Educational Computing in an Age of Diaspora: A Conceptual Backpack for Digital Nomads

Ruben R. PuenteDura, Ph.D.
**Substitution**
*Tech acts as a direct tool substitute, with no functional change*

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

**Modification**
*Tech allows for significant task redesign*

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

Ruben R. Puentedura, *As We May Teach: Educational Technology, From Theory Into Practice*. (2009)
<table>
<thead>
<tr>
<th>Social</th>
<th>Mobility</th>
<th>Visualization</th>
<th>Storytelling</th>
<th>Gaming</th>
</tr>
</thead>
<tbody>
<tr>
<td>200,000 years</td>
<td>70,000 years</td>
<td>40,000 years</td>
<td>17,000 years</td>
<td>8,000 years</td>
</tr>
</tbody>
</table>

Session 1: History & Geography
Does the question represent an important issue to historical and contemporary times?

Is the question debatable?

Does the question represent a reasonable amount of content?

Will the question hold the interest of students?

Is the question appropriate given the materials available?

Is the question challenging for the students you are teaching?

What organizing historical concepts will be emphasized?
Location
Position in space

Condition
Mix of natural & artificial features that give meaning to a location

Links
Connections between places

Formal Region
Group of places with similar conditions

Functional Region
Group of places linked together by a flow
<table>
<thead>
<tr>
<th>Spatial Thinking Skills</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comparison</strong></td>
<td>How are places similar or different?</td>
</tr>
<tr>
<td>Aura</td>
<td>What is this place’s influence on nearby places?</td>
</tr>
<tr>
<td>Region</td>
<td>What nearby places are similar to this one?</td>
</tr>
<tr>
<td>Transition</td>
<td>How do things change between two places?</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>What larger area is this area inside? What smaller areas are inside it?</td>
</tr>
<tr>
<td>Analogy</td>
<td>What places have similar conditions?</td>
</tr>
<tr>
<td>Pattern</td>
<td>What distinctive arrangements can you see on a map?</td>
</tr>
<tr>
<td>Association</td>
<td>Are these patterns similar?</td>
</tr>
</tbody>
</table>
Sixth Crusade
Holy Roman Emperor Frederick II negotiated a truce with the Muslims, giving the Kingdom of Jerusalem temporary control of Jerusalem.

Coronation of Ogedei Khan
Son of Genghis Khan

Mali Empire
The Mali Empire covered most of present-day northern Guinea and southern Mali, ruling millions of people from nearly every ethnic group in West Africa.
Session 2: Math, Science, & Physical Education
The Art of Problem Posing: the What–If–Not Strategy

- **Level 0: Choosing a Starting Point**
  - This could be an object, a concrete scenario, or a theorem.

- **Level I: Listing Attributes**
  - What are all the key components involved in this starting point?

- **Level II: What-If-Not-ing**
  - What if each attribute were not so - what could it be then?

- **Level III: Question Asking or Problem Posing**
  - What new questions can we ask using these new alternatives?

- **Level IV: Analyzing the Problem**
  - We select some of these questions and try to analyze or answer them.
Thinking Mathematically

Understanding Science: How Science Works

EXPLORATION AND DISCOVERY

TESTING IDEAS

BENEFITS AND OUTCOMES

COMMUNITY ANALYSIS AND FEEDBACK

Discussing with classmates?

Outcomes? Also, to parallel the others, could we phrase the discussion as in Benefits and Outcomes?

Could you arrange the mini-bubbles as in Benefits and Outcomes?

If we don't want to use the word hypothesis, we could say instead: (or evaluating hypothesis), revising hypothesis, making a new hypothesis.

Revising hypothesis and revising what I thought seem like there is an order to them or a reason for their placement. Could you arrange the mini-bubbles as in Benefits and Outcomes?

"Chance" or "an accident." Or we could get rid of them completely (covered by surprising observation here) and personal motivation (covered by surprising observation here).

