The Untapped Potential for eLearning

Placing Efficacy at the Heart of Digital Learning Challenges

Rob Kadel, Ph.D.
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Learning to think laterally...

Convergent Thinking
Only right answer

Divergent or “Lateral” Thinking
Lots of possible answers
Example: Convergent Thinking

I live four kilometers from work. My car gets 12 km/L. I want to use less fuel in my commute for financial and conservation reasons. Money is no object.

Find the three best replacement vehicles for my car.

Source: ThinkBrownstone.com
Example: Divergent Thinking

I live four kilometers from work. My car gets 12 km/L. I want to use less fuel in my commute for financial and conservation reasons. Money is no object.

What options do I have to reduce my fuel consumption?

Source: ThinkBrownstone.com
The mission of Pearson’s Research & Innovation Network is to create, communicate, and connect research and development to help transform our educational system so that our students can learn in a digital world at the pace and level that meets their needs.

*Our vision is to turn ideas into useful and usable learning innovations. To meet this strategy, our Network has created centers where researchers focus on specific topics. They collaborate with experts across centers—and globally.*
Research & Innovation Network

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Recent Accomplishments - Highlights

• Adaptive Learning Proof of Concept and Testing
• Patents for adaptive learning algorithms and systems

• Profile and Reliability Estimators in Diagnostic Models
• White House Game Jam

• Programme for International Student Assessment (PISA)
• Personalized Learning Game
• Human Scoring Algorithms

• Middle School Index with District Data
• Middle School Index Dashboard Prototype

• Huntsville 1:1 Computing – Digital Conversion
“We collaborate across research centers, across Pearson, and across the globe to tackle the big, unanswered questions in education.”

Kimberly O’Malley, PhD
Senior Vice President, School Research
Agenda

- Student success
  - Technology & success
- Personalized learning
- Purposeful planning
- Getting to learning outcomes & efficacy
- eLearning challenges in the GCC
Student Success
What do students need to be successful beyond school?
Are Students Life Ready?:
Skills in High Demand Over the Next 5 – 10 years

- Interpersonal and communication skills
- Digital skills
- Agile thinking skills
- Global operating skills

Source: Oxford Economics, *Global Talent 2021*
# Skills in High Demand

<table>
<thead>
<tr>
<th>Digital skills</th>
<th>Agile thinking skills</th>
<th>Interpersonal and communication skills</th>
<th>Global operating skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital business skills</td>
<td>Ability to consider and prepare for multiple scenarios</td>
<td>Co-creativity and brainstorming</td>
<td>Ability to manage diverse employees</td>
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<tr>
<td>Ability to work virtually</td>
<td>Innovation</td>
<td>Relationship building (with customers)</td>
<td>Understanding of International Markets</td>
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<tr>
<td>Understanding of corporate IT software and systems</td>
<td>Dealing with complexity and ambiguity</td>
<td>Teaming (including virtual teaming)</td>
<td>Ability to work in multiple overseas locations</td>
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<tr>
<td>Digital design skills</td>
<td>Managing paradoxes, balancing opposing views</td>
<td>Collaboration</td>
<td>Foreign language skills</td>
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<tr>
<td>Ability to use social media and “Web 2.0”</td>
<td>Ability to see the “big picture”</td>
<td>Oral and written communication</td>
<td>Cultural sensitivity</td>
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Schools Need to Teach

Creativity, Questioning, Music, Art, Physical Education, Etc.

Statistical Analysis, Probability, Satisfaction, Lateral Thinking, Etc.

And if they do...

Critical Thinking, Application, Review Cycles, Etc.

...we can reach this
Technology and Student Success
There are two speeds at which schools are adopting eLearning...

Full steam ahead!

What do we do now?
There are two speeds at which schools are adopting eLearning...

