Intelligence

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This chapter offers suggestions for in-class activities, homework assignments, and resources that psychology and education professors can use to engage students in learning about the complex and controversial topic of human intelligence. It is rare to find intelligence-related activities in the literature, perhaps because theories of intelligence usually rely on abstractions and statistical models that do not easily lend themselves well to experiential approaches. Moreover, there is the danger that in-class activities may oversimplify complicated material, leading students to develop misconceptions and/or overgeneralizations. This is especially true in undergraduate courses where students may have little or no background in psychology or psychometrics before being introduced to this topic. The following activities were selected because they have proven (at least anecdotally) useful as preliminary steps in longer pedagogical processes. Careful attention was paid also to the needs of faculty in schools and colleges of Education, who are preparing future teachers to understand the relevance of intelligence theories for their future classroom practice.

Multiple Intelligence Activity for Pre-service Teachers

Objective: To help teacher education students experience some practical pedagogical consequences of Gardner's (1983/2003) multiple intelligence theory.

Students use a self-rating scale (like the one described below) to identify their strongest and weakest intelligences based on Gardner's theory. They are then placed in groups according to their strongest intelligence. For example, students who believe they are strongest in spatial intelligence are placed together. Each group is then given an unrelated topic that they might teach to a group of their own students in the future (e.g. causes of the civil war). Each group must come up with three ways to teach their assigned topic to students who share their strongest intelligence. For example, teacher education students in the strong spatial intelligence group must design three pedagogical strategies which use spatial intelligence to teach causes of the civil war. This is generally a relatively easy task, as the assignment closely aligns with their personal strengths.

Students are then re-grouped by their weakest intelligence. For example, students who believe they are weakest in spatial intelligence are placed together. The new groups are then given another topic that they might teach in the future. They must then come up with three ways to teach their assigned topic to students whose strongest intelligence is their weakest. For example, the future teachers in the weak spatial intelligence group must teach causes of the civil war in spatial ways. This task is usually substantially more difficult since it targets an area of weakness. The class should come together at the end to debrief.

Multiple Intelligence Self Rating Scale

Objective: To help students identify their multiple intelligence profile.

This resource provides a self-rating scale students can use to rate their strengths and weaknesses using Gardner's Multiple Intelligence Theory (1983/2003). Students are encouraged to reflect about their strengths in terms of their past life experiences and future career goals. Existential intelligence is not included in the rating scale.

- Sternberg, R. J. and Williams, W. (2002). Instructor's resource manual for *Educational Psychology*. Boston: Allyn and Bacon.

Personal Definition of Intelligence

Objective: To introduce students to the challenges of defining and measuring the construct of intelligence.

In this activity, readers think of the most intelligent person they know (living or dead, friend, relative, or famous person). They are then asked to write a list of characteristics that make this person "intelligent." When they have completed their list, they use it to create a personal definition of intelligence by filling in the blank, "Intelligence is_____ ". The chapter then suggests that students compare responses to look for similarities and differences. This small activity could be expanded into a larger lesson in several ways:

1. Students could explore research on lay definitions of intelligence in the U.S. and other countries (e.g., Lim, Plucker, & Im, 2002). This could introduce a discussion of varying conceptions of intelligence formulated by psychometricians and other experts, or cross-cultural comparisons of definitions of intelligence. Students can then be directed to the History of Intelligence Theory and Testing Web site, described below. Personal definitions of intelligence provided by prominent contemporary intelligence theorists are provided there.

2. Students could be encouraged to share some of the characteristics they listed when preparing their personal definitions in order to create a class construct of intelligence, which would be written on the board. This highlights the controversial nature of many of the items. For example, "creativity" is often included on the students' lists, as well as less intuitive items like "kindness." In addition, this activity provides opportunities to explain what a psychological construct is, and also to point out/draw out complexities, such as (a) each item on the construct is also a construct and (b) difficulties in defining and "measuring" each item written on the board. A ruler could be used as a prop to illustrate the difference between measuring the dimensions of a concrete and observable object (such as a desk in the classroom), and "measuring" the construct(s) on the board. This class discussion can take up to 2 hours of class time. In advanced classes, this discussion can follow from an introduction to the normal curve and a lecture about test norming. For homework, students can investigate differing definitions of human intelligence, and/or write a paper defending their personal definition.

- Esping, A., & Plucker, J. A. (2007). Theories of intelligence. In K. R. Stephens and F. A. Karnes (Eds.), *Achieving excellence: Educating the gifted and talented* (pp. 36-48). New York: Prentice Hall.

History of Intelligence Theory and Testing Web Site (http://www.indiana.edu/~intell)

Objective: To provide teachers, researchers and students with an online "textbook" focusing on the history of intelligence theory and testing.

This Web site developed at Indiana University provides biographical profiles of individuals who have influenced the development of intelligence theory and testing, in-depth articles exploring current controversies related to human intelligence, and an interactive chronological map. Highlights of the site include videotaped interviews with prominent intelligence theorists discussing their influences, personal definitions of intelligence, and their most important contributions. The "Resources for Teachers" section includes several syllabi from intelligence courses taught by leaders in the field.

