

PERSONALIZED LEARNING: REPLACING MASS CONSUMPTION WITH MASS PARTICIPATION

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ABSTRACT

The paper investigated various dimensions on personalized learning and discussed how personalized learning can enhance student performance. Personalized learning is a method of instruction in which content (sometimes including instructional technology) and the pace of learning are based upon the abilities and interests of each individual learner. This instructional pattern is an antithesis to mass instruction where content, materials and the pace of learning are standardized for all students in a classroom or a course of study. Data was collected from students at Majan College and findings indicate that virtual learning environment, student participation, contribution and motivation facilitates development of personalized learning environments.

KEYWORDS: Personalized Learning, Student Performance, Individual Learner

INTRODUCTION

Personalized Learning is the tailoring of pedagogy, curriculum and learning environments to meet the needs and aspirations of individual learners. Typically technology is used to facilitate personalized learning environments. Lead beater (2009) believes that such transformational shifts in instructional design and teaching pedagogies can produce mass innovation through collaborative creativity, rather than just mass production of programmed learners. In such environments mass consumption replaces mass participation.

RATIONALE

Personalized learning practices are vaguely practiced and the theory on personalized learning remains underdeveloped. It has been interpreted in different ways and often mistook as individualized learning. According to the National Educational Technology Plan developed by the US Department of Education, personalized learning is defined as adjusting the pace (individualization), adjusting the approach (differentiation), and connecting to the learner's interests and experiences. Personalization is broader than just individualization or differentiation in that it affords the learner a degree of choice about what is learned, when it is learned and how it is learned. It calls for further investigation into practices of personalized learning and generation of new insights how personalized learning can be implemented into curriculum particularly when standardization seems to be the norm in higher education. Higher education across the world and in Oman is experiencing growth and the pressure to standardize is higher than the pressure to personalize. However, the benefits of personalization can be immense particularly in terms of student performance. Once the effective practices of personalized learning are established, its effect on students' performance can be further researched.

RESEARCH OBJECTIVES

- To understand the various dimensions of personalized learning

- To analyze personalized learning dimensions in a higher education setting
- To evaluate the role of technology, learner and teachers' role in promoting personalized learning.

REVIEW OF LITERATURE

Buckley (2005) defined two ends of the personalized learning spectrum: personalization for the learner, in which the teacher tailors the learning, and personalization by the learner, in which the learner develops the skills required to tailor their own learning. This spectrum was adopted by the (2006) Microsoft's Practical Guide to Envisioning and Transforming Education. According to Keefe (2007), personalized education is one in which each individual, student or teacher matters and each student has a designed personal program. Keefe (2007) believes educating for a post-technological age is a challenge and today's education must produce adaptable individuals and lifelong learners who are able to keep up with rapid change. He believes conventional age-graded education system function on the premise that education is about teaching the masses and not individual learners.

Anderson (2011) notes that, "Mass Education is adequate, as long as students are highly motivated to learn and get ahead of their peers" (p. 13). In industrialized countries, where prosperity is already the norm, education does not always translate into significantly higher standards of living. Therefore, the economic incentive to learn is not always present and motivation must become intrinsic. Personalized learning, although not new, allows students to engage in learning that is motivating.

McRae (2010) purports that personalized learning is often represented as a novel approach that can be used to broadly reorganize 21st century schooling and as a way to enhance the pedagogical practices of educators. He affirms that in order to achieve personalized learning, the individual strengths of students need to be assessed and addressed according to students' specific needs and learning styles. Therefore, personalized learning has a strong agenda to develop empowerment of awareness of the learning process and development of self-evaluation process.

Peters (2009) believes personalized learning has emerged in the last decade as a response to the problem of globalization and the waning industrial model. Peters (2009) connects personalization to individualization and examines it as one of many strategies for overcoming the bureaucratic government. Peters (2009) discusses "mass customization" as the discourse from which personalization emerged and focuses on personalizing learning as the model of future public sector reform.

Van Harmelen (2006) goes on to suggest that when personalized learning is studied, part of that personalization is connected to technology, using computer subsystems that include desktop applications or web-based services. Technological possibilities include social networks and other networking protocols that can cross boundaries (peer-to-peer, web services, and syndication) to connect resources and systems within personally-managed spaces. One newer aspect of personalized learning includes alternative approaches developed in Learning Management Systems. There is, however, another broader sense of personalized learning. According to Darling-Hammond (1996), there are four basic elements of a personalized instructional approach: 1) structures for caring and learning that help teachers know students well and work with them intensely; 2) shared exhibits of student work that clarify what the school values and how students are doing; 3) structures that support teacher collaboration focused on student learning (teacher teams); and 4) structures for shared decision making and dialogue about teaching and learning with other teachers, students and parents.

