

## Views on the Nature of Science (VNOS) Interview Protocol

1. What is an experiment?
2. Does the development of scientific knowledge require experiments? Please explain.
3. What is a theory?
4. After scientists have developed a scientific theory (e.g. atomic theory) does the theory ever change?
5. Scientists perform experiments and investigations when trying to find answers to the questions they put forth.
  - A. Do scientists use creativity and imagination during their investigations?
  - B. Why or why not?
  - C. If yes, at which stages of investigation?

*The questions were followed by prompts for additional information when deemed necessary by the researcher.*

*Source: (Russell & Weaver, 2010, adapted from Abd-El-Khalick & Lederman, 2000 and Lederman, Abd-El-Khalick, Bell, & Schwartz, 2002).*

## References

- Abd-El-Khalick, F., & Lederman, N. G. (2000). The Influence of History of Science Courses on Students' Views of. *Journal of Research in Science Teaching*, 37(10), 1057-1095.
- Lederman, N. G., Abd-El-Khalick, F., Bell, R. L., & Schwartz, R. S. (2002). Views of Nature of Science Questionnaire: Toward Valid and Meaningful Assessment of Learners' Conceptions of Nature of Science. *Journal of Research in Science Teaching*, 39(6), 497-521.
- Russell, C. B., & Weaver, G. C. (2010). A comparative study of traditional, inquiry-based, and research-based laboratory curricula: impacts on understanding of the nature of science. *Chemistry Education Research and Practice*, 12, 57–67.  
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