

# The Consultative Model – Day 3 Assessment

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Ruben R. Puentedura, Ph.D.

# Curricular Development and Assessment

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- Assessment
  - Assessment for Learning
  - Assessment of Learning
  - Assessment of Technology in Learning

# Validity and Reliability

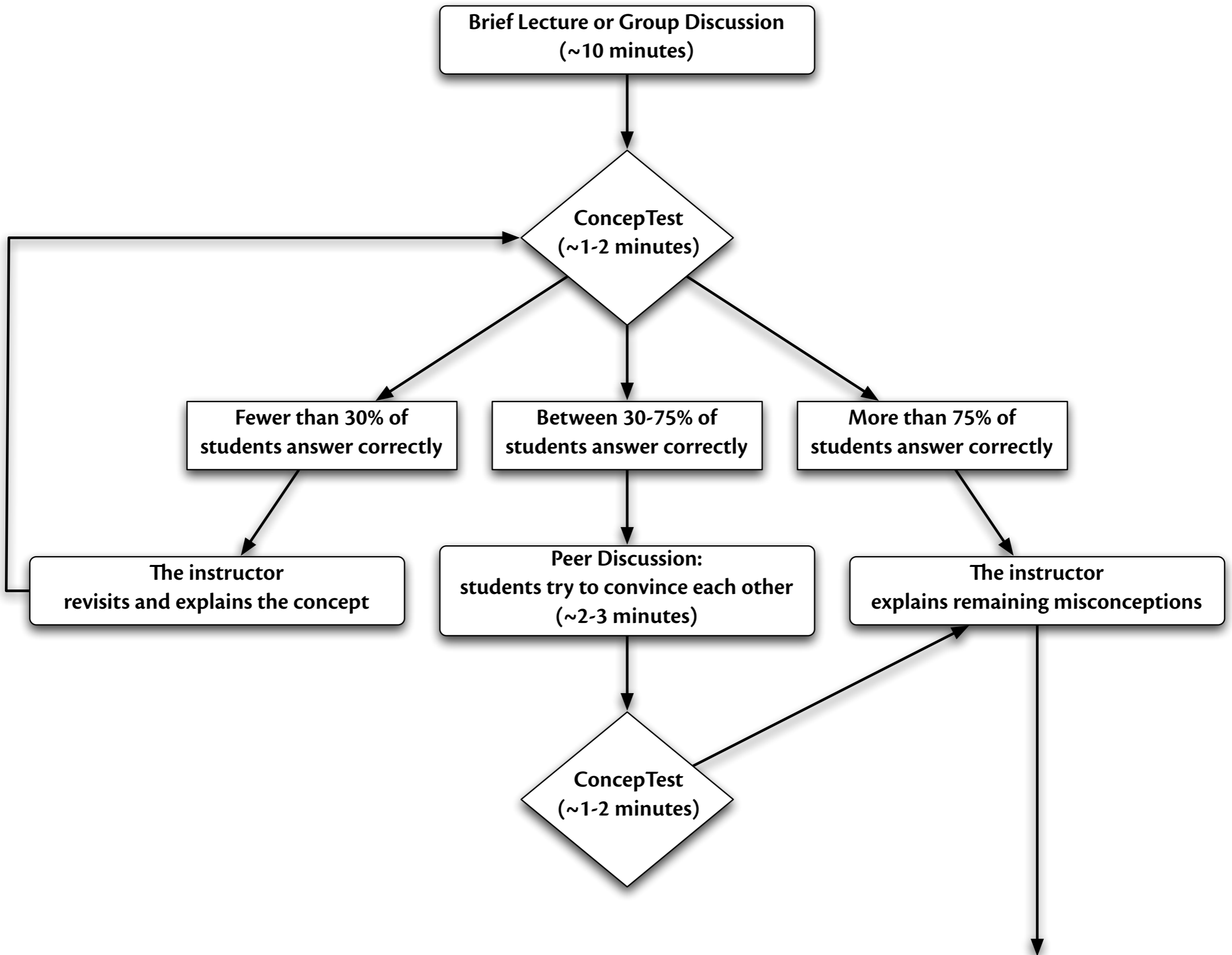
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- Validity
  - Content
    - Does the assessment measure the intended content area?
  - Construct
    - Does the assessment measure the intended construct or ability?
  - Instructional
    - Was the material on the assessment taught?
- Reliability
  - Is this a generalizable measure of student performance?