Collaborative learning and knowledge building is one of the most meaningful ways to support individual learning mechanisms (Bereiter and Scardamalia, 1989). Studies of collaborative learning (Dillenbourg, 1999) have shown that it is effective if the students engage in rich interactions. Through this process learners arrive at complex and conceptual understanding rather than simple answers. This leads to the question: how could the collaborative process in personalised learning be regulated in order to favor the emergence of these types of interactions. For example, how can technology designed to enhance personalized learning environments in ways that increase the possibility that such rich interactions occur.

Personalization technologies are defined as approaches to adapt educational content, presentation, navigation support, and educational services so that they match the unique and specific needs, characteristics, preferences of each learner (Magoulas and Chen, 2006). Alexander (2009) mentioned that the term personalization describes the tool, communities and services that constitute the individual educational platforms learners use to direct their own learning and pursue educational goal. On the contrary to the conventional instruction system, at which students try to adapt themselves to the concept, personalized learning advocates that the concept has to be adapted to the individual student (Karagiannidis, Sampson and Cardinali 2001).

Personalization helps build a meaningful one-to-one relationship between learner/teacher and the learning environment by understanding the needs of individual and helps to reach a goal that efficiently and knowledgeably address each individual's need in a given context (Riecken 2000).

According to Magoulas and Chen (2006), in personalized learning environment, learner modeling is the fundamental mechanism to personalize the interaction between the system and the learner. Learner model generation involves interpreting the information gathered during interaction in order to generate hypotheses about learner goals, plan, preferences, attitudes, knowledge, or beliefs. Personalized learning is a new topic within the field of education. It has led to debates in both the UK (2006 to present) and Canada (2010) where some educators are concerned that it could diminish the relational and ethical dimensions of education. Hargreaves and Shirley (2009) warn about potential negative aspects of some dimensions of personalized learning in their book entitled *The Fourth Way: The Inspiring Future for Educational Change*. They write, for example, that while there are advantages in students being able to access information instantly online, one should not mistake such processes for "something deeper, more challenging, and more connected to compelling issues in their world and their lives." [7] The general argument is that the agenda around personalized learning is more and more directed to technologically-mediated tools.

Overall the literature has emphasized the need to understand, interact and develop student motivation through either class instruction design or use technology that can enhance individual learning mechanisms. However it cautions that personalized learning is becoming too much dependent on technology. In addition establishing the learning goals by learners is difficult to be established which make its implementation in its entirety difficult.

METHODOLOGY

Epistemological foundations of this study are grounded into positivist and realist philosophies (Bryman and Bell 2003). Therefore quantitative strategies have become the dominant strategy in this research (Fisher 2004). It by no means undermines the importance of qualitative research and future research in this area can be done qualitatively to derive more meaning and contexts into student behaviors and motivation. Adopting quantitative approach does not give us claim

to objectivity but enhances the confidence in the findings through scientific methods (Alvesson, and Deetz, 2007). The sample chosen in this study are 100 students in Majan College, although we understand this limits the generalizability. The benefit of using quantitative approach is that it generalizes to populations while qualitative study generalizes to situations. Questionnaire using 5-point Likert scale was used as the primary research tool and data was analyzed using multiple regression and structure equations modeling employing path analysis. Fit indices are a useful guide; a structural model should also be examined with respect to substantive theory. By allowing model fit to drive the research process it moves away from the original, theory-testing purpose of structural equation modeling (Gaskin 2012).

FINDINGS AND DATA ANALYSIS

The first step during the data analysis stage was to establish the reliability. Hence Cronbach’s alpha scores was obtained and it showed satisfactory score of .709 which is considered to be reliable (Saunders 2012).

Table 1

Reliability Statistics	
Cronbach's Alpha	N of Items
.709	14

The next step in the data analysis was to check how far all the independent variables showed causal relationship with the dependent variable. The findings in the table below showed that R (.709) which is the correlation value between predictor variables combined and dependent variable. The R-square value (.512) explains almost 51% variance in the dependent explained by independent variables (sig .000).

