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Personalized Learning as a Gateway to Lifelong Learners

> Dr. Cecil R. Short November 2023

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Background: Blended and Personalized Learning, Teacher Preparation, Open Education

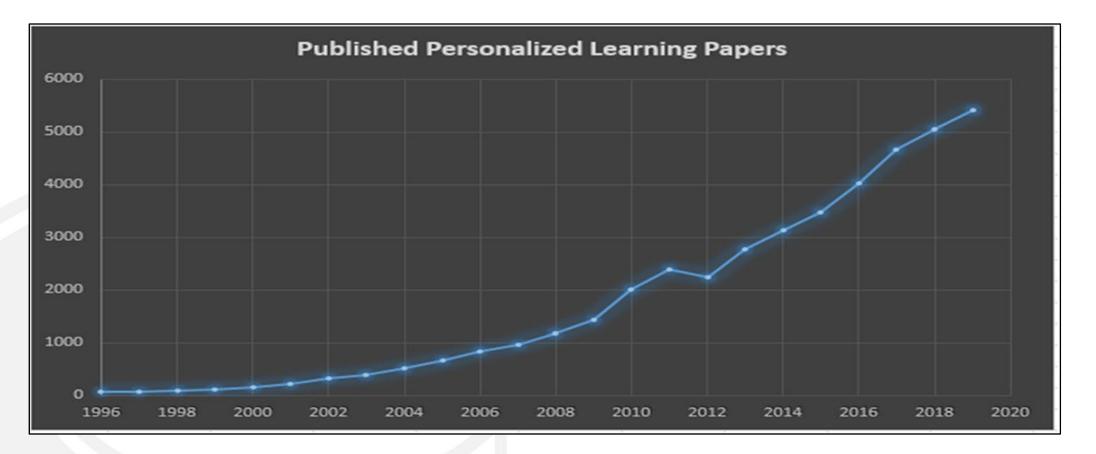


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Defining Personalized Learning 定义个性化学习



Shemshack and Spector (2020)



Shemshack and Spector (2020) Descriptions

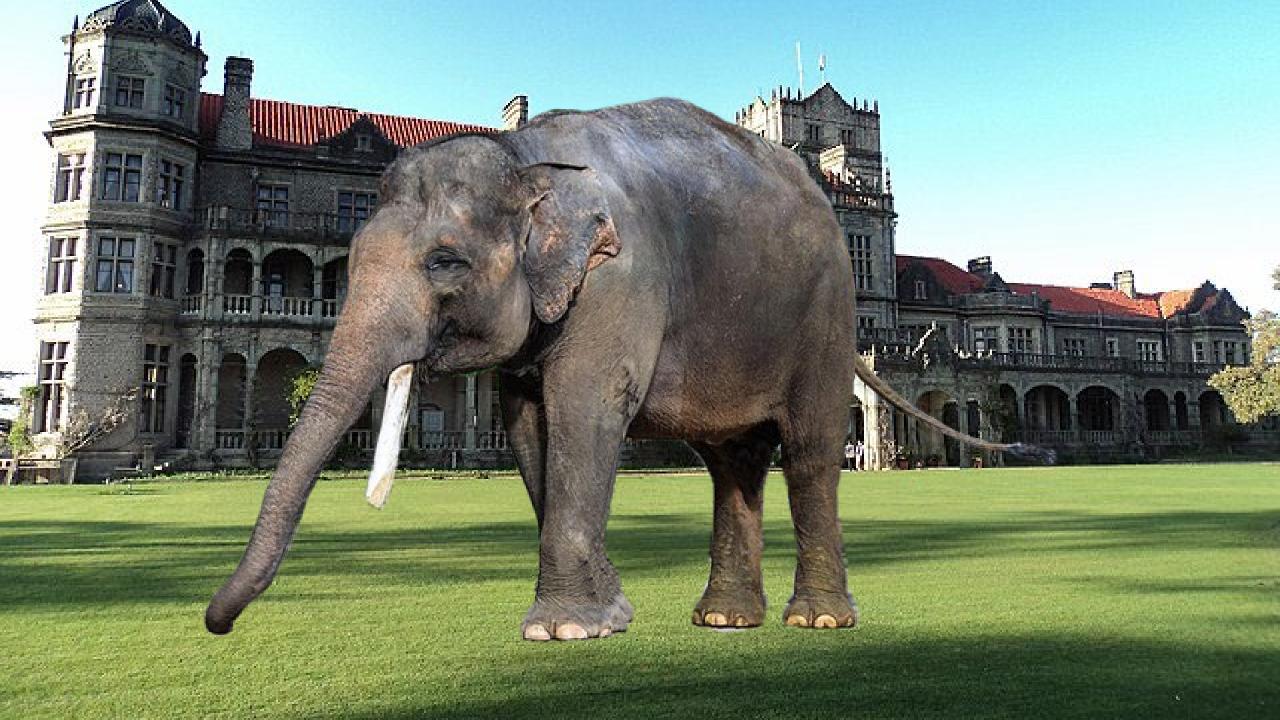
"Personalized learning for everyone looks different according to the needs and goals of the individual" (p. 17).

"We need more research to be done about personalized learning. We also need the involvement of experts in the field, educators, pedagogues, researchers, software engineers, and programmers to create teams to **work on the same goal to produce stable, unified, personalized learning systems/models**" (p. 17).

"...a unified agreement on the components need[ed] to be included in personalized learning models [is] still needed" (p. 17).

