Research Supported Strategies in Personalized Learning

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Abstract

Personalization represents a broad philosophy applied to strategies often termed best practice or perceived as better matching the learning styles and critical skills needed by 21st century learners and beyond. Focusing on learner-centered premises, these strategies seek to adjust characteristics of pace, place, time, and approach in both curriculum planning and instructional design. Specific implementation has been represented in a variety of strategies and instructional practices, leading critics to claim that there is not specific enough evidence to support it as a viable underpinning of educational reform. This brief seeks to determine if a personalized learning philosophy, in the form of learner-centered constructs of individual learning plans, universal design of instructional space, and competency based assessment may be shown to have positive impacts on student engagement and achievement. Furthermore, where engagement is used as an outcome, can adequate evidence be shown that engagement enhances student achievement, as such, providing support to suggest personalized learning as a research supported practice? Finally, due to desire to apply findings to active practice, much of the research is focused on K-6 implementation though some research also draws on a broader range of ages.

Research Topic

This paper seeks to address if strategies in personalized learning can be supported as having positive impact on student achievement. To do so, it first analyzes current literature and practices in personalized learning to more clearly identify specific strategies commonly associated with personalization. Secondly, this paper seeks to determine what impact strategies in personalized learning have on student achievement. Research used is primarily focused on implementation for the elementary (K-6) level.

Introduction

Personalized learning has become a frequently applied label for a variety of educational practices designed to more closely match student learning with each student's individual interests, strengths, and educational readiness. As a topic it combines numerous prior educational initiatives within the broader context of constructivist theory.

So far back as 1899, John Dewey's *The School and Society* talks, later published as essays, brought to light the contrast of schools as factories of passive learners versus schools where students are actively engaged in the production of learning (Dewey, 1990, p. 113). At its simplest this manifested itself when Dewey was looking for a different design of student desks and a shopkeeper remarked "you want something at which the children may work; these are for listening," (p. 31). Dewey's implementation of constructivist theory was less out of proof or research that such active engagement increased student achievement, but by his belief that engaging in active creation of learning rather than passive consumption from "disproportionate amount of the experience of others to which books introduce him," (p. 113), would result in greater

learning. This in turn was theorized to create more productive, less servile individuals to contribute to society.

With the publication of Dewey's writings that occurred in the 1920s through the 1950s, these educational theories began to permeate both teacher training programs and school implementations of constructivist theories. Initiatives such as *child-centered education* emerged in the 1960s (Hartley, 2007, p. 630). Bearing similarity to personalized learning, these theories attempted to place a strong emphasis for design and development of learning opportunities within the child. This has, in fact, been one of the leading criticisms of personalized learning by University of Birmingham professor David Hartley. Hartley's criticism seeks to both attribute that personalized learning is a market term more connected to consumerism than educational achievement (Hartley, 2007, p. 633), and in connecting to child-centeredness, suggests that both were ill-defined in concrete strategies, making it impossible to attribute particular educational results to it (p. 637).

By the 1980's an additional layer to the personalization puzzle had emerged in the form of competency-based education. In contrast to the Carnegie Unit structure by which students are deemed competent in material through percentage accuracy within a given unit of learning time, competency-based education makes time flexible and sets standards of accuracy to demonstrate having learned a particular concept (Johnston, 2011). Such initiatives align with current national educational expectations for clear articulation of student learning according to common learning standards. Students must demonstrate proficiency in a minimum number of standards to have learned. In competency-based systems, all students do so, but at their own pace and readiness (Johnston, 2011).

As the ability to gather greater amounts of data on human behavior and preference have increased in recent years, these constructivist practices have merged under the banner of personalized learning. Both to benefit and detriment, this has resulted in confusion as to just what personalized learning is. Authors Barbara Bray and Kathleen McClaskey have emerged as two leading voices describing specific structures by which to understand personalized learning. Through their recent publication in materials distributed by the Advanc-ED school accreditation organization, these serve as a common framework by which we can define personalized learning (Bray & McClaskey, 2014a, p. 3).