# Assessment for Learning – Three Key Questions

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- Where are you trying to go?
  - Provide a clear and understandable vision of the learning target.
  - Use examples and models of strong and weak work.
- Where are you now?
  - Offer regular descriptive feedback.
  - Teach students to self-assess and set goals.
- How can you get there?
  - Design lessons to focus on one aspect of quality at a time.
  - Teach students focused revision.
  - Engage students in self-reflection, and let them keep track of and share their learning.



Which of these scenarios does not describe an acceleration?

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A. A car going round a circular racetrack at constant speed.

B. A car traveling on a straight racetrack at constant speed.

C. A stone falling from the top of a building.

D. A simple pendulum.

Which of these would best be described as the “Crossing of the First Threshold” in *The Matrix*?

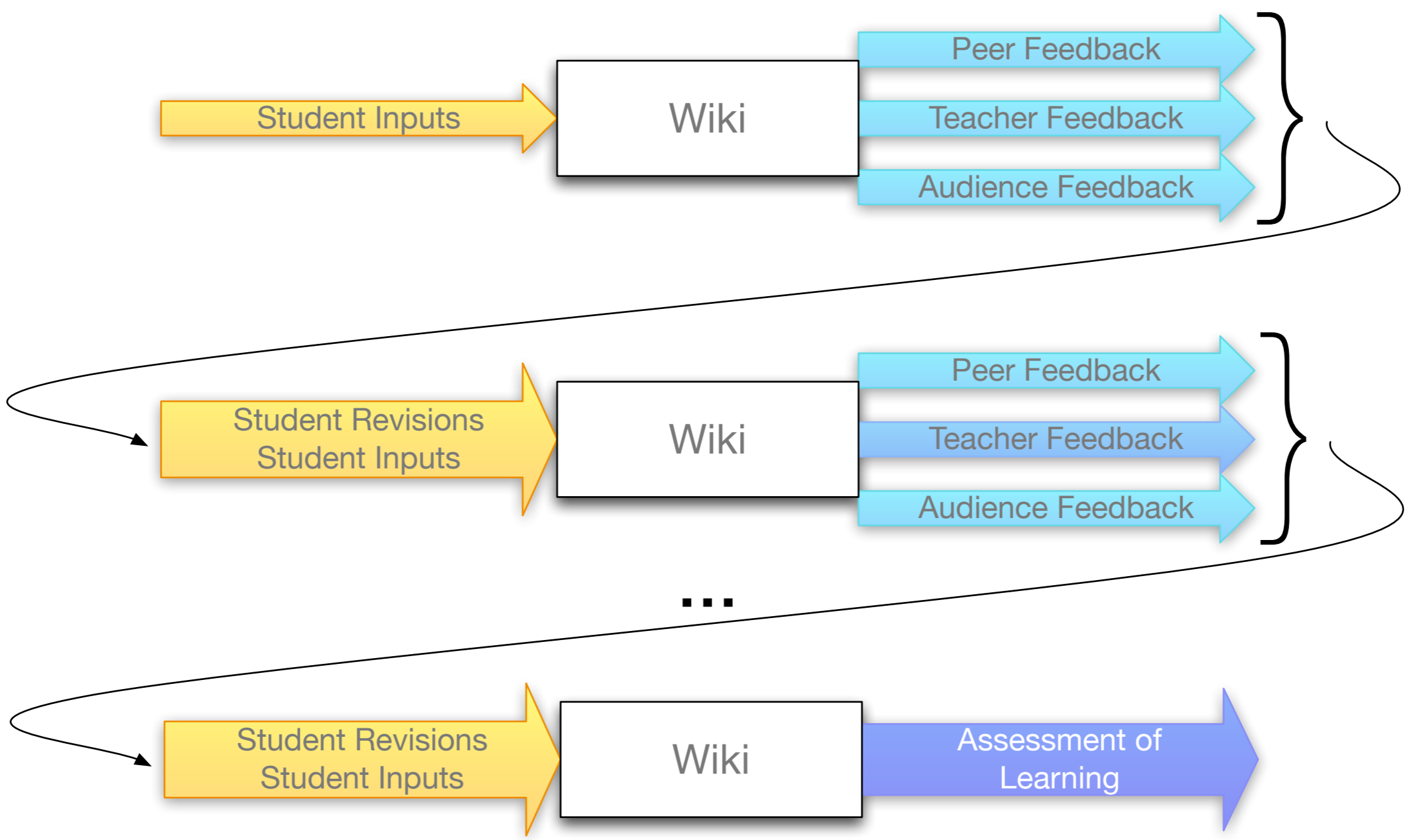
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A. Neo goes to the club.