Table 2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.655 ^a	.512	.410	.35827

Further to investigate higher levels of causal relationship between dependent and independent variables path analysis ‘Analysis of Moment Structures’ (AMOS) using IBM SPPSS version 20 was utilized. The numbers along the path are standardized path coefficient representing the strengths of causal relationships between observed variables (Tabchnick and Fidell 2007, Gaskin 2012).The first level of analysis showed that only 5 items (e5, e6, e7, e8, and e13) showed significant relationships as shown through the table and path diagram below. This was perhaps because of a lower sample size and researchers feel that if the sample size was larger more variables would have been statistically valid.

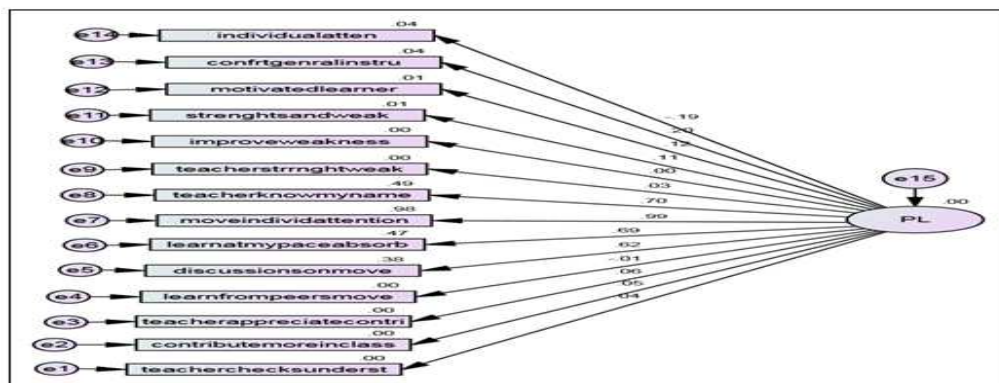


Figure 1

The model fit indices indicated that the data fitted the model satisfactorily but it was not a great fit. The CMIN/DF (5.250), CFI (.764), GFI (.855) and RMSEA (.114) values are shown through the figure and tables below.

Table 3: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	28	404.277	77	.000	5.250
Saturated model	105	.000	0		
Independence model	14	702.041	91	.000	7.715

Table 4

RMR				
Model	RMR	GFI	AGFI	PGFI
Default model	.083	.855	.765	.653
Saturated model	.000	1.000		
Independence model	.136	.637	.581	.552

Baseline Comparisons

Table 5

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.424	.319	.476	.367	.764
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

RMSEA

Table 6

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.114	0.117	0.158	0
Independence model	0.204	0.19	0.218	0

The second level of analyses was done where the items with high modification indices were co-varied such as e1 with e2, e3 with e5, e5 with e11 and e8with e13. Items e4, e10 and e14 were removed from the model. The findings showed a better fit (Hu and Bentler 1999) with no negative values.

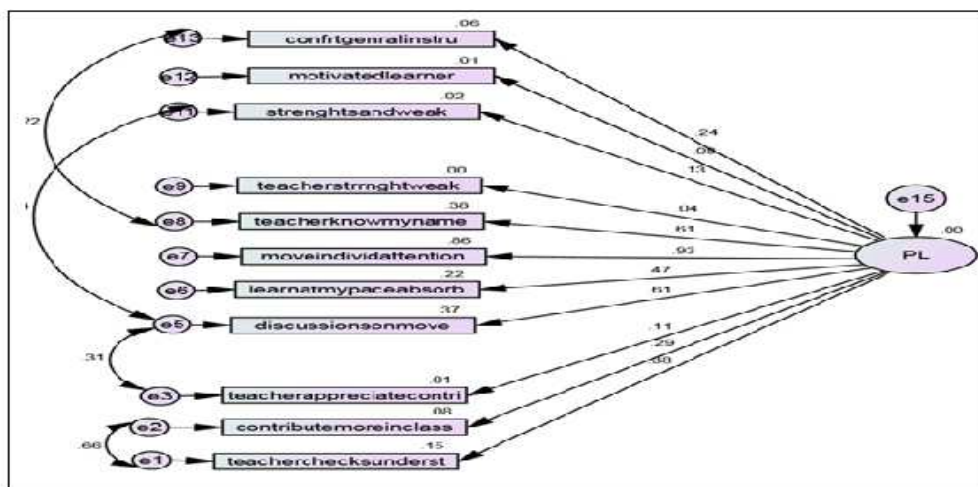


Figure 2

All the remaining items showed significant relationships (p less than .05). The fit indices also improved with values showing CMIN/DF (3.856), CFI (.971), GFI (.963) and RMSEA (.094). The regression weights and model fit indices are shown through the table below.