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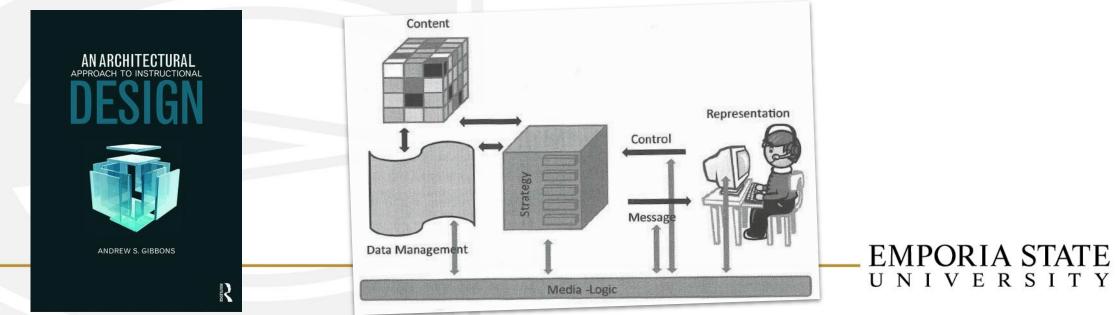
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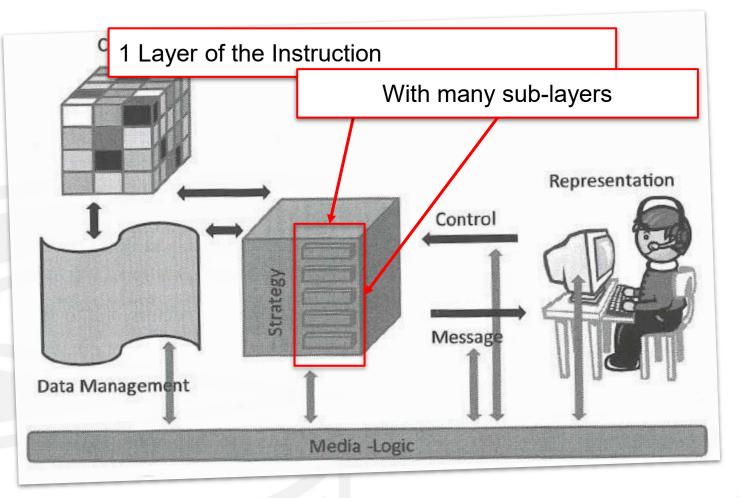
Why so many definitions?

"Theorists who have strategy concepts to promote often use the term opportunistically to **refer to their particular interests** without cross-referencing their ideas with those of others" (p. 303).

Gibbons, A. S. (2013). An architectural approach to instructional design. Routledge.

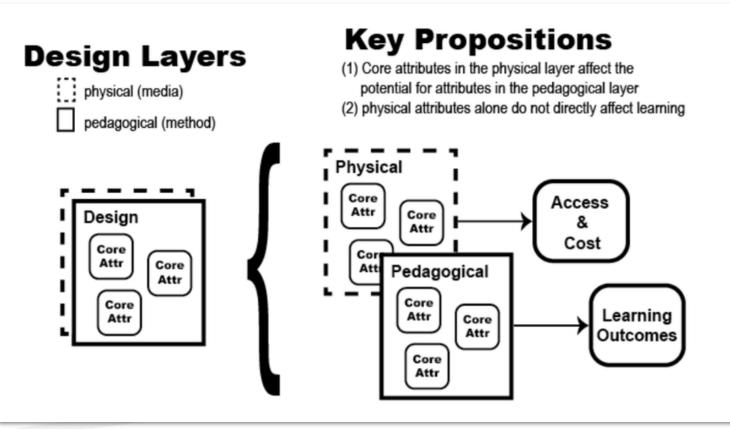


Instructional Layers Labeled



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The Pedagogical Layer of Instruction



Graham, C. R., Henrie, C. R., & Gibbons, A. S. (2014). Developing models and theory for blended learning research. In A. G. Picciano, C. D. Dziuban, & C. R. Graham (Eds.), Blended learning: Research perspectives, volume 2 (pp. 13-33). New York, NY: Routledge. EMPORIA STATE

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A Two-Part Definition

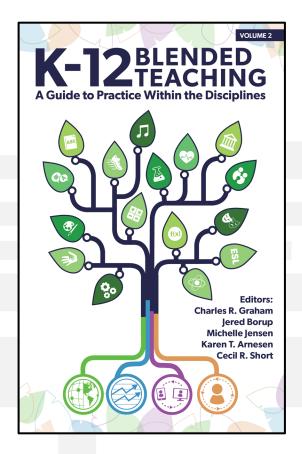
- 1. Personalized Learning is an **instructional strategy** that adapts learning to each learner's individual abilities, interests, or needs.
- 2. As an instructional strategy it **consists of several core attributes** related to what part of the instruction is adapted, how it is adapted, why it is adapted (i.e., what data is the adaptation based on), and who or what adapts it.



