

IMPROVING EQUITY AND ENGAGEMENT IN PERSONALIZED LEARNING: LESSONS FROM VERMONT'S FLEXIBLE PATHWAY INITIATIVE

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THE POLICY PUZZLE

Vermont is a nationwide pioneer in personalized learning (PL) policy, an education reform agenda that tailors classroom learning to students' needs and interests. Top researchers have described the state's 2013 Flexible Pathways Initiative as the "most comprehensive statewide policy approach" to PL in the country.¹ However, the impacts of this reform effort have been inconsistent and largely unmeasured. When the state legislature passed this initiative, it neglected to allocate funding to assist schools make the expected changes, resulting in school-level reform efforts that have been "all over the map," according to a Hechinger report article.² The variation in PL models across Vermont high schools allows this brief to analyze the relationships between school-level PL strategies and student engagement levels, measured by student participation in PL programs. Specifically, this brief seeks to answer two questions:

- What school-level PL strategies and policy design choices are most associated with increases in student engagement?
- What are the implications of these PL strategies for historically underserved and vulnerable students?

"...school-level factors such as having a PL coordinator on staff, offering in-school internship opportunities for students, and using student voices to guide the development of PL programs may be the most vital components of any PL initiative seeking to engage its students."

The analysis draws on survey data collected in 2019 from 35 Vermont high school principals and, additionally, on two focus group interviews conducted in 2020 with six Vermont PL practitioners. This brief reveals that school-level factors such as having a PL coordinator on staff, offering in-school internship opportunities for students, and using student voices to guide the development of PL programs may be the most vital components of any PL initiative seeking to engage its students. Additionally, it reveals that PL programs with entry barriers such as a requirement for independent transportation or complicated registration processes may be inaccessible for many historically underserved students.

NATIONAL CONTEXT: GAPS IN EXISTING PL RESEARCH

Personalized learning promises to tailor classroom learning to students' individual skills and interests. This novel approach has made PL an increasingly popular reform agenda for schools and districts not just in Vermont, but across the entire country.^{3,4} In 2018, an Education Week Research Center poll found that 97 percent of surveyed principals reported that their school was using digital technologies to personalize instruction.⁵ Clearly, PL has emerged prominently on the national stage of education reform.

Yet while the excitement surrounding PL is red hot, the research base for its effectiveness remains lukewarm. The most comprehensive evaluation of PL to date, conducted by the RAND Corporation, links PL practices to modest overall increases in student math achievement, but finds too much uncertainty in the data to discern a significant relationship between PL practices and reading achievement.⁶ Furthermore, the study neglects to consider the specific implications of

individual PL components, instead lumping all PL models into the same treatment group. The head researcher, John Pane, conceded this flaw, writing one year later that “considerable additional research will be needed to sort out the fine details of which [PL] strategies, and in which combinations, are most effective for which students.”⁷ This brief aims to shed light on some of those finer details.

The stakes are high for a better understanding of PL’s intricacies. As PL has begun to see nationwide implementation, researchers worry that certain models may exacerbate education inequalities. In an equity-focused evaluation, Ray, Sacks and Twyman conclude that while some PL models may support historically underserved students by providing key scaffolding, other models may widen achievement gaps by using self-pacing as a justification for the stymied progress of certain students.⁸ In other words, the implications of PL for historically underserved and vulnerable students seem to depend largely on the specifics of how each model functions on the ground. To the author’s knowledge, the analysis presented in this brief is the first large-sample study that examines these intricacies, linking the school-level components of PL models to levels of student engagement. While the findings and policy recommendations focus on Vermont, the lessons regarding how PL may buoy historically underserved students contribute to the nationwide discourses on PL.

PERSONALIZED LEARNING IN VERMONT

The Flexible Pathways Initiative required Vermont schools to adopt numerous PL practices, including personalized learning plans and “flexible pathway” learning options for students. The bill stipulates four types of flexible pathway options: early college courses, work and internship-based learning courses, career and technical education, and online learning. According to the legislation, as of January 2020, all Vermont high schools were expected to offer the four pathways to their students and, additionally, to roll out personalized learning plans for each student to help navigate those options. While most schools have made efforts to integrate these changes, the author’s preliminary interviews revealed that they had employed different sets of strategies to build their PL programs. This study considers the implications of these sets of strategies for student engagement at each school.