Full steam ahead!
- Buy as much technology as we can
- Little or no planning for:
  - Practical application
  - Teacher professional development
  - Teacher buy-in to reach critical mass
- Parental support
- Technical support

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  - Parental support
  - Technical support

What do we do now?
- Hesitation, failure to act, over-planning
- Risks losing out on:
  - Latest technological trends
  - Student engagement
  - Student learning opportunities in the digital sphere (videos, tutorials, opportunities to interact...)
  - Enhancing professional development
How do we balance those two points of view?
What Happens in an Internet Minute?

- 639,800 GB of global IP data transferred
- 20 New victims of identity theft
- 204 million Emails sent
- 47,000 App downloads
- $83,000 In sales
- 1,300 New mobile users
- 100+ New LinkedIn accounts
- 61,141 Hours of music
- 20 million Photo views
- 30 million Photo uploads
- 320+ New Twitter accounts
- 100,000 New tweets
- 277,000 Logins
- 6 million Facebook views
- 2+ million Search queries
- 30 Hours of video uploaded
- 1.3 million Video views

And Future Growth is Staggering

Today, the number of networked devices = the global population
By 2015, the number of networked devices = 2x the global population
In 2015, it would take you 5 years to view all video crossing IP networks each second

Source: Edudemic/Intel
How are students learning and interacting outside of school?
How do we harness that power?
Meet your students in their space

We need to get out of our own way and instead of putting up barriers to technology, figure out how to harness it to engage our students.
Personalized Learning

How can technology help to personalize learning?
Individuation
Each student is taught and assessed in ways that are appropriate and comfortable for that child.

Pluralization
Anything worth teaching could and should be taught in several ways. By doing so, one reaches more students.

Source: Howard Gardner on GettingSmart.com
In the practical sense...

• Not just 1:1 computing
• Students & teachers customize learning objectives, strategies, and pace of work
• Rigorous curriculum framework
• Relevant assessment
• Teachers as facilitators

Source: Pearson/Intel, Realising the Potential of Every Learner
New Expectations

**Students**
- Go from being *consumers* of knowledge to *producers* of knowledge
- Learn to collaborate to create knowledge

**Teachers**
- Move from a top-down, knowledge-transfer approach to a bottom-up, knowledge-creation approach
- Embrace data to help tailor students’ experiences
SAMR Model of Technology Integration

**Redefinition**
Tech allows for the creation of new tasks, previously inconceivable

**Modification**
Tech allows for significant task redesign

**Augmentation**
Tech acts as a direct tool substitute, with functional improvement

**Substitution**
Tech acts as a direct tool substitute, with no functional change

Today, we are about

Source: Ruben R. Puenteledura on hippasus.com
It takes a village: Components of Education Transformation

• **Leadership** – establish a vision, lead by example
• **Policy** – align with desired outcomes
• **Professional Development** – tools, training, inspiration, ongoing support
• **Curriculum & Assessment** – in alignment with each other, must ensure that students gain essential knowledge and 21st Century skills
• **Digital Technology** – provides tools and data to support personalization, robust assessment, and program evaluation
• **Sustainable Resourcing** – develop curriculum, assessment and other resources at scale
• **Research & Evaluation** – grounded in research, programs need monitoring, feedback and formative evaluation

Source: Pearson/Intel, *Realising the Potential of Every Learner*
Getting to our goals...

Goal 1

All students must achieve success in mathematics before graduation.
You can get there from here!

Goals

Objectives

Activities

Tasks
Achieving Your Goals

Goal 1
Achieving Your Goals: Adding Objectives

Goal 1

- Objective 1.1
- Objective 1.2
Achieving Your Goals: Adding Activities

Goal 1

Objective 1.1

Objective 1.2

Activity 1.1.1

Activity 1.1.2

Activity 1.2.1
Achieving Your Goals: Adding Tasks

Goal 1

Objective 1.1

Activity 1.1.1

Task 1.1.1.1
Task 1.1.1.2
Task 1.1.1.3

Task 1.1.2.1
Task 1.1.2.2

Activity 1.1.2

Task 1.2.1.1

Objective 1.2

Activity 1.2.1

Easier to measure...
Example: MathXL will help students master mathematics by graduation.

