



# Pedal to the Metal: Inconsistencies in Student Advancement in Personalized Learning Environments

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COLLEGE OF EDUCATION | MICHIGAN STATE UNIVERSITY

236 Erickson Hall, 620 Farm Lane, East Lansing, MI48824 | (517) 884-0377 | [www.EPICedpolicy.org](http://www.EPICedpolicy.org)

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# **Pedal to the Metal: Inconsistencies in Student Advancement in Personalized Learning Environments**

## **INTRODUCTION**

Over the last 10 years, educators and policymakers have expressed a growing interest in the use of personalized learning (PL) strategies to foster deeper learning amongst K-12 students (e.g., Davis, 2014; Pane et al., 2017). With the necessary and often substantial shift in instructional strategies that have occurred in the last year as a result of the COVID-19 pandemic, personalized learning models have become even more salient as a potential instructional strategy to help meet students where they are in their educational trajectories and allow them to progress at their own pace towards content mastery (e.g., Watson, 2021). As district leaders and state policymakers consider not only how to teach and how students might best learn in these circumstances, and how K-12 education might change in the coming years, they are turning to personalized learning as a potential solution (e.g., Jenkins, 2020; Yanoski, 2020).

Personalized learning represents a shift from conventional standards-based instruction to an approach that focuses on individual student learning and understands that progression varies based on students' prior experiences, academic goals, and learning preferences (Basham et al., 2016; Colby, 2017; Patrick & Kennedy, 2013; Torres, Brett & Cox, 2015). Components of personalized learning include incorporating more student choice, multiple pathways to demonstrate mastery of

learning standards, and students taking on more responsibility for their learning (Colby, 2017; Patrick & Kennedy, 2013; Sturgis, 2016; Torres, Brett & Cox, 2015). Although the structure and elements of this approach vary broadly across districts attempting to implement it, opportunities for individualized pacing remain a core component in most personalized learning models. However, previous research highlights districts' difficulties with incorporating this central element of personalized learning (e.g., Freeland, 2014; Silva et al., 2015; Stump., 2016). Challenges with individualized pacing arise for many reasons, including because of the difficulty of differentiating instruction (e.g., Silva et al., 2015) and student and teacher role inertia (Freeland, 2014; Hayes et al., 2016; Kirk & Accord, 2010; Torres et al., 2015; Stump et al., 2016; Sturgis, 2016). The literature on personalized learning also highlights the critical role of professional development in adapting teachers' practices to the demands of personalized learning settings (e.g., Corkin, Coleman, and Ekemkci, 2019).

Even before the pandemic, the Michigan Department of Education (MDE) was working with seven pilot districts from across the state to develop deeper learning strategies that might transform classroom instruction and learning through the adoption of personalized learning. Drawing on surveys as well as participant interview data, this paper presents evidence about the ways in which these seven districts implemented personalized learning in Michigan, and in particular individualized pacing as it is core to all models of personalized learning. We ask:

1. Are districts providing opportunities for student individualized pacing, both while they are working towards mastery and once they have achieved it?
2. What factors facilitate or hinder students' opportunities for individualized pacing?

Overall, the evidence suggests that, although districts aim to enable students' individualized pacing, they are not creating many opportunities for students to move at their own pace. We identify several factors that restrict districts' abilities to provide individualized pacing, including conflicting district policies, and management barriers. Our results provide important implications for districts and states interested in adopting personalized learning programs. At the district level, we highlight the importance of high-quality, well-scaffolded professional development for teachers as well as progressively scaffolded learning opportunities for students to develop their autonomy and executive functioning skills (e.g., goal setting and self-assessment). At the state and federal levels, our findings suggest that state departments of education and the federal department of education should provide flexibility to districts and states attempting to implement personalized learning. This flexibility needs to go beyond seat-time waivers to consider accountability waivers, which will provide

teachers and schools greater flexibility in ensuring that standards are met at students' own pace, which may require flexibility in terms of time and structure.

The rest of the paper proceeds as follows. First, we review the relevant literature, focusing on the challenges associated with implementation of personalized learning, and in particular flexible pacing, and how implementation has challenged existing, traditional teacher roles. We then discuss our data and the methods we use to answer our research questions. From there, we present both survey and qualitative data to support our findings and provide a discussion and implications for policy and practice.

## RELEVANT LITERATURE

### The Implementation of Personalized Learning in U.S. Schools

The existing literature on personalized learning (PL) highlights the tension between established teachers' roles and the expectations for teachers in personalized learning settings. In traditional instructional settings, teachers' roles are expansive—among other things, they set learning targets, plan learning activities, and monitor and assess student learning (Lortie, 1975). In his historical analysis of teachers' classroom roles, Cuban (1993; 2007) argues that teachers have enjoyed a relative degree of stability in terms of what administrators, parents, students, and outside stakeholders expect from them. These frameworks for teacher professionalism highlight the managerial expectations for teachers' classroom work. In a traditional setting, teachers are the designers, facilitators, and assessors—they are the final authority in the classroom. However, in a personalized learning context, teachers are expected to share the design, facilitating, and assessment responsibilities with their students (Bingham & Dimandja, 2017; Bingham et al., 2016; Bishop et al., 2020; Bray & McClaskey, 2015; Clarke, 2013; Horn, 2017; Nagel & Taylor, 2017; Netcoh, 2017; Staker 2011; Staker, 2012). In these settings, learning becomes a partnership between teachers and students, and in their roles as partners, teachers are expected to assume the role of coach and use feedback to facilitate their students' learning.

In successful personalized learning programs, teachers work alongside students. In these settings, teachers' work is less about delivering content than it is about helping students to develop goals, aligning student interest, and learning standards, analyzing student learning data, and providing targeted and directive feedback to students (Basham, Hall, Carter & Stahl, 2016; Bishop et al. 2020; Netcoh, 2017). Previous research has shown evidence of teachers adapting to these new roles (e.g., Bishop et al., 2020; Bingham et al., 2016; Nagel & Taylor, 2017). These studies reveal that

teachers' practices are affected by the expectations of multiple stakeholders (e.g., administrators, peers, parents, students). Teachers who have successfully adopted these practices have been able to reconcile the competing expectations for their roles in the classroom.

Moreover, students are often unprepared for their increased responsibilities in managing their own learning in terms of flexible pacing in a personalized learning system. To allow for this more student-centered approach to learning, students need explicit preparation in executive functioning (e.g., time management, self-assessment) and selecting evidence that demonstrates their mastery. (Horn, 2017; Nagel & Taylor, 2017; Netcoh, 2017). When students are unprepared to manage their own learning, teachers must take on a significant burden in terms of planning, creating personalized learning plans, and providing feedback and appropriate formative learning experiences (e.g., Bingham, 2017; Horn, 2017). Bingham and colleagues (2016) note that in settings where students struggled to adapt to their new rules, teachers became responsible for adapting curriculum, managing multiple student projects and goals, and analyzing student data and progress while still providing instruction, which ultimately led teachers to see less value in these practices. Additionally, Horn's (2017) work suggests that while students may be able to articulate their interests, it can be a struggle to make the connection to learning objectives and to be able to select an appropriate method to demonstrate their mastery. This ultimately creates additional responsibilities for already-strapped teachers, which then reinforces traditional practices and roles of teachers and students.

Other studies highlight additional barriers to the adoption of this new role for teachers. This includes concerns about preparing students for accountability measures and providing adequate academic rigor (e.g., Au & Reighluth, 2011; Netcoh, 2017), differentiating instruction for each individual student (e.g., Netcoh & Bishop, 2017; Silvia et al., 2015), management (e.g., Bingham et al., 2016; Netcoh & Bishop, 2017), and student preparedness (e.g., Horn, 2017; Netcoh, 2017). These factors alone and together increase the burdens facing teachers and reinforce reliance on traditional practices.

While the discussion above discusses the empirical evidence as to the challenges of adopting personalized learning strategies, a set of recent studies has provided encouraging evidence as to its potential success. These studies highlight the importance of ongoing professional development in helping teachers implement personalized learning. The evidence suggests that this professional development should both address high-leverage practices and provide clear exemplars for teachers to adapt in their own classrooms. Without doing so, professional development – no matter how well intentioned – will not adequately support teachers' shifts in practice.

For instance, even when school districts worked to provide professional development to enable their teachers to create learner-centered math classrooms, the sessions did not provide clear methods for translating these new flexible pacing practices (Corkin, Coleman, and Ekemkci, 2019).