BY THE NUMBERS: VERMONT’S PL EFFORT

74.3% of principals named PL as a professional development priority for teachers

54.3% of schools have a designated full or part-time PL coordinator

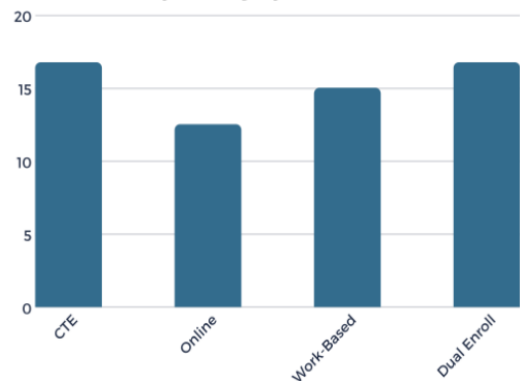
21.2% of schools include students on a steering committee for the implementation of their PL program

37.4% of students in the sample the survey qualify for free or reduced price lunch

8.8% of students in the sample are non-white

Up to 60% of students in the sample participate in flexible pathway programs (see graph for details)¹

The percentage of Vermont students participating in each flexible pathway option:



¹ In the survey, principals indicated the percentage of students at their school who pursue each flexible pathway option. If each figure represented separate students (i.e. no students pursued more than one pathway option), it would mean that 60 percent of students in the sample participate in flexible pathways. However, the actual figure is likely below that mark.

FINDINGS: WHICH PL STRATEGIES ARE MOST PROMISING?

QUANTITATIVE RESULTS

This study uses regression analysis to find the following statistically significant relationships between school-level PL strategies and students' rate of participation in PL programs:⁹

- Having a PL coordinator on staff was associated with an increase in overall flexible pathway participation of **5 to 15 percentage points**.
- Offering in-school internship opportunities was associated with an increase in work-based learning participation of **10 to 30 percentage points**.
- When student voices were not integrated into PL program planning, advisory length did not have a relationship with flexible pathway participation. When student voices were included on the school's PL steering committee, more time in advisory was associated with a bump in flexible pathway participation of **up to 50 percentage points**.

QUALITATIVE RESULTS

The author conducted two focus group interviews with a total of six PL practitioners in Vermont high schools. Their perspectives uncovered a number of insights regarding vulnerable students' access to the full scope of PL programs:¹⁰

- The unnecessary logistical hurdles of early college and dual enrollment courses have rendered the program inaccessible to many under-resourced students. In many cases, students are required to complete numerous forms, request vouchers, and take a placement test all within the span of a handful of days. "The original intent was for first generation students and it has not become that," said April Wortmann of Mt. Abraham.
- Lack of transportation presents a barrier to work and internship-based learning for students without access to a car, particularly in rural areas. "The transportation thing is a barrier for work-based learning students. If they don't have a car, it has to be something within walking distance," said Terry Berger of Leland and Gray Union High School.
- Project-based learning opportunities must not leave students stranded without teacher support. Mt. Abraham made this transition, adding "Guided Learning Opportunities" (GLOs) as a secondary option to their "Independent Learning Opportunity" (ILO) program. Before the changes, "it didn't really look like flexible pathways for all, it looked like flexible pathways for some," reflected Wortmann. But after adding GLOs, the program saw "a much wider spectrum of students engaging in these kinds of opportunities," according to Gabe Hamilton, also of Mt. Abraham.

POLICY RECOMMENDATIONS

The quantitative and qualitative analyses agree in a number of areas and point to three specific components of PL programs that may have a high-leverage impact on student engagement. Those components are: bringing on staff a devoted PL coordinator, making work-based learning accessible through offering in-school student internship opportunities, and integrating student voices into the design of PL programs. These specific components, along with other factors that may make PL programs in Vermont more accessible to historically underserved students, form the backbone of the recommendations put forward by this brief. By making the following changes, Vermont has the opportunity to bolster the effectiveness of its Flexible Pathways Initiative, both by measures of student engagement and of equity.¹¹

SCHOOL-LEVEL RECOMMENDATIONS

- Schools should include student representatives on their PL steering committees and solicit feedback on their programs from the entire student body through surveys.

- Schools should offer in-school internship opportunities such as teacher’s assistantship positions so that students who wish to participate in work-based learning can do so without requiring transportation to the job site.

STATE-LEVEL RECOMMENDATIONS

- Vermont should appropriate funds to help all schools bring devoted PL coordinators on staff.
- Vermont must work with its state colleges and universities to streamline the dual enrollment registration process so that the program may serve its original goal of making post-secondary education more accessible to first-generation students.
- Vermont should expand opportunities for PL coordinators to connect and share strategies.

CONTRIBUTIONS TO NATIONAL PL DISCOURSE

The findings of this study indicate that PL programs seeking to promote equitable outcomes require thoughtfully placed supports. For example, a work-based learning program that places students only in off-site internships creates a divide between students with and without access to transportation. Personalized learning for all students first requires an honest assessment of student needs. This conclusion supports Ray et. al’s admonition that PL programs may “inadvertently *increase* educational inequity” if they fail to account for the needs of historically underserved students.¹² National PL discourses must understand that PL depends on school faculty building personal relationships with students. As shown in this brief, simply the presence of a PL coordinator – someone students can rely on as they navigate their school’s PL program – is linked to increases in student PL participation. Students need to be seen, supported, and understood. When PL programs fail to facilitate faculty relationships with students, they all-too often reinforce educational disparities by misunderstanding or underestimating the needs of their learners. PL programs must prioritize personal relationships between students and faculty for schools to know how to effectively guide and support their students.