B. Neo takes the red pill.

C. Neo meets the Oracle.

D. Neo returns to the Matrix to save Morpheus.





*Higher Order Thinking Skills*

Create

Evaluate

Analyze

Apply

Understand

Remember

*Lower Order Thinking Skills*

# Cognitive Processes

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<b>Anderson &amp; Krathwohl (2001)</b>	<b>Characteristic Processes</b>	
Remember	<ul style="list-style-type: none"> <li>• Recalling memorized knowledge</li> <li>• Recognizing correspondences between memorized knowledge and new material</li> </ul>	
Understand	<ul style="list-style-type: none"> <li>• Paraphrasing materials</li> <li>• Exemplifying concepts, principles</li> <li>• Classifying items</li> <li>• Summarizing materials</li> </ul>	<ul style="list-style-type: none"> <li>• Extrapolating principles</li> <li>• Comparing items</li> </ul>
Apply	<ul style="list-style-type: none"> <li>• Applying a procedure to a familiar task</li> <li>• Using a procedure to solve an unfamiliar, but typed task</li> </ul>	
Analyze	<ul style="list-style-type: none"> <li>• Distinguishing relevant/irrelevant or important/unimportant portions of material</li> <li>• Integrating heterogeneous elements into a structure</li> <li>• Attributing intent in materials</li> </ul>	
Evaluate	<ul style="list-style-type: none"> <li>• Testing for consistency, appropriateness, and effectiveness in principles and procedures</li> <li>• Critiquing the consistency, appropriateness, and effectiveness of principles and procedures, basing the critique upon appropriate tests</li> </ul>	
Create	<ul style="list-style-type: none"> <li>• Generating multiple hypotheses based on given criteria</li> <li>• Designing a procedure to accomplish an untyped task</li> <li>• Inventing a product to accomplish an untyped task</li> </ul>	

# Affective Processes

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<b>Krathwohl, Bloom &amp; Masia (1964)</b>	<b>Characteristic Processes</b>
Receiving Phenomena	<ul style="list-style-type: none"><li>• Student listens actively, responding to questions</li></ul>
Responding to Phenomena	<ul style="list-style-type: none"><li>• Student originates questions</li></ul>
Valuing	<ul style="list-style-type: none"><li>• Student expresses a preference and justifies it</li></ul>
Organizing Values	<ul style="list-style-type: none"><li>• Student articulates a coherent set of preferences and justifications</li></ul>
Internalizing Values	<ul style="list-style-type: none"><li>• Student correlates their personal value set to their social actions</li></ul>

