PDP ACTIVITY DESIGN TEMPLATE

Design Name: ____ Date: _________________

Audience: ____________________________________ Designers: ____________________________________

BACKGROUND

GOALS

EVIDENCE

ACTIVITY DESCRIPTION

T I M E

SYNTHESIS

RATIONALE

FACILITATION

PRODUCTIVELY USING THE ACTIVITY DESIGN TEMPLATE

Teams will design or re-design an inquiry activity where students simultaneously learn scientific knowledge, reasoning processes, and attitudes, by practicing science or engineering. Designs should reflect consideration for contemporary issues in education, including diversity/equity and results from research (such as the *How People Learn* series of summaries).

BACKGROUND AREA

What do you know about your learners coming into the activity?
What prior knowledge, skills, and experiences do they bring? What else do you know about their backgrounds?

GOALS AREA

What kinds of goals do you have for your learners in this activity?

The classic way to categorize types of goals in science education is to divide them into understandings of:

- science content
- science process
- attitudes about science
- nature/role of science

This way of thinking about goals helps you to remember that science content is not all there is -- it is important to build students' science skills and science attitudes as well.

However, we have noticed that drawing a distinction between *content* and *process* often forces us to think of these things separately when the richest science-learning experiences (and the practice of science itself) feature them inextricably intertwined. Consider how meaningless it is to "raise questions" or "test hypotheses" or "explain" in the abstract -- these practices require something to question, hypothesize about, and explain; there must be some content for the processes of science to work on. We are not alone in this view -- the new works *Taking Science to School* and *Ready, Set, Science!* also emphasize moving beyond the classic content-process dichotomy. These works emphasize not the knowledge itself, but the use, application, and deployment of knowledge. The four bullet points above emphasize nouns, while the four bullet points below emphasize verbs.

To help you inter-weave the features of science that are all necessary for real, deep, rich science learning, consider the "strands of scientific proficiency" from *Taking Science to School*:

- knowing, using, and interpreting scientific explanations
- generating and evaluating scientific evidence and explanations
- understanding the nature and development of scientific knowledge
- participating productively in scientific practices and discourse

Whatever framework you choose (and perhaps you will mix the two), the challenge is making these kinds of goals specific to the context you are planning to work in.

EVIDENCE AREA

What would achieving each of your goals look like in practice?

What would you look for?

How will you know that your students are making progress?

How will your students know that they are making progress toward the goals?

Is the evidence you would need collectible somehow?

Feedback between the goals and the evidence will require you to iterate back-and-forth -- the goals may need to be refined, the evidence may be difficult to collect, etc. For instance, wanting students to gain "critical thinking skills" is a worthy goal but is very difficult to assess. Refining this goal to something much more specific (details here would depend on your context) might suggest what evidence should be gathered; or, to at it the other way, thinking about what evidence you would look for might suggest a more refined vision of the goal.

ACTIVITY DESCRIPTION AREA

What will students actually do in the activity?

Try to break down every component of the activity. For instance, each discrete period of student work and each planned "teacher intervention" (like a mini-lecture or a demo) is a separate component.

You don't have to plan in time-order, but you might want to write things down here in this area with the beginning of the activity on the left and subsequent components of the activity progressing to the right.

In addition to planning activity elements that move toward content-type goals, are your students engaged in learning processes and improving their process skills as well?

Components of the activity should move you and your students toward the goals listed above.

SYNTHESIS AREA

How do you plan to wrap up or synthesize the activity?

Consider synthesizing student work and student progress toward all your goals -- don't necessarily just synthesize the science content of the activity.

What will you plan to do here near the end of the time if some or all of your goals are not being achieved?

→ TIME →

RATIONALE AREA

For each component of the activity, what considerations have driven your particular design choices?

Why do you believe that each activity component will help you meet a particular goal or set of goals?

How do your design choices connect with education research considerations, such as the *How People Learn* principles and lenses?

What diversity/equity considerations are important in each design choice? Have you examined your design through an "equity lens"?

Are there tradeoffs associated with your design choices -- for instance, are you sacrificing one kind of consideration in favor of another, or due to time constraints, or some other tradeoff?

FACILITATION AREA

What is the role of the "teachers" in each component of the activity? What is the facilitation plan?

Are there some components where facilitation should be "light" -- leaving learners to work more independently? And other components where facilitation should be "heavy" -- where facilitators actively guide or assist learners?

Should facilitators be "shadowing" learners to collect evidence and assessment data? If so, what will you be looking for (see the "evidence" area above).

Are there things you are planning *not* to do (like, make sure *not* to mention X until a student notices it).