



CLEARING A PATH TOWARD EVALUATION AUTONOMY:

Minimizing measurement disjuncture and improving the validity of findings through
culturally specific assessment

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ON MEASUREMENT

“Well first of all our people didn’t have rulers. They didn’t have rulers to measure with. They measured by parts of the body...

You use your thumb, you used your fingers, your hand...like your hand full, fistful, arm length.

Your arm length was here, (top of shoulder to tip of finger) the foot is used by your foot and it was always approximate...”

Emma Meawasige (Anishinaabe)

SOURCE: Indigenous Knowledge & Our Connection to the Land



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ON ASSESSMENT

For generations, Indigenous peoples have utilized performance-based assessment practices to determine how individuals could best contribute to the society.

Adults observed children exhibiting varying degrees of skill in tasks such as “hunting, running, consensus building, healing, and spiritual leadership.”
(Bordeaux, 1995, p. 3)

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TESTS AS CULTURAL ARTIFACTS

As with any other product of human activity, tests are cultural artifacts (Solano-Flores, 2011, p. 3)

All elements of the instrument development process are prescribed by the cultural worldview under which they are presented

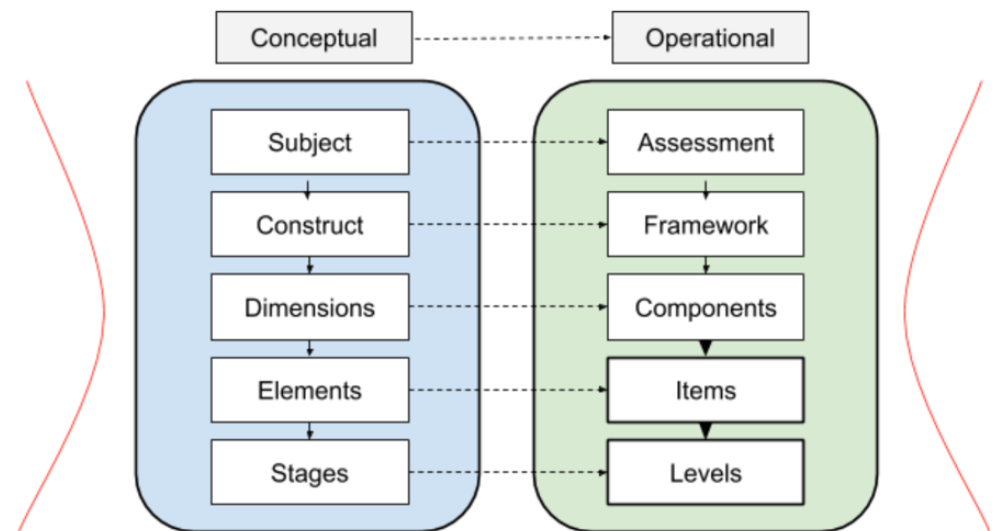
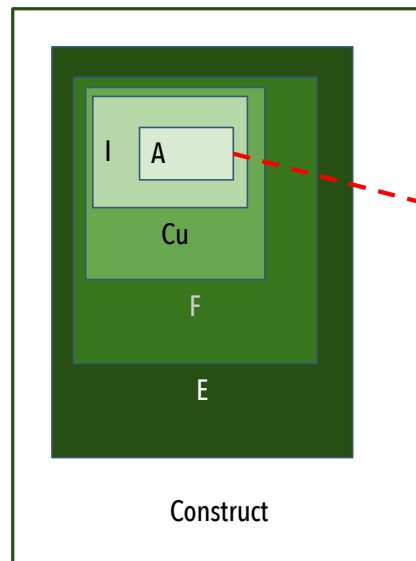


Figure 1. Conceptual and operational process elements for assessment development.