Importantly, this high-quality professional development is necessary for both novice and experienced teachers learning to implement personalized learning, and in particular flexible pacing strategies. More experienced teachers are often comfortable with their established practices and are more reluctant to abandon them in favor of something so radically different (e.g., Bishop et al., 2020; Netcoh 2017). More novice teachers, while potentially less tied to their “tried and true” practices, have for the most part not received training in their teacher preparation programs about how to implement personalized learning (Bingham & Dimandja, 2017; Bingham et al., 2018). For instance, even when school districts worked to provide professional development to enable their teachers to create learner-centered math classrooms, the sessions did not provide clear methods for translating these new practices (Corkin, Coleman, and Ekemkci, 2019). Moreover, schools and districts must undertake this work prior to implementing these practices, noting teachers’ difficulties trying to learn new practices while holding themselves and students accountable to them (Bingham et al., 2016).

Given the challenges with creating flexible pacing in classrooms that are working to implement personalized learning programs, it may be unsurprising that much of the existing research on the topic has focused on demonstrating the infrequency of these practices (e.g., Bingham, 2016; Horn, 2017). Given this hypothesized explanation for the difficulties in implementing personalized learning, and especially flexible pacing, in K-12 schools and classrooms, it is important to understand the barriers that reinforce traditional practices and the extent to which these barriers impact teachers’ expectations for their roles in the classroom inform the fidelity of implementing flexible pacing. This study adds to a small but growing body of literature (e.g., Bingham, 2016; Bishop et al., 2020) that has begun to investigate the tensions between existing school structures and practices and the expectations of personalized learning settings.

## DATA AND METHODS

The data for this paper come from a mixed-methods policy implementation study examining the enactment of personalized learning programs in seven districts across the state of Michigan. This larger study, undertaken in partnership with the Michigan Department of Education, is intended to develop an understanding of specific ways individual districts implement personalized learning in Michigan, with implications for

districts across the state and the country. In what follows, we outline the Michigan context in which the seven pilot districts are implementing personalized learning, our survey and qualitative data, and our methods of data analysis.

## Study Context

### Personalized Learning in Michigan

Michigan is enacting three programs to help further develop personalized learning (PL). First, MDE allocated seed funding and is providing technical assistance and support to seven pilot districts that were grantees of funds (labeled 21j funds) allocated in the state's 2017-2018 School Aid Act. Second, Governor Rick Snyder – who was governor from 2011 to 2019 – established Michigan's Marshall Plan for Talent in 2018 to help ensure that Michigan's education and business infrastructures are more appropriately aligned and that students are prepared for forecasted career opportunities in the state. A key aspect of this plan is further attention to and investment in PL. These two actions come with a substantial fiscal investment, including \$500,000 in PL grants to districts in the FY 2018 State School Aid Act, with a continuing investment of \$500,000 for FY 2019, and \$2,000,000 in grants to districts to support PL and programming in the state's Marshall Plan for Talent. There is also \$450,000 allocated in the Marshall Plan to the MDE to support competency-based learning in Michigan, including capacity-building infrastructure to support the implementation. Third, in its 2018 legislative session, the Michigan Legislature introduced House Bills 6314 and 6315, which together would increase access to seat-time waivers for districts. These bills would, in essence, grant broad exemptions to a set of "Public Innovation Districts" that commit to developing and implementing an instructional system for diagnosing student needs and providing innovative differentiated instruction.

In 2017 the state launched its PL program on a pilot basis. Eighteen school districts applied for the PL grants funded by the State School Aid Act. MDE assessed the proposals based on set criteria, including evidence of the use or development of: 1) multiple and innovative methods to determine pupils' achievement of grade-level competencies; 2) student-driven projects; 3) formative assessment systems; 4) innovative partnerships with employers or institutes of higher education; 5) transition to a competency-based system of student promotion; 6) high quality professional development for educators; and 7) continued participation in the statewide assessment and accountability systems. Additional grant review considerations included addressing educator evaluation considerations, district capacity for implementation, data collection and reporting plans, planning and timelines, budgets, commitment from leadership, rationale for making the shift, and the support of the local board and community. Finally, MDE considered districts' ability to articulate a



vision for shifting practices to represent relevant instruction in settings that are conducive to student learning, and the application of knowledge through innovative methods.

Based on these criteria, MDE selected seven school districts to receive awards in March of 2018 for use in the 2019-2022 school years. The PL pilot program provides these initial seven school districts with the flexibility to depart from traditional standards-based instruction and instead implement PL programming. The seven approved pilot districts are detailed in Table 1.

Though Michigan’s PL pilot districts are similar to others across the state in many ways, a few key differences stand out that may influence a student’s ability to progress through a personalized learning system. Namely, pilot districts tend to have lower proportions of minority students and English language learners. Teachers within the pilot districts are, on average, more experienced than the average teacher statewide and more likely to possess a degree higher than a Bachelor’s. Given these considerations, the experiences of Michigan’s PL districts may differ from those of the average Michigan school district when implementing PL practices.

<b>TABLE 1. Descriptive Characteristics for 21j Pilot Districts</b>								
	State-wide	Williams-Battier	Dawkins-Hurley	Lehigh	Carrawell-James	Davis	Scheyer-Smith	Mercer
<b>Students</b>								
Special Education	14.2%	11.3%	10.6%	14.7%	13.1%	11.8%	11.8%	13.2%
English Learners	7.0%	0.4%	0.0%	8.2%	0.4%	0.0%	0.6%	2.8%
Economic Disadvantage	52.7%	59.3%	30.0%	52.1%	36.3%	37.6%	23.9%	49.1%
Schools of Choice	13.5%	2.0%	12.7%	1.2%	17.5%	0.0%	26.7%	36.3%
Black students	17.9%	0.6%	0.3%	4.7%	0.6%	0.0%	0.1%	14.4%
Hispanic students	8.1%	1.7%	2.6%	17.1%	6.6%	4.9%	1.7%	3.1%
White students	65.7%	94.0%	94.0%	69.4%	89.8%	88.6%	95.7%	73.8%
<b>Teachers</b>								
Early Career Teachers	10.4%	11.0%	3.3%	8.6%	9.1%	0.0%	6.8%	1.1%

Master's Degree or higher	55.7%	59.1%	57.1%	64.6%	62.4%	11.8%	76.1%	76.5%
N (students)	1,479,706	3,778	1,071	3,085	2,812	263	1,756	4,968
N (teachers)	85,104	200	61	175	164	16	88	272
Ratio	17.4	18.9	17.6	17.6	17.1	16.4	20.0	18.3

To date, these pilot PL efforts are localized and in the early stages of implementation; the Aurora Institute (formerly known as iNACOL) classifies Michigan's PL work as "emerging." Almost by definition, the shift away from standards-based/seat-time to competency-based approaches is one that necessitates a set of local priorities and decisions (Colby, 2017). As such, each of the PL pilot districts that received MDE support approaches the transition to PL differently. Some of these differences are apparent in the individual district grant applications; districts differ in the grades and content-areas targeted for transition, timelines, spending plans, and the language they used to describe their PL transitions. Funding use varies by district and includes components such as staffing, local program development and implementation, professional development, instructional support services, and leveraging national experts.

## A MIXED-METHODS APPROACH TO UNDERSTANDING THE IMPLEMENTATION OF PL IN MICHIGAN PILOT DISTRICTS

To evaluate the implementation of personalized learning (PL) in Michigan's 21j pilot districts, we use a mixed-methods triangulation design (Creswell & Plano Clark, 2017) that includes survey and qualitative case study data, with case studies consisting of both participant interviews and classroom observations. By integrating analyses of varied sources of qualitative and quantitative data, we were able to paint a rich picture of how this reform has been implemented across Michigan's 21j PL districts and schools.

### Survey Data and Methods

Quantitative data for this research are drawn primarily from survey instruments developed in early 2019 and administered to teachers in five of Michigan's seven PL pilot districts in the fall of 2019. Two pilot districts declined to participate in the survey portion of this implementation study, citing leadership transitions and timing

concerns. The surveys were designed to capture eight core components of PL implementation in Michigan: (1) Educator professional development and support; (2) profile of a graduate; (3) measurable competencies; (4) formative assessment; (5) personalized instruction; (6) student agency; (7) project-based learning; and (8) competency-based credentialing. Teacher surveys captured details about job satisfaction, instructional practices, and attitudes toward competency-based education. From those surveys we explore PL implementation from the ground level, observing teachers’ dispositions and actions as related to those core components. In this paper, we focus primarily on survey items related to personalized instruction.

