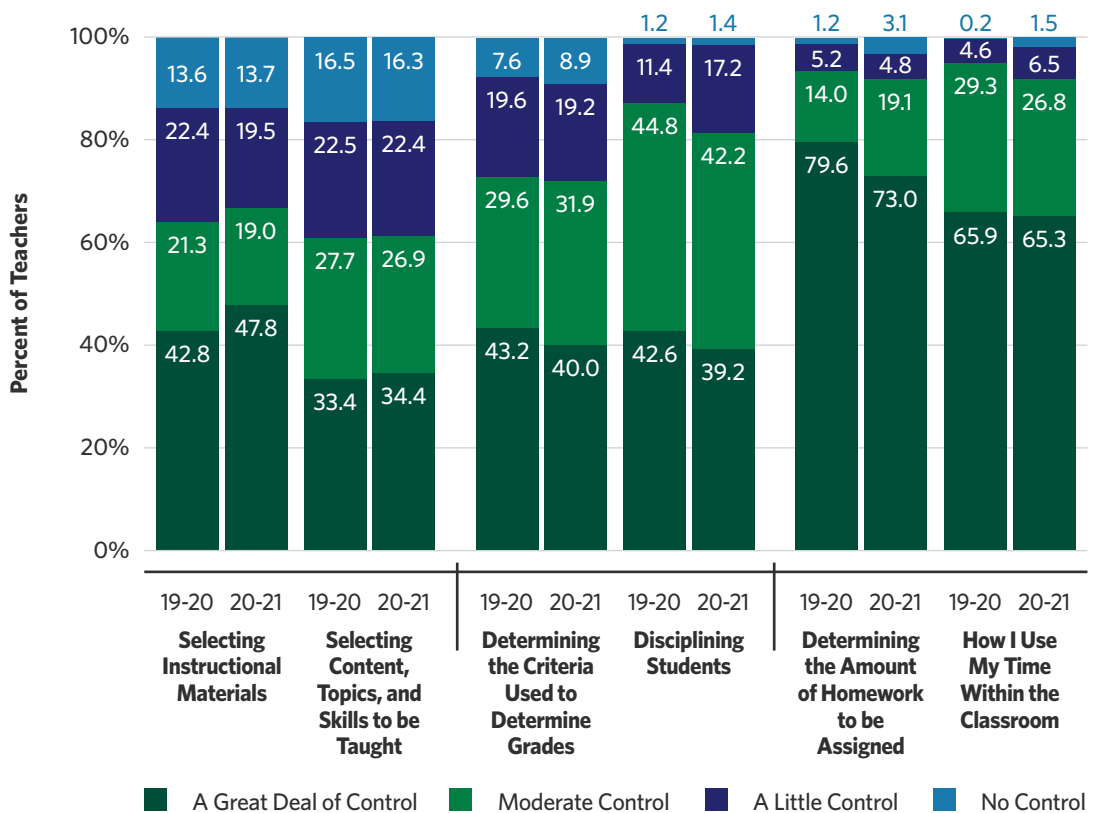
Note: Teachers were asked, "How much actual control do you have in your classroom over the following areas of your planning and teaching?"

Collaboration Between Teachers Primarily Took Place in Professional Learning Communities and Common Planning Groups

Teacher collaboration, professional learning communities, and common planning groups can help support CBE implementation and foster a culture of reform (Steiner et al., 2017, Stump et al., 2016. Stump et al., 2017, Evans & DeMitchell, 2018, Stump & Silvernail, 2015). Most teachers indicated that they engage in these activities to some extent, but only participated in certain types of collaboration regularly. About three-quarters of teachers reported working in common planning

groups or professional learning communities on at least a monthly basis (72% in 2019-20 and 78% in 2020-21). Fewer teachers reported collaborating at least once a month to design lessons or units that are cross-disciplinary (57% and 55% of teachers in 2019-20 and 2020-21, respectively), to design lessons with the appropriate level of challenge for their students (53% and 57%), to design assessments (47% in both years), or to ensure their curricula are aligned across grade levels (30% and 38%). Given the importance of educator collaboration in supporting key components of CBE, these less utilized forms of collaboration may be key areas for growth in these districts.

FIGURE 10. Teacher Perspectives of Educator Collaboration Over Time
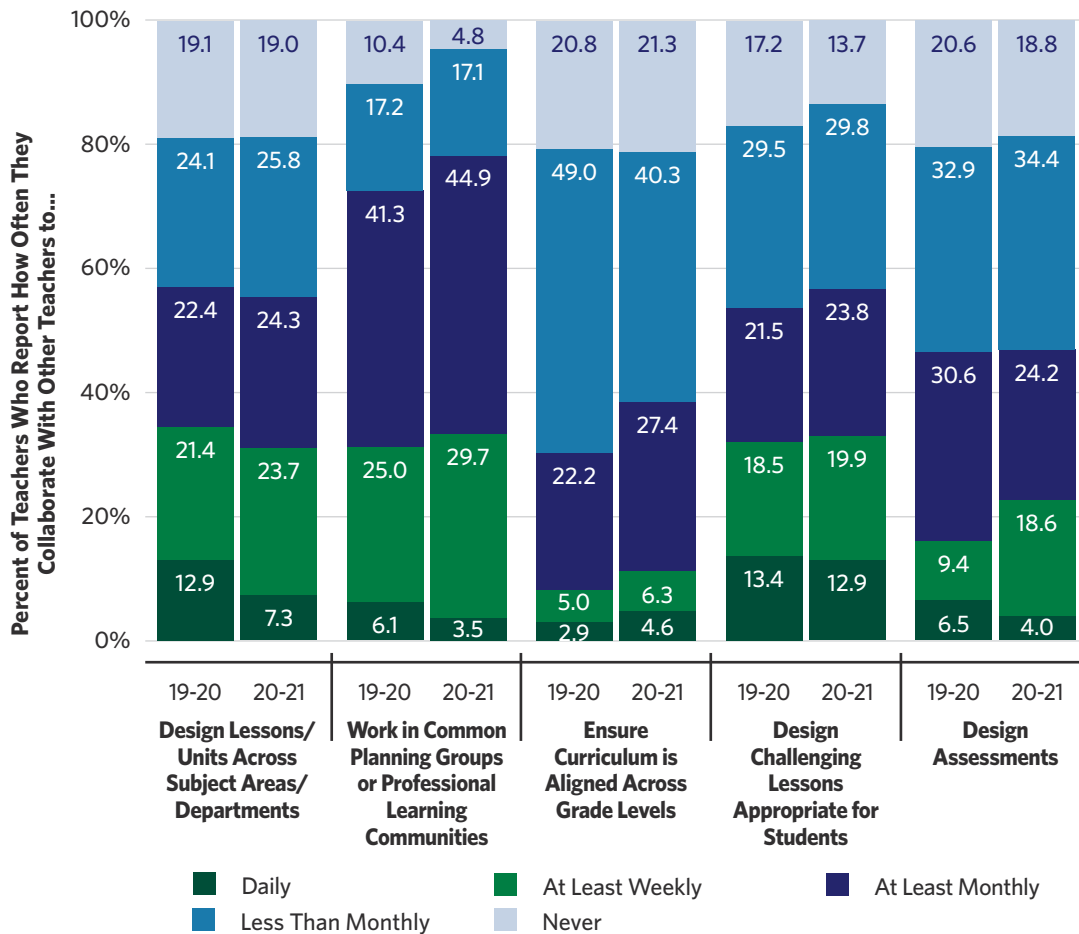

Note: Teachers were asked, "On average, including planning time and outside of school hours, how often do you collaborate with other teachers to..."

