Description: Forms of Justification

Forms of Justification Summary:

Students use many different forms of justifications, including empirical evidence (McNeill & Krajcik, 2012), science ideas (Osborne et al., 2004), appeals to authority, plausible mechanisms, and prior experiences (Sandoval & Cam, 2011). While students may use many different forms of justification, some forms are more accepted within the scientific community. One example is the preference for data as a form of justification (Sandoval & Cam, 2011). While another form of justification, such as science ideas or an appeal to authority, used in combination with empirical evidence can serve to further strengthen the argument, the value of these other forms of justification diminish when they stand-alone. In this project we present a way to measure students' abilities to critique the forms of justification in reading, writing, and talking tasks.

Definition of Justifications:

Empirical evidence—using observations or measurements to support the claim
Science ideas—using scientific concepts that support the claim
Authority—appealing to what an expert or scientist said to support the claim
Prior experiences—appealing to something students have previously seen or felt to support the claim
Plausible mechanisms—contriving a process (mechanism) to make sense of a phenomenon, but is not necessarily scientifically accurate

References

McNeill, K. L., & Krajcik, J. (2012). *Supporting grade 5–8 students in constructing explanations in science: The claim, evidence and reasoning framework for talk and writing*. Upper Saddle River, NJ: Pearson.

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Sandoval, W. A., & Cam, A. (2011). Elementary children's judgments of the epistemic status of sources of justification. *Science Education*, 95(3), 383-408.