

Strategies to Create a Coherent Science Content Storyline

Analysis Guide D1: Selecting and Using Content Representations

Main learning goal: Energy can move or transfer from object to object.

Description of content representation: Students use a ramp-and-marble model (a ruler-ramp of varying heights, a marble, and a block of Styrofoam) to simulate the transfer of kinetic energy from one object to another.

Part 1: Selecting the Content Representation

Is the Content Representation ...	Yes	No
1. Scientifically accurate?		
2. Closely matched to the main learning goal?		
3. Presenting science ideas in ways that are comprehensible to students?		
4. Reinforcing or introducing student misconceptions?		
5. Addressing common student misconceptions?		
6. Distracting students from the main learning goal with too many details or new terms?		

Part 2: Engaging Students in Using the Content Representation

Is the Content Representation Used in a Way That Involves Students In ...	Yes	No
1. Modifying or creating the content representation?		
2. Analyzing the meaning of the content representation?		
3. Critiquing the content representation?		

Part 3: Suggestions for Improvement

Strategies to Create a Coherent Science Content Storyline

Analysis Guide D2: Selecting and Using Content Representations

Main learning goal: Energy can change, or transform, from potential energy to kinetic energy.

Description of content representation: Students examine a diagram showing four positions of a marble rolling down a hill and describe the amount of potential and kinetic energy the marble has in each position.

Part 1: Selecting the Content Representation

Is the Content Representation ...	Yes	No
1. Scientifically accurate?		
2. Closely matched to the main learning goal?		
3. Presenting science ideas in ways that are comprehensible to students?		
4. Reinforcing or introducing student misconceptions?		
5. Addressing common student misconceptions?		
6. Distracting students from the main learning goal with too many details or new terms?		

Part 2: Engaging Students in Using the Content Representation

Is the Content Representation Used in a Way That Involves Students In ...	Yes	No
1. Modifying or creating the content representation?		
2. Analyzing the meaning of the content representation?		
3. Critiquing the content representation?		

Part 3: Suggestions for Improvement

Strategies to Create a Coherent Science Content Storyline

Analysis Guide D3: Selecting and Using Content Representations

Main learning goal: Energy can move or transfer from object to object.

Description of content representation: Students use a ramp-and-marble model (a ruler-ramp of varying heights and two marbles) to investigate what happens to energy when two objects collide.

Part 1: Selecting the Content Representation

Is the Content Representation ...	Yes	No
1. Scientifically accurate?		
2. Closely matched to the main learning goal?		
3. Presenting science ideas in ways that are comprehensible to students?		
4. Reinforcing or introducing student misconceptions?		
5. Addressing common student misconceptions?		
6. Distracting students from the main learning goal with too many details or new terms?		

Part 2: Engaging Students in Using the Content Representation

Is the Content Representation Used in a Way That Involves Students In ...	Yes	No
1. Modifying or creating the content representation?		
2. Analyzing the meaning of the content representation?		
3. Critiquing the content representation?		

Part 3: Suggestions for Improvement

Strategies to Create a Coherent Science Content Storyline

Analysis Guide D4: Selecting and Using Content Representations

Main learning goal: Energy can move or transfer from object to object.

Description of content representation: Students use a ramp-and-marble model (a ruler-ramp of varying heights, a marble, and a block of Styrofoam) to investigate what happens to energy when two objects collide.

Part 1: Selecting the Content Representation

Is the Content Representation ...	Yes	No
1. Scientifically accurate?		
2. Closely matched to the main learning goal?		
3. Presenting science ideas in ways that are comprehensible to students?		
4. Reinforcing or introducing student misconceptions?		
5. Addressing common student misconceptions?		
6. Distracting students from the main learning goal with too many details or new terms?		

Part 2: Engaging Students in Using the Content Representation

Is the Content Representation Used in a Way That Involves Students In ...	Yes	No
1. Modifying or creating the content representation?		
2. Analyzing the meaning of the content representation?		
3. Critiquing the content representation?		

Part 3: Suggestions for Improvement

Strategies to Create a Coherent Science Content Storyline

Analysis Guide D: Selecting and Using Content Representations

Main learning goal: _____

Description of content representation: _____

Part 1: Selecting the Content Representation

Is the Content Representation ...	Yes	No
1. Scientifically accurate?		
2. Closely matched to the main learning goal?		
3. Presenting science ideas in ways that are comprehensible to students?		
4. Reinforcing or introducing student misconceptions?		
5. Addressing common student misconceptions?		
6. Distracting students from the main learning goal with too many details or new terms?		

Part 2: Engaging Students in Using the Content Representation

Is the Content Representation Used in a Way That Involves Students In ...	Yes	No
1. Modifying or creating the content representation?		
2. Analyzing the meaning of the content representation?		
3. Critiquing the content representation?		

Part 3: Suggestions for Improvement
