Impact of Student Choice and Personalized Learning

In the following report, Hanover Research examines the impact of personalized learning, and educational strategies that emphasize student choice, on academic achievement. In particular, the report focuses on promising practices that have the potential to increase academic achievement, student persistence, and overall student engagement.

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EXECUTIVE SUMMARY AND KEY FINDINGS

In the following report, Hanover Research examines the impact of personalized learning, and educational strategies that emphasize student choice, on academic achievement. In particular, the report focuses on promising practices that have the potential to increase academic achievement, student persistence, and overall student engagement. The report is divided into two sections and an appendix:

- **Section I** discusses personalized learning strategies and interventions and their impact on academic achievement.

- **Section II** discusses student choice and its impact on student achievement.

- **The appendix** reproduces a personalized learning plan implementation self-assessment tool created by the Vermont Agency of Education.

KEY FINDINGS

- **Among the most promising strategies for implementing personalized learning include offering competency-based progression pathways, the creation of learner profiles, and customized learning paths.** Such strategies enable educators to tailor instruction to student needs and interests and enable students to have agency in determining their educational path. Moreover, these strategies can lead to improved student engagement, which may result in improved academic outcomes.

- **Student choice is considered to have a similar set of benefits to those associated with personalized learning**. In particular, by empowering students to exercise a degree of autonomous decision making, student choice makes students active participants in their educations, thereby increasing levels of engagement. Notably, researchers highlight the fact that such autonomy is generally associated with greater personal well-being and satisfaction in educational environments, as well as in terms of academic performance. Studies have found that students given a degree of choice about their learning showed improvement on standardized tests.

- **Blended learning is considered one of the most promising ways to integrate digital tools into a personalized learning framework.** As opposed to a strictly face-to-face personalized learning model, which can be exceedingly difficult to bring to scale, the blended (or hybrid) model enables educators to provide tailored instruction at variable paces and to focus on providing individualized attention as necessary. It should be noted that it is difficult for researchers to measure the efficacy of specific digital tools, given the variability of the contexts in which they are used as well as the manner in which educators deploy them.

- **Personalized learning, which frequently involves elements predicated on student choice, is considered an effective intervention for increasing student persistence rates**. By creating an educational environment in which students receive individual attention, students are able to pursue educational pathways that interest them, and in which students generally feel cared for and about, personalized learning can markedly increase student engagement. Moreover, personalized learning structures

can also serve as platforms for implementing other strategies that support at-risk students.

- **The term "personalized learning" is highly variable and the definitions vary according to the context in which they are used**. However, despite this variation, the numerous definitions provided for personalized learning emphasize common features and objectives including flexibility (according to student learning needs), variable pacing, differentiation, and customization, all with the goal of improving student achievement and engagement.

- **Likewise, "student choice" refers to a wide array of practices that center around empowering students with greater autonomy to determine their learning pathways**. Thus, student choice may refer to *organization choice*, such as the ability to choose group members or the ability to participate in establishing classroom rules; *procedural choice*, as in the choice of how to demonstrate competence or mastery; and *cognitive choice*, under the umbrella of which students are empowered to find multiple solutions to problems, align tasks according to their interests, and debate ideas freely.

SECTION I: PERSONALIZED LEARNING

This section examines the education literature concerning the impact of personalized learning on measures of student achievement. In particular, this section highlights personalized learning interventions and strategies that may prove effective in improving student performance and student engagement. This section also discusses the impact personalized learning can have on student persistence as a result of its implementation.

INTRODUCTION

Personalized learning is defined in numerous ways. According to the Great Schools Partnership's "Glossary of Education Reform," personalized learning can refer to a "diverse variety of educational programs, learning experiences, instructional approaches, and academic support strategies" that are, designed to enable the "academic success of each student by first determining the learning needs, interests, and aspirations of individual students, and then providing learning experiences that are customized—to a greater or lesser extent—for each student."[1]

Notably, the term "personalized learning," as well as similar terms (e.g., individualized learning), is used widely by online schools and other vendors of online learning programs; however, "as it is typically designed and implemented in K–12 public schools," personalized learning "can differ significantly from the forms of 'personalized learning' being offered and promoted by virtual schools and online learning programs."[2]

Similarly to the Great Schools Partnership, the International Association for K-12 Online Learning (iNACOL) proposes a student-centered definition of personalized learning as "tailoring learning for each student's strengths, needs and interests—including enabling student voice and choice in what, how, when and where they learn—to provide flexibility and supports to ensure mastery of the highest standards possible."[3] As such, personalized learning enables students to "have agency to set their own goals for learning, create a reflective process during their journey to attain those goals, and be flexible enough to take their learning outside the confines of the traditional classroom."[4]

The U.S. Department of Education defines personalized learning as

> instruction that is paced to learning needs [i.e. individualized], tailored to learning preferences [i.e. differentiated], and tailored to the specific interests of different

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[1] "Personalized Learning," The Glossary of Education Reform, Great Schools Project, 2014.
http://edglossary.org/personalized-learning/
[2] Ibid.
[3] Patrick, Susan, Kathryn Kennedy, and Allison Powell. "Meaning What You Say: Defining and Integrating Personalized Blended and Competency Education," International Association for K-12 Online Learning, October 2013. p.4.
http://www.inacol.org/wp-content/uploads/2013/10/iNACOL-Mean-What-You-Say-October-2013.pdf
[4] Ibid.

learners. In an environment that is fully personalized, the learning objectives and content as well as the method and pace may all vary.[5]

Moreover, the Department of Education highlights the flexibility of personalized learning systems, and connects it with competency-based strategies "that provide flexibility in the way that credit can be earned or awarded, and provide students with personalized learning opportunities."[6] The Department of Education notes that competency-based and personalized learning strategies—such as "online and blended learning, dual enrollment and early college high schools, project-based and community-based learning, and credit recovery"—can lead "to better student engagement because the content is relevant to each student and tailored to their unique needs," as well as improved student outcomes.[7] Other illustrative examples of effective approaches to personalized learning that educators take include:[8]

- **"Reconfiguring the operational and educational structure of a large school** so that students are organized into smaller groups and paired with a consistent team of teachers who get to know the students and their learning needs well." This approach takes a variety of forms depending on the school at which it is implemented: teaming, theme-based academies, and "schools-within-a-school" are some the more common forms.

- **"Eliminating the practice of grouping students into different academic 'tracks'** or tiered course levels based on their perceived ability or past academic performance—a practice called 'heterogeneous grouping' or 'mixed-ability grouping,' in which students of various ability levels are enrolled in the same course or program." Such strategies are also called differentiation, differentiated instruction, and differentiated learning.