We administered surveys digitally, providing a unique URL to individual respondents. Due to technical challenges within some buildings, we provided a subset of schools with paper surveys, which we then collected and digitized such that they could be merged into a complete survey response dataset. Table 2 provides response rates overall and for each of the five participating districts (given pseudonyms to protect anonymity). The overall teacher response rate was 73% (N=444/611), with individual school response rates ranging from 54% to 91%.

<b>TABLE 2. Teacher Response Rates by PL Pilot District</b>			
<b>District</b>	<b>Responses</b>	<b>Target Population</b>	<b>Response Rate</b>
Williams-Battier	59	80	73.8%
Scheyer-Smith	52	91	57.1%
Davis Charter	13	24	54.2%
Mercer	222	243	91.4%
<b>Overall</b>	<b>444</b>	<b>611</b>	<b>72.7%</b>

The teachers who responded to our surveys are largely representative of the overall population of teachers in the five participating districts along observable characteristics. Table 3 shows that teachers in self-contained elementary classrooms were slightly over-represented, whereas special education and physical education teachers were slightly under-represented in our survey sample. The only ways our response sample significantly differs from the overall population on observable characteristics are: 1) the over-representation of elementary self-contained classrooms; and 2) the over-representation of teachers not providing a grade level (“unknown” on Table 3).

To analyze the survey data, we aggregated response frequencies across items and scaled responses on a 4- or 5-point Likert scale depending on the number of options provided by the item. We weighted all frequencies by the inverse of the number of non-missing

responses within a given district, such that each district (and not teacher) is weighted equally, and results can be interpreted as the average across districts. We ran these analyses on both the full sample and individual pilot districts, allowing for observation of average effects and potential heterogeneity between districts.

<b>TABLE 3. Comparing Observable Characteristics of Survey Sample and Target Population</b>			
<b>Observable Characteristics</b>	<b>Target Population</b>	<b>Survey Sample</b>	<b>Difference</b>
<b>Gender</b>			
Female	73.6%	75.2%	1.6%
<b>Teacher Department</b>			
Elementary Subjects	29.9%	34.5%	4.6%*
ELA	10.9%	11.5%	0.6%
Math	9.7%	10.6%	0.9%
Science	9.4%	9.2%	-0.2%
Social Studies	8.4%	8.3%	-0.1%
Special Education	7.1%	4.7%	-2.4%
Physical Education	4.9%	3.6%	-1.3%
CTE	4.4%	4.3%	-0.1%
Fine Arts	4.4%	3.8%	-0.6%
World Languages	3.1%	3.4%	0.3%
Intervention	3.0%	2.5%	-0.5%
Music	2.0%	1.6%	-0.4%
Other	2.8%	2.0%	-0.8%
<b>Race / Ethnicity</b>			
American Indian/Alaska Native	0.5%	0.7%	0.2%
Asian	0.4%	0.5%	0.1%
Black/African American	0.2%	0.2%	0.1%
Native Hawaiian/Pacific Islander	0.2%	0.2%	0.1%
Two or More Races	0.5%	0.2%	-0.3%
Unknown	0.2%	0%	-0.2%
White	98%	98%	0%
<b>Teacher Grade Level</b>			
K-2	16.9%	14.3%	-2.6%
K-5	0.7%	0.5%	-0.2%
3-5	14.9%	13.3%	-1.6%
6-8	13.3%	11.5%	-1.8%
9-12	3.8%	5.1%	1.3%
All	3.2%	3.8%	0.6%
Multiple	46.4%	48.4%	2.0%
Unknown	0.9%	3.1%	2.2%*

Note: Significance calculated using sample tests of proportions. \*  $p < 0.05$

# QUALITATIVE DATA AND METHODS OF ANALYSIS

## Participants

We selected three districts to participate in case studies from the larger set of five pilot districts that participated in our surveys. These sites were selected because of their diversity (e.g., percentages of Black, Indigenous and People of Color (BIPOC), English learner, and economically disadvantaged students), school size, and school type (e.g., traditional public or charter school). We observed and interviewed 35 teachers who taught at the time of our study in one of our three case districts: Lehigh Public Schools, Mercer Public Schools, and Davis Charter School. Participating teachers include elementary, middle, and secondary teachers who teach a variety of subjects. Reflecting the larger population of teachers (both in our sample and nationally (Hansen & Quintero, 2019; Meckler & Rabinowitz, 2019), our sample includes almost exclusively white teachers. Table 4 summarizes the participant demographics for each site. Districts, schools, and teacher names have all been de-identified to provide anonymity for all participants. We recruited participants via in-person presentations during staff meetings and recruitment emails sent by principals and department heads. As an incentive, the research team provided participants \$100 as a thank you for their time and commitment to the study.

TABLE 4. Teacher Participant Demographics					
Participant Name	District	Building	Years Teaching	Grade-Level	Subjects Taught
Lola	Lehigh PS	Dunleavy	1-5	Elementary	Elementary Education
Candice	Lehigh PS	Dunleavy	6-10	Elementary	Elementary Education
Hannah	Lehigh PS	Dunleavy	20+	Elementary	Elementary Education
Allison	Lehigh PS	Dunleavy	6-10	Elementary	Elementary Education
Ginger	Lehigh PS	Dunleavy	20+	Elementary	Elementary Education
Julia	Lehigh PS	Dunleavy	11-15	Elementary	Elementary Education
Spencer	Lehigh PS	Dunleavy	1-5	Elementary	Elementary Education
Mark	Lehigh PS	Dunleavy	16-20	Elementary	Elementary Education
Elizabeth	Lehigh PS	Dunleavy	20+	Elementary	Elementary Education
Joanie	Lehigh PS	Laettner-Hill	20+	Secondary	STEM
Benjamin	Lehigh PS	Laettner-Hill	20+	Secondary	Humanities/Social Science
Samantha	Lehigh PS	Laettner-Hill	20+	Secondary	SPED

Bryan	Lehigh PS	Laettner-Hill	11-15	Secondary	STEM
Carrie	Lehigh PS	Williamson	16-20	Middle	STEM
Maya	Lehigh PS	Williamson	11-15	Middle	STEM
Lawrence	Lehigh PS	Williamson	16-20	Middle	World Languages
Alexandra	Lehigh PS	Williamson	20+	Middle	Humanities/Social Science
Emily	Lehigh PS	Williamson	11-15	Middle	Humanities/Social Science
Tim	Lehigh PS	Williamson	6-10	Middle	STEM
Daniel	Lehigh PS	Williamson	6-10	Middle	STEM
Amelia	Davis Charter	Davis CHS	6-10	Davis CHS	World Languages
Phillip	Davis Charter	Davis CHS	6-10	Davis CHS	STEM
Violet	Davis Charter	Davis CHS	6-10	Davis CHS	Career and Technical
Rachel	Davis Charter	Davis CHS	6-10	Davis CHS	Humanities/Social Science
Donovan	Davis Charter	Davis CHS	6-10	Davis CHS	Humanities/Social Science
Jennifer	Davis Charter	Davis CHS	1-5	Davis CHS	Humanities/Social Science
Miranda	Mercer PS	Barrett	6-10	Barrett	STEM
Anna	Mercer PS	Barrett	16-20	Barrett	Humanities/Social Science
Evelyn	Mercer PS	Barrett	6-10	Barrett	STEM
Maggie	Mercer PS	Winslow	6-10	Winslow	Humanities/Social Science
Claire	Mercer PS	Winslow	1-5	Winslow	Humanities/Social Science
Noah	Mercer PS	Winslow	11-15	Winslow	STEM
Andrew	Mercer PS	Winslow	11-15	Winslow	Humanities/Social Science
Maeve	Mercer PS	Winslow	20+	Winslow	Career and Technical

## Data Collection

Data collection included both semi-structured interviews and classroom observations. Teachers participated in two semi-structured interviews—one during the fall of 2019 and a second during the spring of 2020. Each interview lasted approximately 75 minutes. In total, we collected approximately 95 hours of interview data. The interviews generally took place in the participants' classrooms or coffee shops or restaurants near where the participants lived. When participants were unavailable to meet in-person, interviews were conducted over the telephone. All second interviews

in spring 2020 were conducted remotely due to COVID-19 safety protocols. To document these interviews, we used the recording app called Record-A-Call to record these conversations.