**Goal:** All students must achieve success in mathematics before graduation.

**Objective:** Students who practice math skills will have higher math achievement.

**Activity:** Students will use MathXL to practice math skills.

**Task:**
- Survey students to ensure Web access.
- Get student email addresses.
- Set up student accounts in MathXL.
The Importance of Verbs

Source: Educational Origami
Purposeful Planning Can Ensure...

- That all tasks are mapped out beforehand
- That adequate staff are assigned to each task
- That budgets can be accurately estimated
- That you can measure the success of your program
Learning Outcomes & Efficacy
It isn’t enough to simply be good. You have to do good.

-Ancient proverb

It isn’t enough to simply have a good learning program. You have to demonstrate it.

-Rob Kadel 😊
Why “Efficacy”? 

Our commitment to efficacy

Pearson is committed to measure our performance in improving people’s lives through learning with the same clarity that we measure product sales and corporate profits today. The pursuit of better learner outcomes is our responsibility and our mission.

We invite you to learn more about our efforts, join the conversation, discover the power of efficacy, find tools to bring efficacy into your workplace and join us as an advocate for efficacy in education.
What’s your plan?

Having a purposeful plan is critical. Make that your first step!

Make sure you can measure your tasks and activities.
We are going to “reverse engineer” it...

- Helps us plan.
- Helps us measure.
Our Example Revisited

Efficacy

All students must achieve success in mathematics before graduation.

Outcomes

Students who practice math skills will have higher math achievement.

Steps

Students will use MathXL to practice math skills.

Checklists

Survey students to ensure Web access.

Get student email addresses.

Set up student accounts in MathXL.
Be sure to account for other factors!

- **Efficacy**
  - All students must achieve success in mathematics before graduation.

- **Outcomes**
  - Students who practice math skills will have higher math achievement.

- **Steps**
  - Students will use MathXL to practice math skills.

- **Checklists**
  - Survey students to ensure Web access.
  - Get student email addresses.
  - Set up student accounts in MathXL.

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- **Tech skills**
- **Family support**
- **Language barriers**

- **Leadership**
- **Mentoring**
- **Teacher professional development**
eLearning Challenges in the Gulf Cooperation Council
Technical Infrastructure

- Are all schools & all users connected?
  - Cities and outlying areas have access to the Internet
  - Students have access to digital devices
  - Wireless connections increasingly important
Leadership

- Are leaders supporting and demonstrating effective technology use?
  - Transition to digital is part of the school’s mission
  - Digital communication (with staff, students, parents)
  - Support for teacher professional development
Language

Content languages for websites as of March 2014
(Source: W3Techs.com)

Challenge: To encourage students to learn in the language of the Internet while maintaining the rich heritage of the Arabic language.
Digital Literacy

- Basic knowledge of computing devices (including handhelds)
- Skills in using computer networks
- Abilities to engage in online communities and social networks
  - Understanding of online behavior protocols
- Ability to find and capture information
  - Evaluate its academic/social value
- An understanding of societal issues raised by digital technologies
  - E.g., big data, analytics, the “hyper connected world”
- Critical thinking skills
21st Century Skills

21st Century Student Outcomes and Support Systems

- Learning and Innovation Skills – 4Cs
  - Critical thinking
  - Communication
  - Collaboration
  - Creativity

- Information, Media, and Technology Skills

- Core Subjects – 3Rs and 21st Century Themes

- Life and Career Skills

Source: Partnership for 21st Century Skills
Don’t Take Teachers for Granted

Things for schools to consider:

- Professional development
  - *Technological*
  - *Teaching with tech*
- Administrative support and encouragement
- Collaboration opportunities
- Mentoring of new teachers by experienced teachers
- Comprehensive and collaborative teacher performance evaluation
Thank You!

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