- Offering students a **"variety of learning pathways**—i.e., a wider and more diverse selection of learning experiences," such as career-related internships, dual enrollment experiences and independent study opportunities, that allow students to customize their learning experiences in accordance with their particular needs.

- Enabling students to **"create and maintain personal learning plans** which describe their academic, collegiate, and career goals, while mapping out the educational decisions they need to make to achieve their goals, or portfolios, which are a cumulative record of a student's academic work and accomplishments. Teachers, advisors, and educational specialists may use these plans and portfolios to guide how they teach and support specific students."

- **"Using alternative educational approaches and instructional methods**—such as authentic learning, blended learning, community-based learning, or project-based

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[5] As quoted in: Wolf, Mary Ann. "Innovate to Educate: System [Re}Design for Personalized Learning," Software and Information Industry Association, 2010. p.12. http://siia.net/pli/presentations/PerLearnPaper.pdf

[6] Competency-Based Learning or Personalized Learning," U.S. Department of Education. http://www.ed.gov/oii-news/competency-based-learning-or-personalized-learning
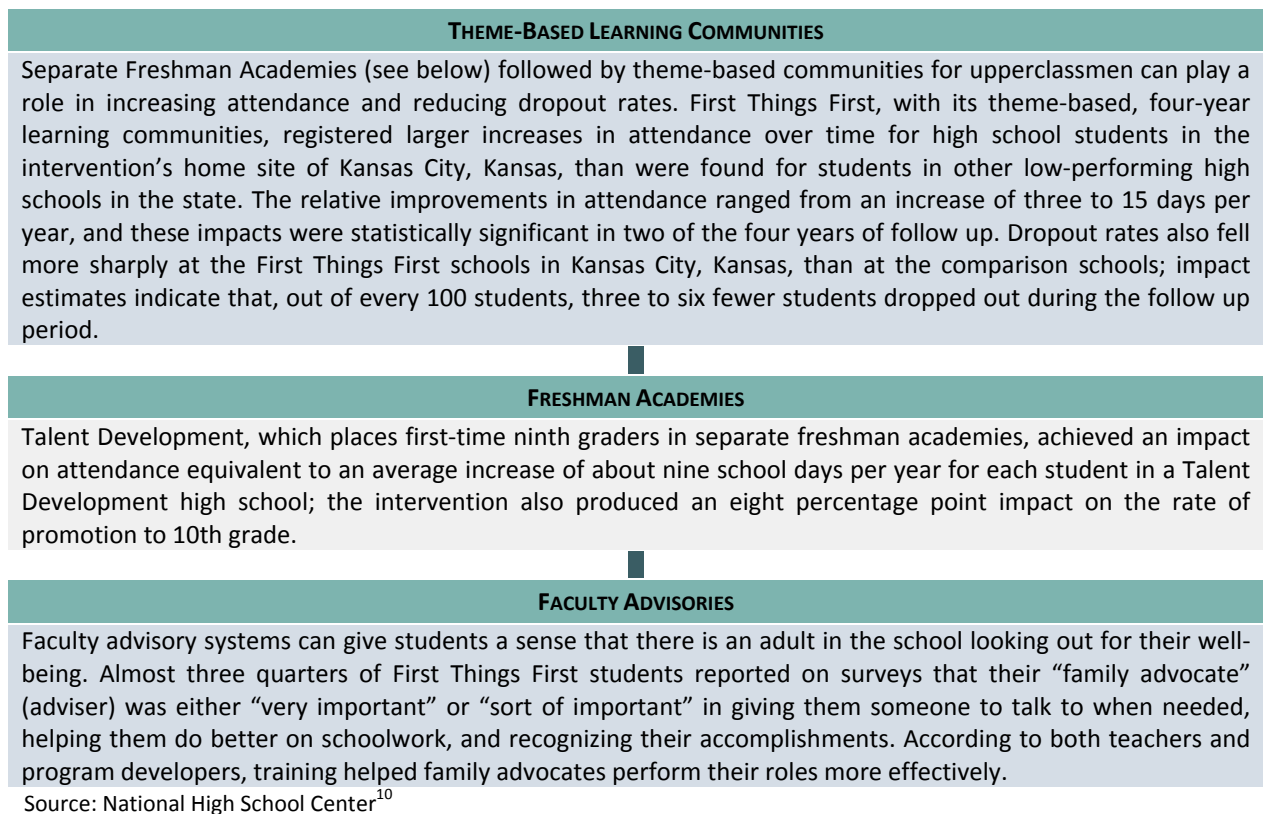
[7] Ibid.

[8] "Personalized Learning," The Glossary of Education Reform, Great Schools Project, 2014. Op cit.

learning, to name just a few—that may give students more personal choice in their education and more opportunities to pursue learning experiences that reflect their personal interests, career aspirations, or cultural heritage."

PROMISING PRACTICES FOR IMPLEMENTING PERSONALIZED LEARNING STRATEGIES

In a 2006 National High School Center report titled "Emerging Evidence on Improving High School Student Achievement and Graduation Rates: The Effects of Four Popular Improvement Programs," researchers noted the potential for personalized learning structures to improve student outcomes. The report notes that—based on the evidence from evaluations of high school reform models (First Things First, Project Graduation Really Achieves Dreams (GRAD), and Talent Development)—"creating a personalized and orderly learning environment" was an area in which successful interventions contributed to improved high school student outcomes, particularly in large high schools.[9] Key interventions noted in the report are highlighted in Figure 1.1.

Figure 1.1: Promising Personalized Learning Interventions at the High School Level

THEME-BASED LEARNING COMMUNITIES
Separate Freshman Academies (see below) followed by theme-based communities for upperclassmen can play a role in increasing attendance and reducing dropout rates. First Things First, with its theme-based, four-year learning communities, registered larger increases in attendance over time for high school students in the intervention's home site of Kansas City, Kansas, than were found for students in other low-performing high schools in the state. The relative improvements in attendance ranged from an increase of three to 15 days per year, and these impacts were statistically significant in two of the four years of follow up. Dropout rates also fell more sharply at the First Things First schools in Kansas City, Kansas, than at the comparison schools; impact estimates indicate that, out of every 100 students, three to six fewer students dropped out during the follow up period.

FRESHMAN ACADEMIES
Talent Development, which places first-time ninth graders in separate freshman academies, achieved an impact on attendance equivalent to an average increase of about nine school days per year for each student in a Talent Development high school; the intervention also produced an eight percentage point impact on the rate of promotion to 10th grade.