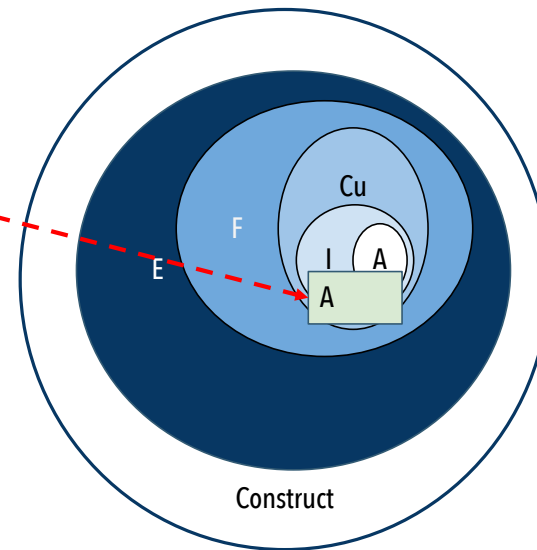
EDUCATIONAL SYSTEM ALIGNMENT, DISRUPTED

- Construct
- Expectations
- Framework
- Curriculum
- Instruction
- Assessment

All elements must reside within the worldview in order for alignment to be maintained



Western



Indigenous

As a psychometrician:

- What do we call this?
- Why is this a problem?
- What do we do about it?



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MEASUREMENT DISJUNCTURE

What do we call this?

The misalignment that occurs when elements of an instrument development process from one worldview are applied to the instrument development process of another worldview (Sul, 2019)

Why is this a problem?

1. Negatively affects the establishment of measurement validity
2. Introduces measurement error thereby negatively affecting
 - individual scores - *“When our students are trying to communicate with us, we don’t receive the signals they are sending us.”*
 - conclusions about groups of individuals within quantitative research designs - *“We don’t get proper credit for our efforts.”*



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EFFECT OF MEASUREMENT DISJUNCTURE ON TEST SCORES

Proficient vs. Not Proficient

Which of these two type errors affects Indigenous people more?

Decision Made	Correct State	
	<u>Not Proficient</u>	<u>Proficient</u>
<u>Not Proficient</u>	Correct Decision	Incorrect Decision (Type II Error) <i>Actually proficient Declared not proficient Under estimates ability</i>
<u>Proficient</u>	Incorrect Decision (Type I Error) <i>Not actually proficient Declared proficient Overestimates ability</i>	Correct Decision



EFFECT OF MEASUREMENT DISJUNCTURE ON QUANTITATIVE RESEARCH DESIGN CONCLUSIONS

SOURCE	df	SS	MS	F
Factor A (between)	k-1	$\sum_{i=1}^n n_i (\bar{x}_i - \bar{x})^2$	$MSA = \frac{SSA}{df_A} = \frac{SSA}{k-1}$	$F = \frac{MSA}{MSE}$
^a Error (within)	n-k	$\sum_{i=1}^n (n_i - 1) s_i^2$	^b $MSE = \frac{SSE}{df_e} = \frac{SSE}{n-k}$	
Total	n-1			

- Measurement disjuncture increases the amount of error in the data.
- When the error term increases, the mean square error (MSE) artificially increases.
- Thus, the value of the F statistic artificially decreases. Smaller F statistic implies less impact.
- As a result, we are less likely to acknowledge that the treatment has had an impact when, in fact, it has (Type II error).**
- In practical terms: We end up undervaluing the influence of our interventions and ***"We don't get proper credit for our efforts."***



WHAT DO WE DO ABOUT IT?