APPENDIX

METHODS: ANALYZING PL IN VERMONT

This study used a mixed-methods approach, analyzing both quantitative and qualitative data. First, a series of preliminary interviews were conducted with four PL practitioners from high schools across Vermont. These interviews allowed the research to better understand the school-level components of PL in Vermont, and additionally, to pre-test the survey instrument. The final survey included twenty-two questions on PL and the Flexible Pathways Initiative. It was distributed to all Vermont high school principals over email, and the researcher followed up with one email reminder and two phone reminders to each school. In all, principals from 35 out of 60 public Vermont high schools responded to the survey, for a 58.3% overall response rate. Survey responder schools did not differ significantly from survey non-responder schools in terms of average enrollment, average poverty level, or average percent minority enrollment. The analysis in the quantitative section of this study drew on a dataset made up of information provided by survey responders merged with administrative data from the U.S. Office of Civil Rights, the U.S. Department of Education, and the Vermont Agency of Education.

After analyzing this data, the researcher conducted two focus group interviews, one in Northern Vermont and the other in Southern Vermont to reduce participants’ travel times. Because the quantitative analysis found in-school internships and student voice to have a positive relationship with flexible pathway participation, the author invited PL coordinators from all schools that reported having implemented both factors to the focus group interview. Five out of nine such schools participated in the focus group interviews (one school sent two representatives, for a total of six interview participants). Though no strict protocol was used for the interviews, each lasted approximately 90 minutes, and the author made sure to guide discussion toward two central questions: 1) From what you have seen, which PL strategies have worked, and which strategies have not worked? 2) How have various PL strategies worked for vulnerable or underserved students? Overall, would you consider the Flexible Pathways Initiative to have been an equitizing or stratifying reform at your school in terms of educational attainment?

The author recorded all interviews and transcribed relevant quotations. After providing all interview participants with access to the quotations used in the text of his thesis (in which the quotations originally appeared), all participants gave consent for their full names to be used in the written work. For more details, please see Lehrer-Small, 2020.

REGRESSION MODELS AND OUTPUT

The quantitative findings presented in this brief come from a more comprehensive statistical analysis. The tables below list the regression models and output employed. See Lehrer-Small, 2020 for more details.

TABLE 1: MODELS, MULTIPLE LINEAR REGRESSION

Model 1	Is offering in-school internships associated with higher percentages of students pursuing work-based learning when controlling for school size and percentage of students receiving free or reduced lunch?
Model 2	Is offering in-school dual enrollment courses associated with higher percentages of students taking dual enrollment courses when controlling for school size and percentage of students receiving free or reduced lunch?
Model 3.1	Is having a paid PLP/flexible pathways coordinator associated with having higher rates of students pursuing flexible pathway options when controlling for school size and percentage of students receiving free or reduced lunch?
Model 3.2	Is having a paid PLP/flexible pathways coordinator associated with having higher rates of students pursuing flexible pathway options controlling for school size?
Model 4	Is having 60+ mins of advisory associated with having higher rates of students pursuing flexible pathway options when controlling for school size and percentage of students receiving free or reduced lunch?
Model 5	Is naming professional development targeted at personalized learning techniques as a priority associated with having higher rates of students pursuing flexible pathway options when controlling for school size and percentage of students receiving free or reduced lunch?
Model 6	Is there a significant difference between mixed-grade and same-grade advisory structures in regard to the mean amounts of students who pursue flexible pathway options when controlling for school size and percentage of students receiving free or reduced lunch?