FACULTY ADVISORIES
Faculty advisory systems can give students a sense that there is an adult in the school looking out for their well-being. Almost three quarters of First Things First students reported on surveys that their "family advocate" (adviser) was either "very important" or "sort of important" in giving them someone to talk to when needed, helping them do better on schoolwork, and recognizing their accomplishments. According to both teachers and program developers, training helped family advocates perform their roles more effectively.

Source: National High School Center[10]

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[9] Herlihy, Corinne M. and Janet Quint. "Emerging Evidence on Improving High School Student Achievement and Graduation Rates: The Effects of Four Popular Improvement Programs," National High School Center, November 2006. p. 5. http://www.mdrc.org/sites/default/files/Emerging%20Evidence%20full.pdf

[10] Quoted, with minor variations, from: Ibid. pp. 5-6.

At a 2010 symposium on personalized learning, titled "Innovate to Educate: [Re]Design for Personalized Learning," which brought together education leaders and personalized learning experts, participants identified five "essential elements central to personalized learning:"[11]

- **Flexible, Anytime/Everywhere Learning**: This includes learning beyond a traditional school day or building through online or blended learning, hands-on opportunities in the community, and instruction offered by a range of teachers, experts, or technologies.

- **Redefine Teacher Role and Expand "Teacher"**: the role of the teacher dramatically changes with personalized learning, as it emphasizes a shift from a single teacher delivering knowledge to his classroom of students to teachers as facilitators of learning, **often as a part of a team of teachers with differentiated roles**. While the teacher directed model has its place, this facilitator model is a significant departure from the way teachers have been trained to teach and how they learned as children.

- **Project-Based and Authentic Learning Opportunities**: Project-based and authentic learning opportunities can help increase the relevance of learning and improve students' ability to apply knowledge and use critical thinking skills. Education leaders view this as an instructional shift to one better able to incorporate meaningful content and 21st century skills and to meet the interests and learning styles of many students. Symposium participants generally agreed that project-based and authentic learning opportunities therefore can help increase student engagement and ongoing attention, which improves the likelihood of learning and achievement.

- **Student-Driven Learning Path**: Such a model provides learning opportunities tailored to the expressed learning interests and abilities, whole child factors, schedule, and goals of the students. Although ensuring alignment and mastery of standards, each student's path may vary not only in terms of when and where learning takes place, but also in terms of the modalities and instructional strategies used, the pace of learning, and the types of courses and topics studied.

- **Mastery- or Competency-Based Progression/Pace**: Mastery or competency-based progressions provide opportunities for students to work at their own pace and to reinforce a particular skill or standard until they have mastered the content. Students address standards at the time and in the manner that meets their needs, rather than being taught only when the entire group covers a certain topic. For some students, this may accelerate the pace of learning based upon abilities, needs, and interests, while for others this may require additional learning time and alternative instructional formats until the student masters the information. As such, competency-based learning is really the authentic implementation of standards-based education.

Additionally, a 2013 report, titled "Are Personalized Learning Environments the Next Wave of K–12 Education Reform?," by the American Institutes for Research (AIR), highlights four

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[11] Bullet points quoted, with minor variations, from: Wolf, Op cit. pp.13-16.

instructional strategies and approaches that constitute "central components of the 16 [Race to the Top-District] grant applications" included in the report.[12] AIR assessed these strategies and approaches in order to "learn lessons from this initial group of pioneering grantees' efforts to implement and scale teaching and learning innovations."[13] The strategies, which overlap significantly with those recommended by the 2010 personalized learning symposium previously discussed, include:[14]

- Creating and implementing blended learning environments;

- Developing and using individualized college and career readiness learning plans;

- Implementing competency-based models to support and accelerate students' progress through their learning plans; and

- Engaging and empowering key stakeholder groups, including teachers, parents, and the broader community in the process of ensuring student success.

The Institute at CESA #1, "a division of Cooperative Educational Service Agency #1, a provider of high-quality, cost-effective programs and services that are responsive to the dynamic needs of K-12 school districts throughout Southeastern Wisconsin," highlights three components that should form the core of personalized learning structures:[15]

- **Learner Profiles**: Comprehensive, data-rich learner profiles convey how a student learns best and are used to plan customized learning environments and instructional strategies. When we have a deep understanding of each learner, we can leverage individual strengths to determine the correct blend of learning modalities and strategies to ensure success.

- **Customized Learning Paths**: Each learner follows a unique path based on their individual interests, strengths and learning style. By personalizing learning for each student, we create a circumstance where we can address needs as they occur rather than having to remediate later.

- **Proficiency-Based Progress**: Learner progress is based on demonstrated proficiency in pre-defined, agreed-upon standards. Advancement is tied to performance, not seat time or credits.

EDUCATION TECHNOLOGY AND PERSONALIZED LEARNING

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[12] Tanenbaum, Courtney, Kerstin Le Floch, and Andrea Boyle. "Are Personalized Learning Environments the Next Wave of K–12 Education Reform?," American Institutes for Research, August 2013. p. 1. http://www.air.org/sites/default/files/AIR_Personalized_Learning_Issue_Paper_2013.pdf
[13] Ibid.
[14] Ibid.
[15] "Design Principles for Personalized Learning Environments," The Institute at CESA #1, Cooperative Educational Service Agency #1. http://www.wasb.org/websites/convention/File/2013/session_handouts/wednesday/WED_SSN_329_GettingLearningRight_8_45_TO_9_45_AM.pdf

Technology plays an increasingly important role in education reform strategies and is very closely linked to many personalized learning interventions. Proponents of such technology-based solutions for implementing personalized learning strategies note that "while it may be possible to implement personalized learning without technology for a few students at a time or for a few lessons, education leaders overwhelmingly agree that it is almost impossible to bring the program to scale for all students without capitalizing on technology."[16]

One of the advantages of incorporating technology into personalized learning is that it enables educators to take advantage of blended learning environments. "An increasing number of educators and policymakers see blended learning as one of the most promising means of educating students with a wide variety of learning styles and abilities."[17]

Given that "the criticism of online learning has long been that, however cost-effective, it cannot replace the human element in teaching," blended learning is seen by some as an approach that "enhances the human element. Computers help students to achieve competency by letting them work at their own pace."[18]