Educators May Have Gotten Better at Tailoring the Difficulty of Their Assignments to Match Students' Developmental Levels

Educators implementing CBE should provide instruction that is appropriate to students' learning and developmental levels. Students learn best when instruction takes place within their zone of proximal development (Sturgis & Casey, 2018), which is the range between what students are capable of doing on their own and what they are capable of doing with support (Vygotsky, 1978). CBE can increase zone of proximal development learning through teachers' use of formative assessment to differentiate instruction and increases in the amount of time students spend working with peers whose developmental levels are similar to their own.

Students' perceptions about the difficulty of their classwork suggest that they are mostly engaging in learning activities that meet them at their developmental level, and to a greater extent in 2020-21 than the year prior. In 2019-20, 63% of students in each grade range indicated that it was at least mostly true that most of the activities in their class are challenging, but not too challenging to complete, increasing to 76% of elementary and middle school students and 73% of high school students in 2020-21. These findings suggest that as teachers continued to implement CBE practices over time, students may have experienced a shift towards more learning within their zone of proximal development, which is one of the goals of CBE. Alternatively, this change may be driven at least in part by the shifts in teachers' mode of instruction and students' mode of learning during the COVID-19 pandemic.

FIGURE 11. Student Perspectives of the Challenging Level of Activities Over Time
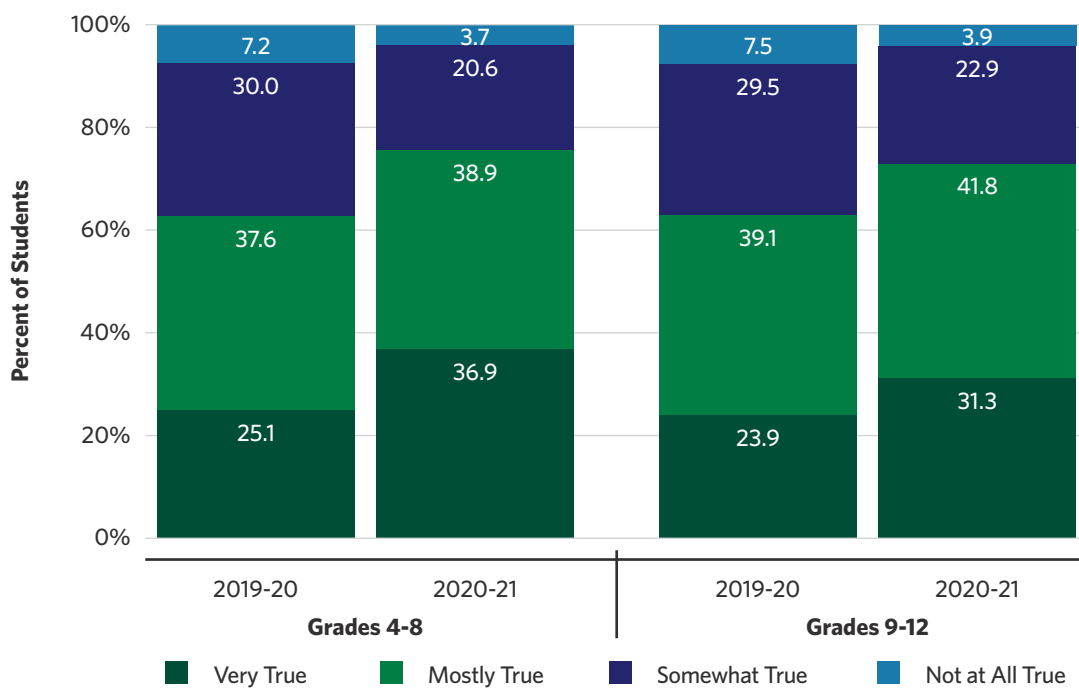

Note: Students were asked to what extent do the following statements describe what they think about their class. 2019-20 statements included, "Most of the activities in this class are challenging, but not too challenging to complete." 2020-21 statements included, "My teacher gives me assignments that are challenging, but not too challenging to complete."

During the COVID-19 Pandemic, Teachers Dedicated Less Class Time to Learning Activities That Allow Students to Work Collaboratively With Their Peers

Group projects and other types of group assignments can help to foster zone of proximal development learning in CBE as students learn collaboratively with peers whose developmental levels are similar to their own. However, such students reported fewer opportunities to engage in this kind of learning in the 2020-21 school year than the year prior. In 2019-20, more than 90% of students in both grade ranges reported spending at least some class time working with a group of students on a project or assignment, with 76% of elementary and middle school students and 81% of high school students indicating that they do this on at least a monthly basis. Not surprisingly, students had fewer opportunities to engage in these types of activities during the COVID-19 pandemic, as changing learning modalities and new safety protocols introduced new

challenges and shifted priorities. In 2020-21, only 72% of elementary and middle school students and 64% of high school students reported spending any class time at all on group projects and assignments, with 55% of elementary/middle students and 45% of high school students doing so at least once a month. While it is understandable that teachers could not provide the same types of learning activities consistently after the COVID-19 pandemic began, this may mean that students missed important opportunities to build skills that will help them eventually reach the desired competencies and deeper learning outcomes.