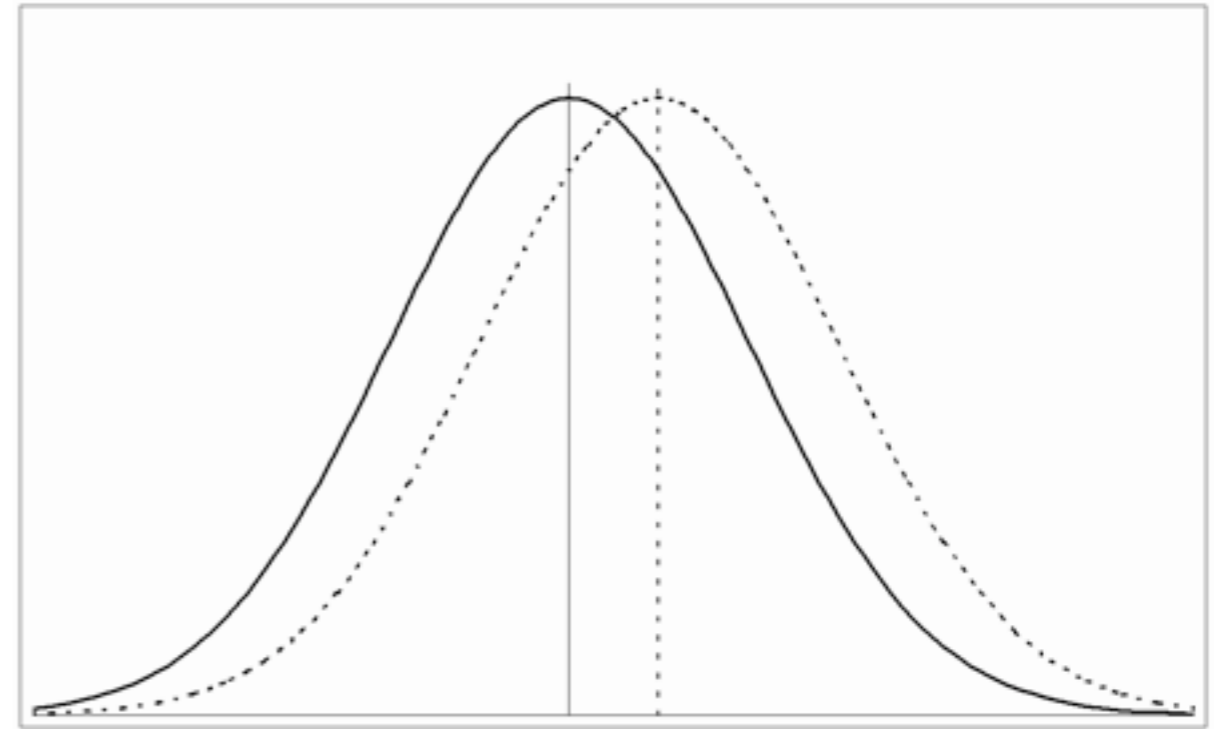
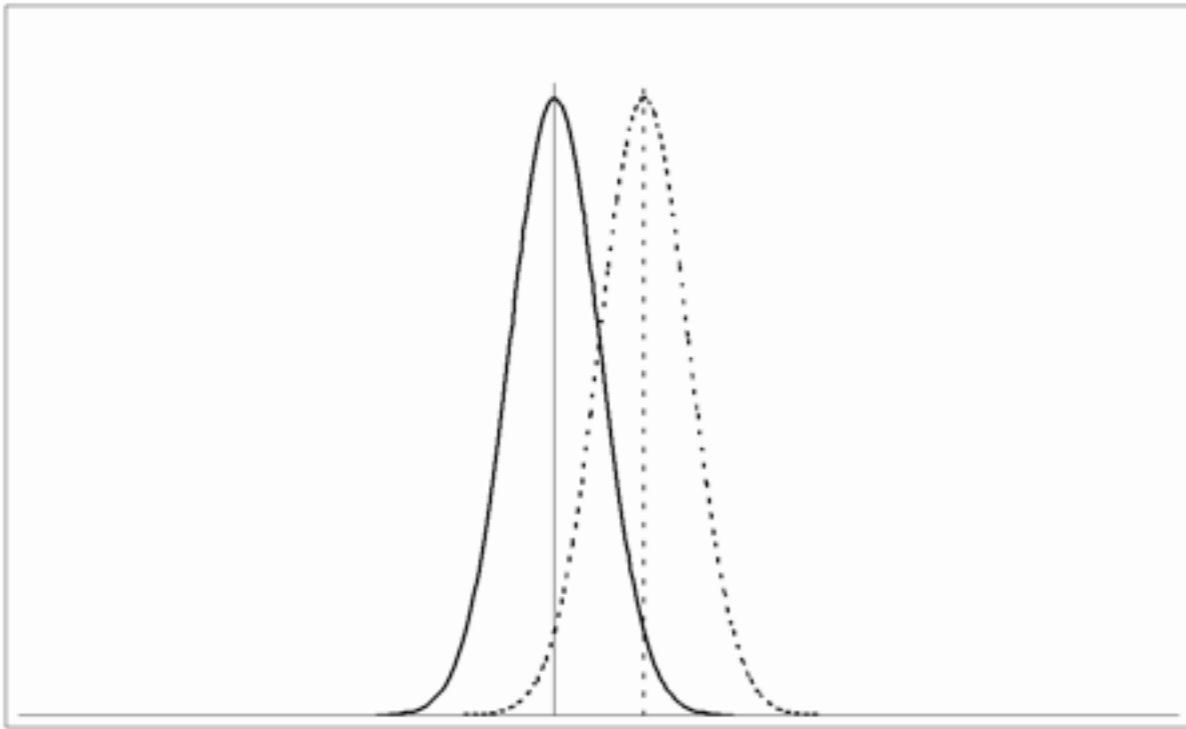
# Psychomotor Processes