Core Attributes of Personalized Learning 个性化学习的核心特征



Free Resources (免费资源)



https://bit.ly/k12blended2



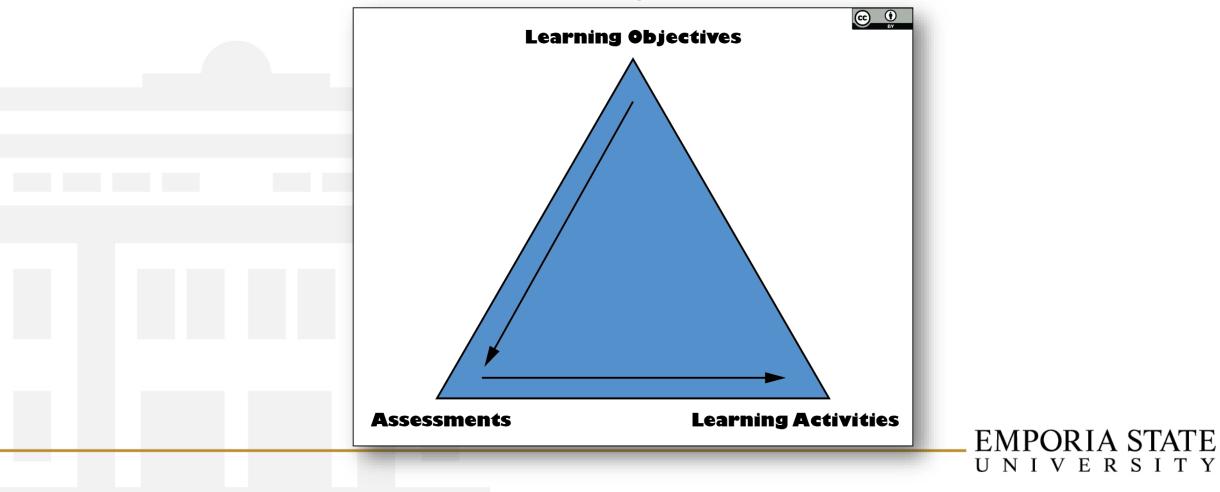
https://bit.ly/pldfchapter



https://bit.ly/pldefinition



What is aspect of instruction is being adapted?



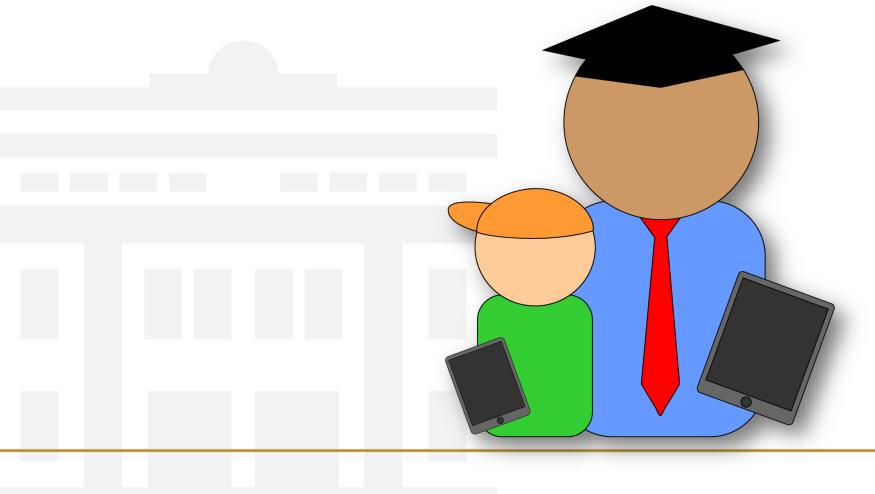
How is instruction being adapted?



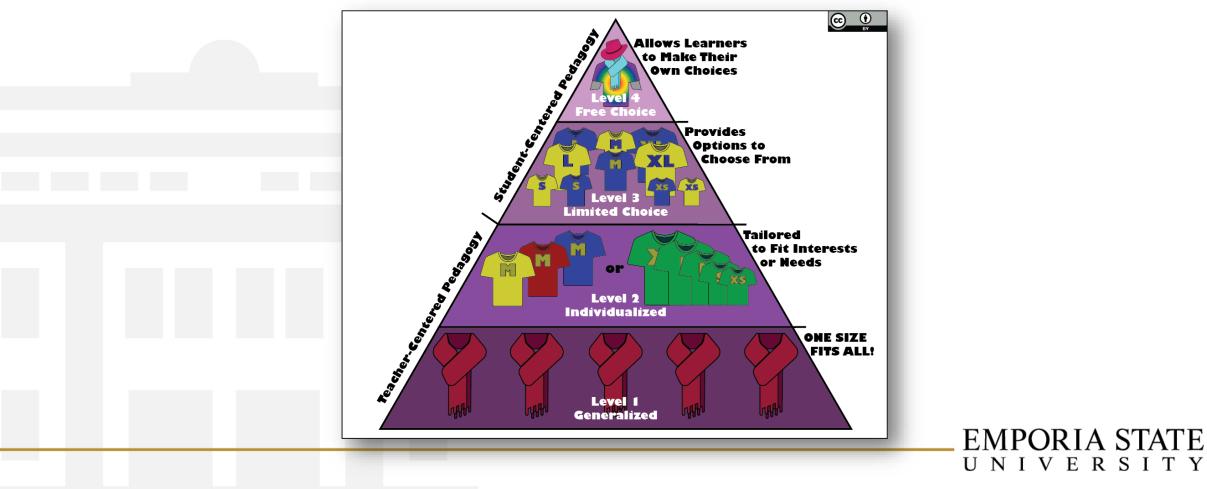
What are the adaptations of instruction based on?



Who or What makes adaptations to the instruction?



To what extend are learners given agency to adapt instruction?



The Personalized Learning Design Framework (PLDF)

 Creates a shared understanding of what personalized learning is and how it works.