FIGURE 12. Student Perspectives of Instruction Time Spent on Group Projects, by Grade Level Over Time
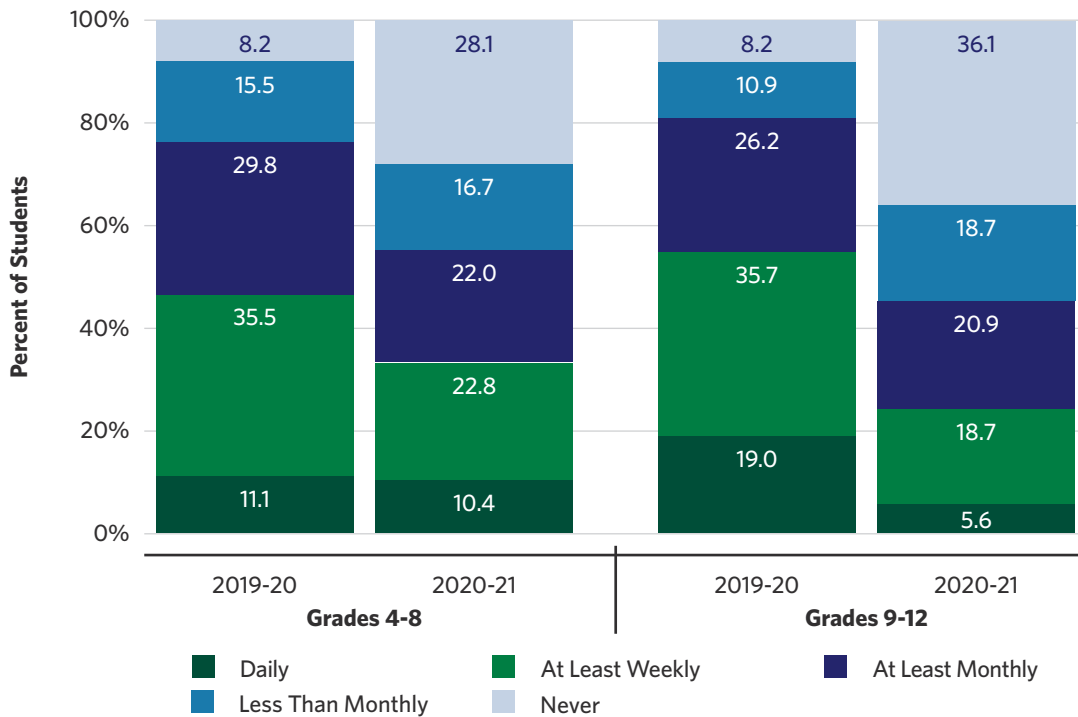

Note: Students were asked, "During this class period, how often do you spend time doing the following activities?" Statements included, "Working on a project or assignment with a group of students."

Teachers Generally Felt Well-Supported and Satisfied With Their Working Conditions

These shifts in teachers' practice and instruction are intended to lead to a more efficient and effective teacher workforce inside schools and districts engaged in CBE. This happens directly through targeted instruction, but also indirectly by shifting more control to teachers in curricular, assessment, and planning decisions. This may increase teacher engagement, thus improving teacher retention and potentially enhancing CBE districts' reputation amongst teachers, enabling them to attract a more skilled teacher labor force. On the other hand, CBE instruction places more responsibility on teachers, and though beneficial to student engagement and learning, adopting these practices may be difficult if teachers do not feel well-supported. Given teachers' increased flexibility and autonomy, it is important that they also have the appropriate tools and guidance to fulfill their new responsibilities confidently. Without proper support, these changes could increase teachers' workload substantially.

Survey results indicate that the majority of teachers in 21j districts are satisfied with their jobs in both 2019-20 and 2020-21, with over 90% agreeing or strongly agreeing in each year that they enjoy working in their current schools. Similarly, nearly all teachers agree or strongly agree that they feel supported by their colleagues. There was somewhat less consensus among teachers regarding administrator support, with approximately three-quarters of teachers agreeing that they receive adequate support from their administrators in 2020-21, down from 83% the year prior. Two-thirds of teachers in each survey year believe that expectations for teachers in their schools are realistic.

FIGURE 13. Teacher Perspectives of Educator Satisfaction and Support Over Time
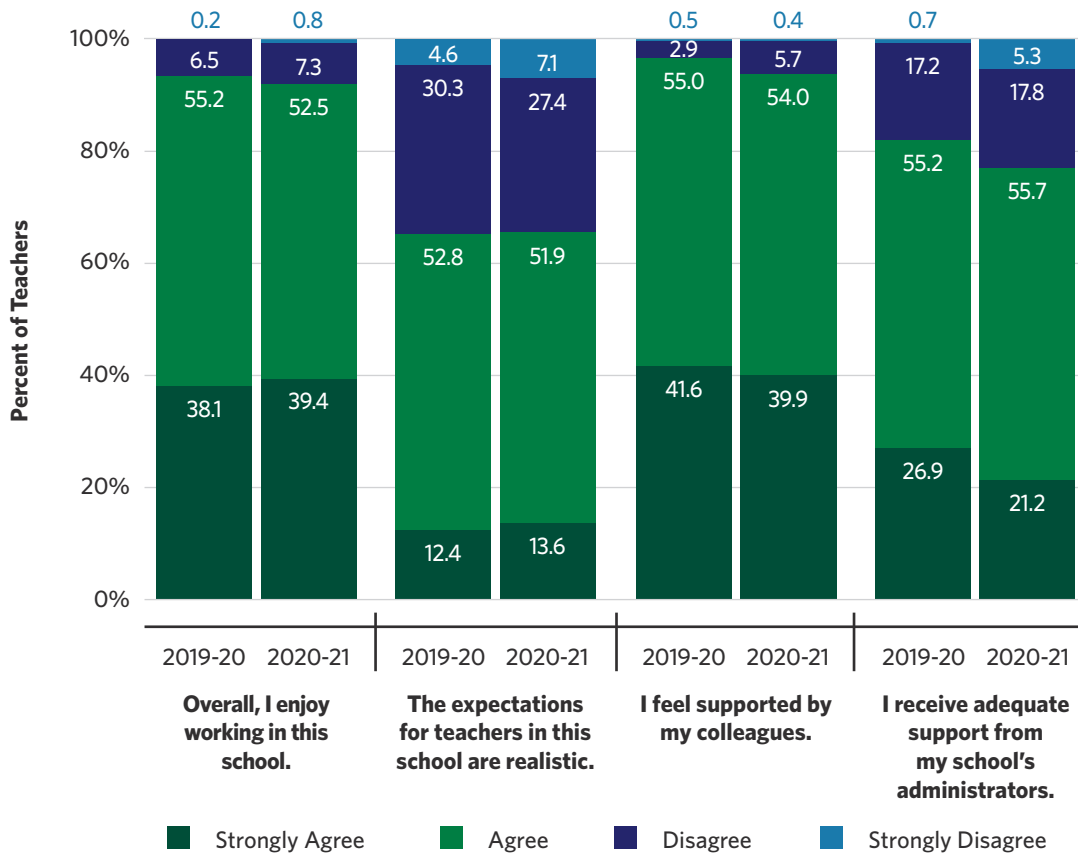
Note: Teachers were asked to indicate the extent they agree with the following statements.

Together, these data provide strong evidence that, on average, teachers in 21j schools tend to be satisfied with their working conditions. However, it is important to recognize that these sentiments were not universal, and a substantial portion of teachers felt less positive about their schools and supports. For instance, 35% of teachers disagree or strongly disagree that the expectations for teachers in their schools are realistic. Similarly, nearly a quarter of teachers in 2020-21 disagree that they have adequate support from their administrators. These findings suggest that the expectations and responsibilities of teachers within a CBE framework may add to their workload, and for teachers whose capacity was strained to begin with, this may mean asking them to do more than they reasonably can. Districts may need to provide additional support for teachers to implement CBE as intended and to cultivate a more efficient and effective workforce.