CHALLENGES IN MEASURING EFFICACY

Given the variety and multiplicity of the interventions and strategies that may be categorized under the heading personalized learning education researchers note that assessing the efficacy of personalized learning, especially when in it involves digital tools and platforms, is difficult. Notably, education experts suggest that "there are very few large-scale models of excellence, backed by research, for educators to turn to for guidance" when implementing personalized learning interventions, and that "it is hard for researchers to isolate the impact of the digital tools when evaluating a personalized-learning approach that emphasizes the use of technology."[19] Another challenge associated with measuring the efficacy of digital tools in the context of personalized learning environments is that "personalization often hinges on how a given educator implements the technology." Isolating the benefits conferred by digital tools from the context and ways in which they are used makes it difficult to draw generalizable conclusions about their efficacy.[20]

PERSONALIZED LEARNING AND STUDENT PERSISTENCE

In addition to the potential to improve academic achievement, personalized learning also has the potential to increase the rate of student persistence. In its "Dropout Prevention

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[16] Wolf, Op. cit., p. 23.
[17] Headden, Susan. "The Promise of Personalized Learning," Education Next, 2013. http://educationnext.org/the-promise-of-personalized-learning/
[18] Ibid.
[19] Michelle, R. D. "Researchers Tackle Personalized Learning," Education Week, 2011. p.38. http://search.proquest.com/docview/858788311?accountid=132487
[20] Ibid.

Guide," the Institute for Education Sciences, of the U.S. Department of Education, recommends establishing personalized learning environments as an effective means for reducing dropout rates, citing a "moderate" level of evidence in support of personalized learning.[21] The panel rated the supporting evidence at a moderate level because

> despite the promising effectors of efforts to personalize the learning environment by including features such as team teaching or school-within-a-school, the panel was unable to disentangle the effects of these specific components to determine the impact of the specific practice on dropping out.[22]

"Teachers' sense of shared responsibility and efficacy related to student learning," that typify strong personalized learning environments, is associated with increased student engagement and learning. Additionally, "evidence suggests that student engagement and learning are fostered by a school climate characterized by an ethic of caring and supportive relationships, respect, fairness, and trust."[23] The benefits of personalized learning stem from the capacity for increased engagement that personalized learning engenders. For example, "students who receive personalized attention from teachers may be more engaged in learning because the teachers know what motivates individual students," and a "high degree of personalization allows schools to focus intensely on why students are having difficulty, and actively work to address sources of difficulty" by closely tracking student performance and behavior.[24] Moreover, the "Dropout Prevention Guide" notes that a "personalized learning environment also serves as platform for implementing other strategies…for at-risk students."[25]

In addition to highlighting the potential impacts that personalized learning can have on student persistence rates, the "Dropout Prevention Guide" also highlights several promising practices for implementing personalized learning strategies and environments. Notably, these recommended practices closely resemble those recommended by the National High School Center, and other education reform organizations, for improving academic achievement. The practices recommended in the "Dropout Prevention Guide" are presented in Figure 1.2.

Figure 1.2: Personalized Learning Interventions for Increasing Student Persistence Rates

ESTABLISH TEAM TEACHING
Pairing teachers as partners in the classroom has benefits for personalizing the learning environment. Not only can teachers conduct common lesson planning and decision-making about the classroom, but students have access to more than one teacher who can offer individualized attention or new perspectives for the student. Other benefits for team teaching…include teachers working one-on-one with students more often, since one teacher can teach and the other can provide direct student support during the lesson, a collegial support system for working with difficult students, and teachers establishing connections with the students that facilitate ongoing discussions of academic and behavioral progress with students and parents.

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[21] "Dropout Prevention Guide," Op cit. p. 30.
[22] Ibid.
[23] As quoted in: Ibid.
[24] Ibid. p. 31.
[25] Ibid. pp. 30-31.

CREATE SMALLER CLASSES

Lowering the number students in the class allows for teachers to interact with students on an individual level more frequently. Having fewer students in the classroom also allows students to feel a greater sense of belonging in the classroom, The number of students per class can range from 18 to 30, depending on school size and staffing.

CREATE EXTENDED TIME IN THE CLASSROOM

Implementing innovative schedule features—such as block scheduling, extended class periods, or advisory and study periods—provides more time for student-teacher and student-student interactions during the day. Students also have the opportunity to explore topics in greater depth in both groups and as individuals working with the teacher.

Encourage Students to Participate in Extracurricular Activities

Teachers and staff should not assume that students will participate in activities of their own accord, and should personally invite students at risk of dropping out to school-related activities. Schools can accommodate the varying interests of students at risk of dropping out by providing extracurricular activities such as sports, clubs, after school field trips, guest speakers, postsecondary partnerships, or service groups.

Source: Institute for Education Science[26]

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[26] Ibid. p. 32.

SECTION II: STUDENT CHOICE

This section examines the literature concerning the impact of strategies that promote student choice on measures of student achievement. In particular, this section highlights areas of impact in which student choice may be especially effective, as well as strategies for effectively implementing student choice.

IMPACT OF STUDENT CHOICE

Practices that facilitate and emphasize student choice—both in terms of the student's educational path and the curriculum that the student follows—are widely considered to have positive impacts on student motivation and participation, and, as a result, academic performance.

A 2007 study of differentiated learning instructional strategies found that student choice and interest "play a vital role in achievement and student satisfaction in learning."[27] By way of example, the study notes that research has found that "students who were given a choice in their learning and whose instruction met their learning needs showed significant improvement on standardized tests."[28] Additionally, researchers have found that giving students a

> choice increases positive emotions, is important because it teaches decision making, increases their interest in learning, and increases learning. When products are differentiated, students are given a choice on how they demonstrate mastery of the standards. By giving students a choice, the teacher is developing responsibility and ownership in the students. Students take a greater responsibility in their learning because they have a vested interest in what they are producing.[29]

Education researcher Alfie Kohn, in a 1993 article titled "Choices for Children: Why and How to Let Students Decide," cites a variety of evidence, both historical and contemporary, in support of the view that facilitating student choice can lead to improved academic achievement. In fact, Kohn goes so far as to state that "there is no question about it: even if our only criterion is academic performance, choice works."[30] In one example, Kohn notes that one illustrative study "found that children given more 'opportunity to participate in decisions about schoolwork' score higher on standardized tests."[31] Other corroborating evidence Kohn cites includes:[32]

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[27] Koeze, Patricia, A. "Differentiated Instruction: The Effect on Student Achievement in an Elementary School," Master's Theses and Doctoral Dissertations, Eastern Michigan University, 2007. p. iii-iv.
http://commons.emich.edu/cgi/viewcontent.cgi?article=1030&context=theses
[28] Ibid. p. 36.
[29] Ibid. pp. 36-37.
[30] Kohn, Alfie. "Choices for Children: Why and How to Let Students Decide," The Phi Delta Kappan, 1993.
http://www.alfiekohn.org/teaching/cfc.htm
[31] Ibid.
[32] Bullet points quoted from: Ibid.