Patton (2002) has highlighted the importance of interviews as a qualitative tool for two primary reasons. First, interviews allow researchers to collect information that cannot be directly observed. Second, and linked to the epistemological assumptions guiding qualitative methods, interviewing allows the researcher “to enter into the other person’s perspective” (Patton, 2002, p. 340-341). The purpose of these interviews was to learn about how these teachers understood, evaluated, and implemented personalized learning strategies in their classrooms. The questions were designed to create opportunities for participants to share their experiences and tell their unique stories. Initial interviews elicited broad understandings and perspectives on personalized learning, with subsequent conversations and interviews attempting to unpack the origins and motivations for their commitment to personalized learning practices. All data were transcribed verbatim and uploaded into the online qualitative data analysis tool Dedoose.

In addition to the interviews, we conducted multiple observations of the teachers’ classrooms. Each observation lasted between 30-100 minutes. In total, we collected approximately 200 hours of classroom observation data. All observations were recorded as field notes. In each observation, we focused on the different roles students and teachers played in each activity. We focused specifically on activities and work being assigned and whether it provided pathways for differentiation.

## Data Analysis

As the first step in the data analysis procedures, we conducted multiple readings of the data—reading across and within case districts, grade level, and subject. In addition to initial impression formation during the data readings, we regularly contributed to a series of memos about data collection and the emerging analysis based on interviews and observations. These memos took one of two formats: reflective or analytic. Reflective memos served as a space to examine issues of subjectivity and researcher positionality. Analytic memos served to examine connections between these data and existing theory, literature and frameworks related to personalized learning. The analytic memos served as a space to develop emerging assertions about these data under which codes would eventually be grouped. Finally, we utilized a hybrid coding scheme, drawing on both deductive codes derived from the literature on personalized learning and its assumptions (Crabtree & Miller, 1992) and inductive codes that emerged from the data (Merriam, 2002; Ravitch & Carl, 2016). Through open coding, we identified several emergent codes (e.g., teachers’ dependence on normative

practices," "coercive curriculum," "teachers as knowledge facilitators," and "teachers as knowledge providers." In subsequent rounds of coding, we applied deductive codes drawn from the existing literature on personalized learning and MDE's Theory of Change (e.g., "shifts in educator practice," "use of formative assessment," and "increased student agency." Our analysis includes both single case and cross-case analysis, coding across site districts, grade levels, and classrooms. The coding process yielded ten codes that related to whether there were opportunities for individualized student pacing and students to advance once they demonstrated mastery of a learning competency. We used these codes to support or provide disconfirming evidence to support our assertions.

## Integrating the Survey and Qualitative Data

Each data source and analytic method discussed in this section separately enables us to examine whether Michigan's PL districts are providing opportunities for student individualized pacing and the factors that facilitate or hinder the provision of these opportunities. Throughout the data collection process, we worked to allow findings from our analyses of survey data to inform questions included in our qualitative protocol, and we attempted to interpret survey results through the lens of our rich qualitative data. We thus triangulated our survey and case study findings to provide deeper insights into districts' use of individualized pacing. In what follows, we identify recurring themes across analyses, integrate various sources of evidence, and strive to explain discrepancies in findings stemming from different data sources.

## FINDINGS

Throughout this section we provide both quantitative and qualitative evidence to support our assertions and answer our research questions. We separate this section into two parts: The first discusses the extent to which teachers in personalized learning settings are providing students flexible instructional pacing. In the second section, we present how teachers identified challenges at the teacher, classroom, and district levels that impeded or facilitated their efforts to provide flexible pacing. Through our analysis of teacher interview data, we demonstrate the way teachers are recognizing the incompatibility of their existing school structures and the expectations for personalized learning settings, specifically, their concerns related to their efficacy in managing multiple learner paces and the lack of alignment between curriculum, professional development, school schedules, and reform goals.

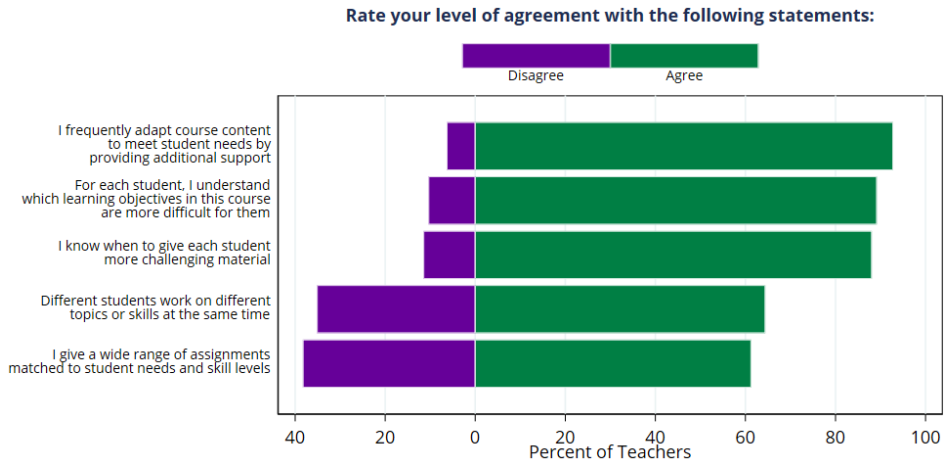


## Flexible Pacing and Advancing Upon Mastery

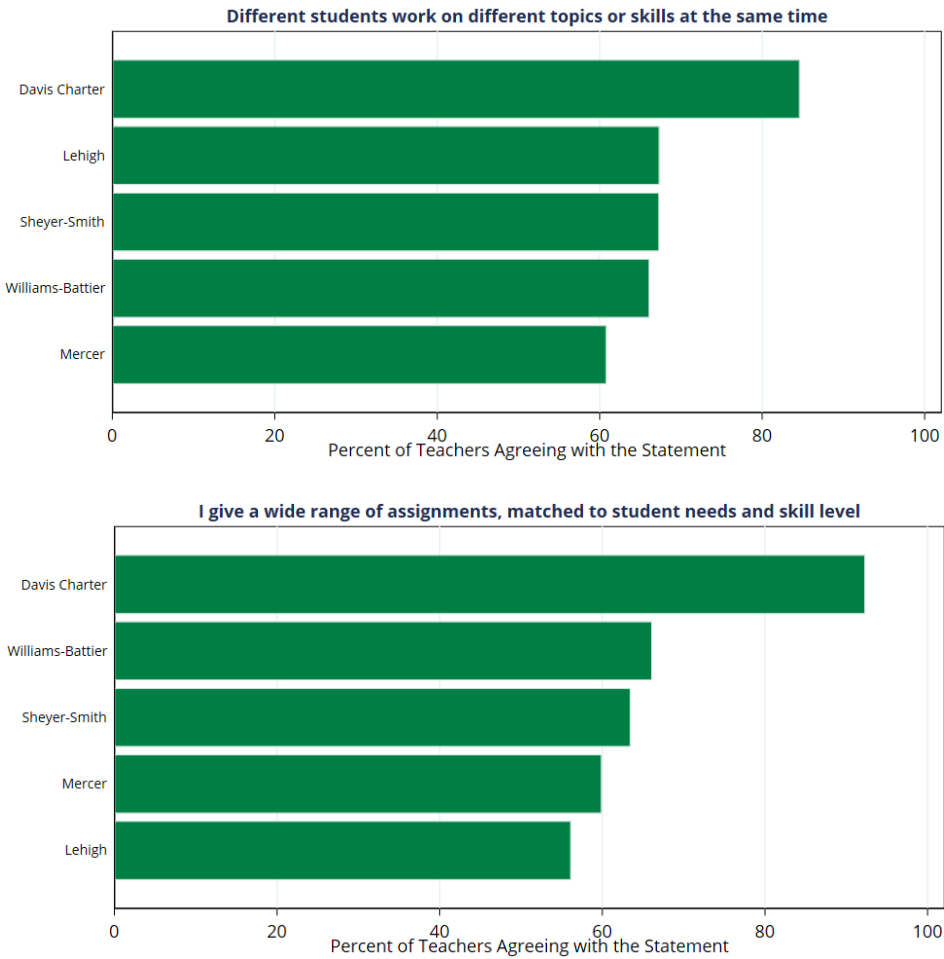
There are two elements of individualized pacing in PL models: 1) allowing students to self-pace as they are working to achieve competency in each area or set of topics; and 2) continuing to individualize instruction and student pacing as students advance once they have achieved mastery. Our survey and qualitative data offer conflicting perspectives on whether districts are providing individualized instruction and opportunities for students to self-pace their learning. Survey data suggest that teachers in Michigan's PL districts believe that they are targeting instruction to students' needs and providing students with the ability to self-pace. For instance, teachers overwhelmingly report that they know when to give a student more challenging material, know which learning objectives are difficult for a particular student, and frequently adapt their courses to meet students' needs. As is shown in Figure 1, when presented with these statements individually, over 90 percent of teachers agreed with each one. Most teachers also report that they provide students with multiple learning activities and assignments matched to a given student's needs and skill level. Thus, from the lens of the teachers, evidence suggests a high prevalence of content personalization throughout PL districts.