Intermediate Student Outcomes

As educators implement CBE, not only are their practices and instruction evolving, but students are also shifting how they learn. CBE practices are intended to promote students' sense of autonomy by recognizing students as "active agents" rather than "passive recipients" in the educational system (Spady, 1977). Further, when students are given the time they need to master one topic before moving on to another, the pace of learning may increase in the long run since student success and competence precede instructional progression (Kulik et al., 1990). As a result, students' feelings of autonomy, competence, and relatedness should increase.

**Students Felt Confident in Their Abilities and Capable of Succeeding
in School but Had Few Opportunities to Demonstrate Autonomy**

When asked about their ability to perform well within their CBE classes, students' perceptions were generally positive. The far majority of students expressed confidence in their ability to master the skills taught in their class and believed that there were many things in their class that they can do well. Response patterns were consistent across grade ranges and, despite the disruptions in learning related to the COVID-19 pandemic, did not change substantially from 2019-20 to 2020-21.

FIGURE 14. Student Perspectives of Self-Efficacy and Autonomy, by Grade Level Over Time
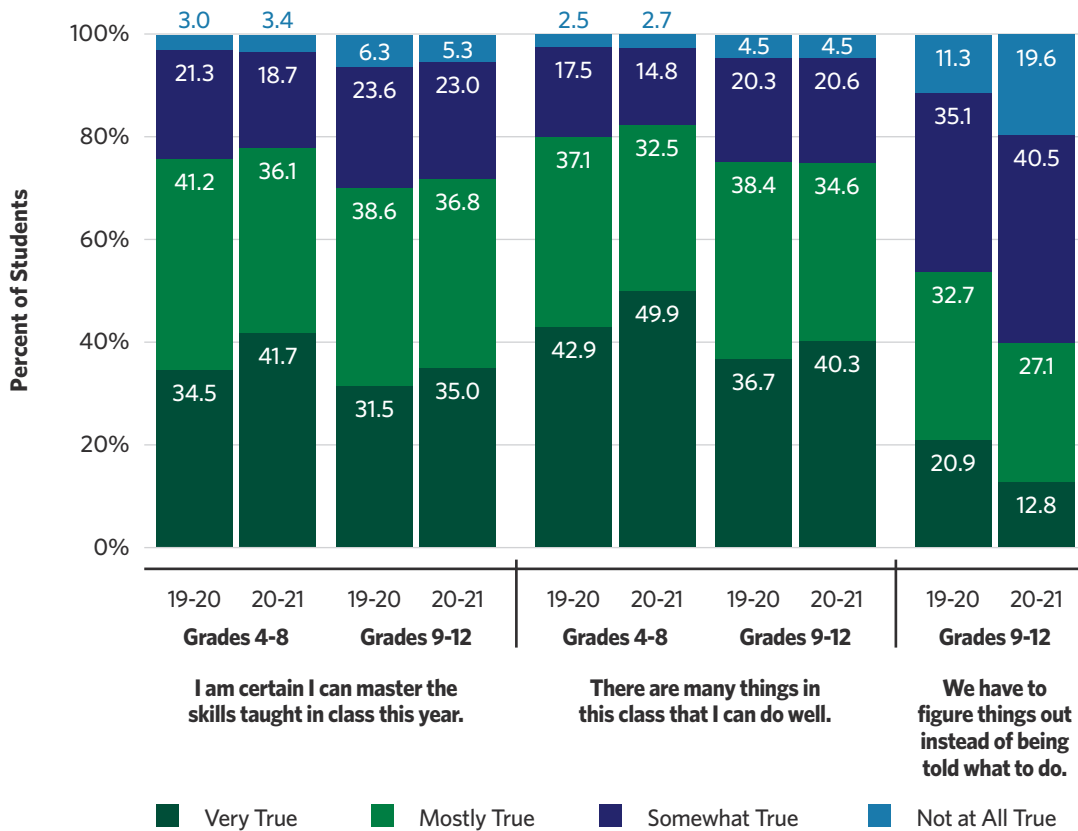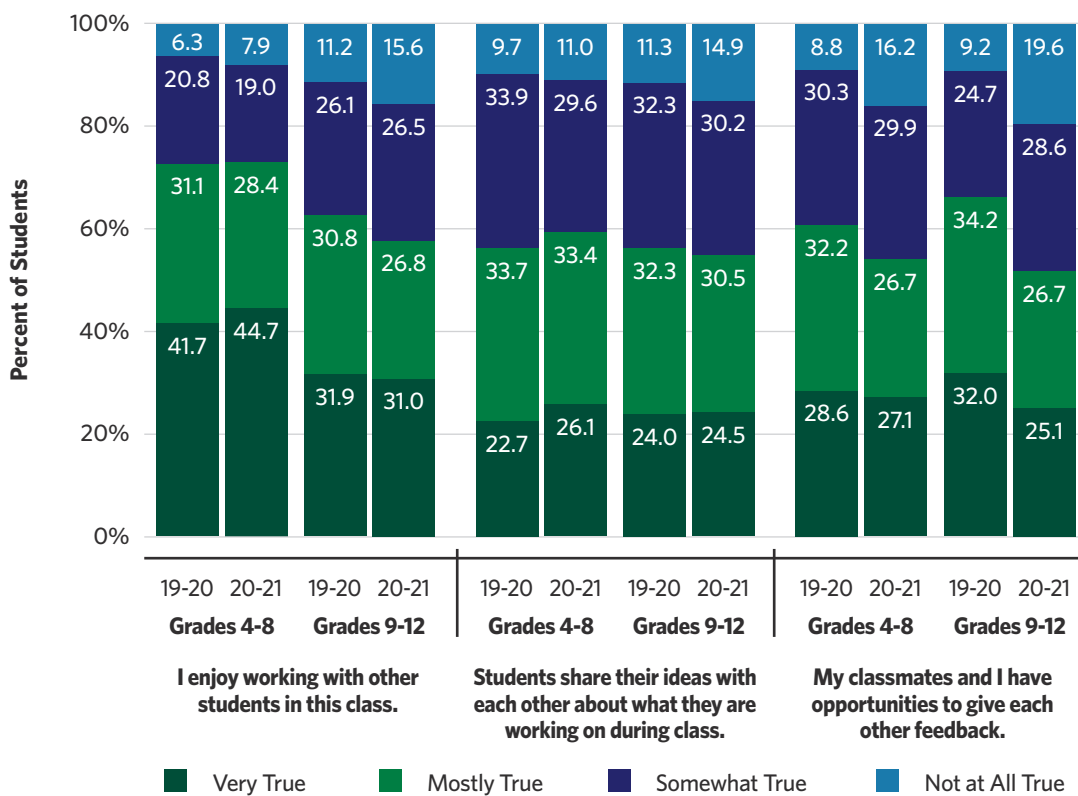

Note: Students were asked to indicate how true each of the following statements are for them. In 2020-21 students were asked, "I am confident I can master the skills taught in class this year." Only high school students were asked "In this class, we have to figure things out instead of being told exactly what to do," in both survey adminstrations.

