The Good, the Bad, and the Future of Personalized Learning
The Good, the Bad, and the Future of Personalized Learning

EdWeek
May 7, 2019

Tim Hudson, PhD
Chief Learning Officer
@DocHudsonMath
Personalized Learning and the Digital Privatization of Curriculum and Teaching

Faith Boninger, Alex Molnar, and Christopher M. Saldaña
University of Colorado Boulder

How corporate interests are overtaking well-intentioned goals of personalized learning

By Valerie Strauss
Reporter
April 30

Report: Can Personalized Learning Actually Deliver?

Peter Greene Contributing Editor
Education
I look at K-12 policies and practices from the classroom perspective.
Also worth discussion…

Can Impersonal Learning Actually Deliver?

Today’s Session

- Defining Personalized Learning: A Matrix
- Designing for Personalized Learning: Pedagogy First
- Evaluating Past, Current, and Future Personalized Models
- Q&A
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Defining Personalized Learning: A Matrix
If “personalized learning” is the solution, then what is the problem?
Today’s Lesson: Fraction Addition

This is way too hard. It doesn’t make sense. I give up!

I haven’t learned anything new all year. This math class is boring.

This math class is just right for me – not too hard, not too easy.
Today’s Lesson: Fraction Addition

Why?

These students were all born during the same 12-month window about 11 years ago.
Today’s Lesson: Fraction Addition

Math is boring. Every math class is the same: Lecture, practice, lecture, practice, quiz, test. It's not engaging, or authentic.

I feel like it makes sense when my teacher shows it in class, but I’m lost when I get home.

I know how to win at school. I just wait for the teacher to show me how to solve familiar problems.
Seat-time policies, pacing calendars, standardized testing schedules, age-based classrooms and weak competency-based tools make it difficult for me to personalize and differentiate.
“Only 9% of assignments pushed student thinking to higher levels.”

Only 3% gave students opportunities for choice in their assignments.

Only 2% of tasks provided some aspect of relevancy to student experiences.
Personal Story...

“Natural” (i.e., unmedicated) Childbirth Course
• 6 three-hour evening sessions
• 6 Weeks
• 6 Couples
• Voluntary
• Self-Funded
Why are they yelling so much?

I get that! So why don’t they just take some pain killing medication?

Because labor is painful!

OMG!

That’s the whole point of this class!

WE’RE not going to use medication!

THIS IS WEEK 4!!!
Personal (Relational)

Impersonal (Industrial)
What are you ready to learn?

What do you think about it?

When were you born?

What did someone else tell me to think?

Personal (Relational)

Impersonal (Industrial)

Schooling Structures from Adults

Learning Pedagogy with Students

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What are you ready to learn?

What do you think about it?

Schooling Structures from Adults

Learning Pedagogy with Students

Personal (Relational)

Impersonal (Industrial)
What are you ready to learn?

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When were you born?

What were you told to think?

Schooling Structures from Adults

Learning Pedagogy with Students

Personal (Relational)

Impersonal (Industrial)
Personalized Schooling
What are you ready to learn?

Impersonal Schooling
When were you born?

Personalized Learning
What do you think about it?

Impersonal Learning
What were you told to think?

Schooling Structures from Adults
Learning Pedagogy with Students

Personal (Relational)
Impersonal (Industrial)
What are you ready to learn? What do you think about it? When were you born? What did someone else tell me to think?

Schooling Structures from Adults

Learning Pedagogy with Students

Personal (Relational)

Impersonal (Industrial)
Having a baby – ready, ready, motivated, and able to take a childbirth class

“Sit and get” pedagogy didn’t stimulate thought during the class
**Personal** (Relational)

- **Personalized Schooling**
  - What are you ready to learn?

- **Impersonal Schooling**
  - When were you born?

---

**Impersonal** (Industrial)

- **Impersonal Learning**
  - What were you told to think?

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**Schooling**

- Structures from Adults

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**Learning**

- Pedagogy with Students

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*Apollo 13*
“Were you just gonna plagiarize the whole thing for us? You have any thoughts of your own on this matter?”
Personalized Schooling

What are you ready to learn?

Impersonal Schooling

When were you born?

Personal (Relational)

Impersonal (Industrial)

Schooling Structures from Adults

Learning Pedagogy with Students

Apollo 13

Good Will Hunting

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Student is ready and/or wants to learn about dividing fractions.
Student is ready and/or wants to learn about dividing fractions.

“Yours is not to reason why. Just invert and multiply.”
Student is ready and/or wants to learn about dividing fractions

Sense-making experiences with equal sharing using fractional values

“Yours is not to reason why. Just invert and multiply”
Student is ready
and/or wants to learn
about dividing
fractions

Sense-making
experiences with equal
sharing using fractional values

The pacing calendar
says all 6th graders get
the fraction division
unit in March

“Yours is not to reason
why. Just invert and
multiply”

Schooling
Structures
from
Adults

Personal (Relational)

Impersonal (Industrial)

Learning
Pedagogy
with
Students
I haven’t learned anything new all year. This math class is boring.