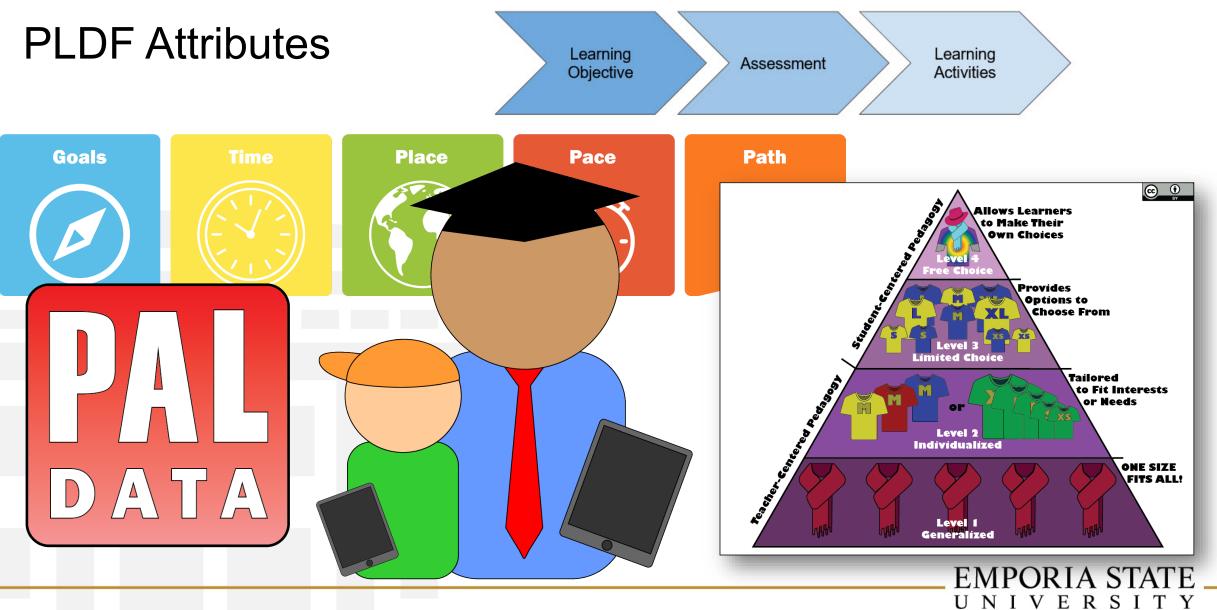
 Guides the design of personalized learning by clarifying (some) of the core attributes of personalized learning.

 Guides the evaluation of personalized learning by providing a framework for focusing on what is being personalized, how, why, and/or by whom.

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PLDF Research 1 个性化学习设计框架研究1



PLDF Design and Research

•What core attributes of provide the greatest impact on outcomes such as increasing learner's academic performance, engagement, or agency and ownership? How do these core attributes differ based on context?

- Lead the design of personalized learning environments and instruction in P-12, Higher Education, and Corporate settings.
- Guide the creation of evaluation matrices for personalized learning environments and contexts.

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Validation of the PLDF

 Article 3: "Blending and Personalizing: A Cross-Disciplinary Analysis of K-12 Blended Teacher Practices for Personalization"

 Short, Cecil R., "Preparing K-12 Teachers for Blended Teaching: An Exploration of Peer-reviewed Research, Important Practices, and Teacher Experiences" (2021). *Theses and Dissertations*. 9110. https://scholarsarchive.byu.edu/etd/9110

Research Questions

What does personalized learning look like in K-12 blended contexts?

- What dimensions of personalization (goals, time, place, pace, and/or path) are K-12 blended teachers implementing and what does this implementation look like?
- Are there patterns or differences in these practices across dimensions of personalization, subject area, or grade level?

•Are the skills or knowledge that teachers use for BPL similar to those provided by existing professional development and/or teacher preparation resources, such as K-12 Blended Teaching: A Guide to Personalized Learning and Online Integration (Graham et al., 2019)?

Data Gathering Methods

Semi-structured interviews conducted by a team of researchers
60- to 90-minute interviews

- 62 teachers, instructional coaches, librarians
- Georgia, Missouri, Nevada, Utah, Virginia, and Internationally
- Self-identified or through professional networks

Representation Across Grades and Subjects

15K-6General76-12Science (e.g., biology, chemistry, earth science)27-12Technology (e.g., computer coding)66-12Math66-12English Language Arts56-8Foreign Language (e.g., American Sign Language, English as a Second Language, French, Spanish)67-12Social Sciences (e.g., social studies, history, geography)57-12Arts (e.g., visual arts, performing arts, music)67-12Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	Number of Interviews	Grade Levels	Subject Areas	
27-12Technology (e.g., computer coding)66-12Math66-12English Language Arts56-8Foreign Language (e.g., American Sign Language, English as a Second Language, French, Spanish)67-12Social Sciences (e.g., social studies, history, geography)57-12Arts (e.g., visual arts, performing arts, music)67-12Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	15	K-6	General	
66-12Math66-12English Language Arts56-8Foreign Language (e.g., American Sign Language, English as a Second Language, French, Spanish)67-12Social Sciences (e.g., social studies, history, geography)57-12Arts (e.g., visual arts, performing arts, music)67-12Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	7	6-12	Science (e.g., biology, chemistry, earth science)	
66-12English Language Arts56-8Foreign Language (e.g., American Sign Language, English as a Second Language, French, Spanish)67-12Social Sciences (e.g., social studies, history, geography)57-12Arts (e.g., visual arts, performing arts, music)67-12Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	2	7-12	Technology (e.g., computer coding)	
56-8Foreign Language (e.g., American Sign Language, English as a Second Language, French, Spanish)67-12Social Sciences (e.g., social studies, history, geography)57-12Arts (e.g., visual arts, performing arts, music)67-12Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	6	6-12	Math	
Language, English as a Second Language, French, Spanish)67-1267-1257-1267-1267-1267-127Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	6	6-12	English Language Arts	
geography)57-1267-1267-129Other (e.g., physical education, health, family and consumer sciences)4K-12Support Staff (e.g., librarians, instructional coaches)	5	6-8	Language, English as a Second Language,	
6 7-12 Other (e.g., physical education, health, family and consumer sciences) 4 K-12 Support Staff (e.g., librarians, instructional coaches)	6	7-12		
4 K-12 Support Staff (e.g., librarians, instructional coaches)	5	7-12	Arts (e.g., visual arts, performing arts, music)	
coaches)	6	7-12		
	4	K-12		EMPORIA STATE