However, the COVID-19 pandemic may have hindered opportunities for students to develop and demonstrate their sense of autonomy. In particular, in 2019-20 more than half of all high school students indicated that in their class they must figure things out themselves rather than being given explicit instructions. This decreased to just 40% in 2020-21. These findings suggest that while students in many CBE classrooms were beginning to take a more active role in their learning in 2019-20, teachers in many other classrooms retained their traditional role of expert rather than empowering students to become autonomous learners. The decrease in autonomous learning in 2020-21 may indicate that some teachers reverted to more traditional, structured practices in an effort to provide more support to students during a turbulent, chaotic year.

Students Maintained a Strong Sense of Relatedness to Their Teachers but Did Not Always Have Opportunities to Build Connections With Their Peers

CBE practices may also help to support students' sense of relatedness to a greater degree than traditional instruction. This can happen through increased opportunities to build collaborative problem-solving and social skills, as well as by shifting to more personalized instructional models.

FIGURE 15. Student Perspectives of Peer Connectedness, by Grade Level Over Time

Note: Students were asked to indicate how true each of the following statements are for them.

However, student responses suggest that peer discussion and collaboration may not be happening as much as one would expect within a CBE framework, even before the COVID-19 pandemic. Specifically, 10% to 15% of students each year indicated that it is not at all true that they share ideas with each other about their classwork and 30% to 34% indicated it is only somewhat true.

However, most students reported that they enjoy working with their classmates. In fact, 58% to 63% of high school students said this was mostly or very true, as did 73% of elementary and middle school students. These results show a contrast in the opportunities students have to collaborate with others in their class and their joy in participating in such activities. Introducing more collaborative learning activities may help to increase student engagement. Not surprisingly, students' reflections about their connections with peers shifted slightly from 2019-20 to 2020-21. Students were less likely to report having opportunities to exchange feedback with their classmates in 2020-21, with the percentage of students indicating it was not at all true that they have these types of opportunities increasing from 9% for both grade ranges in 2019-20 to 16% and 20% of elementary/middle and high school students, respectively, in 2020-21. With CBE's emphasis on peer collaboration, these results highlight one of the many ways that the COVID-19 pandemic likely hindered its implementation.

TABLE 4. Student Perspectives of Connectedness to Teachers, by Grade Level Over Time						
Please indicate how true each of the following statements is for you:	Grades	School Year	Not at All True	Somewhat True	Mostly True	Very True
My teacher tries to understand how I am feeling.	4th-8th	2019-20	8.7%	29.8%	30.7%	30.9%
		2020-21	7.7%	24.7%	30.9%	36.8%
	9th-12th	2019-20	13.0%	33.1%	27.0%	26.8%
		2020-21	8.4%	25.5%	30.5%	35.6%
My teacher cares about me.	4th-8th	2019-20	3.9%	15.4%	24.7%	56.0%
		2020-21	2.5%	12.7%	21.7%	63.2%
	9th-12th	2019-20	6.2%	24.4%	28.3%	41.0%
		2020-21	2.7%	17.6%	27.2%	52.4%
My teacher wants me to do my best work.	4th-8th	2019-20	0.9%	4.6%	14.0%	80.5%
		2020-21	0.7%	2.7%	13.6%	83.0%
	9th-12th	2019-20	3.2%	11.3%	27.2%	58.4%
		2020-21	0.4%	6.1%	24.6%	68.8%
My teacher cares if I am successful.	4th-8th	2019-20	2.6%	9.2%	22.4%	65.8%
		2020-21	1.8%	7.7%	21.0%	69.6%
	9th-12th	2019-20	6.1%	16.6%	28.2%	49.1%
		2020-21	2.2%	9.7%	26.4%	61.7%

Students' feelings of connectedness with their teachers remained relatively strong across both the 2019-20 and 2020-21 school years. Students were more likely in 2020-21 to say it was very true that their teacher tries to understand how they are feeling, cares about them, wants them to do their best work, and cares if they are successful. Although elementary and middle school students were more likely than high school students to feel this way in either year, changes from 2019-20 to 2020-21 were consistently larger for high school students. This may indicate that, despite some high school students feeling less connected to their teachers at this time (as we saw in the COVID-19-focused survey questions), they recognized the efforts their teachers were making to engage

with them and address their social-emotional needs. Given the unique challenges the COVID-19 pandemic introduced, teachers may have been more proactive when engaging with students to better address their social-emotional needs, which was a common concern in education throughout the 2020-21 school year. The implementation of CBE practices, which are more individualized for each student compared to traditional schooling, also likely contributed to these results.

Students Generally Feel That They are Trying Their Best, Though Many Did Not Believe That the Course Material Was Interesting or Important

According to the Theory of Change, as students develop their senses of autonomy, competence, and relatedness, they will become more engaged in their learning and more intrinsically motivated.

Despite the intentional design of CBE instruction to encourage student agency and ownership over their education and engage students in cross-disciplinary content, survey responses suggest there may be a disconnect in the lessons or content taught and students' interests, Roughly one-third of students in each grade range said it was mostly or very true that they are bored in their class, with slight changes from year to year, and approximately 40% indicated that this statement was somewhat true. Fewer than half of all high school students and about two-thirds of elementary and middle school students responded that it was mostly or very true that the content they learn in class is important to know in life.