K-2:

Flowchart for K-2 – the E&D and CA&F bubbles should be bolder than the others as that is where most students will be working. The text should be modified to read:

Anna:

Solve everyday problems

Answer questions

Learn more

B&O

Coming up with new questions and ideas

Repeating the investigation

Having others try your investigation

Listening to classmates

Discussion with classmates

Talking about our observations and ideas

CA&F

Changing what I thought after more observations

Revising hypothesis or making a new one

Using observations to tell what made me think that…

Using observations to tell what made me think that…

Gathering data

Making a hypothesis

Reading about science discoveries

E&D: Making observations

Change to "Explaining what my observations make me think"

Flowchart for 3-5 – the text should be modified to read:

Benefits and outcomes

Curiosity

Build technology

Satisfy curiosity

Practical problem

Solve everyday problems

Address societal issues

Build knowledge

Inform policy

Solve everyday problems

Analyzing data

Identifying patterns

Interpreting data

Supportive, contradictory, surprising or inconclusive data may...

...support a hypothesis.

...inspired revised or new hypothesis.

...oppose a hypothesis.

...inspire revised or new hypothesis.

...inspire revised or new hypothesis.

Feedback and peer review

Replication

Discussion with colleagues

Publication

Coming up with new questions/ideas

Theory building

EXPLOORATION AND DISCOVERY

Making observations

Asking questions

Sharing data and ideas

Finding inspiration

Exploring the literature

Gathering data

Hypotheses

Expected results/observations

Actual results/observations

Interpreting data

Testing ideas

Supportive, contradictory, surprising or inconclusive data may...

...support a hypothesis.

...inspired revised or new hypothesis.

...oppose a hypothesis.

...inspire revised or new hypothesis.

Feedback and peer review

Replication

Discussion with colleagues

Publication

Coming up with new questions/ideas

Theory building

COMMUNITY ANALYSIS AND FEEDBACK

New technology

Practical problem

Curiosity

Satisfying curiosity

Solve everyday problems

Address societal issues

Build knowledge

Inform policy

Solve everyday problems

Analyzing data

Identifying patterns

Interpreting data

Supportive, contradictory, surprising or inconclusive data may...

...support a hypothesis.

...inspired revised or new hypothesis.

...oppose a hypothesis.

...inspire revised or new hypothesis.

Feedback and peer review

Replication

Discussion with colleagues

Publication

Coming up with new questions/ideas

Theory building

BENEFITS AND OUTCOMES

Develop technology

Address societal issues

Inform policy

Solve everyday problems

Build knowledge

Inform policy

Solve everyday problems

Analyzing data

Identifying patterns

Interpreting data

Supportive, contradictory, surprising or inconclusive data may...

...support a hypothesis.

...inspired revised or new hypothesis.

...oppose a hypothesis.

...inspire revised or new hypothesis.

Feedback and peer review

Replication

Discussion with colleagues

Publication

Coming up with new questions/ideas

Theory building
Psychomotor Processes

<table>
<thead>
<tr>
<th>Dave (1967)</th>
<th>Characteristic Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imitation</td>
<td>Repeating an act that has been demonstrated</td>
</tr>
<tr>
<td>Manipulation</td>
<td>Practicing an act until it becomes consciously habitual</td>
</tr>
<tr>
<td>Precision</td>
<td>Attaining proficiency and efficiency in performing an act</td>
</tr>
<tr>
<td>Articulation</td>
<td>Developing harmony and flexibility in performing an act</td>
</tr>
<tr>
<td>Naturalization</td>
<td>Creating new ways of performing an act</td>
</tr>
<tr>
<td></td>
<td>Modifying responses “on the fly” automatically</td>
</tr>
</tbody>
</table>
# The T.A.C.T.I.C. Matrix

<table>
<thead>
<tr>
<th>Game and Focus (from taxa)</th>
<th>Principles of Play (depth)</th>
<th>Tactical Awareness Components (breadth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems, rules, objectives of game</td>
<td>Basic elements of play that structure effective game playing</td>
<td><strong>Initial</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Space</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Where</strong></td>
</tr>
<tr>
<td></td>
<td>Where an object should be placed/where a player should go in the area of play</td>
<td>How much and where to apply force on an object/self for height, directional control, distance</td>
</tr>
</tbody>
</table>

### Rainfall in Gallons

I wonder how much water falls on land throughout the year? We can use a [rainfall database][mdb] to find out how much it rains in Seattle and then use Calca's unit conversion support to help us determine that.