- When second-graders in Pittsburgh were given some choice about their learning, including the chance to decide which tasks they would work on at any given moment, they tended to "complete more learning tasks in less time." *(Margaret C. Wang and Billie Stiles, "An Investigation of Children's Concept of Self-Responsibility for Their School Learning,"* American Educational Research Journal*, 1976.)*

- When high school seniors in Minneapolis worked on chemistry problems without clear-cut instructions - that is, with the opportunity to decide for themselves how to find solutions - they "consistently produced better write-ups of experiments" and remembered the material better than those who had been told exactly what to do. They put in more time than they had to, spending "extra laboratory periods checking results that could have been accepted without extra work." Some of the students initially resisted having to make decisions about how to proceed, but these grumblers later "took great pride in being able to carry through an experiment on their own. *(Robert G. Rainey, "The Effects of Directed Versus Non-Directed Laboratory Work on High School Chemistry Achievement,"* Journal of Research in Science Teaching, *1965.)*

- When teachers of inner-city [African American] children were trained in a program designed to promote a sense of self-determination, the students in these classes missed less school and scored better on a national test of basic skills than those in conventional classrooms. *(Richard de Charms, "Personal Causation Training in the Schools*," Journal of Applied Social Psychology, 1972.)

- When second-graders spent the year in a math classroom where textbooks and rewards were discarded in favor of an emphasis on "intellectual autonomy" - that is, where children, working in groups, took an active role in figuring out their own solutions to problems and were free to move around the classroom on their own initiative to get the materials they needed - they developed more sophisticated reasoning skills without falling behind on basic conceptual tasks. (Paul Cobb et al., "*Assessment of a Problem-Centered Second-Grade Mathematics Project,"* Journal for Research in Mathematics Education, *1991.)*

Other studies have also demonstrated the potential for student choice to increase academic performance, even when student choice is an ancillary component of the curriculum. Researchers studying how "integrating the Arts in social studies education can increase student participation and motivation, and impact student achievement through that increased motivation and participation" found that "students' choice in what type of activities to complete had the greatest perceived impact on their motivation and participation" and that "many students' social studies grades increased in response to the integration of Arts activities and student choice."[33]

Stefanou et al. note that "although choice and decision making," as encouraged by organizational and procedural autonomy supports, "are fundamental, more than simple

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[33] Kosky, Courtney and Reagan Curtis. "An Action Research Exploration Integrating Student Choice and Arts Activities in a Sixth Grade Social Studies Classroom," Journal of Social Sciences Research, 2008. p.22.
http://search.proquest.com/docview/211146651?accountid=132487

choices about tasks or roles are necessary to influence students' decisions to become cognitively engaged in academic tasks."[34] The researchers point out that "activities that support organizational or procedural autonomy may be necessary but insufficient to promote student engagement and intrinsic motivation," whereas cognitive autonomy support, which promotes choice in the way students think about and approach class materials, "may be the essential ingredient without which motivation and engagement may not be maximized."[35] Figure 2.1 shows example practices.

Figure 2.1: Models of Autonomy Support that Facilitate Student Choice

Organizational Autonomy Support	Procedural Autonomy Support	Cognitive Autonomy Support
Students are given opportunities to: ▪ Choose group members ▪ Choose evaluation procedure ▪ Participate in creating and implementing classroom rules ▪ Choose seating arrangement	*Students are given opportunities to:* ▪ Choose materials to use in class projects ▪ Choose the way competence will be demonstrated ▪ Display work in an individual manner ▪ Discuss their wants ▪ Handle materials	*Students are given opportunities to:* ▪ Discuss multiple approaches and strategies ▪ Find multiple solutions to problems ▪ Justify solutions for the purpose of sharing expertise ▪ Have ample time for decision making ▪ Be independent problem solvers with scaffolding ▪ Re-evaluate errors ▪ Receive informational feedback ▪ Formulate personal goals or realign task to correspond with interest ▪ Debate ideas freely ▪ Have less teacher talk time; more teacher listening time ▪ Ask questions

Source: Stefanou et al.[36]

In addition to considering the impact of student choice on academic achievement, Kohn outlines a holistic rationale for implementing student choice policies in the classroom. Kohn notes that research indicates that empowering students to determine aspects of their

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[34] Stefanou, Candice R. et al. "Supporting Autonomy in the Classroom: Ways Teeachers Encourage Student Decision Making and Ownership," Educational Psychologist, 2004. p. 109.
 http://faculty.washington.edu/sunolen/562/old%20562%20files/Stefanou.pdf
[35] Ibid.
[36] Ibid. p.101.

education has salutary effects on teachers, as well as on student well-being.[37] Figure 2.2 presents descriptions of the non-academic dimensions of the educational experience that student-centered policies on choice propose to positively affect.

Figure 2.2: Non-academic Dimensions of Impact for Student Choice in Education

DIMENSION	EXPLANATION
Student well-being	Kohn notes that "many different fields of research have converged on the finding that it is desirable for people to experience a sense of control over their lives. These benefits reach into every corner of human existence, starting with our physical health and survival. One series of studies has shown that people who rarely become ill despite having to deal with considerable stress tend to be those who feel more control over what happens to them." Accordingly, "all else being equal, emotional adjustment is better over time for people who experience a sense of self-determination; by contrast, few things lead more reliably to depression and other forms of psychological distress than a feeling of helplessness. (One recent study showed this was true in an educational setting: distress was inversely related to how much influence and autonomy teachers said they had with respect to school policy.)"
Student behavior and values	Kohn suggests that student choice has a powerful impact on how students lean to comport themselves, noting that "the only way children can acquire both the skills of decision making and the inclination to use them, is if we maximize their experiences with choice and negotiation," particularly in a society that upholds democratic values.
Effects on teachers	In addition to possible mitigating teacher "burn-out," Kohn notes that research has indicated that by incorporating student choice into the curriculum and into classroom activities, teachers may be unburdened from constantly policing the classroom, and so also freed to interact productively with students.
Intrinsic value	According to Kohn, "allowing people to make decisions about what happens to them is inherently preferable to controlling them…[children] are people whose current needs and rights and experiences must be taken seriously."

Source: Kohn[38]

Similarly, other researchers highlight the need for educators to support student autonomy as a means for both increasing student well-being and engagement. Stefanou et al. cite numerous studies that link autonomy support that emphasizes choice with improvements in student motivation and student achievement.[39]

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[37] Kohn, Alfie. "Choices for Children: Why and How to Let Students Decide," The Phi Delta Kappan, 1993. http://www.alfiekohn.org/teaching/cfc.htm

[38] Ibid.