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Data Analysis Methods

8 Steps Combining Methods from:

 Huberman, A. M., & Miles, M. B. (1994). Data management and analysis methods. In N. K. Denzin & Y. S. Lincoln (Eds.), Handbook of qualitative research (pp. 428–444). Sage.

 Wolcott, H. F. (1994). Transforming qualitative data: Description, analysis, and interpretation. Sage.

Analysis Methods 1-4

- Read the transcripts of interviews and make marginal notes of first impressions (Huberman & Miles, 1994) and/or create separate notes related to the research questions as part of the initial reading (Wolcott, 1994).
- 2. Write a brief reflection concerning the transcript that can help guide future steps in the analysis (Huberman and Miles, 1994).
- 3. Identify codes within the interview transcripts and write brief notes describing such codes (Huberman & Miles, 1994).

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4. Determine essential patterns and themes through organizing the codes collected in the previous step (Huberman & Miles, 1994; Wolcott, 1994).

Analysis Methods 5-8

- 5. Provide descriptive statistics of the codes (Huberman & Miles, 1994).
- Use themes and descriptive statistics to compare relationships between codes and themes, while building logical assertions based on these relationships (Huberman & Miles, 1994).
- 7. Analyze the relationships among codes and themes as they relate to frameworks from the literature (Wolcott, 1994). The framework used for this analysis was the personalized learning competencies from Graham et al. (2019), which were used in a prior BT analysis completed by Short et al. (2021).
- 8. Report and display findings through a combination of tables, charts, diagrams, and/or figures (Wolcott, 1994), as well as provide comparisons between K-12 blended teaching contexts (Huberman & Miles, 1994; Wolcott, 1994).

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Findings – Personalized Learning Activities

Combining online and in-person instruction (27, 43)
Setting apart time (18, 19)

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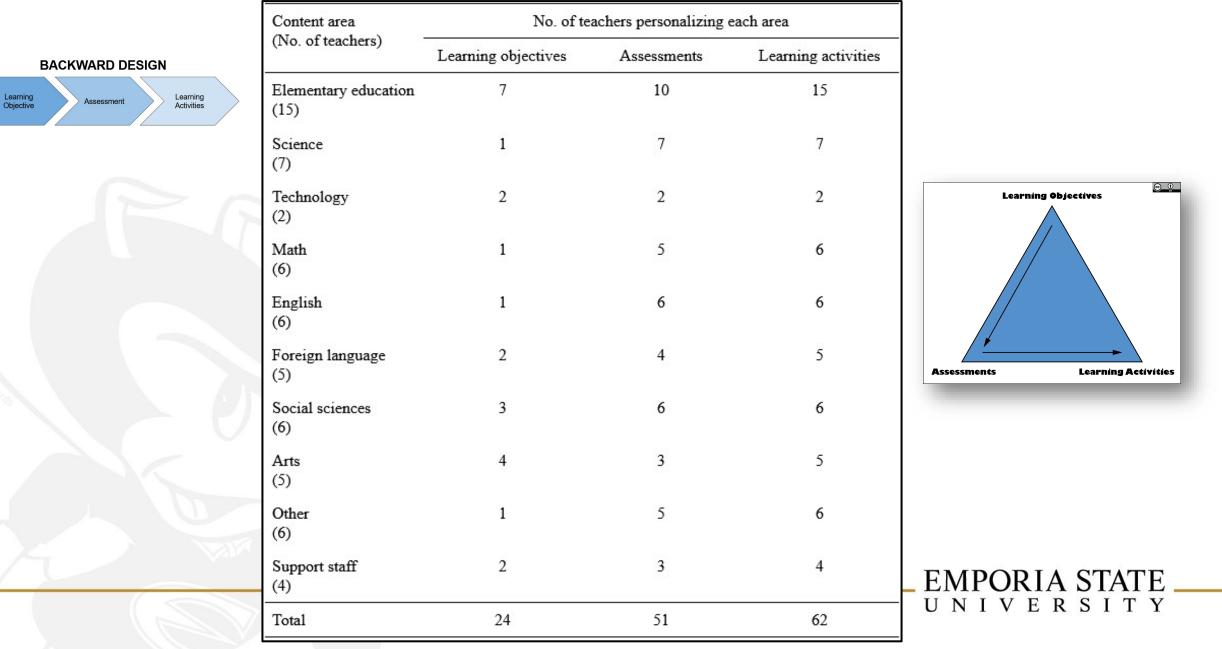
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- Creating multiple paths (14, 23)
- Curating resources (11, 16)
- Student-centered design (10, 13)
- Planning ahead (8, 10)
- Classroom setup (6, 7)
- Student-driven learning (5, 5)
- At home technology (3, 3)

Findings – What is Personalized?

