MICE:
Capturing what eludes traditional classroom observation

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epic

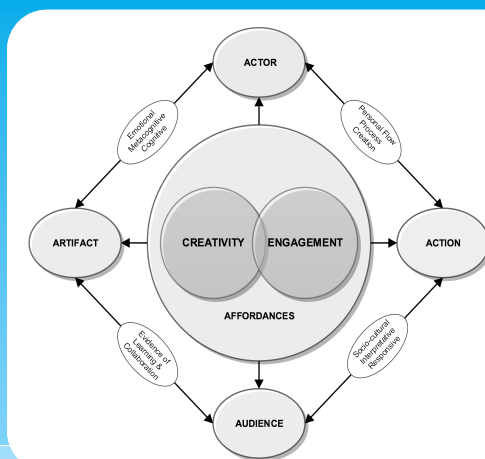## Measure of Instruction for Creative Engagement (MICE)
Of MICE and meaning in the learning environment

Study Goals

- Theoretical model
- Observation tool
- Findings and implications

The Five A's of Creativity *Glăveanu (2013)*

- ❑ Actor
- ❑ Audience
- ❑ Action
- ❑ Artifact
- ❑ Affordances

Rationale

* Teaching practices support or stymie creativity
  * Only–one–right–answer didactic focus (Beghetto, 2010)
  * Fragile balance of unconventional ideas and imagination with structural disciplinary knowledge (Beghetto, 2016)

* Few extant tools to measure pedagogy and learning environment through this lens (Schacter et al., 2006)

* Lingering questions:
  * Was observed floor effect due to lack of teaching practices or imprecision of tool?
  * Relationship with student engagement and achievement?

Research Questions

* Can we measure dimensions of instruction for creative engagement?
  * To what extent do observers reliably code the instructional practices?
  * Across several observations, to what extent does the protocol provide consistent ratings of the same teacher?
  * To what extent does the protocol measure teaching for creative engagement?

Method

Study conducted within larger program of inquiry on effects of academically integrated arts

* Middle school teacher Sample (*n* = 25)
* Female = 14
* Male = 11
* White = 23
* Latino(a) = 1
* Asian = 1

Observation Tool

* Use more nuanced teaching standards and indicators (Ho & Kane, 2013)

* Defining the construct
    * Characteristics of creative learning behaviors drawn from developmental framework (Lench et al., 2015)
    * Indicators of instructional practices that cultivate creativity and optimal learning environment

Observation Tool

* Multi-step protocol
    * Classroom observation and literal note-taking
    * Checklist of evidence
    * Scoring rubric

* Observer training and tool refinement
    * Identify common factors that might influence construct validity of the tool

Observation Tool

STEP 3: RUBRIC

COMMUNICATE

Attribute	Standard	1 Not or minimally present	2 Somewhat present	3 Present	4 Developed
Self- awareness & Reflection	Teachers invite students to think about their personal interests, monitor their progress towards personal goals, respond to new ideas, and evaluate possible solutions and how they impact their audience and others.				
Cultivating & Evaluating ideas	Teachers demonstrate and expect students to use their imaginations and provide inspiration to play with their ideas while committing to a timeline and adapting their work based on others' ideas.				
Tolerating Risk & Ambiguity	Teachers communicate through explanation, explicit strategies and overall teaching vocabulary how to embrace less structure, persevere and balance imagination with real world constraints.				

Observation Tool

STEP 2: CHECKLIST

COMMUNICATE

Self Awareness & Reflection	Cultivating & Evaluating Ideas	Tolerating Risk & Ambiguity
The teacher…	The teacher scaffolds, for student independence, through explicit modeling and think-alouds…	The teacher scaffolds, for student independence, through explicit modeling and think-alouds how to…
1. Identifies that their perspective is only one interpretation.	1. How to synthesize thoughts across learning experiences.	1. Remain open to a new task or persist through a challenge.
2. Paces lessons to provide time for students to reflect, explore, and refine.	2. How to draw out and use personal inspirations (e.g. verbalize, write etc.)	2. Use constraints when necessary.
3. Steps aside for others to share.	3. How to share and appreciate different ideas.	3. Discuss or play with multiple answers, solutions, or possibilities during their learning experiences.
4. Circulates the classroom to monitor students' work and thinking.	4. How to explore alternative ideas that change the impact of their work.	The teacher…
5. Uses open-ended questions to evoke reflective discussion.	5. How to advocate for their ideas and work.	4. Scaffolds student risk taking by checking in regularly with each student about individual progress.
	The teacher…	5. Designs instructional learning tasks that challenge students' thinking.
	6. Refers to the lesson objectives that are linked to student experiences and ideas.	6. Mediates student conversations only when necessary.
	7. Uses rich vocabulary to describe and explore content with students.	7. Admits to errors.
	8. Conveys the importance of one's personal ideas and interpretations through clear language	

Limitations, findings, implications

* Limitations
  * Ill-structured measurement design (ISMD)
    (Putka, Le, McCloy, & Diaz, 2008)
  * Small sample size; lack of statistical power
  * Convenience sampling

Limitations, findings, implications

Table 5

Observation Data Matrix

			Rater ID		
Rater ID	1	2	3	4	5
1	15	7	5	3	1
2		21	7	7	0
3			22	2	8
4				12	1
5					9

Note. The values in cells shared by two raters represent their common observations. The values on the diagonal represent the rater's total observations.

Limitations, findings, implications

RQ1: To what extent do observers reliably code the instructional practices?

ICC reliability estimates:
(Landis & Koch, 1979)
- Moderate = (.41 - .60)
- Substantial = (.61 - .80)
- Nearly perfect = (.81 – 1.0)

Table 6

Variance Component Estimates and Alpha Results for the ICC Analysis

Variance component	Domain 1: Communicate		Domain 2: Question & Engage		Domain 3: Assess & Respond		Domain 4: Students		Total	
	σ^2	%	σ^2	%	σ^2	%	σ^2	%	σ^2	%
σ_L^2	.621	64.22	.434	59.78	.474	64.05	.357	56.31	7.398	73.89
σ_R^2	.053	5.48	.003	.41	.001	.14	.038	5.99	.160	1.60
$\sigma_{LxR,e}^2$	.293	30.30	.289	39.81	.265	35.81	.239	37.69	2.454	24.50
α	.64		.60		.64		.56		.73	

Note. The α values provided in this table represent the ICC coefficients of the MICE instrument and reflect findings regarding the null hypothesis test.

Limitations, findings, implications

* RQ2: To what extent does the protocol provide consistent ratings?
  * Pearson correlation coefficients
  * Positively correlated, p<.01
  * $r = 0.663 – 1.000$

Limitations, findings, implications

* RQ3: To what extent does the protocol measure teaching for creative engagement?
  * Arts integrated lessons $M = 12.08$ ($SD = 1.78$)
  * Status quo classroom lessons $M = 6.15$ ($SD = 2.62$)
  * $t(56) = 7.37$, p = .000

Implications

* Evidence that domain-general instructional practices for creative engagement can be measured
* Need to refine the *communication* and *student behavior* domains (Kane & Staiger, 2012)
* Research design
  * Number of lessons, observers, and different students
  * Observation design (nested, crossed)
  * G-Study to disaggregate the residual facet

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