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<b>Dave (1967)</b>	<b>Characteristic Processes</b>
Imitation	<ul style="list-style-type: none"><li>• Repeating an act that has been demonstrated</li></ul>
Manipulation	<ul style="list-style-type: none"><li>• Practicing an act until it becomes consciously habitual</li></ul>
Precision	<ul style="list-style-type: none"><li>• Attaining proficiency and efficiency in performing an act</li></ul>
Articulation	<ul style="list-style-type: none"><li>• Developing harmony and flexibility in performing an act</li></ul>
Naturalization	<ul style="list-style-type: none"><li>• Creating new ways of performing an act</li><li>• Modifying responses “on the fly” automatically</li></ul>

# Comparing Results

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## Cohen's Effect Size Index $d$

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$$d = \frac{|m_A - m_B|}{\sqrt{\frac{(n_A - 1)\sigma_A^2 + (n_B - 1)\sigma_B^2}{n_A + n_B - 2}}}$$

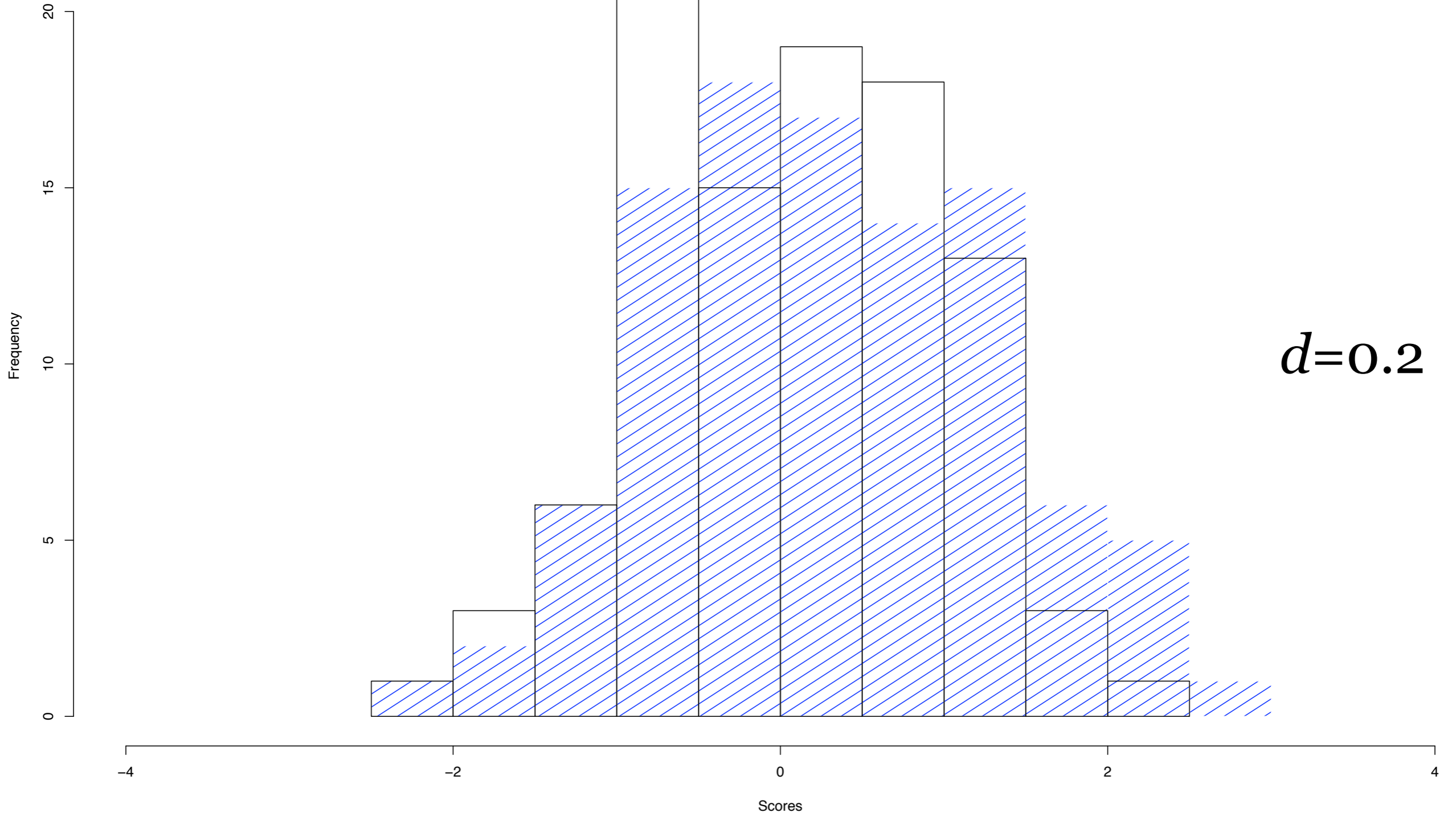
$m_A, m_B$ : mean scores for the two groups being compared