When we break down survey responses for teachers in our case sites, we see that they fall largely in line with sample-wide averages and, accordingly, those in non-case sites. However, teachers from Davis Charter High School indicated higher levels of agreement across all survey items targeting personalized instruction. This is most prominent when considering prompts on the variety of assignments provided and the alignment of those items to the individual students' skill levels, to which only one respondent responded in the negative. This finding may be due in part to the smaller sample size for Davis CHS (13 teachers) but is more likely a product of the district's charter, which is founded on a personalized learning model. Those two items, broken down by district, can be seen in Figure 2.

**FIGURE 1. Teachers' Implementation of Personalized Content**



**FIGURE 2. Key Personalized Instruction Items by District**



Although approximately 65 percent of teachers in our survey sample note that different students within their classroom are working on different topics and skills at any given time, data from our case studies provide a different picture. First, analyses of our case data suggest regardless of whether students achieve mastery or not, they are advancing to the next topic or competencies. The evidence from the case studies suggests that once students reach mastery of a specific skill or topic, they are not allowed the flexibility to continue to self-pace to delve deeper into a topic or to move on to the next competency without their classmates. Interview items that asked teachers to reflect on instructional pace received emphatic answers. For instance, Joanie, a veteran science teacher at Laettner-Hill High School in the Lehigh Public School District explained that the school operated as 100% teacher-paced, noting “*we are way teacher paced.*”

Teachers in other case districts spoke to the disconnect between PL systems’ expectations for individualized pacing and current pacing practices. Maggie, an English teacher at Winslow High School in the Mercer Public School District explained the disconnect between the expectations for pacing in a personalized learning environment and the reality in classrooms,

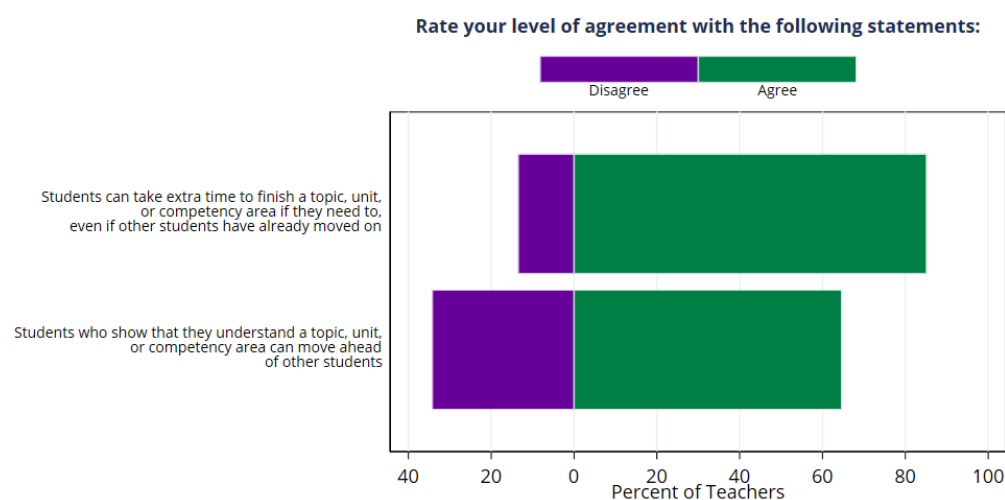
*Everyone is on the same page at the same time. There is no ‘well, you’ve already mastered this. You’re going to move on to this. There—you know, you’ve demonstrated this. Now let’s increase the difficulty level’ or scaffolding of, um, knowledge.’ In my opinion, what I’ve seen and what I’ve heard, and that’s not happening.*

Overall, classroom instruction in Mercer and Lehigh primarily operates at teacher pace without opportunities for advanced students to participate in self-pacing or deeper learning.

While classroom time does not provide opportunities for flexible pacing, schools in Mercer and Lehigh have used their advisory programs as well as extended days to provide some flexible pacing; however, these mechanisms are primarily used to address students that are currently struggling to keep up with the classroom pace; they are not providing opportunities for students at or above teacher pace. For example, Bryan, a science teacher at Laettner-Hill High School, described how he and his fellow teachers still control the pace, “*the way we slow the pace for them, essentially, is just give them more time.*” While students are being given additional opportunities outside of class time, the expectation is for them to continue with the current teacher paced instruction.

It may be that teachers are better able to provide opportunities for remediation through the PL framework than for pushing towards and through mastery. To that end, survey data suggest that teachers are offering differentiated pacing, though are more likely to offer students opportunities to catch up as opposed to jump ahead. Figure 3 shows that 86 percent of teachers offer their students extra time to finish a topic, unit, or competency when needed, even as other students move forward, whereas fewer teachers—65 percent—say that they permit students to advance ahead of their classmates.

**FIGURE 3. Personalized Pacing – Remediation versus Advancement**



For students at Davis Charter High School, there are more opportunities to participate in flexible pacing within the classroom. Phillip, one of the science teachers, commented on the various ways mastery and advancement operate at his school. Phillip stated:

*Students can still advance if they don't master previous competencies.  
There are ways for students to make up previous competencies.  
Naturally, students who are behind focus on the earliest competency they need to make up but there is no standard policy/procedure governing this. For example, if a student is behind in a class, most teachers in most situations will try to work with students on the earliest competencies that they missed from the year. If it makes sense a teacher may recommend just jump onto the current project/competencies. This often happens if that class is starting a new project and there won't be a content gap with the competencies that a student missed in a previous project.*

Unlike their peers in Mercer and Lehigh, who are driven by teacher-pace, Davis students' advancement is determined by additional factors such as mastery and necessity of advancement.

The quantitative and qualitative data suggest differing degrees of flexible pacing. While the quantitative results suggest that teachers are providing flexible pacing, these data cannot pinpoint where these opportunities are occurring. The interviews suggest that traditional instructional time is paced by teachers, and it is during extended learning time such as advisory periods that pace is tailored to individual student needs.

## Challenges to Individualized Pacing

Given the fact that individualized pacing is such a key component of personalized learning and to its success, it is critical to understand what factors may make it difficult for teachers and schools to accomplish this. We uncover evidence of multiple challenges experienced by teachers in their efforts to incorporate flexible pacing, including: 1) teachers' concerns about managing multiple learning activities simultaneously; 2) lack of alignment between district-provided curriculum resources and pacing expectations; 3) inflexibility of schools' daily schedules; and 4) gaps in training and professional development related to exemplars of personalized learning best practices. These challenges occurred in many of the classrooms observed in the study, although the degrees to which they were experienced varied across schools, classrooms, and grade levels and were most acute at the middle and secondary levels. The presence of these challenges highlights the difficulties in implementing student-driven pacing. In the following section, we describe these challenges and highlight specific examples. Additionally, we provide evidence of educators who are successfully managing these challenges. Finally, we discuss the implications and provide recommendations for future implementation.

### **Challenge #1: Confronting Issues With Classroom Management**

The qualitative data highlight how teachers' concerns about their ability to manage a classroom with more personalized pacing led them to implement a teacher-led pace. For these teachers, the idea of having each student, or even multiple groups of students, at different levels of mastery was daunting. Emily, an English teacher at Williamson Middle School in the Lehigh Public School District, reflected on her districts' early adoption of individualized pacing. As she remembers, they excitedly allowed students to move at their own pace; however, for Emily and other teachers this became overwhelming and prompted a swift return to establishing a clear teacher-driven pace. Emily explained, *"We have to continue a teacher pace, or we will lose our minds. To have 30 kids every hour at 30 different spots was not manageable."*

In addition to the challenge of managing multiple learning activities, teachers expressed concerns related to simultaneously monitoring and assessing numerous learning objectives. These challenges were exacerbated at the middle and secondary levels by larger class sizes. Teachers commonly expressed a feeling that it was not possible to meet the needs of each student, especially with class sizes as large as 30 students. Joanie, a science teacher at Laettner-Hill High School, argued that the combination of her large classes and her limited class time was ultimately prohibitive for a student-driven learning pace. Joanie explained, *“A student pace would be ideal, but if you give me—I have, uh, at least 20-some kids in every hour—30 in a few and you don’t give me additional time I don’t have a way for every kid to be at their own pace, I can’t monitor that many students.”* Finally, Daniel, a science teacher at Williamson Middle School who is a strong proponent of personalized learning, strongly believes that teachers should be setting the targets. Daniel argued, *“Even if you’re at full personalized learning, there still needs to be a pace that the kids have to hit. Otherwise, you’re gonna have kids in first grade who are 16.”* Daniel was not alone in his concerns, other teachers expressed concerns that by allowing students to dictate their own pace classes lost structure, there was too much uncertainty, and the environments became too relaxed.

