



Interactive Session

How well do assessment tasks align
with standards?



The Importance of Goals



THE WIZARD OF ID PARKER & HART





Science and Mathematics Assessments



**For assessments to be *helpful*,
they must accurately measure
what you want your students to
learn - your standards.**



Alignment

What does it mean?

What constitutes evidence for it?

How does one go about ensuring it for a task or set of tasks?



Learning Goal on Conservation of Matter

No matter how substances within a closed system interact with one another, or how they combine or break apart, the total mass of the system remains the same. The idea of atoms explains the conservation of matter: If the number of atoms stays the same no matter how they are rearranged, then their total mass stays the same. *Benchmarks, 4D 6-8, #7*



Common Student Difficulties

Conservation of Matter

- Interpreting chemical changes in terms of disappearance and appearance of substances (Driver et al., 1994)
- Thinking gases aren't substances and hence not considering their mass (AAAS, 1993)
- Confusing weight with density (AAAS, 1993)



Sample Task

Balance the following equation:



Exploring Physical Science (Prentice-Hall, Inc., 1997)



Necessity and Sufficiency

Given this task...

- **Is the example learning goal *necessary* to respond correctly? If so, is all of it or only part of it necessary?**
- **Is the example learning goal *sufficient* to respond correctly? If not, what other knowledge is needed?**

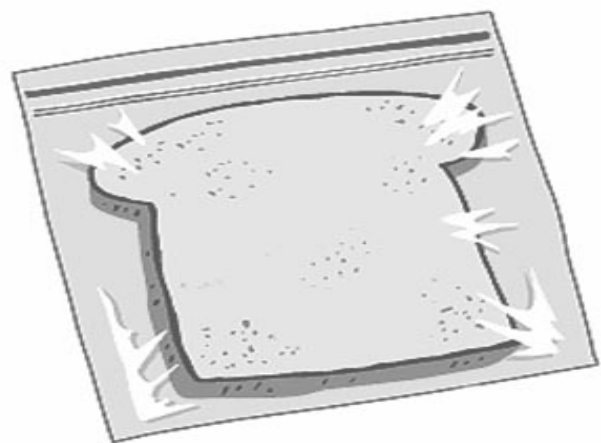


Learning Goal on Conservation of Matter

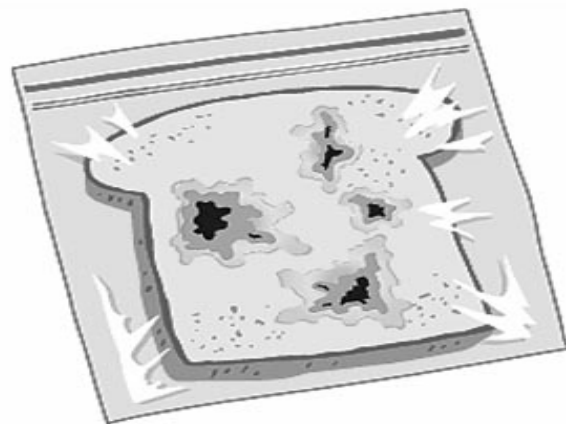
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Task: Moldy Bread

Betsy placed some bread in a plastic bag. Nothing could get in or get out. After two weeks, she noticed mold growing on the bread.



Before



After Two Weeks

Betsy weighed the bag with the bread before and after mold started growing. Did the bag, with the moldy bread, weigh the same, more, or less than it did before the mold started growing? Fill in the oval next to your answer below.

same

more

less

In a few sentences explain your answer.



Necessity and Sufficiency

Given this task...

- **Is the example learning goal *necessary* to respond correctly? If so, is all of it or only part of it necessary?**
- **Is the example learning goal *sufficient* to respond correctly? If not, what other knowledge is needed?**



Learning Goal on Conservation of Matter

No matter how substances within a closed system interact with one another, or how they combine or break apart, **the total mass of the system remains the same**. The idea of atoms explains the conservation of matter: If the number of atoms stays the same no matter how they are rearranged, then their total mass stays the same. *Benchmarks, 4D 6-8, #7*



Goals-Based Assessment

“Commercially available norm-referenced tests would not meet the legislation’s criteria for quality, standards-based tests. We don’t want these off-the-shelf tests.”

Senator Edward Kennedy

ED, February 14, 2002



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Alignment and Policy Implications in Large-Scale Assessments



- **Virginia Malone - Commercial Test Developer's Perspective**
- **Ed Smith - Michigan's Assessment Development**
- **David Potter - Assessment Alignment Issues**

CONSERVATION OF MATTER