[39] Stefanou, et al. Op cit. pp. 97-110.

STUDENT CHOICE AND PERSONALIZED LEARNING

Many personalized learning strategies are predicated on providing students a greater degree of autonomy and choice in directing their education. For example, the Michigan Department of Education notes that "personalized learning plans may include a degree of student choice about" numerous educational dimensions, as shown in Figure 2.3, on the next page.[40]

Figure 2.3: Dimensions of Student Choice in Personalized Learning, Michigan DOE

- Learning outcomes/content;
- Instructional delivery methods including blended learning and opportunities outside the traditional school building;
- When learning will take place;
- Locations of instructional delivery;
- Supports for the learner;
- The pace at which instructional delivery occurs;
- How learning will be measured and how instruction will be adapted based on student needs;
- How learning and competency will be demonstrated locally; and
- How communication between stakeholders including teachers, parents, and students will take place.

Source: Michigan Department of Education[41]

Similarly, a strong example of how student choice can be incorporated into personalized learning strategies and environments comes from the Dallas Independent School District. Over the last several years, the district has made personalized learning a strategic priority; the operating principles established in response to this strategic priority emphasize a high degree of student choice, as shown in Figure 2.4, on the next page.

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[40] "Personalized Learning," Michigan Department of Education. http://michigan.gov/mde/0,4615,7-140-28753_65803-322738--,00.html

[41] Ibid.

Figure 2.4: Dallas ISD Operational Principles for Personalized Learning

STRATEGY/INTERVENTION	DESCRIPTION
Learner Profiles	■ **Students will have voice and choice in the design of their educational trajectory**. Students will be empowered to take ownership of and responsibility for their own learning as active participants instead of passive observers. ■ Students will engage in ways that resonate with their learning preferences.
Personalized Learning Paths	■ **Students will have individualized learning plans to articulate their goals and objectives**. Teachers will have shared access to these plans in order to collectively best meet the needs of individual students. ■ The role of the teacher will be multifaceted and dynamic depending on the unique needs of every student. Teachers will employ a variety of instructional approaches and tools in a manner that builds on student assets. ■ Students will develop the skills necessary to thrive in the future global marketplace through diverse and relevant learning experiences. These skills will reach far beyond academic content to include critical thinking, problem-solving, and collaboration skills.
Individual Mastery	■ **Students will demonstrate mastery of content in a range of ways and will have opportunities to progress per mastery as opposed to seat time** (in subjects where PL is implemented). ■ Data from embedded assessments will drive instructional decision-making and will support cross-functional teams to better support the many and varied needs of every student.
Flexible Learning Environments	■ **Students will access rich content though a combination of flexible scheduling and learning environments** (e.g., live instruction, online platforms, and experiential learning) in the broader education ecosystem. ■ **While every student's experience will be personalized, he/she will meaningfully collaborate and engage with his/her peers throughout the school day.** ■ The district will begin the implementation of personalized learning in academic disciplines where content is advanced enough to support PL (e.g., math and reading). ■ Parents, community members, and business/industry will serve as active participants in the education of our students (e.g., by offering ways for students to connect to career opportunities).

Source: Dallas Independent School District[42]

In a chapter titled "Choice and Voice in Personalized Learning," published by the Organization for Economic Co-operation and Development in "Schooling for Tomorrow: Personalizing Learning," David Miliband highlights student choice as one of the five key components essential for effective personalized learning. The availability of choice, with regard to the curriculum, "engages and respects students;" thus, personalized learning

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[42] "Personalized Learning in Dallas ISD," Bill & Melinda Gates Foundation NextGen Systems Initiative: Phase I, Dallas Independent School District. pp. 2-3. http://www.disdblog.com/docs/disd-gates-summary-next-gen-012414.pdf

means every student enjoying curriculum choice, a breadth of study and personal relevance, with clear pathways through the system."[43]

In a broad sense, Miliband notes that personalized learning is predicated on both student choice and student voice, suggesting that educators "can and must combine the empowerment of parents and pupils in choices about schools and courses and activities with their genuine engagement in the search for higher standards." [44] Within the context of implementing personalized learning strategies, Miliband suggests differentiating the types of curriculum choice offered to students at various levels of development, with the degree of choice increasing for older students:[45]

- At the elementary level, enabling choice "means students gaining high standards in the basics allied to opportunities for enrichment and creativity."

- "In the early secondary years," personalizing learning enabling choice "means students actively engaged by exciting curricula, problem solving, and class participation."

- At ages 14-19, personalized learning that emphasizes choice "means significant curriculum choice for the learner."

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[43] "Schooling for Tomorrow: Personalizing Learning," Center for Education Research and Innovation, Organization for Economic Co-operation and Development, 2006. p.25.
[44] Ibid. p.27.
[45] Ibid. p.25.

APPENDIX: SELF-ASSESSMENT TOOL

This appendix reproduces, in Figure A, the Vermont Agency of Education's self-assessment tool for schools and districts working to implement personalized learning plans (PLPs) for their students. The tool is organized around four dimensions of implementation—policy, public will, practice, and academic standards—and provides rationales and guiding questions for each recommended step.

Figure A: Vermont Agency of Education PLP Implementation Self-Assessment Tool

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
Policy		
1) Engage School Board to understand conceptual framework and PLP design	There needs to be unified understanding, support, and buy-in to champion the cause and develop appropriate policy. In addition, this work needs to take place preK-12, and as such, requires coordination from the classroom to the school board. As the school/district moves ahead with implementation, school board members will be needed to support this effort with the public.	1. Are there adequate pathways established within the school system to allow for effective implementation of Personalized Learning Plans? 2. What are potential barriers for the school board to support Personalized Learning Plans? 3. What role will the school board play in supporting and communicating about PLPs? 4. How can administrators, teachers and students help the school board understand PLPs?
2) Review current school board policies; identify areas in need of updating	As a board embarks on a review of current policies with an eye toward flexible pathways and Personalized Learning Plans, a thoughtful analysis of current policies will be required. Members will need to determine key leverage points for policies knowing that a school board cannot create policies for all occasions. It is important to remember that no set of policies can predict all future considerations and must be undertaken jointly with cultural changes and understanding.	How does our board's process for policy adoption engage and include community members and educators?
3) Draft new district policies	New policies will be needed—but such policies need to be targeted to specific issues. In general, fewer but more specific policies are more helpful than a host of broader policies.	How can we learn from other districts and adapt policies to our local needs?
4) Implement policy adoption process (if necessary)	After the policy committee has had ample time to review and revise policies, the full board will want to consider the changes. This might be an appropriate time for parents and the general public to attend a board meeting to learn about the proposed policies and provide feedback. Upon conclusion, the board may choose to consider the public response when finalizing the language of the policy(ies).	How might the board work with school leadership to raise awareness of proposed changes and elicit feedback?
5) Pass new district policies (if necessary)	Following proper decorum, the school board will secure final language of policy as it relates to personal learning plans. The policy will be included in future manuals and available for school and public review at will.	