To begin, Bray and McClaskey articulate the difference between Personalization, Differentiation, and Individualization. While all are built on constructivist learning theories, Individualization seeks to design instruction to meet individual learning needs and is a common premise behind the design of special education practices. Differentiation addresses learning preferences and is often used to support learners in acquiring common content (2014b, p. 2). Personalization, according to Bray and McClasky "is paced to learning needs, tailored to learning preferences, and tailored to the specific interests of different learners," (p. 2). In both differentiation and individualization, learning continues to be passive because the teacher directs it. Bray and McClasky contend that only by involving the student in the direction of their learning does it create increased engagement.

The resulting strategies are often referred to by defining personalization as including alteration for pace, place, time, and approach in learning opportunities (Rodel Foundation, 2010). For the purposes of this paper, these strategies are further refined as

using individual learning plans (time and pace), universal design of instructional space (place and approach), and assessment through competency based practices (time and pace).

Summary of Finding

The work of John Hattie (2013) in Visible Learning provides a profound base to support the specific strategies noted. As a synthesis of meta-analyses, it provides research-vetted studies on the impact these strategies may have. In addition, much of the writing on personalization strategies has as its outcome increased student engagement. Though a commonly accepted theory, research on the linkage of student engagement with student achievement was found to be less current or limited. What could be found, and that was focused in the elementary age this paper investigates, suggests that there is a strong connection between increased engagement and achievement, and as such, we can suggest that strategies that will increase student engagement will in turn increase student achievement.

Individual Learning Plans

The development of individual learning plans for each student is a process that would look different for each school or school system based on its policies and practices. Bray and McClasky (2014b) describe a "personal learner profile" (p. 5) that aligns student interests and strengths with learning goals that yet need to be attained. John Hattie's meta-analysis identified several practices that would be included in such plans that have significant positive impacts on student achievement.

First amongst these was accelerated instruction. Hattie's analysis of more than 37 studies found that accelerating instruction had an effect size of d=0.88 (Hattie, 2013, p.

100). Criticism of acceleration has often been around social and emotional impact of students working with peers not of their typical equivalent age. Individual learning plans would alter this factor in that if students alter pace, allowing either accelerated or slowed acquisition of content, the result would be a broader base of multi-age interaction.

A second practice of a personal learning plan is the co-creation of learning outcomes and tasks. Two sets of studies apply in this circumstance. Such co-creation relies heavily on strong teacher-student relationships. Hattie's analysis of 229 studies yielded an effect size of d=0.72 on student achievement, with a notable variable, non-directivity being the strongest contributor (Hattie, 2013, p. 117). An included meta-analysis by Cornelius-White defined non-directivity as "student-initiated and student-regulated activities," (p. 118), a definition that fits closely with Bray and McClasky's student-directed practices.

The second set of studies associated with development of a personal learning plan would be meta-cognitive strategies. The student's role in creating and refining their plan with their teachers serves the role of thinking about their thinking when approaching learning tasks and monitoring progress (Hattie, 2013). These practices had a moderately high effect size, d=0.69 (p. 189), however the effect was found to be greatest in upper grades, remedial learning, and less intensive programs, elements at odds with previously mentioned elements such as acceleration.

Another element that may confound the positive attributions of a personal learning plan is the findings around individual instruction. Individual instruction is described as creating an instructional program for each student with "flexibility in teaching methods and motivational strategies," (Hattie, 2013, p. 198). Analysis of more

than 600 studies yielded an effect size of only d=0.23 for individual instruction (p. 198).

The personal learning plan as a structure does bear strong resemblance to this description.

Universal Design of Instructional Space

One of the more tangible elements of personalized learning is student choice and

control over learning space. Literature and research linking psycho-social impacts of

space stems back to the late 1950s with design concepts such as Barrier-Free and

Universal Design seeking to remove differences in functionality of spaces and objects for

those with differing levels of accessibility (Catanese, 2012, p. 206). Only more recently

has such design begun to be directly correlated with actual academic achievement.

Recent studies by Kenneth Tanner, a significant voice in the field of school design, has

sought to attribute design aspects such as movement and circulation, day lighting, and

views of spaces to specific achievement gains in standardized tests (Tanner, 2009, p.