$n_A, n_B$ : sample sizes for the two groups being compared

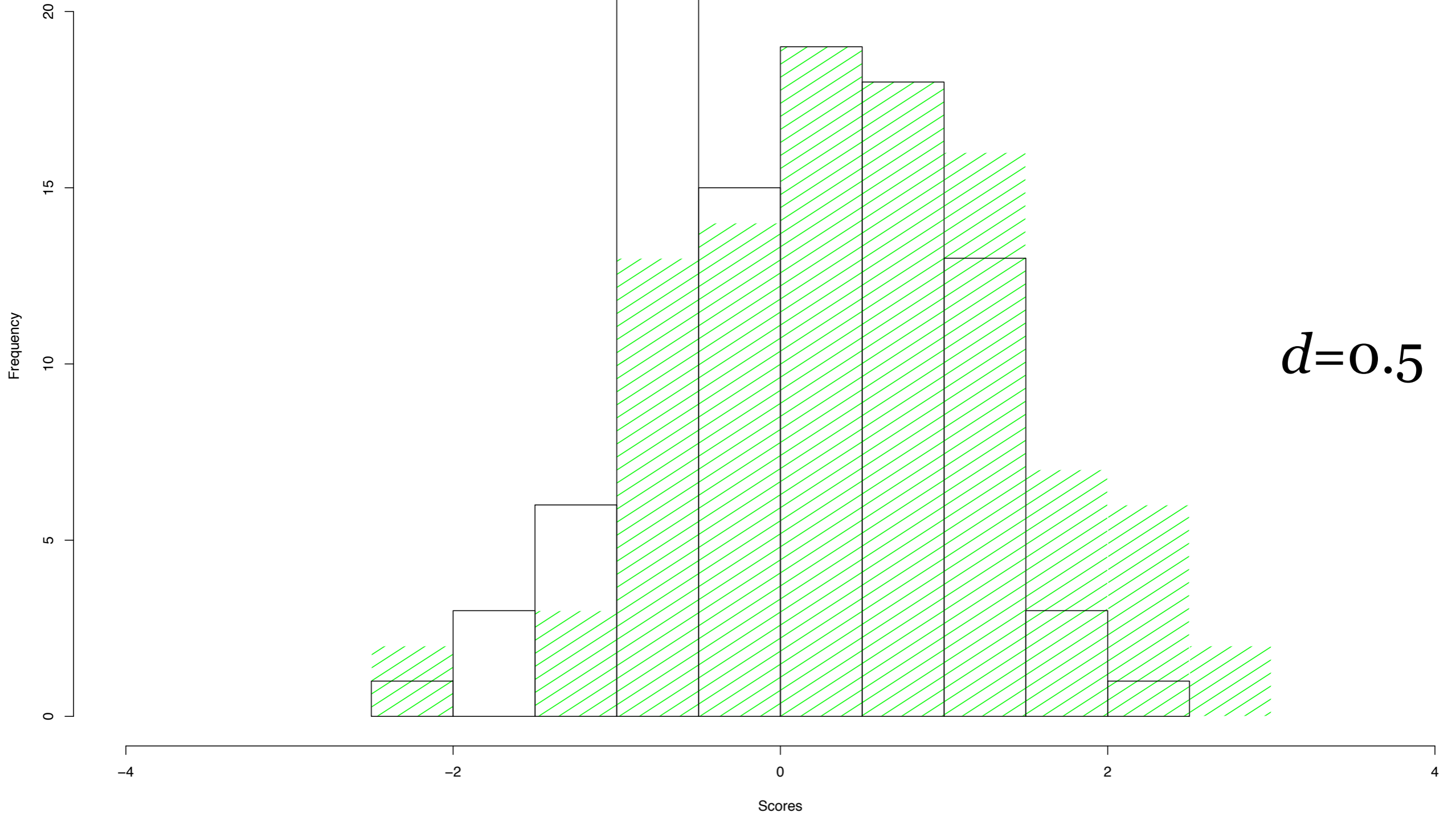
$\sigma_A, \sigma_B$ : standard deviation of the scores for the two groups being compared