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
Public Will		
1) Engage parents and general public in understanding of conceptual framework and PLP design	To ensure support from educators and parents, the school board and PLP committee members need to create strategies where public members may explore the purpose of Personalized Learning Plans—how PLPs work, how PLPs can increase student learning, and how PLPs will change learning. Parents and community members need to understand how this work will change the structures of the school including time and locations of learning. Ultimately, the public needs to support these ideas to ensure successful implementation.	1. How will community members see this work as a great step forward for student learning? 2. What concerns might parents and community members raise? 3. How will you respond to accolades and concerns?
2) Create a communication plan to share the PLP and its implementation	When initiating any new initiative that will have considerable impact on the student learning process, it is important to educate the student body and community on the value of this approach. To do this effectively, a school's PLP committee and administration should devise a clear communication plan with focused and limited talking points that are centered around the outcome expected from this approach to teaching and learning.	1. What is the core message the school wants parents, students, and the general public to know about Personalized Learning Plans? 2. What is the process for gathering feedback from constituents regarding this system? 3. Who might be a sounding board for the message and language? 4. How can faculty, students, and school board members be engaged as spokespeople for this work? 5. What process will be used to ensure that messages from different people and buildings are consistent and aligned?
3) Implement the communication plan with parents & general public	Utilizing the relationships that the school community has built with the media and other constituents, school members can implement the communication plan and build collective support for and universal understanding of the intent of Personalized Learning Plans. Miscommunication and mixed messages from the faculty, student body, or misdirected media representatives will result in confusion and doubt related to the value of this approach. The communication from the school should be ongoing and allow for multiple opportunities to envision the concept within the school.	1. What public forums exist that you might use to share your message? 2. How will school representatives ensure that there are multiple opportunities for parents and the general community to learn about and provide feedback regarding the Personalized Learning Plans? 3. What is the role for students in helping to communicate this work? 4. Who are the champions in the community for this effort and how might they best be used? 5. Who is strongly opposed to this effort? How might you use their concerns to review the implementation plan? 6. How will support be provided to the messengers?

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
4) Implement the communication plan with the local media	Utilizing the relationship that the school community has built with the media, school members can implement the communication plan and build collective support for and universal understanding of the intent of Personalized Learning Plans. It is vital for schools to consider how its community members engage with media and provide information through those means. Free and social media has become woven into the fabric of daily lives in many families. Schools have the opportunity to deliver consistent messages directly to its community through these varied means in a timely and ongoing manner. It is also essential for schools to consider the roles and responsibilities of faculty and staff with regard to sharing stories of success and responding to inquiries associated with Personalized Learning Plans.	1. How might free and social media be used to enhance the impact of the message? 2. How might school representatives formulate a relationship with key reporters or bloggers? 3. How might training be provided for administrators regarding how to interact with and answer questions from the media? 4. What process is regularly employed to share success stories with the media? 5. How might support staff be trained to handle media inquiries? 6. How will administrators be encouraged and expected to share and stay on a consistent message? 7. How will internal communications be employed to ensure consistency of message regarding press inquiries and responses?
Practice		
1) Establish a school-wide PLP Committee	Because of the nature and scope of the work to be done, a representative group of school-based faculty members, administrators and students should be formed and be responsible for designing the building-based implementation plan that is aligned with the district plan. This committee needs to created prior to engaging in this work to ensure support for this effort from those who will implement these strategies	1. What knowledge and skills do committee members need to be successful? 2. What other successful initiatives could inform our school's PLP? 3. How will decisions be made? What is the decision-making authority of the committee? 4. How will our school's curriculum, instruction, and assessment change as a result of students being able to pursue selected pathways and design Personalized Learning Plans to graduate?
2) Identify/adopt a conceptual framework with faculty	It is vital to the process that educators in the school develop, determine, and ultimately support the general PLP conceptual framework. The conceptual framework does not include specific components that will be designed later.	1. How will this work advance student learning? 2. What are the terms, common language, and conceptual understandings that we need to agree on and define for all? 3. What common misunderstandings will need to be addressed? 4. What resources does the faculty need to support the framework?

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
3) Build the faculty, knowledge base regarding Personalized Learning Plans	Successful implementation of Personalized Learning Plans depends on faculty and administrators understanding the importance of a shift in the learning process that broadens options for students based on their individual goals, diverse interests and learning styles and their involvement in the design and support structures.	1. How will the school/district ensure that there will be time for discussions around the various facets of the PLP process, to include but not be limited to identifying pathway options and resources, how pathways will align with standards, and PLP design and processes? 2. How will the PLP committee or district administration assess the faculty's comprehension and commitment to PLPs? 3. What opportunities will be made available to faculty to see PLP models in other schools? How will samples and information available on the Internet be used to support a professional review process and discussion?
4) Engage the faculty and students in the design of the PLP	Teachers play a key role in working with students to develop, implement, review, and adjust their plans. In many instances, they will be involved in the assessment of students' knowledge and skills as well as the academic standards embedded in students' pathway choices. Having the faculty play a critical role in the design process of the Personalized Learning Plan may help when the school is prepared to launch its communication plan and when implementing PLPs.	1. How will a school document progress and achievement in meeting the goals laid out in a student's PLP? 2. How consistent are students' experiences across classes in the same grade or content area? To what extent are the expectations for academic performance and demonstration of learning consistent across pathway options? 3. How does the Personalized Learning Plan template provide opportunity for students to communicate their goals and interests? 4. How does the PLP template provide opportunity for students to establish or select a pathway toward graduation?
5) Identify criteria for acceptable learning pathways	In order to craft a Personalized Learning Plan, students will want to know the criteria defining acceptable pathways. Establishing the criteria is crucial in order to enable students to create self-designed pathways outside of those created by teachers. An essential component of this work will entail a careful review of Act 77 and an engagement with the full faculty around the concept of multiple and flexible pathways.	1. How will the committee engage faculty in the development of pathways? 2. What school practices, including pathways, already align with students being able to choose personalized learning pathways, and what practices will need to change? 3. What processes will be used with faculty to ensure appropriate levels of rigor, personalization and equity within each pathway? 4. How will the structure of the school change based on the identification of pathways?