Teachers had other practical concerns about allowing their students to work at their own pace, for example in settings that required considerable oversight, teachers were especially reluctant to deviate from teacher pace. As part of his chemistry course, Noah, who taught at Winslow High School in the Mercer Public School District, regularly incorporated laboratory work. Noah felt as though it was not practical or safe to have students working at different paces in a lab-based environment. Noah explained, *“I have significant safety concerns about my—my subject. Which is why that is a—that’s a huge challenge, of how can I have eight groups of four, so to have eight groups of four all doing something different? I can’t have certain chemicals out together because I don’t—you’re a high schooler. I don’t trust you.”*

While many middle and secondary teachers in both the Lehigh and Mercer school districts expressed concerns about management, the teachers at Davis Charter High School expressed fewer concerns about accommodating differentiated student pacing. The Davis teachers made it clear that many of their concerns about managing these environments were strongly alleviated by their schools’ adoption of project-based learning. For Amelia, who teaches world languages, the projects provide structure for both teachers and students but also offer flexibility for students. According to Amelia, *“they are at different stages or doing different things but they’re all working on the project and I’m not managing completely different activities. It’s all related.”*

Elementary school teachers voiced considerably fewer concerns about individualized pacing. The primary explanation as to why elementary teachers were less burdened

by management concerns related to class size. At the elementary level, class sizes are considerably smaller than middle and secondary classrooms. In both the Lehigh and Mercer districts, elementary teachers' student load ranged from 18-24 students, as opposed to their middle and secondary peers who taught between 100-150 students. The smaller classes sizes at the elementary level made individualizing more feasible.

Some elementary teachers also employed strategies that facilitated flexible pacing. Elementary teachers at Dunleavy Elementary in the Lehigh District utilized student data binders, which included data from both formative and summative assessments. By keeping student data readily available, these data binders made monitoring, assessing, and reassessing students less burdensome. Keeping track of student data both anecdotally and via data binder, were considerably easier tasks with smaller teaching loads. While data binders could have proven to be effective tools for managing multiple student paces at the higher grade levels as well, secondary teachers were too overwhelmed by their teaching loads to be able to put this strategy into place.

### **Challenge #2: Lack of Alignment Between Curricula and Pacing Expectations**

The use of scripted curricula and pacing guides represents a significant barrier to providing students an opportunity to move at their own pace. With pacing guides in place, teachers feel beholden to these deadlines. Many teachers expressed an interest in providing a more fluid pace for their students but ultimately expressed concerns about being out of sync with the guides. Even as these districts attempt to wade deeper into their implementation, they continue to adopt curricula that do not align with their goals of providing flexible student pacing. This was most acutely felt for math teachers at Mercer's Barrett Elementary and science teachers at Lehigh's Williamson Middle School, where the districts had adopted curricula that required teachers to adhere to a scripted pace. While the teachers believed in the quality of these curricular programs, they also recognized that they did not allow for variation in pace. The combination of the perceived quality of the materials and the substantial resources their districts had invested in curricular adoption compelled teachers to follow the pacing guides. For Maya, a science and STEM teacher at Williamson, this was challenging. She recognized the quality of the curriculum but also the disconnect between it and the district's larger goals of creating flexible pacing. Maya explained, *"The program that we purchased for this year is pretty scripted, but super high quality. We are pretty much on pace with each other day to day."* The highly scripted nature of the program is creating a singular pace, across multiple classrooms.

Even when teachers were not utilizing scripted curricula with strict pacing guides, they still emphasized content coverage. Teachers' drive to cover their assigned or expected curriculum leads them to adopt a teacher-led pace. As Jesse, a social studies teacher

at Williamson Middle School, explained, “my mentor had the rule you’re at the Civil War by Thanksgiving or bust.” These attitudes are reinforced during observations, during which administrators note where teachers are in the material relative to where they “should” be. Daniel, a science teacher at Williamson Middle School, explained the pressure he feels to meet his administrator’s expectations,

*The only aspect of {personalized learning} that we have is the—it’s not you take a test and {students} move on. {Students} take a test. {Students are} still responsible for that material. {Students} are responsible to get the material that is required for that course. The problem is {teachers} move on regardless, the class. Then {teachers are} just dragging these kids along, trying to get them caught up. They can’t slow down because we don’t have the ability to slow down.*

Claire, an English teacher at Winslow High School in Mercer, also acknowledged the tension between trying to provide students flexible pacing and pressure to stay on pace. Claire said, “we give them several extra weeks to master a competency. However, there’s a set amount of curriculum I have to get through each semester, so we still have to keep pushing forward the whole class unless it’s something that I see, you know, okay, average, nobody in here is understanding this concept.” For Joanie, a science teacher at Laettner-Hill, the creation of flexible student pacing would be detrimental to their ability to cover their curriculum. Joanie explained,

*I get through 13 measurement topics by the end of the year in biology, five in earth science. I don’t remember how many in physics. And I’m obligated to get them through that, and I have kids going on to {University of Michigan}, and they need all of them. So, I can’t stop and work with some—I can’t get somebody through eight and give them credit for the course. I have no recourse—or no option to get them through the other five at some other point.*

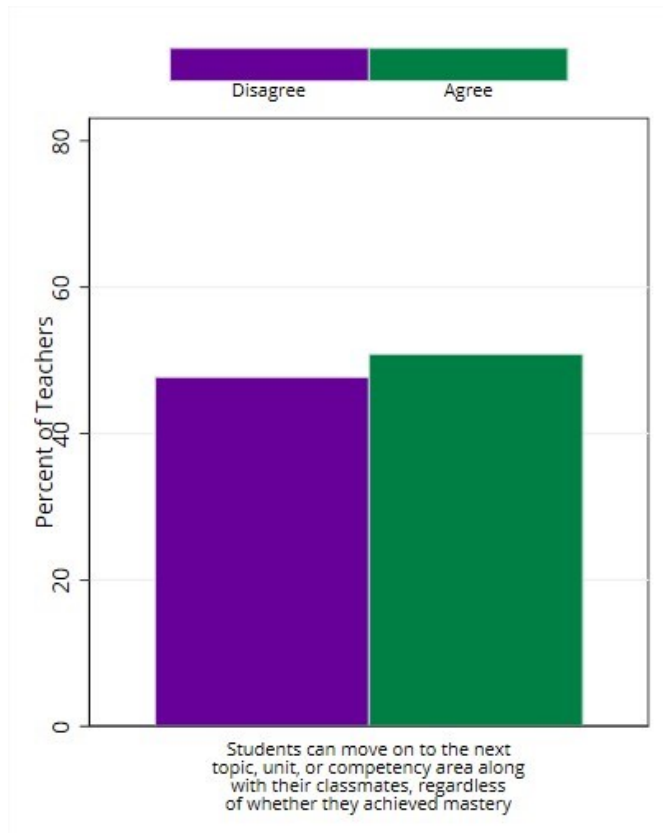
Andrew, a veteran social studies teacher at Mercer’s Winslow High School, explained that his department was also reluctant to deemphasize coverage in favor of flexible pacing. Andrew explained, “My department is a little bit stubborn in the fact that they’ll turn you to the Michigan high school content expectations for what they need to teach, and they’ll say, the state of Michigan tells me I have to teach X, Y, and Z.”

These case findings are reinforced by our survey data, where we see that teachers are often establishing competencies within their classrooms, but they are not enforcing those competencies as requirements for advancement. While districts are creating measurable competencies, established competencies serve more as goals to strive towards than requirements for students to advance to the next competency. As shown



in Figure 4, approximately 80 percent of teachers report creating measurable competencies, but more than half of the teachers surveyed agreed that students could move on to the next topic, unit, or competency area regardless of whether they achieved mastery.