FIGURE 16. Student Perspectives of Intrinsic Motivation, by Grade Level Over Time
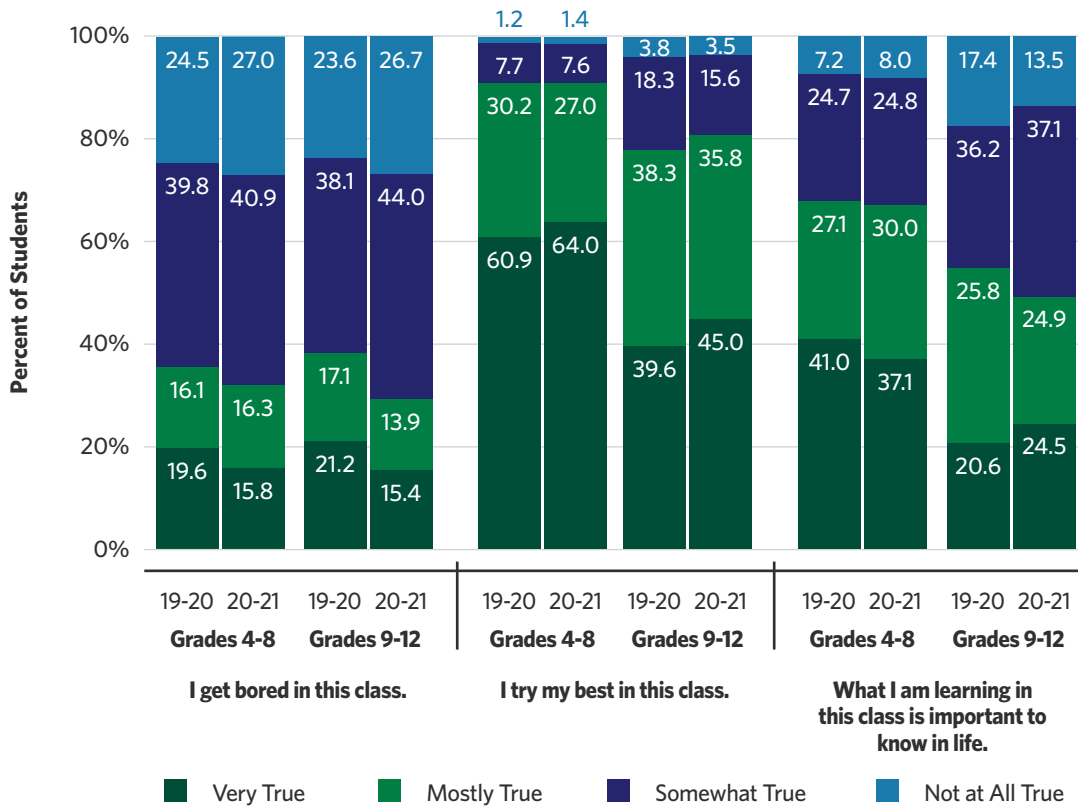
Note: Students were asked to indicate how true each of the following statements are for them.

These findings suggest that a substantial share of students do not find the content they learn interesting or valuable, which could hinder their motivation and overall learning. Still, when prompted with, "I try my best in this class," responses were overwhelmingly positive, with 91% of elementary and middle school students and 78% to 81% of high school students selecting mostly or very true. Thus, while many students said they do not find the content interesting and are often bored, most indicated they were highly motivated to do well in their class regardless.

Deeper Learning

Implicit in and fundamental to the Theory of Change underlying competency-based education is the notion that the shift to CBE approaches can promote deeper learning. Deeper learning encompasses the skills, disposition, and knowledge that are essential to prepare students for success in college, in a career, and as citizens (Vander Ark & Schneider, 2014). Each district may define and approach deeper learning competencies in different ways; some districts may prioritize life-role competencies (such as communication and collaboration skills) while others may place greater emphasis on mastering specific academic standards and content knowledge.

Survey Results Suggest That Students Engaged in Activities That Foster Deeper Learning, but Likely Need More Time to Fully Develop These Competencies

Critical Thinking and Problem Solving. Deeper learning activities in CBE require students to apply their skills and knowledge in new ways, helping them to build and strengthen their critical thinking and problem-solving skills. However, survey results suggest that it may have been difficult for teachers to engage their students in these types of activities during the COVID-19 pandemic. In 2020-21, 66% of elementary and middle school students and 53% of high school students said it was mostly or very true that their teachers asked them to explain how they got their answers, compared to 77% of elementary and middle school students and 56% of high school students in 2019-20. These decreases—particularly for elementary and middle school students—are likely related to the difficulties educators experienced in translating instructional materials to remote or hybrid instruction and the challenges of engaging students during this turbulent year, particularly for younger students. Similarly, the share of elementary and middle school students who indicated it was mostly or very true that their teacher poses questions "that make them really think" decreased from 74% in 2019-20 to 61% in 2020-21, compared to 59% of high school students in both years. These findings highlight possible disparities in how CBE practices are being implemented for the different grade ranges and the resulting effect of the COVID-19 pandemic on early learners.

Communication. Communication skills are also important indicators of students' deeper learning. When asked whether they had opportunities to present what they learned in class to other students, responses were middling, with more than 60% of students in both grade ranges indicating this was somewhat or mostly true in 2020-21 and 35% saying it was only somewhat true. About 20% of students in each grade range said it was very true in 2020-21, compared to 23% and 28% of elementary/middle and high school students, respectively, in 2019-20. These results suggest that most students had at least some opportunities to present their work to peers, but that students' experiences in this area varied. Moreover, it may have been challenging for teachers to continue offering these types of opportunities during the COVID-19 pandemic, especially at the high school level.

Students' perceptions about whether their class helped them learn to communicate their ideas were generally moderate, but also varied widely across students. Specifically, 60% to 65% of students each year said it was somewhat or mostly true that their class helped them learn how to explain

their ideas to others, with 14% to 19% saying it was not at all true and 18 to 27% saying it was very true. Overall, students seem to be developing communication skills but may need additional time, support, or opportunities to fully achieve the intended deeper learning outcomes.

Student Agency. Deeper learning activities can also help students learn to monitor and direct their own learning (Hewlett Foundation, 2013). One way students might demonstrate this skill is by taking the initiative to seek help when they need it. In 2020-21, 87% of elementary and middle school students and 81% of high school students indicated that it was mostly or very true that they know where to go for help with a problem in school. In the prior year, 84% and 72% of elementary/ middle and high school students responded this way, respectively, suggesting that students felt more confident in this area in 2020-21. Students largely reported that they get the help they need with assignments before they are due, with 65% to 69% indicating this was mostly or very true. However, this is notably lower than the share of students who said they know where to go for help. This suggests that students are aware of the resources that are available to them, but do not always actively seek those resources when they need them.

TABLE 5. Student Perspectives of Deeper Learning, by Grade Level Over Time						
Please indicate how true each of the following statements is for you:	**Grades**	**School Year**	**Not at All True**	**Somewhat True**	**Mostly True**	**Very True**
I know where to go for help with a problem in school.	4th-8th	2019-20	3.6%	12.5%	29.2%	54.7%
		2020-21	3.1%	10.0%	28.5%	58.4%
	9th-12th	2019-20	5.0%	22.9%	32.0%	40.0%
		2020-21	3.3%	15.2%	33.5%	47.9%
I get the help I need with assignments before they are due.	4th-8th	2019-20	6.0%	25.3%	36.7%	32.0%
		2020-21	6.6%	24.8%	36.6%	31.9%
	9th-12th	2019-20	8.2%	30.5%	34.9%	26.3%
		2020-21	7.9%	26.9%	33.4%	31.8%
My teacher asks me to explain how I get my answers.	4th-8th	2019-20	4.6%	18.4%	32.0%	45.1%
		2020-21	9.5%	23.9%	31.7%	34.9%
	9th-12th	2019-20	11.5%	32.9%	30.8%	24.9%
		2020-21	12.1%	34.9%	31.0%	22.1%
My teacher asks questions in class that really make me think.	4th-8th	2019-20	4.9%	21.6%	34.9%	38.6%
		2020-21	7.2%	31.7%	39.2%	21.9%
	9th-12th	2019-20	11.3%	30.0%	33.1%	25.6%
		2020-21	7.8%	33.5%	37.5%	21.3%
I have had opportunities in this class to present what I have learned to other students.	4th-8th	2019-20	13.2%	32.6%	31.0%	23.3%
		2020-21	13.9%	35.4%	30.1%	20.7%
	9th-12th	2019-20	14.0%	30.1%	28.0%	27.9%
		2020-21	18.6%	35.4%	26.8%	19.2%
This class has helped me learn how to explain my ideas to others.	4th-8th	2019-20	14.1%	31.2%	28.3%	26.5%
		2020-21	14.4%	34.6%	28.8%	22.2%
	9th-12th	2019-20	18.9%	32.8%	27.0%	21.2%
		2020-21	17.5%	37.6%	27.1%	17.7%