Small Effect Size

$d=0.2$

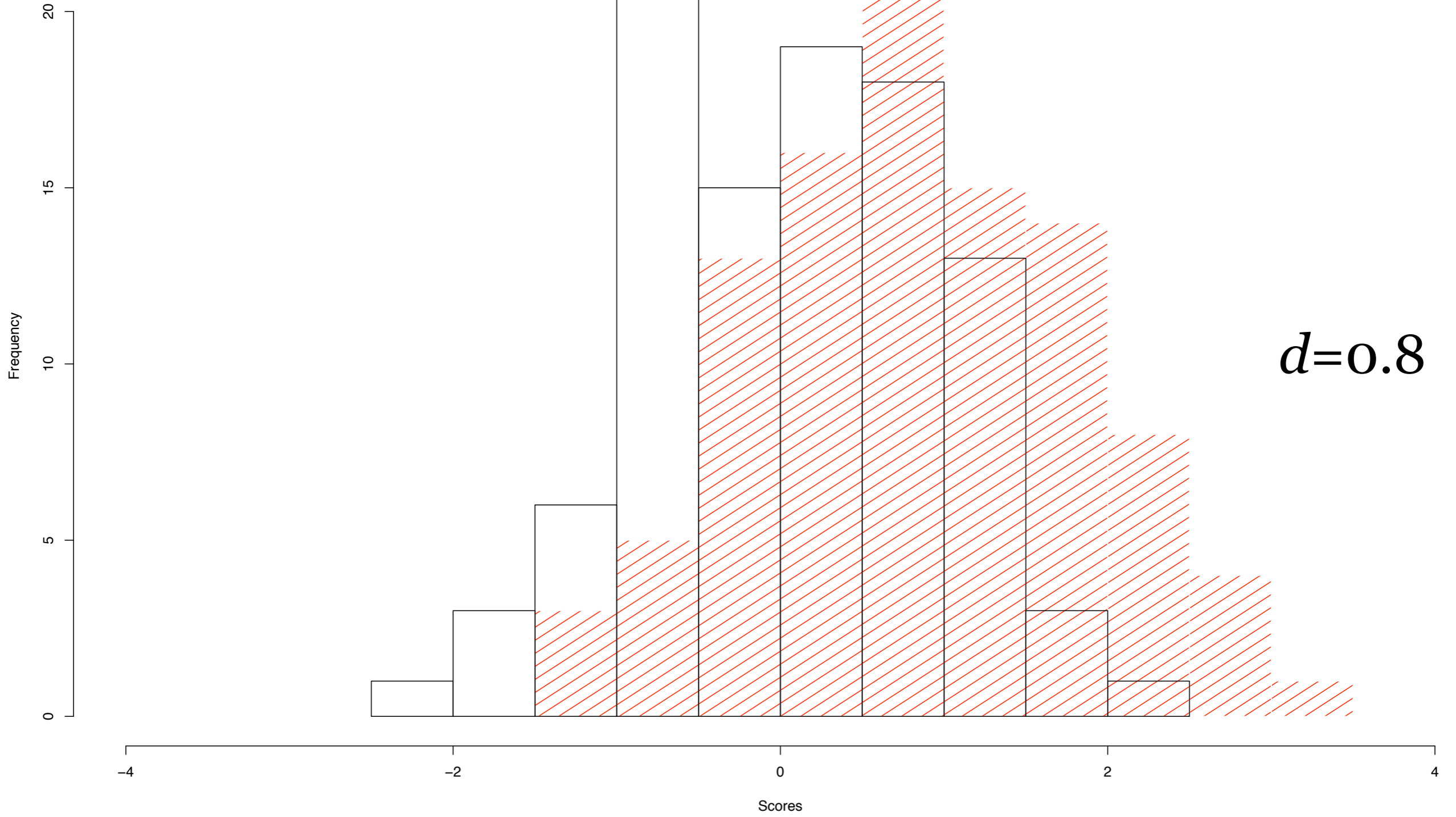


Medium Effect Size





Large Effect Size



$d=0.8$

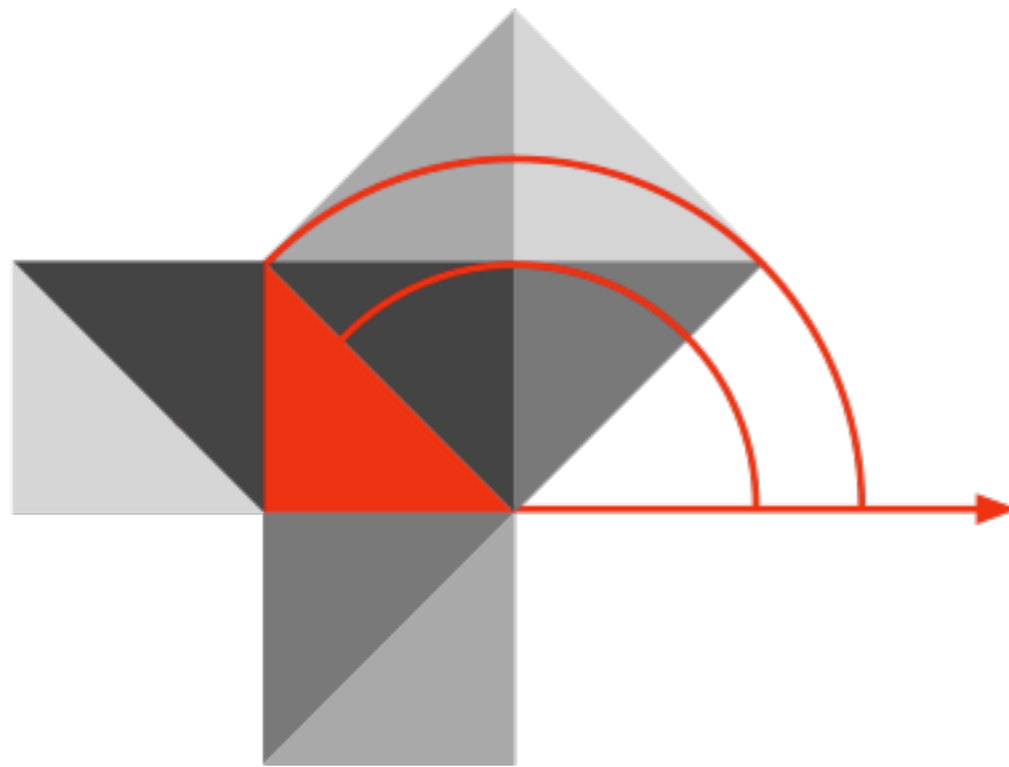
# Resources

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- J. Myron Atkin, Paul Black, and Janet Coffey (Eds.), *Classroom Assessment and the National Science Education Standards*. National Academies Press. (2001) Online at: [http://www.nap.edu/catalog.php?record\\_id=9847](http://www.nap.edu/catalog.php?record_id=9847)
- Richard J. Stiggins, Judith A. Arter, Jan Chappuis, and Stephen Chappuis, *Classroom Assessment for Student Learning: Doing it Right - Using it Well*. Assessment Training Institute. (2004)
- “ConcepTests”. *Starting Point – Teaching Intro-Level Geoscience*. (2003-2010) Online at: <http://serc.carleton.edu/introgeo/interactive/conctest.html>
- Phil Brookhouse, “Why Wait for the Science Test?” Workshop offered at the *Pictures Sounds Numbers Words Online Conference*. (May 2009) Online at: <http://mltiolc.wordpress.com/workshop-schedule/workshop-25/>
- Marija Cubric, “Using Wikis for Summative and Formative Assessment”. *REAP International Online Conference on Assessment Design for Learner Responsibility*. (May 2007) Online at: <http://www.reap.ac.uk/reap07/ConferenceSessions/Theme2Greatdesignsforassessment/Web20pedagogicdesign/tabid/279/Default.html>
- Trevor Hawkes, “Using wikis, and only wikis, to teach and assess an advanced mathematics module”. *E-Learning in Mathematical Subjects (ELMS)*. (May 2009) Online at: <http://www.elms.org.uk/previous/may2009>
- Lorin W. Anderson and David R. Krathwohl (Eds.), *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom’s Taxonomy of Educational Objectives, Complete Edition*. Longman. (2000)
- David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia. *Taxonomy of Educational Objectives: Book 2 - Affective Domain*. Addison-Wesley. (1999)
- R.H. Dave, “Taxonomy of Educational Objectives and Achievement Testing”. *Developments in Educational Testing: The Proceedings of an International Conference Held Under the Aegis of the Pädagogisches Zentrum, Berlin*. University of London Press. (1969)
- Robert Coe, “It's the Effect Size, Stupid: What effect size is and why it is important”. Paper presented at the *Annual Conference of the British Educational Research Association*. (September 2002) Online at: <http://www.leeds.ac.uk/educol/documents/00002182.htm>

# Hippasus

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<http://hippasus.com/rrpweblog/>  
[rubenrp@hippasus.com](mailto:rubenrp@hippasus.com)

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