**FIGURE 4. Measurable Competencies**



**Challenge #3: The Inflexibility of Schools’ Daily Schedule**

To accommodate student-centered pacing, case districts have adopted scheduling changes such as block scheduling. However, the entrenchment of traditional elements of school scheduling—such as traditional bell schedules (which the case sites all still employ) and the inability to schedule similar courses during the same blocks—make it difficult to enable individualized pacing. For Jesse, a social studies teacher at Williamson Middle, the incompatibility between the current school structure and providing students with flexible pacing is striking,

*The next problem to solve is when students reach the end of a {grade} level and are ready to start the next grade level. Our system isn't set up for that type of free-flowing movement. We've explored ideas on how to*

*make this work, but it involves so much flexibility and movement, that it's very difficult to do in a system with "schedules" and attendance benchmarks, and grading systems that are still used, despite being somewhat archaic. We've tried to get some leniency from some of the legislative handcuffs on some of these issues (seat time waivers, credit waivers, etc.), but the reality is, they are deeply entrenched. We're trying to create a system made of a square peg and trying to fit it into best practices which is a round hole.*

Concerns regarding the schedule were again experienced more acutely by teachers at the middle and secondary level. Because of the way elementary classes rely less on transitions and instruction in limited environments, elementary teachers were far less constrained by the daily schedule. Lola, Candice, and Ginger, all members of the kindergarten team at Lehigh's Dunleavy Elementary, regularly used common planning time to assess their students' level of mastery and adjust their classroom schedules. For Candice, the adaptable nature of the elementary schedule allowed her and her team members to extend learning activities and share students across ability groups, which allowed for more opportunities for students to learn at their own pace. While the pliability of the elementary schedule created opportunities to extend learning time or provide students appropriately paced instruction, this currently eludes teachers at the middle and secondary level.

Given the structure of middle and secondary school schedules, teachers in higher grade levels cannot as easily extend students' learning opportunities or share students. This is evident in the experience of Daniel, a science teacher at Williamson Middle, who explained that while he and the other 8th grade science teachers have discussed practices such as sharing students to accommodate students at their individual paces, ultimately, their classes are scheduled at different times. Additionally, Alexandra, an English teacher at Williamson expressed similar concerns, explaining, *"because I can't just send kids to Emily or to Lee, all the learning has to happen in my class and I just am not prepared to teach all parts of my curriculum at once."*

While the lack of flexibility in the schedule made flexible pacing less feasible, there are some districts that are working to get around this challenge by using extended learning time to meet individual student needs. For instance, Mercer and Lehigh school districts have created advisory programs to extend learning opportunities and create opportunities for individualized pacing. In addition to their advisory program, the Lehigh School District implemented an extended day at their middle school. Maya, who regularly supervised students during the extended day, recounted its benefits in improving opportunities for students to work at their own pace:

*We used to have seventh hour up until this year. It was afterschool tutoring. It was an hour and a half after school, three days a week. There was one teacher, they had enough budgeted to pay one teacher in each of the core subject areas to staff that three days a week. Students could come in and they could retake tests, they could catch up on work. That was huge. An hour and a half is a huge chunk of time—compared to the 22 minutes of advisory each day.*

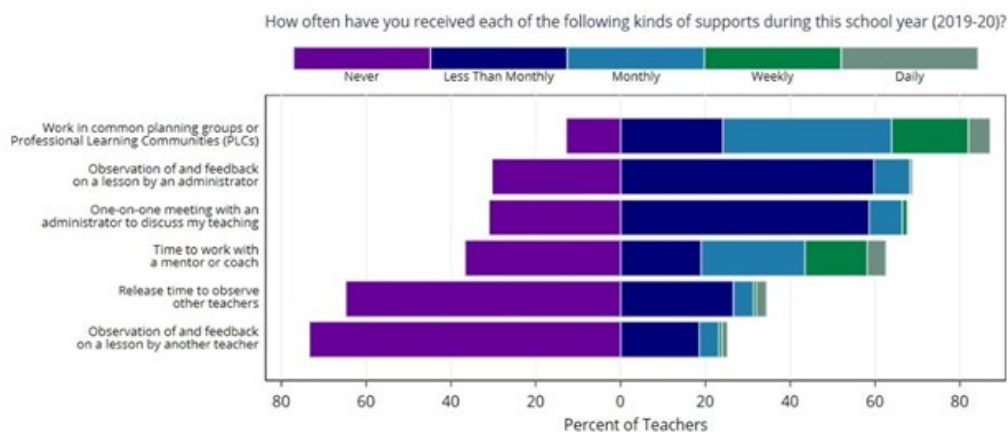
As Maya suggests, the extended day provided substantially more time and better opportunities for flexible student pacing. However, while Maya and other teachers at Williamson supported the extended day, the school no longer has the funding to pay for instructional and transportation costs. This surfaces another challenge to innovative strategies to enable flexible pacing: sufficient funding.

#### **Challenge #4: Limited Professional Development Opportunities**

While teachers in our case sites discussed with ease the importance of flexible pacing, they ultimately struggled to articulate how it would be operationalized in their classrooms. This leads us to the fourth significant barrier to implementing PL strategies, which was also discussed in the literature on personalized learning: teachers' lack of access to high-quality, targeted professional development on flexible pacing.

In our surveys, teachers note that professional development opportunities in general – not just related to individualized pacing – are limited in both content and frequency. Notably, as is shown in Figure 4, while teachers report that they frequently meet with their professional learning communities (PLCs)—typically a group of educators that meets regularly, shares expertise, and works collaboratively to improve teaching skills—it appears that other professional development opportunities are rare or not afforded at all. This is most strongly seen through responses to survey items relating to peer observation. When asked to report the frequency with which they were provided release time to observe other teachers, over 60 percent reported that such an opportunity was never afforded to them. Similarly, nearly two-thirds of teachers reported that they at no point received observation of and feedback on a lesson by another teacher. Survey responses to questions about professional development opportunities may be seen in Figure 5.

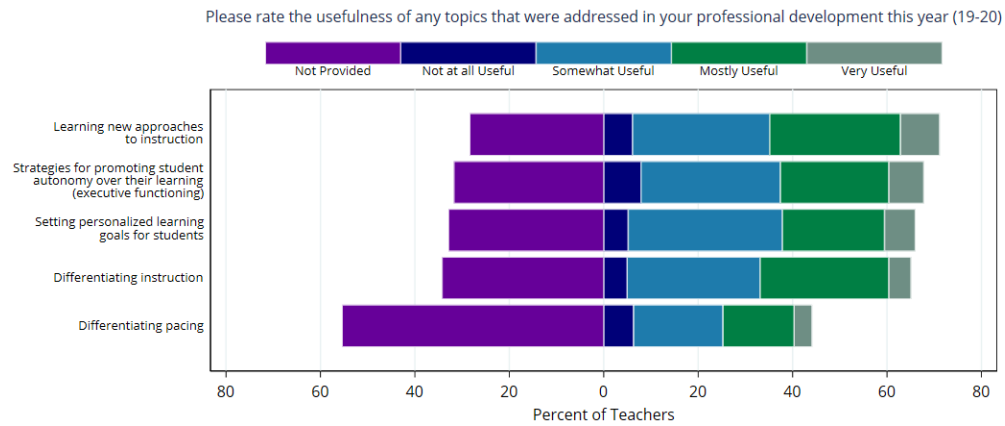
FIGURE 5. Professional Development Opportunities



Even when teachers are provided professional development opportunities, the content often is not well-aligned to their current personalized learning needs. Indeed, when asked about the usefulness of various professional development topics, teachers rarely reported that a given topic was mostly or very useful. This was especially the case with respect to personalized pacing and instruction. Response frequencies for select professional development-focused items related to personalized pacing and instruction are provided in Figure 6 below. The purple sections of each bar highlight the extent to which the given professional development focus was not provided to teachers in our survey sample. Across these items, 30% or more of teacher respondents indicated that the specific professional development focus was not addressed.

Of particular interest is the lack of professional development opportunities focused on differentiated pacing. Over 55% of teacher respondents reported that such opportunities were not provided to them. For those who were offered such an opportunity, fewer than half found it mostly or very useful. The lack of training, or the presence of training of minimal usefulness, will necessarily inhibit teachers' ability to implement a system of personalized pacing.