“Cross-walk” learning objectives from one worldview to another

Cultural decentering (Werner & Campbell, 1970) - translate survey items from English to Spanish and then translate the items back into English

Statistically correlate results of one assessment to those of another

Include post-hoc cultural, linguistic review panels

Integrate culturally responsive practices

Maintain all elements of the assessment development process within the worldview

Culturally specific assessment (Sul, 2019)

CULTURALLY SPECIFIC ASSESSMENT

1. Supports the academic development of students;
2. Inclusive of a willingness to nurture and support cultural competence;
3. Aims to support the development of a sociopolitical or critical consciousness;
4. Focused on constructs and measures of importance to educational practitioners and other key stakeholders;
5. Functions within a system of knowledge that exists within a named worldview

1-3: Culturally relevant
(Ladson-Billings, 1995)

3: Pedagogy of the
Oppressed
(Freire, 1970)

4: Responsive Evaluation
(Stake, 1973)

1-4: Culturally
responsive
(Hood, 1998)

1-5: Culturally specific
(Sul, 2019)



WHAT DOES IT LOOK LIKE?

1. Foundational example
2. Decisions about validity
3. Design of rating levels
4. Gathering evidence of learning
5. Data systems
6. Sample reports
7. Latest project



HILO, HAWAI'I PETALUMA, CALIFORNIA MNIDOO MNISING (MANITOULIN ISLAND), ONTARIO



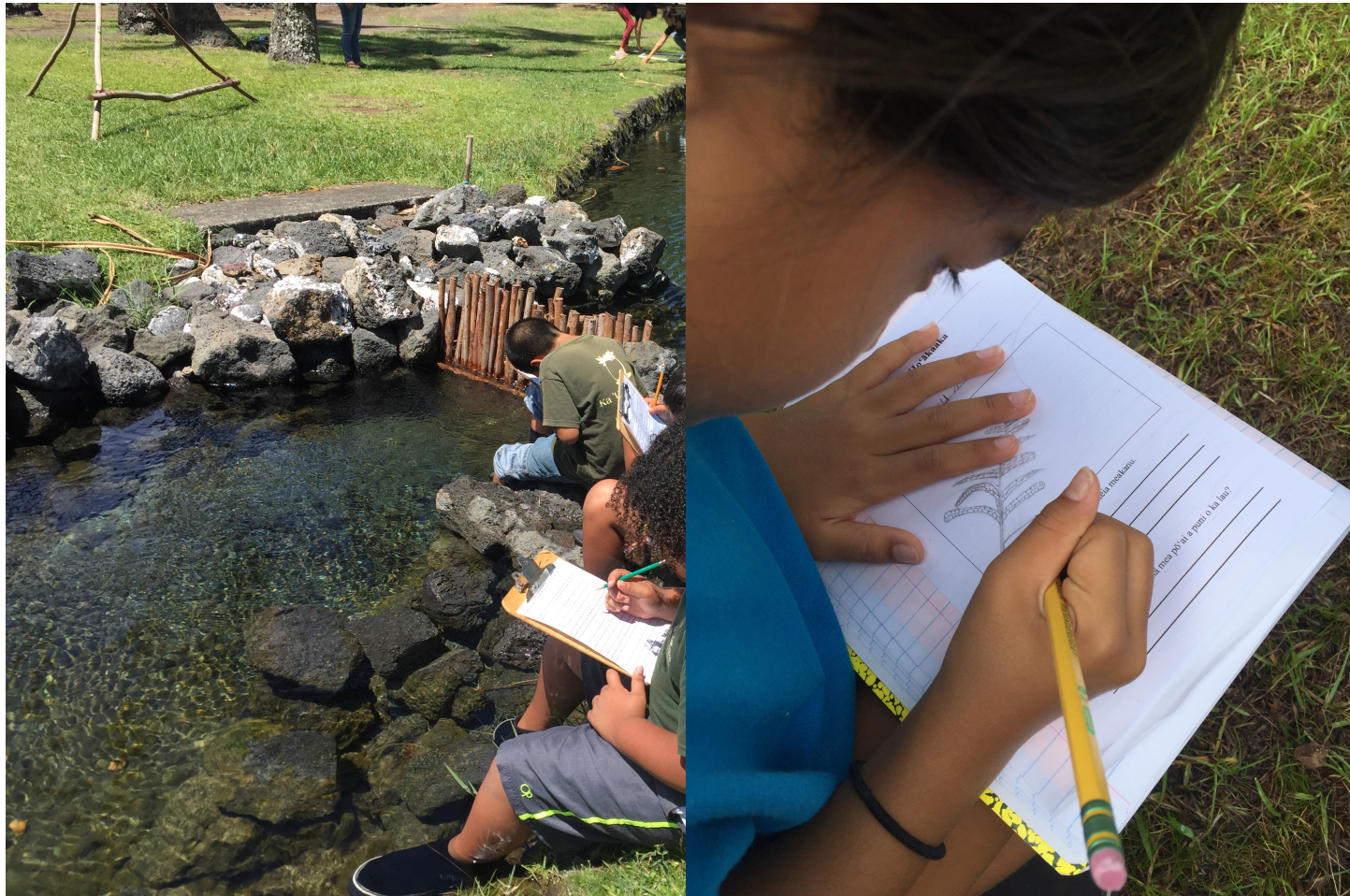
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Kilo

