Define Design Do Debrief

Engage

Explore

Explain

Enhance

Extensions

Evaluate

Identifying similarities and differences

Summarizing and note taking

Reinforce effort/providing recognition

Homework and practice

Nonlinguistic representation

Cooperative learning

Setting objectives/providing feedback

Generating and testing hypotheses

Cues, questions, and advanced organizers (from Marzano)

The following PBL is from (<http://www.ncsu.edu/meridian/win2002/514/2.html> )

Introduction—Set the stage, motivate

Your task—Guiding question or driving/guiding statement, should be engaging, challenging, and doable,

Resources—Provide data and/or materials to be used

Process—This is the procedure to help answer the question or solve the problem. This should include activities that require higher level thinking such as analysis, synthesis, and evaluation.

Guidance and Scaffolding—This may be needed as learners move through the problem-solving. This includes teacher interaction, worksheets, peer collaboration, guiding questions,, etc.

Cooperative & Collaborative Learning—This may include peer reviews or group brainstorming as well.

Also see (ASCD “Preparing Creative and Critical Thinkers”; <http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx> ):

|  |  |
| --- | --- |
| **Tools for Generating Possibilities (Creative Thinking)** | **Tools for Focusing Possibilities (Critical Thinking)** |
| [**Brainstorming**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#brainstorming).Generating many, varied, or unusual options for an open-ended task or question. | [**Hits and Hot Spots**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#hits). Selecting promising or intriguing possibilities (identifying hits) and clustering, categorizing, organizing, or compressing them in meaningful ways (finding hot spots). |
| [**Force-Fitting**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#force). Using two objects or words that seem unrelated to the task or problem, or to each other, to create new possibilities or connections. | [**ALoU: Refining and Developing**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#alou). Using a deliberate, constructive approach to strengthening or improving options, by considering ***a****dvantages,****l****imitations* (and ways to ***o****vercome* them), and ***u****nique features*. |
| [**Attribute Listing**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#attribute). Using the core elements or attributes of a task or challenge as a springboard for generating novel directions or improvements. | [**PCA: Paired Comparison Analysis**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#pca). Setting priorities or ranking options through a systematic analysis of all possible combinations. |
| [**SCAMPER**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#scamper). Applying a checklist of action words or phrases (idea-spurring questions) to evoke or trigger new or varied possibilities. | [**Sequencing: SML**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#sequencing). Organizing and focusing options by considering **s**hort, **m**edium, or **l**ong-term actions. |
| [**Morphological Matrix**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#morphological). Identifying the key parameters of a task, generating possibilities for each parameter, and investigating possible combinations (mixing and matching). | [**Evaluation Matrix**](http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx#evaluation). Using specific criteria to systematically evaluate each of several options or possibilities to guide judgment and selection of options. |
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