

## Creativity in Progress Rubric (CPR) on Problem Solving

Miloš Savić  
University of Oklahoma  
savic@ou.edu

Gülden Karakök  
University of Northern Colorado  
gulden.karakok@unco.edu

Gail Tang  
University of La Verne  
gtang@laverne.edu

Houssein El Turkey  
University of New Haven  
helturkey@newhaven.edu

Emily Cilli-Turner  
University of La Verne  
ecilli-turner@laverne.edu

Kimberley Cadogan  
University of Northern Colorado  
kimberley.cadogan@unco.edu

Paul Regier  
University of Oklahoma  
paulregier@ou.edu





### MAKING CONNECTIONS

	<b>Beginning</b>	<b>Developing</b>	<b>Advancing</b>
Between Definitions/Formulas/Theorems  NA <input type="checkbox"/>	Recognizes some relevant definitions/formulas/theorems from the course with no attempts to connect them in a solution	Recognizes some relevant definitions/formulas/theorems from the course and attempts to connect them in a solution	Uses relevant definitions/formulas/theorems from the course or other resources outside the course in a solution
Between Representations <sup>1</sup>  NA <input type="checkbox"/>	Provides a representation with no attempts to connect it to another representation	Provides multiple representations and recognizes connections between representations	Provides multiple representations and uses connections between different representations
Between Examples  NA <input type="checkbox"/>	Generates one or two specific examples with no attempt to connect them	Generates one or two specific examples and recognizes a connection between them	Generates several specific examples and uses the key idea synthesized from those examples
Between Solutions  NA <input type="checkbox"/>	Attempts to connect multiple solutions to each other	Connects multiple solutions to each other	Connects multiple solutions to each other and generalizes common properties

<sup>1</sup> We define a *mathematical representation* similar to NCTM's (2000) definition. It includes written work in the form of diagrams, graphical displays, and symbolic expressions. We also include linguistic expressions as a form of lexical or oral representation. For example, a student can use a lexical, oral, or physical representation for "function", an input/output table, a graph of the function, the symbolic representations  $x \mapsto y$ ,  $f(x) = y$ , or  $(x, y)$ . Note the last representations are in the same category, e.g. symbolic, but they are still considered three different representations.

**Creativity in Progress Rubric (CPR) on Problem Solving**

**TAKING RISKS**

	<b>Beginning</b>	<b>Developing</b>	<b>Advancing</b>
Tools and Tricks <sup>2</sup>	Uses a tool or trick that is usual for the course or the student	Uses a tool or trick that is partly unusual <sup>3</sup> for the course or the student	Creates a tool or trick that is unusual for the course or the student
NA <input type="checkbox"/>			
Flexibility <sup>4</sup>	Introduces one solution path	Introduces more than one solution path	Uses more than one solution path
NA <input type="checkbox"/>			
Posing Questions	Recognizes there should be a question asked, but does not pose a question <sup>5</sup>	Poses questions clarifying a step within a solution	Poses questions about reasoning within a solution
NA <input type="checkbox"/>			
Evaluation of Solution Attempt	Checks surface-level <sup>6</sup> features of a solution attempt	Checks an entire solution attempt for reasoning	Revises or validates an entire solution attempt for reasoning
NA <input type="checkbox"/>			

<sup>2</sup> Based on the Originality category from Leikin (2009).

<sup>3</sup> Learned in a different context.

<sup>4</sup>

<sup>5</sup> For example, a student writes a “?” next to something.

<sup>6</sup> Surface-level features include technical, computational, and step-by-step logical details.