394).

In between, theories of Universal Design have been co-opted to include not only

design of space, but the design of lessons, accommodations, and most recently design for

implementation of technology. Furthermore, the term Universal Design for Learning

represents a trademark group. It has worked to link this research to curriculum and space

design. Proponents of Universal Design for Learning theorize that efficacy of space and

task remove barriers and positively impact learning, much as Universal Design removed

impediment to functional use of objects and space. One such study did draw this positive

alignment of learning space and learning task to student engagement.

Study designers and participants identified four configurations of learning space,

linear, horizontal, cluster, and network. Each configuration was associated with different

kinds of instructional practices from lecture, to small group discussion to individual

workspace. Through staff and student survey data comparing spaces designed to be

flexible to these configurations as compared to traditional classroom setups, respondents

indicated higher levels of student engagement, collaboration, variety of use, and

alignment to teaching and learning style. Significantly, students responded their

engagement as 1.51 standard deviations higher than the mean when there was room

efficacy or a match of room arrangement with instructional method (Neill & Etheridge,

2008). This would suggest that matching task to design of space should have a positive

impact on student engagement with the learning.

Competency-Based Assessment Practices

As an extension on the learning plan, personalized learning relies on movement

through content based on demonstrating competency rather than seat time. Competency-

based and proficiency-based educational movements arose in the 1980's as an alternative

to the Carnegie Unit (Johnston, 2011). Similarly, standards-based education practices

seek to note the specific skills students have acquired, but do so without explicitly

altering pace of student learning.

Research on the achievement impact is represented in the similar term of mastery

learning. All three terms (i.e., competency, proficiency, and mastery) align in meaning

and fit with personalized learning as they keep learning as a constant with time as a

variable (Bray & McClasky, 2014b). Meta-analysis found that instruction and

assessment practices of this kind resulted in $d=0.58$ or a moderately positive effect size

(Hattie, 2013, p. 170)

Support of Achievement Through Increased Engagement

As has been noted throughout, much of the benefit attributed to personalization and its associated practices has been suggestive of its ability to increase student engagement. While it is a commonly held theory that increased engagement in learning will increase achievement, research supported evidence, particularly at the elementary level, was found to be limited.

A study by Katerina Bodovski and George Farkas out of Pennsylvania State University, compared the impacts of instructional time and engagement on student achievement looking at kindergarten, first, and third grade mathematics growth (Bodovski & Farkas, 2007). Data was used from the Early Childhood Longitudinal Study performed by the National Center for Educational Statistics. Specifically, students perceived by their teachers as being engaged performed between 0.51 and 0.67 standard deviations higher than the mean (p. 122). As the study draws on a nationally representative sample of more than 3,000 individuals, we can conclude that such findings could be broadly generalized.

A similar study examined reading achievement for kindergarten students based on classroom behavioral engagement. Ponitz, Kaufman, Grimm, and Curby (2009) used the Woodcock-Johnson III Tests of Achievement to examine student's letter-word identification, word recognition, and sound awareness as an achievement measurement and the National Institute of Child Health and Human Development's Observed Child Engagement Scale to measure evidence of engagement. Tested in Fall and Spring, for achievement, "students observed as more engaged in classroom activity attained higher

levels of reading proficiency by year's end, compared to those not as engaged," (Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009, p. 115).

A final source that seeks to demonstrate a connection between engagement and achievement is the ongoing data sets being created as part of the Gallup Student Poll. This poll, administered beginning in fifth grade, focuses on the idea that "hope, engagement, and well-being are actionable targets and indicators of success, with links to grades, achievement scores, retention, and employment," (Lopez & Calderon, 2011, p. 122). While the first two fall within the typical domain of schooling and research studies, it is the last that may bear more relevance, as Gallup Researcher Shane Lopez notes that current poll data suggests high ratings of hope, engagement, and well-being are better predictors of future success than is academic performance (Gallup, 2014).