Figure 6: Usefulness of Select Professional Development Topics



Interviews with case study educators made clear that teachers were seeking training and professional development opportunities to enable them to implement flexible pacing in their classrooms. Educators expressed that they would like clear exemplars of classrooms that provided flexible student pacing. Because many teachers were trained to be presenters of learning and instruction and not co-facilitators of learning, high-quality professional development is essential in helping them to adopt new practices. Noah, a science teacher at Winslow High School, explained this gap in knowledge, *“I’ve never really been fully trained to run three different classrooms, you know, a classroom 17 different ways simultaneously.”*

Teachers recognized the positive role professional development could play in providing them with exemplars and high-leverage practices. However, many teachers noted that the trainings they received were more focused on big ideas and frameworks than on high-leverage, replicable practices. Lawrence, a world language teacher at Williamson Middle School explained, *“So everyone is moving at their own pace? Like, how would you execute a classroom where the kids are moving at their own pace?”* Miranda, a math teacher at Mercer’s Barrett Elementary described it like *“seeing these wonderful pictures of the food but not being provided either the recipe or the ingredients.”* Other teachers expressed similar frustration that the professional development included limited opportunities to translate concepts into practice. They reported that their professional development sessions failed to provide training that presented high-leverage, adaptable or replicable practices related to individualized pacing. Additionally, teachers expressed concerns that their professional development rarely provided appropriate scaffolding and practice time. Evelyn, a math teacher at Barrett Elementary School, explained, *“How many times have they talked to us about formative assessment, guided practice, scaffolding? Where is that for us? It just makes it seem like bad practice.”* For many teachers, this constituted an

additional burden and made it less likely for them to adopt these new strategies. Because teachers did not possess a clear understanding of what constituted best practices, ultimately many of their classrooms continued to operate at teacher pace.

It is important to again highlight where there are exceptions to the rule. While the survey data suggest that teachers have limited opportunities to observe and be observed by peers, this was not the case with the Lehigh Public School District. As part of their professional development initiative, they instituted the Demonstration Classroom Cohort, in which teachers participate in observation and reflection circles. Through this observation program, cohort members observed teachers while they demonstrated components of personalized learning in their classroom. For Mark and Spencer, two 5th grade teachers at Dunleavy Elementary, this program was critical to their development. As Mark explained, *“It’s one thing to read about it, but actually going in and seeing Julie do it, like her social emotional check-in or morning meeting, it’s something I can use but it also gets me thinking about how I want to change this for my class.”* Spencer also placed a significant amount of value on this program. Spencer noted, *“sometimes you read something and you’re like ‘yeah how does that work in a real class with 20 kids, but seeing it here makes it possible.”*

## DISCUSSION

The goals for this paper are twofold. First, we investigate why districts that are implementing personalized learning programs struggle to enact flexible pacing that allows students to spend the necessary time on topics to achieve mastery of the topic or standard and then advance to new learning competencies upon mastery. Second, while the literature on personalized learning outlines various challenges related to preparing students for accountability measures and providing adequate academic rigor (e.g., Au & Reigluth, 2011; Netcoh, 2017), differentiating instruction for each individual student (e.g., Netcoh & Bishop, 2017; Silvia et al., 2015), management (e.g., Bingham et al., 2016; Netcoh & Bishop, 2017), and student preparedness (e.g., Horn, 2017; Netcoh, 2017), these challenges are broadly defined. In this paper, we highlight the ways challenges impact a core component of personalized learning—flexible pacing. Ultimately, our data highlight the significant entrenchment of policies and practices that are impeding districts from providing flexible pacing and we show how educators and schools are able to overcome challenges to implement individualized pacing. In this section, we explore these factors and discuss recommendations for policy and practice.

First, we find that elementary classrooms are experiencing success in providing their students with flexible pacing. Our evidence suggests that this success is facilitated by

the flexibility of their daily schedule, which enables them to easily extend learning opportunities. The lack of schedule flexibility and adherence to traditional bell schedules acted as major obstacle to flexible pacing in middle and secondary classrooms. Still, middle and high schools might adopt some of the practices that facilitate individualized pacing in elementary schools, including scheduling similar courses at the same time to facilitate transfer between classes and providing teachers with common planning time so that they can discuss students' individual needs and if students would benefit from transferring between classes. In addition, some middle and high schools in our study implemented an extra advisory period that was useful to help with some aspects of flexible pacing.

We also find that the charter high school in our study has had greater success providing students with flexible pacing than have their traditional public-school counterparts. Several factors facilitated the charter school's success. As a relatively new school that began as a project-based, personalized learning school, Davis was not tied to "traditional" methods of instruction or the ways instruction had happened in the past. They were able to start fresh without having to transition from older, more traditional, practices. By contrast, teachers in Mercer and Lehigh schools were in the process of transitioning from traditional, teacher-centered practices to more student-centered practices. Teachers' struggle to make this transition was compounded by a lack of timely and relevant professional development. These findings provide additional evidence to the growing body of literature on personalized learning, specifically teachers' lack of access to high-quality professional development (e.g., Bingham & Dimandja, 2017; Bingham et al., 2018; Corkin, Coleman, and Ekemkci, 2019). While our findings highlight the necessity of professional learning opportunities for teachers, they also demonstrate the need for professional development that is targeted and provides adequate time for translating the theoretical into classroom practices.

Second, by adopting a project-based approach, the teachers at Davis were able to avoid the management concerns that perplexed many teachers in the Mercer and Lehigh school districts. Suggesting the potential that traditional instructional practices might be incompatible with personalized learning. Successful implementation might require more substantial changes to instructional practices.

Finally, our study showed that teachers are not comfortable providing flexible pacing. Their discomfort is driven by their concerns about covering their curriculum, adhering to pacing guides, and their professional preparation. Teachers recognize a gap between their training and the expectations for teachers in personalized learning settings. This discomfort is exacerbated by professional development that does not provide adequate examples for scaffolding for learning new practices.

## RECOMMENDATIONS FOR POLICY

There are several steps states may take to ensure more effective implementation of personalized learning programs. First, these findings suggest that districts should closely examine curricular programming and the alignment between the curriculum and districts' broader instructional goals. If districts are trying to implement personalized learning programs that emphasize flexible pacing, they should consider curricula that provide pacing guides with more flexibility. Additionally, administrators should place more emphasis in evaluative observations on teaching practices, rather than pacing.

Second, our findings suggest it may be more challenging to implement individualized pacing at sites that must transition an existing teaching staff than at sites that are just starting out (e.g., new charters, turnaround schools). Future implementors should consider two key recommendations: phasing in implementation and inclusion of new professional development topics. States and districts should consider a phase-in approach whereby the policy is implemented over time beginning in the lower grades to slowly provide the experiences and training to not only the teachers but also to provide the students the socializing experiences where they learn more about self-regulation and executive functioning and are able to take on more of the ownership of their learning as they advance through their education. Additionally, this would enable programs to develop best practices over time that were richly contextual and require smaller subsets of teachers to make shifts in their practices.

It is also incumbent upon states and districts to provide professional development opportunities that present exemplary practices and challenge existing paradigms about teachers' roles in the classroom. Educators need meaningful opportunities to engage in reflective activities where they can unpack the tension between their own assumptions and expectations for their work and the expectations required in a personalized learning setting. This professional development would be most beneficial if provided prior to program implementation; teachers should not be simultaneously learning about and implementing new practices.

Our findings also highlight the influence of traditional school scheduling (e.g., bell schedules). Implementation moving forward should consider allowing districts more flexibility in setting their schedules. Future implementation may consider schedules that are designed around learning activities instead of units of time.



## FUTURE RESEARCH

The analysis presented here suggests several directions for future research on personalized learning should focus on three primary areas. First, identifying exemplar districts that are implementing pacing structures to learn from what is working there. Second, future researcher might delve deeper into students' experiences with individualized pacing, focusing specifically on supports and scaffolding that has prepared them to act as co-facilitators in their learning. Finally, future research should directly assess state structures that work to facilitate individualized pacing. Additionally, Our findings provide some initial evidence to support the efficacy of implementing personalized learning in elementary settings. The previous literature on personalized learning has provided limited insight into how these practices manifest themselves successfully or unsuccessfully in elementary settings. The rationale for excluding these classrooms is unclear; however, it is possible to assume that concerns regarding developmental abilities have limited to application of personalized learning to middle and secondary classroom. While elementary students may be developmentally unprepared for the level of autonomy required in a personalized learning setting, these findings suggest that the flexibility offered by the elementary schedule may warrant further consideration.

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