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
6) Establish a process for students, teachers, and parents to monitor Personalized Learning Plan	Personalized Learning Plans are most helpful when students are involved in ongoing engagement with their PLPs—not as a "fill in the blanks and move on" exercise. Students will need support to continually revisit and refine their PLPs to ensure deep and ongoing learning.	1. How will the plan encourage consistent and targeted monitoring by faculty, students, and parents? 2. How will the school ensure that the process around the development and monitoring of a student's plan be consistently employed for all students, including those with IEPs, 504s and other accommodations? 3. How will a school ensure equity of experience in relation to the monitoring and advising of a PLP? 4. How will the school be responsive to suggestions and requests as the model is initially being implemented?
7) Establish a support structure for students engaged in the PLP process	Creating and engaging in PLPs is a learned skill for students, not something that they can initially tackle on their own. The school needs to create various support structures to ensure that students are able to create their PLPs, take advantage of various learning pathways, and attain both the academic standards expected from every student and their own personal goals.	1. How will the school ensure adequate structural support for sustainable implementation and monitoring of Personalized Learning Plans? 2. How will the parents' role evolve with the implementation of PLPs? 3. How will the support structures enhance communication and collaboration with community agencies/partners? 4. How will the district ensure timely support for internal needs associated with PLPs?
8) Develop a system for teachers and students to track and report achievement of student learning	Schools will want to provide a data collection platform for teachers, students, and parents that will insure easy access to a student's records at any time. The platform should allow for the student to be one of the individuals who enters information (data) about his/her own learning. It is vital that those supporting students in the learning process have access to the student's progress at any given time.	1. How can we best use technology to enhance our PLP system? 2. What do parents, students and teachers want to know in regard to the outcomes of the PLP? 3. What professional development and support will teachers need to maintain and use the reporting system? 4. Depending upon how we use technology, how will we support families who are not technology rich? 5. What do you want to communicate through a Personalized Learning Plan?
9) Develop a process for evaluating the PLP program on an annual basis	It is important for schools to establish an evaluation process to guide continuous improvement of the PLP program. Understanding the impact the program is having on students' abilities to establish personal and learning goals, engage in learning experiences that are relevant to achieving their career, college and academic goals, and improve instructional quality will help stakeholders make necessary adjustments and refinements to the program.	1. What evidence will need to be collected annually to determine the level of success and areas in need of adjustment? 2. How will the findings of an evaluative review impact the ongoing work around Personalized Learning Plans within the school?

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
Academic Standards		
1) Identify/adopt standards and performance indicators aligned with state academic standards.	A necessary component of a Personalized Learning Plan is mapping the academic standards against the pathway that the student will follow to demonstrate competency/proficiency and graduate. To conduct this step, a school will need to carefully review the state's academic standards and develop a manageable set of content-specific standards and performance indicators.	1. How much experience has the faculty had collaboratively working on national or state standards? 2. What standards are crucial for graduation? What knowledge and skills are essential in each content area for graduation? 3. How are we ensuring that our local standards and performance indicators are aligned to the national and state level standards? 4. What process will be used to engage faculty in creating these standards? 5. How will we ensure that our standards are manageable, enduring, and high-leverage? 6. How will we help our faculty unpack the graduation standards to create the performance indicators? 7. How will we ensure that the performance indicators align with the graduation standards and build upon each other as appropriate?
2) Identify/adopt standards and performance indicators aligned with transferable skills	Personalized learning pathways are designed around the understanding that students will have a carefully crafted approach to meeting standards essential to success in our global society. Cross-curricular graduation standards highlight the transferrable skills necessary for success in the 21st century. Performance indicators provide the detailed descriptions and measurable language associated with these skills.	1. How will our school measure progress and demonstration of these transferable skills? 2. What are our assumptions and experiences about how school faculty understand and support the concept of transferable skills?
3) Build faculty capacity regarding assessment literacy	Implementing PLPs requires faculty members to have a deep understanding regarding the various methods to assess student achievement of academic standards, transferrable skills, and individual student goals. Quality assessing of these various components will ensure greater flexibility for students and ultimately increased personalization.	1. How well do the school's assessments evaluate the knowledge and skills students need for success? 2. How do teachers use formative assessment to guide instruction and provide feedback to students? 3. How do the school's summative assessments ensure students demonstrate the skills and knowledge of the standards? 4. What opportunities do all students have to demonstrate deep understanding of standards? 5. To what extent can students inform/design ways to demonstrate their knowledge and skills? 6. How do teachers use multiple forms of assessment to engage and assess student learning in pathway experiences?

STEP	RATIONALE/DESCRIPTION	GUIDING QUESTIONS
4) Design/adopt assessment structure	Assessment is a regular and routine part of learning; to successfully implement PLPs, the school needs to identify an assessment structure that will be used to verify achievement of academic standards, transferable skills, and student goals. The structure may include regular classroom assessments, common school wide assessments, performance assessments, and even rubrics to assess a body of evidence. In particular, transferable skills are not demonstrable through a single example of achievement but comprise skills that must be demonstrated over time and across multiple venues. Consequently, the only manner in which these can be assessed is by reviewing a collection of student work – a body of evidence – demonstrating achievement. The process will need to include students collecting their work to prove their achievement and ensure reliability in the scoring process both across students and across scorers.	1. What assessment methods are better suited for different types of learning standards? 2. What support do students need in order to create and implement unique assessments to determine achievement of their goals? 3. What structures are required to enable students to take and retake assessments? What type of assessments work best in this scenario?
5) Design/adopt assessments for demonstration of standards and performance indicators	The actual assessments used to measure achievement of academic standards, transferable skills, and performance indicators need to be of high quality, valid, and deliver repeatable results. In addition, the breadth of assessments must employ a breadth of assessment methods matched to the nuances of the specific standards.	1. What assessment process will be used to ensure that students have demonstrated proficiency in each content area standard? 2. Will the results of all performance indicator assessments be used to verify proficiency or will you use some sort of trending strategy? 3. What evidence will be used for transferable skills? 4. Who will be responsible for assessing transferable skills? 5. Is there a process for teachers to share the assessment responsibilities with learning pathway experts?

Source: Vermont Agency of Education[46]

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[46] "PLP Self Assessment – Steps, Rationale, and Guiding Questions," Vermont Agency of Education.
http://education.vermont.gov/documents/EDU-PLP_Self_Assessment_Guiding_Questions.pdf

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