Aspect of personalization	Code	Description of code	BACKWARD DESIGN Learning Objective Assessment Learning Activities
Instructional elements	Learning Objectives	Practices related to allowing students to have ownership and agency over what they wish to learn. It could be within a specific subject area or domain or a broader learning goal like pursuing personal, academic, professional, or special interests.	Learning Objectives
	Assessments	Practices related to allowing students to have ownership over how, when, or where they demonstrate understanding, proficiency, or progress.	
	Learning Activities	Practices related to allowing students to have ownership over how they want to learn, how quickly they complete activities, which activities they complete, and when or where they complete learning activities.	Assessments Learning Activities

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Findings – How is it Personalized?



Dimensions of personalization	Goals	Student ownership over <i>what</i> they wish to learn, or <i>how</i> they wish to learn. This could be choosing subjects to study, setting deadlines, choosing resources, etc.
	Time	Student ownership over <i>when</i> learning will occur. Such as during class, or at home, or at work, etc.
	Place	Student ownership over <i>where</i> learning occurs – at home, in the classroom, at school outside of the classroom, etc. – or <i>with whom</i> learning takes place – working with other students, adults, aides, etc.
	Pace	Student ownership over how quickly learning progresses.
	Path	Student ownership over <i>which activities</i> students complete within a learning unit or lesson or <i>how</i> students demonstrate understanding.

Content area	Dimension of personalization						
(No. of – teachers)	Goals	Time	Place	Pace	Path		
Elementary education (n = 15)	12	11	13	15	14		
Science (n = 7)	4	5	5	7	7		
Technology (n = 2)	2	2	2	2	2		
Math (n = 6)	2	5	6	6	5		
English (n = 6)	2	6	6	6	6		
Foreign language (n = 5)	2	5	5	5	4		
Social sciences (n = 6)	5	4	5	6	6		
Arts $(n = 5)$	4	3	3	5	5		
Other $(n = 6)$	3	4	5	6	6		
Support staff (n = 4)	2	4	4	4	4		
TOTAL	38	49	54	62	59		

Goa

Path

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\wedge	Content area	Personalization dimensions within learning objectives					
	(No. of teachers)	Goals	Time	Place	Pace	Path	Goals
Learning Activities	Elementary education (n = 15)	7	1	2	2	2	
	Science (n = 7)	1	7	17	1	1	me
	Technology (n = 2)	2	1	1	2	2	
Assessment	$\begin{array}{l} \text{Math} \\ (n=6) \end{array}$	1	1.7	17	17		Pace
Asse	English (n = 6)	1	-	-	-	-	
	Foreign language (n = 5)	1	-	-	-	1	
Learning Objective	Social sciences (n = 6)	2	-7	Ξ	-7	3	
Ô Ľ	Arts (n = 5)	3	1	1	1	4	Path
	Other (n = 6)	1	-	-	-	-	
	Support staff (n = 4)	2	1	1	1	2	EMPORIA STATE
	TOTAL	21	4	5	7	15	_

There are a second s	ent area	Dimensions of p	A contract of the second		
(No. teach	Croals	Time	Place	Pace	Path
	ation 2 15)	1	2	2	10
Scier (n =		3	2	7	5
Tech (n = 1	nology 1 2)	1	1	1	2
Math (n =) Ssess Engl: (n =)		1	1	2	4
Si Engli SV (n =)		3	2	4	5
Forei langu (n = 1	lage	1	17	4	3
Social scient (n = 0 Arts	ices	3	3	3	5
۵ - C Arts (n = :	5)	2	2	2	2
Other (n =)		1	1	3	5
Supp (n = -	oort staff - 4)	2	2	1	3
TOT	AL 10	18	16	29	44

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Goals

Pace

Path

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Content area	Pe	rsonalization di	mensions within	learning activiti	es
(No. of teachers)	Goals	Time	Place	Pace	Path
Elementary education (n = 15)	6	9	8	15	14
Science (n = 7)	3	5	5	7	7
Technology (n = 2)	2	2	2	2	2
$\begin{array}{l} Math \\ (n=6) \end{array}$	1	5	5	6	4
English (n = 6)	2	2	2	6	6
Foreign language (n = 5)	1	5	5	5	4
Social sciences (n = 6)	2	2	2	5	6
Arts $(n = 5)$	3	3	3	5	5
Other $(n = 6)$	2	4	4	5	5
Support staff (n = 4)	2	3	4	4	4
TOTAL	24	40	40	60	57

Goa

Path

PLDF Research 2 个性化学习设计框架研究2



Research Questions Research 2

•What are the affordances and constraints of K-12 BPL as perceived by K-12 blended teachers?