Wae'ano

Makawalu



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EVIDENCE OF LEARNING

DIBISHGAADEMGAK ANISHINAABEMOWIN

Anishinaabemowin



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DATA SYSTEMS

DIBISHGADEMGAK ANISHINAABEMOWIN

What must it do?

Receive raw data

Store data

Generate information

Open Source Software

PHP

mySQL

FPDF

Drupal

HTML

Linux Server

Code

```
$pdf->Cell(20,6,$x,0,0,"C",false);
$pdf->Cell(20,6,$y,0,0,"C",false);
$pdf->Ln(1);
```

$$x = x_c + r * \cos(\alpha)$$

$$y = y_c + r * \sin(\alpha)$$

$$C = (110.00125 \ 164.00125)$$

$$r = 40$$

α = angle in radians

Negative angle --> $\sin(-\text{THETA}) = -\sin(\text{THETA})$

$$x = 110.00125 + r * \cos(\alpha)$$

$$y = 164.00125 + r * \sin(\alpha)$$

$$110 + 40 * \cos(\text{'da_scales'.'angle'}) \text{ AS 'x'}$$

$$164 - 40 * \sin(\text{'da_scales'.'angle'}) \text{ AS 'y'}$$



Shki-Maajitaa (newly starting)	Maajiishkaa (In motion)	Eshkam gwa Nitaa'aangidoon (Progressively speaking)	Zhaabiwendaan (Seeing through)
6 13	14 22	23 27	28 31

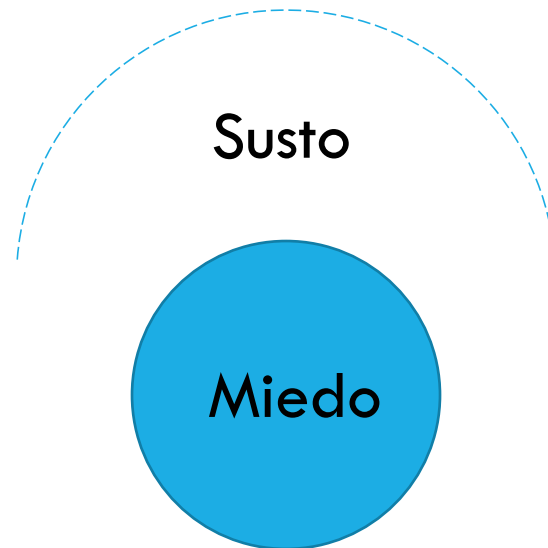


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FEAR OF DEPORTATION ASSESSMENT



DECLARATION OF AUTONOMIES

We assert the right to educate ourselves within our own worldview.

This is the declaration of our educational autonomy.

We assert the right to develop assessments within our own worldview.

This is the declaration of our assessment autonomy.



MAHALO!
MIIGWECH!
¡MUCHAS
GRACIAS!
THANK YOU!

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