This is way too hard. It doesn’t make sense. I give up!

This math class is just right for me – not too hard, not too easy.

I haven’t learned anything new all year. This math class is boring.

Structural “Schooling” Issues

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Pedagogical “Learning” Issues

Math is boring. Every math class is the same: Lecture, practice, lecture, practice, quiz, test. It’s not engaging, or authentic.

I feel like it makes sense when my teacher shows it in class, but I’m lost when I get home.

I know how to win at school. I just wait for the teacher to show me how to solve familiar problems.
Before we continue, what clarifying questions do you have about this framework?
Designing for Personalized Learning: Pedagogy First
Nearly all “Personalized Learning” conversations & models focus here.

This is where “Personalized Learning” truly happens.

**Schooling Structures from Adults**

**Learning Pedagogy with Students**

**Personal** (Relational)

**Impersonal** (Industrial)
Planning “Backwards” for Personalized Learning

1. Identify desired results
2. Determine acceptable evidence
3. Plan learning experiences & instruction
What’s the Difference?

1. Identify desired results
2. Determine acceptable evidence
3. Plan learning experiences & instruction

Understanding by Design, Wiggins & McTighe, ©2005
Define “Instruction”
in·struc·tion [in-struhk-shuh n] noun
1. the act or practice of instructing or teaching; education.
2. knowledge or information imparted.
3. an item of such knowledge or information.
4. Usually, instructions. orders or directions: The instructions are on the back of the box.
5. the act of furnishing with authoritative directions.
6. Computers. a command given to a computer to carry out a particular operation.
**in·struc·tion**  [in-struhk-shuh n]  

**noun**

1. the act or practice of instructing or teaching; education.
2. knowledge or information imparted.
3. an item of such knowledge or information.
4. Usually, *instructions*. orders or directions: *The instructions are on the back of the box.*
5. the act of furnishing with authoritative directions.
6. *Computers.* a command given to a computer to carry out a particular operation.
Reflections of a 5th Grade Teacher

“I had a lot of good people teaching me math when I was a student – earnest and funny and caring. But the math they taught me wasn’t good math. Every class was the same for 8 years:

‘Get out your homework, go over the homework, here’s the new set of exercises, here’s how to do them.

Now get started. I’ll be around.’”

p. 55, Teaching What Matters Most, Strong, Silver, & Perini, ©2001
“They were so concerned with making sure we knew how to do every single procedure we never learned how to think mathematically. I did well in math but I never understood what I was doing. I remember hundreds of procedures but not one single mathematical idea.”

p. 55, Teaching What Matters Most, Strong, Silver, & Perini, ©2001
What is a “Learning Experience?”
“Thinking is the method of an educative experience.”
“Thinking is the method of an educative experience.”

Dewey, 1916
“Thinking is the method of an educative experience.”

Democracy and Education: an Introduction to the Philosophy of Education, Chapter 12, J. Dewey, 1916
“Thinking is the method of an educative experience.”

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Dewey, 1916

Democracy and Education: an Introduction to the Philosophy of Education, Chapter 12, J. Dewey, 1916
Dewey, 1916

"Thinking is the method of an educative experience."

Genuine Situation

Genuine Problem Develops

Seek information, Make observations

Solutions OCCUR to her

Opportunity to Test Ideas

Democracy and Education: an Introduction to the Philosophy of Education, Chapter 12, J. Dewey, 1916
Classroom Learning Experience

Field Trips and Fund-Raisers: Introducing Fractions, C.T. Fosnot, Heinemann © 2007, used with permission
Digital Learning Experience

Enter a value to rotate the Webmaker exactly one full rotation.

© DreamBox Learning
Personal (Relational)

Learning Experiences

Impersonal (Industrial)

Instruction

Learning Pedagogy with Students

Schooling Structures from Adults

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Evaluating Past, Present, and Future Personalized Learning Models
The “Industrial Factory Models” of schooling were developed to make learning impersonal and treat every student the same.
The Original Factory Education was...

a Personalized Learning Experiment

- Madras & Lancaster Systems in the late 1700s
- Large warehouse or barn with students divided by ability
- Small groups of students at skill practice work stations
- Older student tutored younger ones
- Repeated success to move up groups
Criticism of the Madras & Lancaster Models

“if students were to **get to understanding** instead of simple memorization they needed **high quality teachers**… who don’t exercise step-by-step methods, but rather have a grasp of **principles and techniques** and use them to foster **inquisitiveness and discovery** in the classroom.”

**Mike Caulfield**, www.hapgood.us, 2014
Director of Blended and Networked Learning, Washington State University-Vancouver
Having a baby – ready and motivated to take a childbirth class. What do you think about it?

Impersonal Schooling
When were you born?

"Sit and get" pedagogy from older students with no formal training

Personal (Relational)
Impersonal (Industrial)

Schooling Structures from Adults
Learning Pedagogy with Students

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Ensuring high achievement for all learners requires continual differentiation, and thus presents legitimate logistical challenges.
93% of educators agree technology can effectively personalize and adapt to improve achievement.
Personalized Schooling
What are you ready to learn?