Overall, these findings suggest that students are engaging in deeper learning activities and making progress toward deeper learning outcomes, but many are still developing these competencies.

KEY TAKEAWAYS

Despite COVID-19 Pandemic-Related Hindrances, Teachers Continue to Practice Core Components of CBE Instruction in Their Classrooms

After another year implementing their CBE pilot programs, districts continued to emphasize their visions of what students should know and be able to do by the time they graduate and to delineate expectations for students. Our 2020-21 surveys show evidence that, compared to 2019-20, more teachers introduced cross-disciplinary projects into their courses, teachers provided more flexibility for students to work at their own pace, and students took a more active role in setting their own learning goals. At the same time, changes in students' learning environments and teachers' mode of instruction during the COVID-19 pandemic made some components of CBE, such as project-based learning, particularly challenging to implement.

Teachers With Too Little Autonomy or Support May Struggle to Fully Implement CBE

Teachers reported having varying degrees of autonomy in selecting instructional materials, course content, and grading criteria in both 2019-20 and 2020-21. Those who felt they had limited control over these types of decisions may have struggled to provide students with personalized learning experiences as a result. On the other hand, even teachers with high levels of autonomy may have struggled without sufficient support or training. Although teachers reported receiving professional development in a wider range of topics in 2020-21 than in the previous year, they did not always find these professional development opportunities to be useful and they reported having fewer opportunities to observe each other's lessons in 2020-21.

Students Had Fewer Opportunities to Engage in Collaborative Learning Activities With Their Peers in 2020-21, but Maintained Strong Connections With Their Teachers

During the COVID-19 pandemic, some teachers may have experienced challenges in implementing project-based learning and peer discussion/collaboration and relied more on traditional pedagogical practices instead. Limiting these types of collaborative learning experiences could hinder students' progress toward communication-oriented deeper learning competencies. However, students' connections with their teachers remained strong and in some cases, became even stronger in 2020-21. This may mean that students recognized their teachers' efforts to proactively engage with them and monitor their well-being during the COVID-19 pandemic. Thus, while teachers may not have been able to implement all aspects of CBE instruction as planned, their increased focus on students' social-emotional needs may have helped facilitate opportunities for personalized learning experiences.

Students Show Progress Toward Reaching Critical Milestones of Successful CBE Programs, but May Need More Time to Achieve Deeper Learning

Survey responses show early evidence that continued use of and exposure to CBE may be facilitating some of the desired intermediate outcomes for teachers and students, but that students have not yet reached the end goal of deeper learning. For instance, teachers' responses show improvements in their ability and efforts to adapt and differentiate instructional content to meet their students' needs but suggest that they do not always provide opportunities for students to guide their own learning. Students' responses generally indicate they understand what they need to do to succeed in their classes and what supports are available to them, but often do not take an active role in seeking the skills or support they need. For the most part, students in 2020-21 still perceived teachers as primarily retaining their traditional role of expert, suggesting that they may not yet feel empowered to take ownership of their own learning. This is particularly true for elementary and middle school students, whose survey responses demonstrate increased engagement and development in experiences that are teacher-driven, while high school students' responses demonstrate more independence and peer-to-peer growth. These findings show that, on average, students are shifting towards deeper learning, with older students reaching more advanced stages of development.

POLICY IMPLICATIONS

The Flexibility and Personalization Inherent in CBE Helped Districts and Teachers Adapt to Changing Conditions and Support Student Learning During the COVID-19 Pandemic

As COVID-19 led to nationwide school building closures and teachers shifted to remote, hybrid, or socially distanced instruction, several of the key components of CBE helped to support student learning and to facilitate transitions to new modes of instruction. By emphasizing student agency, personalized instruction, and providing professional development to teachers, districts that adopted CBE may have been better equipped to facilitate learning amidst the COVID-19 pandemic. The flexibility and individualization afforded as a result of implementing CBE likely provided opportunities for students and teachers to collaborate and support student learning through unprecedented challenges.

Finding the Appropriate Balance of Autonomy and Support is Critical for CBE Programs to Be Successful, Especially in the Wake of the COVID-19 Pandemic

To truly adapt their instruction to provide personalized learning experiences that meet the unique needs of their students, teachers need a high level of autonomy in decisions about how students spend time in their classroom. However, it's also important to recognize that these types of decisions can add to teachers' demanding workloads, and that they will need adequate support to deliver CBE

instruction effectively. Particularly in the initial years of implementing a new CBE program, it is important that districts provide sufficient training and guidance to empower teachers to shift their instructional practices and roles in their classrooms to align with the core principles of CBE.

It will be particularly important to support teachers in districts that are or are beginning to implement CBE in the wake of the COVID-19 pandemic. Given that the COVID-19 pandemic and associated challenges have accentuated teacher staffing shortages in many districts and have led to decreasing teacher morale and greater feelings of burnout (Carver-Thomas et al., 2021; Choate et al., 2021; Madigan & Kim, 2021; Pressley, 2021), placing greater expectations on teachers may make what is already a difficult job feel increasingly impossible. Teachers will need consistent and substantive supports to help them implement CBE in the coming years.

Instructional Practices That Promote Student Agency Will be Instrumental in Moving Students Toward Deeper Learning Competencies

Like their teachers, students need both support and autonomy to be successful in a CBE classroom. Activities that shift traditional classroom dynamics to give students more of an active role in directing their own learning are crucial for students to develop deeper learning competencies. These types of learning activities can foster deeper learning through peer-to-peer interaction and collaboration, learning to organize and communicate their ideas, engaging in cross-disciplinary and longer-term projects, applying skills and knowledge to new situations, or teaching students to set and follow through on educational goals. Some of these types of learning opportunities were particularly challenging for teachers to provide during the COVID-19 pandemic, and this likely contributed to difficulties keeping students engaged and fostering their sense of agency. This will be an important area to emphasize in CBE instruction moving forward.