- **land area** = 0.25 acre
- **avg annual precip** = 36.15 inch / year
- **daily rain accumulation**
  - avg annual precip * land area
  - in gallon/day
  - \( \Rightarrow 671.9012 \text{ gallon/day} \)

Wow, that's a lot of water, but what if we just have a bucket?

- **land area** = 1 ft * 1 ft
- **daily rain accumulation** \( \Rightarrow 0.0617 \text{ gallon/day} \)

That's not very much... How many cups is that?

- **daily rain accumulation** in cups/day \( \Rightarrow 0.9872 \text{ cups/day} \)

So if I left a 1 ft by 1 ft bucket around I could collect about a cup of water every day. And they say it rains a lot.

[rdb]: http://average-rainfall.weatherdb.com
\begin{align*}
\text{abs}(y) & \leq \sin(x) \\
\text{abs}(y) & \leq -\sin(x) \\
\text{abs}(y) & \leq 0.5 \cdot \sin(2 \cdot x) \\
\text{abs}(y) & \leq -0.5 \cdot \sin(2 \cdot x) \\
y^2 + \left(x - \frac{\pi}{4}\right)^2 & < 0.25 \\
y^2 + \left(x - \frac{3\pi}{4}\right)^2 & < 0.25 \\
y^2 + \left(x - \frac{5\pi}{4}\right)^2 & < 0.25 \\
y^2 + \left(x - \frac{7\pi}{4}\right)^2 & < 0.25 \\
y & \leq 3 \cdot x^2 + 2 \\
y & \geq -2.1 \cdot x + 3
\end{align*}
### Income distribution

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Canada</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gini index</strong></td>
<td>0.408</td>
<td>0.326</td>
<td>0.472</td>
</tr>
<tr>
<td>(world rank: 99th)</td>
<td>(world rank: 30th)</td>
<td>(world rank: 122nd)</td>
<td>(world rank: 126th)</td>
</tr>
<tr>
<td><strong>Income share held by highest 20%</strong></td>
<td>45.82%</td>
<td>39.94%</td>
<td>52.75%</td>
</tr>
<tr>
<td>(world rank: 89th)</td>
<td>(world rank: 133rd)</td>
<td>(world rank: 35th)</td>
<td>(world rank: 126th)</td>
</tr>
<tr>
<td><strong>Income share held by second 20%</strong></td>
<td>22.4%</td>
<td>22.95%</td>
<td>20.2%</td>
</tr>
<tr>
<td>(world rank: 37th)</td>
<td>(world rank: 11th)</td>
<td>(world rank: 126th)</td>
<td>(world rank: 126th)</td>
</tr>
<tr>
<td><strong>Income share held by third 20%</strong></td>
<td>15.66%</td>
<td>17.18%</td>
<td>13.33%</td>
</tr>
<tr>
<td>(world rank: 66th)</td>
<td>(world rank: 21st)</td>
<td>(world rank: 123rd)</td>
<td>(world rank: 126th)</td>
</tr>
<tr>
<td><strong>Income share held by fourth 20%</strong></td>
<td>10.68%</td>
<td>12.73%</td>
<td>8.79%</td>
</tr>
<tr>
<td>(world rank: 80th)</td>
<td>(world rank: 26th)</td>
<td>(world rank: 117th)</td>
<td>(world rank: 126th)</td>
</tr>
<tr>
<td><strong>Income share held by lowest 20%</strong></td>
<td>5.44%</td>
<td>7.2%</td>
<td>4.93%</td>
</tr>
<tr>
<td>(world rank: 194th)</td>
<td>(world rank: 55th)</td>
<td>(world rank: 117th)</td>
<td>(world rank: 126th)</td>
</tr>
</tbody>
</table>
Session 3: ELA, Foreign & Classical Languages
# Facione: Critical Thinking – Cognitive Skills and Subskills