Impersonal Schooling
When were you born?

Personalized Learning
What do you think about it?

Impersonal Learning
What were you told to think?

Schooling Structures from Adults

Learning Pedagogy with Students

Personal (Relational)

Impersonal (Industrial)
**Personal** (Relational)

- **Personalized Schooling**: What are you ready to learn?
- **Personalized Learning**: What do you think about it?

**Impersonal** (Industrial)

- **Impersonal Schooling**: When were you born?
- **Impersonal Learning**: What were you told to think?

**Blended Schooling**
- Structures from Adults

**Blended Learning**
- Pedagogy with Students

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Personalized Schooling: What are you ready to learn?

Impersonal Schooling: When were you born?

Personalized Learning: What do you think about it?

Impersonal Learning: What were you told to think?

Blended Schooling Structures from Adults

Blended Learning Pedagogy with Students

Is there an app for this?
Do these Blended Learning Models also enable Personalized Learning?

from H. Staker, M. Horn, Classifying K-12 Blended Learning, © 2012
Personal (Relational)

Impersonal (Industrial)

Blended Schooling Structures from Adults

Blended Learning Pedagogy with Students

Figure 12. Enriched-Virtual model, Albuquerque eCADEMY
“Technology-enabled innovations… use basic pedagogy – most often in the form of introducing concepts by video instruction and following up with a series of progression exercises and tests.”

Other digital innovations are simply tools that allow teachers to do the same age-old practices but in a digital format.”

“If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print.”
What are you ready to learn? What do you think about it?

Age-Based Yearly Grades

Most Schools Aren’t Changing This

Most EdTech is Digitizing This

Personal (Relational)

Impersonal (Industrial)

Schooling Structures from Adults

Learning Pedagogy with Students

Sit and Get, then Skill Practice
What are you ready to learn?

What do you think about it?

Age-Based Yearly Grades

Most Schools Aren’t Changing This

Most EdTech is Digitizing This

Impersonal (Industrial)

Sit and Get, then Skill Practice

Learning Pedagogy with Students

Schooling Structures from Adults
Personalized Schooling
What are you ready to learn?

Personalized Learning
What do you think about it?

Blended Schooling
Structures from Adults

Blended Learning
Pedagogy with Students

Personal (Relational)
“I know kung fu.”

The Matrix, 1999, Warner Brothers, Village Roadshow Pictures
Learning is not accomplished by putting thoughts into a mind, but rather by empowering a mind to generate thoughts.
Key Advancement in AI from Google’s DeepMind

AlphaGo

• In 2016, defeated 17-time world champion Lee Sedol

• Trained to mimic the play of human experts by being shown 30 million moves from a database of real games

• Also trained by playing against itself
Key Advancement in AI from Google’s DeepMind

**AlphaGo**
- In 2016, defeated 17-time world champion Lee Sedol
- Trained to mimic the play of human experts by being shown 30 million moves from a database of real games
- Also trained by playing against itself

**AlphaGo Zero**
- In 2017, defeated AlphaGo 100-0
- Given no data from human games
- Only given the rules of Go; it learned by inventing its own strategies
- Dominated through unconventional tactics human champions had never seen
Personal (Relational)

Alpha Go Zero
Invented new ways of playing

Alpha Go
Told to play like human champions

Impersonal (Industrial)

Schooling
Structures from Adults

Learning
Pedagogy with Students

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Using Your PLC to Improve Personalized Learning
PLC Four Essential Questions

1. What do we expect our students to learn? (Goals)
2. How will we know they are learning? (Assessment)
3. How will we respond when they don’t learn? (Intervention)
4. How will we respond if they already know it? (Acceleration)
1. What do we expect our students to learn? (Goals)
2. How will we know they are learning? (Assessment)
3. How will we respond when they don’t learn? (Intervention)
4. How will we respond if they already know it? (Acceleration)
PLC Four Essential Questions

0. For which students are we setting these goals? (Groups)
1. What do we expect our students to learn? (Goals)
2. How will we know they are learning? (Assessment)
2.5.
3. How will we respond when they don’t learn? (Intervention)
4. How will we respond if they already know it? (Acceleration)
PLC Four Essential Questions

0. For which students are we setting these goals? (Groups)
1. What do we expect our students to learn? (Goals)
2. How will we know they are learning? (Assessment)
2.5. How are we empowering students to think? (Pedagogy)
3. How will we respond when they don’t learn? (Intervention)
4. How will we respond if they already know it? (Acceleration)
The future of Personalized Learning depends on pedagogy - the design and use of innovative learning experiences.
Thank you

Tim Hudson, PhD
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Digital K-8 Math Curriculum
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Make data-informed decisions

Surface strengths and gaps in prior knowledge
Relevant PD Driven by Student Needs
Deeper Math Content Knowledge for Teachers

- Confidence with Whole Class Lessons
- Insights for Small Group Facilitation
- Improved Individual & Personalized Support
Thank you