Affordances for Teachers

- Differentiation (44, 102)
- Learning about students (29, 44)
- Relationships with students (23, 40)
- Learning outcomes (18, 25)
- Improved feedback (10, 15)
- Buy-in from parents and students (10, 13)
- More class time (10, 13)
- Less planning time eventually (12, 14)
- Easier classroom management (9, 12)
- Multiply teacher efforts (8, 9)
- Organization (7, 8)

Affordances for Students

- Increased learning outcomes from personalizing pace (30, 58)
- Increased ownership (26, 36)
- Increased confidence (22, 41)
- Pursual of interests (22, 28)
- Increased access to learning (21, 34)
- Expression of creativity (18, 22)
- Extension of learning (11, 16)
- Purpose-driven learning (11, 12)

- Online organization, feedback, and assignments (10, 18)
- Deeper learning (9, 13)
- Collaboration opportunities (7, 10)
- Receive one-on-one help (7, 7)
- Growth Mindsets (6, 10)
- Learn from different sources (3, 3)
- Stronger peer relationships (3, 3)



(number of interviews, overall instances for code)

Constraints for Teachers

Time for designing and grading (24, 29)

- Iterative design cycle (10, 11)
- Stakeholder buy-in (9, 13)
- Adapting curriculum (8, 9)
- Technology barriers (7, 10)
- Management strategies shift (7, 9)
- Emotional toll in learning more about students (7, 9)
- Relationships with [advanced] students (4, 5)
- Pacing restrictions imposed by state/school (3, 4)

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Grading requires new approaches (3, 4)

(number of interviews, overall instances for code)

Constraints for Students

- Self-motivation can be lacking (16, 22)
- Students may misunderstand expectations (13, 14)
- Students struggle when given a choice (12, 15)
- Ability restricted options students wanted to pursue (8, 9)
- Students struggle with time management (7, 7)
- Technological difficulties (5, 6)
- Students might work too fast or too slow [pacing] (4, 4)

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- Group dynamics and social stigma if behind (2, 2)
- Lacked home support (2, 2)

(number of interviews, overall instances for code)

PLDF Research 3-4 个性化学习设计框架研究3-4



Research Questions for Research 3-4

How do university students design and manage their personalized learning experiences?

Two studies

 Arnesen, K. T., Graham, C. R., Short, C. R., & Archibald, D. (2019).
 Experiences with Personalized Learning in a Blended Teaching Course for Preservice Teachers. *Journal of Online Learning Research*, *5*(3), 275–310.

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Short, C. R. and Moon, L (in preparation).

Arnesen et al. (2019) Methods

- 81 students (35 secondary, 46 elementary)
- Pre- and Post-Survey data using the Blended Teaching Readiness Survey (<u>http://bit.ly/K12-BTR</u>)
- Assignment reflections analyzed using the template method described by Crabtree and Miller (1992).
- Final exam reflections analyzed using the thematic network analysis from Attride-Stirling (2001).
- Analysis of student goals and assignment activity



Arnesen et al. (2019) BTR Survey Findings - Increase

Table 2 Descriptive and Paired Samples T-test Statistics for Pre-Post Readiness Survey Data (N=67)								
Competency Areas	Disposition	Online Integration	Data Practices	Personalizing Instruction	Online Interactions	Total		
Total Possible	48	66	48	48	48	258		
Pre Mean	37.3	44.5	28.6	27.6	34.2	172.7		
((SD)	(4.6)	(8.8)	(8.0)	(8.0)	(8.0)	(29.9)		
Percent	77.5	67.4	59.6	57.5	71.3	66.9		
Post Mean	40.0	54.8	40.3	39.6	41.5	217.3		
(SD)	(7.3)	(7.4)	(5.9)	(6.3)	(5.6)	(30.1)		
Percent	83.3	83.0	84.0	82.5	86.5	84.2		
Post – Pre Mean	2.8	10.4	11.7	12.1	7.3	44.6		
(SD)	(7.1)	(9.5)	(7.8)	(8.5)	(7.4)	(30.8)		
Percent	5.8	15.7	24.4	25.2	15.2	17.3		
Paired Sample t	3.2	8.9	12.4	11.6	8.0	11.8		
Significance	.002	.000	.000	.000	.000	.000		

Arnesen et al. (2019) BTR Survey Findings - Decrease

Table 3 Students in Each Area Whose Scores Decreased							
Competency Areas (n=)	% Who Decreased	Score Possible	Pre-test Mean (SD)	Post-test Mean (SD)			
Disposition (16)	(8.0)	48	38.6 (5.9)	36.9 (8.2)			
Online Integration (7)	57.5	66	51.0 (6.7)	46.0 (7.8)			
Data Practices (3)	4.2	48	36.0 (6.2)	32.3 (8.0)			
Personalization (4)	5.4	48	34.3 (3.4)	31.5 (3.1)			
Online Interaction (7)	9.9	48	44.4 (2.2)	42.3 (2.7)			
Total (5)	7.4	258	187.4 (19.6)	178.2 (18.3)			

Arnesen et al. (2019) Unit Experiences

Table 4 Student Responses to Dimensions of Personalization Experienced during the Final Unit										
	Go	als	Tir	ne	Pla	ace	Pa	ce	Pa	ath
	#	%	#	%	#	%	#	%	#	%
Positive	11	79*	14	93	7	88	19	86	24	96
Not positive	3	21*	1	7	1	12	3	14	1	4
Total	14	36**	15	38	8	21	22	56	25	64

*Percent of students who commented on that dimension of personalization (n= number in the "Total" row for each dimension).

** Percent of total respondents who commented on any dimension of personalization (n=39).

Arnesen et al. (2019) Unit Experiences - Goals

Positive

- "Because I was the one who set the goal, I had a surer knowledge that I could to it."
- I really enjoyed being able to choose this assignment and the due date! I was tempted to put the due date for the last day, but with your [the instructor's] encouragement, realized that was a pretty bad idea."

Not Positive

"It did teach me that I am a kind of student that puts things off, so perhaps it will be helpful for students like me to set their goals as a more hard and fast individually set due date."