<table>
<thead>
<tr>
<th>Skill</th>
<th>Subskills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation</td>
<td>Categorization, Decoding Significance, Clarifying Meaning</td>
</tr>
<tr>
<td>Analysis</td>
<td>Examining Ideas, Identifying Arguments, Analyzing Arguments</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Assessing Claims, Assessing Arguments</td>
</tr>
<tr>
<td>Inference</td>
<td>Querying Evidence, Conjecturing Alternatives, Drawing Conclusions</td>
</tr>
<tr>
<td>Explanation</td>
<td>Stating Results, Justifying Procedures, Presenting Arguments</td>
</tr>
<tr>
<td>Self-Regulation</td>
<td>Self-examination, Self-correction</td>
</tr>
</tbody>
</table>

Ten Strategies for Designing Critical Thinking Tasks

• Tasks linking course concepts to students’ personal experience or previously existing knowledge
• Explanation of course concepts to new learners
• Thesis support assignments
• Problem-posing assignments
• Data-provided assignments
• Template assignments
• Assignments requiring role-playing of unfamiliar perspectives or imagining “what if” situations
• Summaries or abstracts of articles or course lectures
• Dialogues or argumentative scripts
• Cases and simulations

## ACTFL Proficiency Guidelines (2012)

<table>
<thead>
<tr>
<th>Level</th>
<th>Speaking</th>
<th>Writing</th>
<th>Listening</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Novice</strong></td>
<td>short messages, everyday topics, isolated words/phrases</td>
<td>lists and notes, formulaic information, words and phrases</td>
<td>key words, expressions, simple statements, recognize known phrases</td>
<td>key words, expressions, predictable texts, recognize known text</td>
</tr>
<tr>
<td><strong>Intermediate</strong></td>
<td>recombine material, simple questions, sentence-level language</td>
<td>simple messages, simple facts, ideas, connected sentences</td>
<td>sentence-length speech, everyday topics, controlled environment</td>
<td>loosely connected texts, basic information, straightforward texts</td>
</tr>
<tr>
<td><strong>Advanced</strong></td>
<td>participatory dialogue, broader topics, paragraph-level</td>
<td>routine texts, factual narratives, paragraph structures</td>
<td>connected discourse, general interest topics, straightforward discourse</td>
<td>main idea of narratives, real-world topics, concrete texts</td>
</tr>
<tr>
<td><strong>Superior</strong></td>
<td>accuracy and fluency, abstract elaboration, extended discourse</td>
<td>research texts, complex topics, extended narrative</td>
<td>extended discourse, less familiar topics, specialized narrative</td>
<td>broad range of texts, wide range of subjects, stylistic awareness</td>
</tr>
<tr>
<td><strong>Distinguished</strong></td>
<td>articulate users, wide range of concepts, sophisticated discourse</td>
<td>full formal writing, wide range of topics, sophisticated discourse</td>
<td>rich cultural discourse, wide range of topics, sophisticated discourse</td>
<td>wide range of genres, complex topics, sophisticated discourse</td>
</tr>
</tbody>
</table>
Designing Successful Fluency & Accuracy Activities

• Characteristics of Successful Fluency Activities:
  1. Comprehensible input (reading and/or listening texts)
  2. Culturally authentic and personalized information gap:
     a. Genuine (students share authentic information, e.g. their own life experiences)
     b. Contrived (students share information assigned to them, e.g. roleplaying someone else’s experiences)
  3. Strategy Instruction
  4. Targeted language functions (e.g. narration, persuasion), text types, modes of language use (e.g. interpretive, interpersonal, presentational)
  5. Accountability phase (demonstration of mastery of skills, concepts, or information via multiple formats, e.g. oral presentation, written report, charts, graphs, digital storytelling)

• Key Accuracy Components:
  • Grammatical/Syntactical
  • Pronunciation/Intonation/Spelling
  • Lexicon
  • Sociolinguistic

A Five-Phase Lesson Plan

• Overview
  • Statement of goals, learning objectives

• Preparation
  • Presentation of listening, reading texts
  • Language processing tasks
  • Cultural context and background
  • Discussion of learning, language processing strategies

• Drill and Practice
  • Opportunities for discourse, spoken or written, interpersonal or presentational
  • Drill: teacher-centered
  • Practice: learner-centered

• Check
  • Demonstration of mastery of skills, concepts

• Follow-up
  • Discussion of outcomes, current and future strategies
  • Larger cultural comparisons, analysis
Sidewalks