Table 7: Regression Weights: (Group Number 1 - Default Model)

			Estimate	S.E.	C.R.	P	Label
Teacher checks understanding	<---	PL	1.000				
Contribute more in class	<---	PL	.762	.154	4.934	***	
Teacher appreciate contribution	<---	PL	.064	.120	.534	***	
Discussions on Move	<---	PL	1.812	.285	6.348	***	
Learn at my pace absorb	<---	PL	1.000				
Move individual attention	<---	PL	2.891	.397	7.290	***	
Teacher know my name	<---	PL	1.632	.237	6.877	***	
Teachers help in SW assessment	<---	PL	.074	.140	.528	***	
I assess my SW	<---	PL	.240	.239	1.006	***	
Motivated learner	<---	PL	.250	.162	1.548	***	
Comfortable with general instruction	<---	PL	.431	.197	2.191	.028	

Table 8: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	25	158.081	41	.000	3.856
Saturated model	66	.000	0		
Independence model	11	565.564	55	.000	10.283

Table 9: RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.094	.963	.880	.536
Saturated model	.000	1.000		
Independence model	.161	.632	.558	.526

Table 10: Baseline Comparisons

Model	NFIDelta1	RFIrho1	IFIDelta2	TLIrho2	CFI
Default model	.720	.625	.777	.692	.971
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Table 11: RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.094	.112	.155	.060
Independence model	.240	.222	.258	.060

DISCUSSIONS

Technology and Learning Management Systems

The findings indicated that MOVE (Majan Virtual Learning Environment) was significant a significant contributor towards personalized learning. The findings are similar to what has been discussed in the literature on e-learning platforms. Van Harmelen (2006) emphasized that part of that personalization is connected to technology using web-based services. Learning management systems, social networks and other networking protocols can create resources

and systems within personally-managed spaces that have the potential to enhance personalized learning. Dillenbourg (1999) and Keefe (2007) supported the view that technology can facilitate creation of personalized spaces where students can be comfortable to learn at their pace. Keefe (2007) reiterates that educating for a post-technological age must produce adaptable individuals and lifelong learners who are able to keep up with rapid change. Alexander (2009) also argued that mentioned that personalization involves tools, communities and services that constitute the individual educational platforms learners use to direct their own learning and pursue educational goal. The discussion forums on MOVE was also found to be significant factor impacting personalized learning and has proved to be a key contributors evidenced through various other feedbacks received from students on student learning experience. However, the enthusiasm to promote personalized learning must be accompanied by health warning as the technologically-mediated tools cannot replace meaningful dialogues within and outside class rooms (Hargreaves and Shirley 2009).

Teachers' Role in Class: Personalization for the Learner

The teachers' role in the class also found considerable representation in understanding personalized learning. Teachers' ability to check understanding at regular intervals, teachers' appreciating contribution and teachers' knowing students' by names were found to be significantly contributing towards enhancement of personalized learning. These factors are important because it enhances the visibility of teachers toward students and students feel that they cannot hide behind the shadows of brighter students and their contribution is equally important. This is what Riecken (2000) argues leads to meaningful one-to-one relationship between learner/teacher and the learning environment by understanding the needs of individual and helps to reach a goal that efficiently and knowledgeably address each individual's need in a given context.

Students' Role: Personalization by the Learner

A moderately statistically significant variable indicated that students agree that they are comfortable with general instructions and mass consumption is desired. However, this is not the view of majority and these students may not have been exposed to benefits of personalized learning. At the same time students agreed that contributing in the class generates teachers' attention and facilitates personalized learning. Empowerment of awareness of the learning process and development of self-evaluation process (McRae 2010) was also found to be only moderately significant variable. This calls for further research in this area. The argument forwarded here is that lack of awareness and lack of any stimuli to undertake self-evaluation process. This calls for more education to the students on the self-evaluation and teachers must make efforts not only to assist students in identification of their strengths and weakness but further prepare them to overcome their weakness. This will lead to structures for caring and learning that help teachers know students well and work with them intensely (Darling-Hammond 1996).

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