TABLE 2: OUTPUT, MULTIPLE LINEAR REGRESSION

	(1) <i>Intern. †</i>	(2) <i>Dual Enr. ††</i>	(3.1) <i>Coord.</i>	(3.2) <i>Coord.</i>	(4) <i>Adv. Mins</i>	(5) <i>PD</i>	(6) <i>Adv. Type</i>
<i>In-School Internships</i>	0.77 ** (0.33)						
<i>In-School Dual Enrollment</i>		0.067 (0.32)					
<i>Paid Coordinator</i>			0.071 * (0.038)	0.083 ** (0.032)			
<i>60+ Min Advisory</i>					0.011 (0.038)		
<i>Professional Development</i>						-0.055 (0.041)	
<i>Advisory Type</i>							-0.015 (0.044)
<i>FRL Percent</i>	-8.7e-03 (1.4e-02)	0.011 (0.012)	-1.6e-03 (2.0e-03)		-1.8e-03 (2.2e-03)	-1.2e-03 (2.1e-03)	-1.3e-03 (2.4e-03)
<i>School Size</i>	5.8e-04 (5.5e-04)	4.3e-04 (4.6e-04)	-4.4e-05 (7.6e-05)	-1.9e-05 (5.3e-05)	-5.5e-05 (8.8e-05)	2.7e-05 (7.8e-05)	-7.8e-06 (8.9e-05)
<i>(Intercept)</i>	1.37 * (0.74)	1.28 ** (0.56)	0.90 ** (0.10)	0.82 ** (0.026)	0.95 ** (0.11)	0.94 ** (0.10)	0.94 ** (0.12)
<i>Sample Size</i>	N= 30	N=30	N=30	N=34	N=30	N=30	N=30

* indicates significant at the $p < 0.1$ level; ** indicates significant at the $p < 0.05$ level
† indicates outcome measure = work-based learning score; †† indicates outcome measure = dual enrollment score
Unless otherwise indicated, outcome measure = log flexible pathway score

TABLE 3: MODELS, MULTIPLE LINEAR REGRESSION WITH MODERATOR ANALYSIS

Model 7	Does the effect associated with having 60 mins of advisory depend on whether PLPs are structured through the advisory system when controlling for percentage of students receiving free or reduced lunch and school size?	$logFP = \beta_0 + \beta_1 * 60minAdv + \beta_2 * plpAdv + \beta_3 * frl + \beta_4 * schSize + \beta_5 * 60minAdv * plpAdv$
Model 8.1	Does the effect associated with having 60 mins of advisory depend on whether students are included on the school's PLP advisory committee when controlling for percentage of students receiving free or reduced lunch and school size?	$logFP = \beta_0 + \beta_1 * 60minAdv + \beta_2 * studCommittee + \beta_3 * frl + \beta_4 * schSize + \beta_5 * 60minAdv * studCommittee$
Model 8.2	Does the effect associated with having 60 mins of advisory depend on whether students are included on the school's PLP advisory committee when controlling for school size?	$logFP = \beta_0 + \beta_1 * 60minAdv + \beta_2 * studCommittee + \beta_3 * schSize + \beta_4 * 60minAdv * studCommittee$
Model 9	Does the effect associated with having PL-focused PD depend on the tenure of the principal in their current position when controlling for percentage of students receiving free or reduced lunch and school size?	$logFP = \beta_0 + \beta_1 * pd + \beta_2 * newPrinc + \beta_3 * frl + \beta_4 * schSize + \beta_5 * pd * newPrinc$
Model 10	Does the effect associated with having a PLP/flexible pathways coordinator depend on whether students are included on the school's PLP advisory committee when controlling for percentage of students receiving free or reduced lunch and school size?	$logFP = \beta_0 + \beta_1 * paidCoord + \beta_2 * studCommittee + \beta_3 * frl + \beta_4 * schSize + \beta_5 * paidCoord * studCommittee$

TABLE 4: OUTPUT, MULTIPLE LINEAR REGRESSION WITH MODERATOR ANALYSIS

	(7) Adv*PLP	(8.1) Adv*Stud	(8.2) Adv*Stud	(9) PD*Principal	(10) Coord*Stud
60+ Min Advisory	-0.034 (0.052)	-0.016 (0.043)	-1.36e-03 (0.036)		
Paid Coordinator					0.060 (0.044)
PLP in Advisory	-0.022 (0.057)				
Student PLP Committee		-0.085 (0.108)	-0.075 (0.068)		-0.033 (0.103)
Professional Development New Principal				-0.082 (0.056)	
60+ Min Adv * PLP in Adv.	0.094 (0.075)				
60+ Min Adv * Stud PLP Committee		0.20 (0.13)	0.19 ** (0.09)		
Professional Dev * New Principal				0.024 (0.081)	
Coord. * Stud PLP Committee					0.090 (0.114)
FRL Percent	-1.9e-03 (2.1e-03)	-1.4e-04 (2.4e-03)		-8.7e-04 (2.1e-03)	-1.5e-03 (2.1e-03)
School Size	-3.7e-05 (9.0e-05)	-8.2e-06 (9.2e-05)	-2.7e-05 (6.0e-05)	5.9e-05 (8.0e-05)	-5.1e-05 (8.0e-05)
(Intercept)	0.96 ** (0.11)	0.87 ** (0.12)	0.86 ** (0.03)	0.90 ** (0.10)	0.90 ** (0.11)
Sample Size	N= 30	N=30	N=34	N=30	N=30

* indicates significant at the $p < 0.1$ level; ** indicates significant at the $p < 0.05$ level

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