- Clear Demarcation Between Public/Private Space
- Under the Gaze of Natural Proprietors
- Safety
- Human Contact
- Balance Between Personal Privacy and Socialization
- Trust Between Residents
- Sidewalks
- Enjoys Continuous Usage
- Assimilating Children
- Unwatched
- Impedes
The Geology of the Berkshires

Sed et lacus quis enim mattis non

Photo Credit: Eric Shaw White
Session 4: Visual & Performing Arts, Music
<table>
<thead>
<tr>
<th>Organizer</th>
<th>Primary Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Society</td>
<td>Art is made by and for people.</td>
</tr>
<tr>
<td>Imagination</td>
<td>People use their imaginations to create art.</td>
</tr>
<tr>
<td>Point of View/Stance</td>
<td>Art suggests a point of view.</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Different people interpret art differently.</td>
</tr>
<tr>
<td>Identity</td>
<td>Each person makes art about himself/herself and his/her world.</td>
</tr>
<tr>
<td>Culture</td>
<td>The people of each culture make art in their own way.</td>
</tr>
<tr>
<td>Mediation</td>
<td>People tell stories through art.</td>
</tr>
<tr>
<td>Past/Present</td>
<td>People have always made art.</td>
</tr>
<tr>
<td>Form</td>
<td>People design art.</td>
</tr>
<tr>
<td>Medium</td>
<td>People make art using a variety of materials.</td>
</tr>
<tr>
<td>Inquiry</td>
<td>People make art based on what they see and what they know.</td>
</tr>
<tr>
<td>Criticism</td>
<td>People value art for many reasons.</td>
</tr>
<tr>
<td>Contexts</td>
<td>Art is a part of everyday life.</td>
</tr>
<tr>
<td>Reflective Practice</td>
<td>Art can make people think.</td>
</tr>
<tr>
<td>Didactics</td>
<td>Art educates.</td>
</tr>
</tbody>
</table>

Following a Strand: Culture

- **Primary Level:** The people of each culture make art in their own way.

- **Middle Level:** Art is central to the development of cultures and subcultures, including student subcultures.

- **High School Level:** Art is a cultural carrier; it is shaped by cultural conditions and reveals them.

- **Higher Ed. Foundations:** Art, and its professional communities, promote cultural reification and critique.
influence. The successful journal *Theatre in Education: A Bulletin of the Drama, in University, College, School or Youth Group* ran from 1947 to 1953 and contributed to the dissemination of educational principles and dramatic practices in four issues each year. (It is widely believed that the term ‘theatre in education’ was coined in the 1960s, but it is interesting to note that the expression was already well known and debated in the 1940s.) The remit of this journal included all kinds of theatre that took place in educational settings, including plays that toured to schools, children’s theatre, youth theatre and drama in schools and universities. The first issue in 1947 set the tone for the journal’s eclecticism by promising that it would address the following objectives:

1. The importance of the study of drama as a subject in the school curriculum
2. The value of practical dramatic activity as an educational medium. (p. 1)
Place/Space

Place

Identity

Home

Diaspora

Rooted

Nomadic

Theatrical Space

Location
Position in space

Condition
Mix of natural & artificial features that give meaning to a location

Links
Connections between places

Formal Region
Group of places with similar conditions

Functional Region
Group of places linked together by a flow


Component Skills of Intelligent Musicianship

I. Performance Skills
A. Social Behavior in Music Settings
B. Psychomotor Skills/Performance Technique
   1. Tempo/Rhythm
   2. Intonation/Tone Quality/Articulation
   3. Dynamics/Balance
   4. Wind Instruments
   5. String Instruments
   6. Percussion Instruments
   7. Vocal Technique/Tone Quality/Intonation
   8. Conducting
C. Music Literacy/Aural Analysis
D. Musical Creativity
   1. Improvisation
   2. Composition

II. Knowledge of Subject Matter
A. Personal Music Repertoire
B. Verbalizing about Music/Music Performance Vocabulary
C. Musical Styles/Genre, Music History
D. Music Theory
E. The Music Professions

III. Music Appreciation
A. Music Listening
B. Music Criticism