Arnesen et al. (2019) Unit Experiences – Time and Place

Positive

- "I enjoyed being able to . . . Do the assignment when it was best for me."
- "I felt [this assignment] taught me how to manage my time as if I was really a teacher now....I got to decide when to do this just as if I was a teacher deciding when to do this."
- "I was able to find a way to fit it into my schedule instead of forcing my schedule to fit with the assignment."
- "Having more control over . . . where . . . I accomplished this assignment made me feel more positively about it." (place)

Arnesen et al. (2019) Unit Experiences – Pace Positive

Positive

- One thing I really liked about this assignment was I could take the time to think about what kinds of questions would really help me learn about my students and set them up for success."
- "I enjoyed being able to work at my own pace and being able to do the assignment when it was best for me."
- "I was very glad that my assignment to do this had an open schedule because it took a while to work with me teacher and get this implemented in class, and I think that is a great thing to do for students when they have a project is give them plenty of time to do what they need to do."

Arnesen et al. (2019) Unit Experiences – Pace Not Positive

Not Positive

- "I learned through this assignment that I am actually really bad at pacing myself."
- "Having more control over the aspects of personalization proved difficult for me because of all the other classes and work I am balancing. It was easy for me to lose track of my timeline and have to finish things at the last minute."

Arnesen et al. (2019) Unit Experiences – Path

Positive

- I think that I was a prime example of an interested student that spent a lot of time on something that interested me and I learned from it."
- I liked the freedom it gave me. I was better able to pick something relevant and useful, as well as fir it into my schedule at a perfect time for me."
- I was so motivated to work on these assignments because I had so much choice. I felt that I Was able to choose things that are actually applicable to me and my own learning."
- "Having more control in the assignment helped me value personalization."

Arnesen et al. (2019) Unit Experiences – Submission Goals

Table 6 Assignment Submissions in Relation to Student Goals						
Assignment Submission Status	# of Assignments	% of Assignments				
Turned in before goal	45	28				
Turned in day of goal	15	9				
Turned in after goal	82	51				
Turned in after class deadline	4	2				
Had no goal	16	10				
Total	162	100				

Arnesen et al. (2019) Unit Experiences – Themes

Benefits of personalized learning (35)
Specific practices of personalized learning (47)
Changed attitudes toward personalized learning (63)
Implementation of personalized learning (73)

• "For me, the biggest growth in personalization was seeing how beneficial it was for me and how much more I enjoyed this course because of it. It was cool to learn about it, and then see it in practice in my own classroom."

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Arnesen et al. (2019) Unit Experiences – Conclusions

 Most students felt positively about their experiences with personalization, and most planned to include it in their future classrooms.

- The course improved personalization self-efficacy for almost all students.
- Almost all students reporting on their experiences (n 1) enjoyed at least some aspect of personalization during UNIT 3.
- Additional instructor/teacher help is needed to ensure effective student control over time, pace, place, path, and goals of learning.

Short and Moon (in progress) - Context

 Personalized learning opportunities within the Honors College at Emporia State University

- Choose your own honors project
- Choose your own honors courses
- Interview analysis with 7 Honors College juniors/seniors
- Same process as teacher interviews (Research 1) using Huberman & Miles, 1994; Wolcott, 1994.

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Short and Moon (in progress) – Findings Related to PL

20 positive statements v. 2 negative comments

- Explore interests that were meaningful and prevalent
- Personalized the objectives, goals, and path.
- Grew faculty relations
- More motivating
- Improved confidence and soft skills
- Mentioned that the honors college is effective because of personalized learning

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Short and Moon (in progress) – Quotes 1

I think that being in the Honors College and having that relationship with my professors taught me that we're all working together for the common good, right? We're all working on this common goal and it doesn't matter my place or my ranking or my degree."

 "Having an initiative. I think that's a big characteristic that you are learning with the Honors College. Being the first ont to approach professors takes a lot of initiative. Even when you're building a contract course, having the initiative to figure out a project and things like that, I think that's really big."

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Short and Moon (in progress) – Quotes 2

I think being able to take what I'm learning, but also what I'm passionate about, and then applying it through my community engagement practicum, is really cool and a unique skill set that I get to have now."

If fell like over my ESU experience, but also my Honors College experience, I've really grown to love science and love, you know, just learning and bettering myself and bettering my mind."

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Short and Moon (in progress) – Quotes 3

• One of the biggest things I've learning is just say your idea and see where it goes. Throw it against the wall and see if it sticks."

When I was doing my research, that was something really big for me, because it was something I wouldn't have gotten to explore anywhere else."

It has really helped me to better, not just communicate with people, but understand how other people communicate."

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Short and Moon (in progress) – Future Learning

Mentioned that the experiences would help them with future learning opportunities.

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Graduate school

- Professional development
- Informal learning

Creating Lifelong Learners 培养终身学习者



The Empowerment of Personalized Learning

 Personalized learning empowered students to take ownership over their learning.

 Tailoring the objectives, assessments, and activites of learning along the dimensions of goals, time, place, pace, and path made learners feel more confident.

Learners were able to pursue learning that was meaningful for them.

Diversified Learning

- Students learned . . .
 - In a way that suits them
 - About the things that interest them
 - Critical thinking and creativity skills alongside essential content

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- Self-reflection and goal-setting skills
- How to design effective learning paths

Lifelong Learning

Students and teachers felt like they

Had stronger relationships between those involved in learning

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- Had increased learning outcomes
- Were more prepared for future learning opportunities

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