REFERENCES

Baker, C. N., Peele, H., Daniels, M., Saybe, M., Whalen, K., Overstreet, S., & The New Orleans Trauma-Informed Schools Learning Collaborative. (2021). The experience of COVID-19 and its impact on teachers' mental health, coping, and teaching. *School Psychology Review*, *50*(4), 491–504. https://doi.org/10.1080/2372966X.2020.1855473

Carrión-Martínez, J. J., Pinel-Martínez, C., Pérez-Esteban, M. D., & Román-Sánchez, I. M. (2021). Family and school relationship during COVID-19 pandemic: A systematic review. *International Journal of Environmental Research and Public Health*, *18*(21), 11710. https://doi.org/10.3390/ijerph182111710

Carver-Thomas, D., Leung-Gagné, M., & Burns, D. (2021). *California teachers and COVID-19: How the pandemic is impacting the teacher workforce.* Learning Policy Institute. https://doi.org/10.54300/987.779

Choate, K., Goldhaber, D., & Theobald, R. (2021). The effects of COVID-19 on teacher preparation. *Phi Delta Kappan, 102*(7), 52-57. https://doi.org/10.1177/00317217211007340

Dos-Santos M. L. (2021). The relationship between workforce sustainability, stress, and career decision: A study of kindergarten teachers during the COVID-19 pandemic. *Sustainability*, *13*(20), 11521. https://doi.org/10.3390/su132011521

Education Week. (2021, March 4). A year of COVID-19: What it looked like for schools. *Education Week.* https://www.edweek.org/leadership/a-year-of-covid-19-what-it-looked-like-for-schools/2021/03

Evans, C., & DeMitchell, T. A. (2018). *Mapping out the terrain: Northeast principals' perceptions of the barriers and facilitators to implementing k-12 competency-based education.* Durham, NH: University of New Hampshire, Education Department, Division of Educational Studies. https://www.researchgate.net/publication/328356063_Mapping_out_the_Terrain_Northeast_Principals'_Perceptions_of_the_Barriers_and_Facilitators_to_Implementing_K-12_Competency-Based_Education_October_2018

Ferren, M. (2021, July 6). *Remote Learning and School Reopenings: What Worked and What Didn't*. Center for American Progress. https://www.americanprogress.org/issues/education-k-12/reports/2021/07/06/501221/remote-learning-school-reopenings-worked-didnt/

Gutierrez, L. A., Hernandez, L., Kim, T., Kuttner, P. J., Lopez, G. R., Mayer-Glenn, J., Niang, A., & Yanagui, A. (2020, October 6). Family-school relationships are the missing link in COVID-19 era education. *Education Week.* https://www.edweek.org/leadership/opinion-family-school-relationships-are-the-missing-link-in-covid-19-era-education/2020/10

Hewlett Foundation. (2013). *Deeper learning defined*. https://hewlett.org/wp-content/uploads/2016/08/Deeper_Learning_Defined__April_2013.pdf

Kulik, C. L., Kulik, J., & Bangert-Drowns, R. L. (1990). Effectiveness of mastery learning programs: A meta-analysis. *Review of Educational Research,* 60(2), 265-299. https://doi/10.3102/00346543060002265

Madigan, D. J., & Kim, L. E. (2021). Does teacher burnout affect students? A systematic review of its association with academic achievement and student-reported outcomes. *International Journal of Educational Research, 105,* 101714. https://doi.org/10.1016/j.ijer.2020.101714

Michigan's Center for Educational Performance and Information (2021). *Extended COVID-19 learning plan dashboard.* https://mischooldata.org/covid-dashboard/

Nagel, J., Kilbride, T., & Strunk, K. O. (2021). *Competency-based education in Michigan's 21j pilot districts: An early analysis of implementation and innovation.* Education Policy Innovation Collaborative. https://epicedpolicy.org/competency-based-education-in-michigan/

Pressley, T. (2021). Factors contributing to teacher burnout during COVID-19. *Educational Researcher*, *50*(5), 325–327. https://doi.org/10.3102/0013189X211004138

Pressley, T., Ha, C., & Learn, E. (2021). Teacher stress and anxiety during COVID-19: An empirical study. *School Psychology*, *36*(5), 367–376. https://doi.org/10.1037/spq0000468

Sizer, T. R. (1984). *Horace's compromise: The dilemma of the American high school.* Houghton Mifflin Co.

Spady, W. G. (1977). Competency based education: A bandwagon in search of a definition. *Educational Researcher*, *6*(1), 9-14. https://doi.org/10.3102/0013189X006001009

Steiner, E. D., Hamilton, L. S., Stelitano, L., & Rudnick, M. (2017). *Designing innovative high schools: Implementation of the opportunity by design initiative after two years.* RAND Corporation. https://www.rand.org/pubs/research_reports/RR2005.html

REFERENCES *(continued)*

Stump, E. K., Doykos, B., & Fallona, C. (2016). *Proficiency-based high school diploma systems in Maine: Local implementation of state standards-based policy phase IV policy report.* Maine Education Policy Research Institute in the Center for Education Policy, Applied Research, and Evaluation. https://digitalcommons.usm.maine.edu/cepare_proficiency/4/

Stump, E., Connor, E., Fallona, C., & Doykos, B. (2017). *Proficiency-based high school diploma systems in Maine: Implementing a standards-based system and proficiency-based graduation policies in a public high school (a case study).* Maine Education Policy Research Institute in the Center for Education Policy, Applied Research, and Evaluation. https://usm.maine.edu/sites/default/files/cepare/PBDS17_HS_policy_implementation_case%20study.pdf

Stump, E. K., & Silvernail, D. L. (2015). *Proficiency-based diploma system in Maine: Implementing district-level high school graduation policies phase III report.* Maine Education Policy Research Institute. https://usm.maine.edu/sites/default/files/cepare/Proficiency-Based_Diploma_System_in_Maine_Implementing_District-Level_HS_Graduation_Policies_Phase_III.pdf

Sturgis, C., & Casey, K. (2018). *Levers and logic models: A framework to guide research and design of high-quality competency-based education systems.* Vienna, VA. iNACOL. https://aurora-institute.org/resource/levers-and-logic-models-a-framework-to-guide-research-and-design-of-high-quality-competency-based-education-systems/

Torres, A. S., Brett, J., & Cox, J. (2015). *Competency-based learning: Definitions, policies, and implementation.* Regional Educational Laboratory Northeast & Islands at EDC. https://www.researchgate.net/publication/316558365_Competency-Based_Learning_Definitions_Policies_and_Implementation

Vander Ark, T., & Schneider, C. (2014). *Deeper learning for every student every day.* Hewlett Foundation. https://hewlett.org/library/deeper-learning-for-every-student-every-day/

Vygotsky, L. (1978). *Interaction between learning and development.* Mind in Society. Harvard University Press. 79-91.

RESEARCH WITH CONSEQUENCE