Implication of the Findings and Application to MOEC

Implications of the Findings

Personalized learning or a focus on personalization of student learning tasks has become an increasingly popular topic in professional literature. Authors frequently tout its positive impact on student engagement and suggest that it increases depth of student thinking by virtue of better matching learning outcomes to the individual learner.

Accessing direct research to support these assertions proved difficult. Of the recent work published in peer-reviewed sources, a majority was editorial. Furthermore, the term personalization itself has been criticized as not being articulated clearly enough to determine specific practices as effective or not. For those writings that do seek to define specific strategies, the matter is confounded through frequent publication outside the academic peer-review realm. Educational Advisory Groups and Research Programs

may offer valid and valuable information about how these strategies can positively

impact student achievement, but ultimately are accountable to funding agencies rather

than peer review. The matter is then confused when reputable organizations such as

Advance-ED republish these works as guidance to ongoing school accreditation and

improvement.

When specific strategies are teased out of the broader topic of personalization,

many are found, through research, to have positive impacts on student engagement.

Others can be directly tied to student achievement. Research on engagement increasingly

supports theory that high engagement will result in high achievement, however this

connection is indirect. Furthermore, it is troubling that some key elements of

personalization such as the personal learning plan, while promoted in educational

discourse, do not prove to have a universally positive impact on student achievement.

The implications of these strategies are far reaching as well. On a practical level

our schools are not currently structured to support personalized learning. Physical spaces

are designed for traditional classroom instruction and furniture is typically not suited to

the flexible learning environments associated with personalized learning. Furthermore,

our current system of accountability and reporting could be a hard fit with personalized

learning practices. Teacher training too would be significant if personalization were to be

applied in large scale to the educational system. The amount of change necessary would

no doubt require a significant investment of finances and effort on the part of schools to

educate the public on the purposes and proposed benefits to making these changes.

Applications for Metropolitan Omaha Educational Consortium

The specific application for the Metropolitan Omaha Educational Consortium (MOEC) is most present in the strong push to implement personalized learning by one of its member districts. Westside Community Schools has articulated in its district vision a commitment to providing personalized learning opportunities. As it continues to move along this path there will likely be opportunities for other districts to collaborate and implement components or more fully integrated practices in personalization.

With an aging infrastructure and an expanding population, many metro districts are in the process of refreshing their facilities. This typically occurs through the passing of bonds that while individual to each district have the potential to create either momentum or roadblocks depending on their successful implementation. Local impact of shared resources through the Learning Community means districts may choose to work collaboratively in building new kinds of facilities to support their individual and shared intentions for students. These are being referred to as corridors of innovation, and MOEC could serve as a guiding agency for these kinds of collaborations.

Many metro districts have also recently experienced increased change over in staffing. This has been, in part, due to state funding rules regarding employee retirement as well as budgetary constraints. As a link to University of Nebraska at Omaha, MOEC has a vested interest in preparing pre-service teachers to successfully implement strategies being used by its member districts. At the graduate level, providing training to more experienced educators as well as to future and practicing administrators could also act as a point of alignment between participating districts.

Finally, as districts implement their own visions aimed at increasing student opportunity for achievement, there is likely to be social and political discussion. As a community we value diversity of opportunity. We offer numerous means for families to have school choice. This works both for and against us, as we become an increasingly mobile society. This paper does not address the implementation of technology which is often paired with personalized learning. As districts with different emphasis will still have to educate students in their enrollment, there is the potential for concern over unequal opportunity or access. MOEC might serve as a means to establish a common educational experience which districts could then add their individual focuses to.

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Garret Higginbotham is currently the Principal of Rockbrook Elementary with Westside Community Schools, a suburban district in Omaha, NE meeting the unique needs of diverse learners. Westside Community Schools, while under the leadership of Superintendent Dr. Blane McCann has actively pursued the educational philosophy of Personalization. As a district building level administrator, Garret provides instructional leadership to Rockbrook Elementary, its teachers, students, and community. Garret is also part of curriculum, instruction, and assessment committees for Westside Community Schools, where he is a contributor to the development of practice and policy on student assessment, technology integration, and staff supervision and evaluation.