- Plucker, J. A. (Ed.). (2003). Human intelligence: Historical influences, current controversies, teaching resources. Retrieved [July 29, 2010], from http://www.indiana.edu/~intell

Intelligence Treasure Hunt

Objective: To introduce students to the scope of material available on the History of Intelligence Theory and Testing Web site (http://www.indiana.edu/~intell). The following is a previously unpublished activity created by Jonna Kwiatkowski of Mars Hill College:

Your mission today is to complete the following tasks with your team. The team that has the most correct tasks completed in time will be the winner. This website will be most useful to you in your quest: http://www.indiana.edu/~intell/index.shtml

1. Burt was influenced by the cousin of the first person you need to identify.
2. What is the definition of intelligence offered by the person identified for question #1?
3. The above definition of intelligence is a "Hot Topic" for debate even today. In particular, a book based on the name of everyone's favorite statistical distribution has received a lot of attention. What is the title and authors for this book? Why is the book controversial?
4. You know you've found the right book for question #3 if Stephen Jay Gould criticized it. What is the example SJ Gould uses to argue against genetics and IQ?
5. Question #1 includes the name of a very controversial researcher of intelligence. He influenced a lot of scientists, but why might they have been led astray in listening to him?
6. Another great controversial hot topic describes a graduate student who debunked the theories of his mentor and a character from question #1. Who was the graduate student, and what did he find?
7. Most of your scavenging has been related to two members of the Modern Foundations group. Who is the last member of this group and why is he important to psychology?
8. A famous 18th century composer is the focus of another hot issue. List the fallacies from this topic.

***Testing and Intelligence* Video (2001)**

Objectives: To introduce students to some of the historical, cultural, and psychometric contexts of contemporary intelligence theory and testing.

This 25 minute video hosted by psychologist Philip Zimbardo explores the development of intelligence theory and testing, with emphasis on test bias and stereotype threat. It features interviews with

eminent psychologists including Howard Gardner and Robert Sternberg. The video can be streamed live, or purchased from Annenberg Media. Accompanying Web resources include an excerpt from Dr. Gardner's interview, and a list of key terms.

- Testing and Intelligence available at: http://www.learner.org/discoveringpsychology/16/e16expand.html

Using Intelligence as a Unifying Theme in a Cognitive Psychology Course

Objective: To demonstrate how individuals who teach courses in cognitive psychology can organize their syllabus based on the unifying theme of human intelligence.

Sternberg and Pardo (1998) argue that the construct of intelligence can be useful as a unifying theme in cognitive psychology courses, which typically cover such topics as perception, working memory, and information processing. The authors provide five collaborative classroom activities to facilitate this goal:

(1) A cognitive analysis of an outdated version of an intelligence test,
(2) generation of a new intelligence test based on contemporary cognitive theory,
(3) linking factorial and cognitive theories by identifying cognitive theories underlying psychometric factors,
(4) identifying the cognitive processes inherent in their everyday adaptive activities, and
(5) identifying the cognitive processes underlying everyday adaptive activities in diverse cultures.

The authors suggest research articles to support each activity.

- Sternberg. R. J., & Pardo, J. (1998). Intelligence as a unifying theme for teaching cognitive psychology. *Teaching of Psychology, 25(4),* 293-296.

Using Online "Intelligence" Tests

Objective: To practice using test validation criteria.

Students can be asked use what they have learned about intelligence theories and testing to critically evaluate the validity of online tests that purport to measure intelligence or IQ. This can be done at a very simplistic level for undergraduate students (who often believe that these are "real" intelligence tests) or at a more sophisticated level for advanced students who are learning about test validity. Online "intelligence" tests can be found easily by entering "IQ test" or "intelligence test" in any browser search engine. Students can be asked to discuss their conclusions in groups during class time, or to submit their responses in a formal paper.

Santrock's (2003) Educational Psychology

Objective: To practice analyzing real-world contexts based on intelligence theories.

This resource suggests three possible activities. First, students can think of an activity they have participated in during the last 24 hours, and then analyze it in terms of Sternberg's Triarchic Theory (1985) or Gardner's Multiple Intelligence Theory (1983/2003). Second, students can observe an educational setting, and then analyze the types of intelligence that are valued in the classroom, emphasizing whether these values are explicit or implicit in the curriculum (several guiding questions are provided). Third, students can identify several of their own strengths and weaknesses as they relate to Gardner's Multiple Intelligence theory.

- Santrock, J. W. (2003). Instructor's manual to accompany *Educational Psychology* (2nd ed.). (Chapter 4 section, from 4.1-4.11, no page numbers included). Boston: McGraw Hill.

A Survey of How Intelligence Testing is Taught in APA-Accredited Programs

Objective: To introduce college faculty to some typical processes and procedures for teaching courses on intelligence testing.

This article summarizes standard practices for teaching intelligence testing in APA accredited programs in school and clinical psychology. It discusses typical class requirements, instructional practices, and assessment strategies used by the university professors completing the survey. Most faculty members required students to practice administering the latest versions of the Wechsler and Stanford Binet scales. Many instructors also required students to observe others administering the exams, and conduct fabricated protocols during class time. Two-way mirrors and videotaping kits wereused for evaluation purposes. Course assessments included administering tests to practice subjects, writing reports, and taking examinations.

- Cody, M. S., & Prieto, L. R. (2000). Teaching intelligence testing in APA-Accredited programs: a national survey. *Teaching of Psychology, 27*, 190-194.

References

Gardner, H. (1983/2003). *Frames of mind. The theory of multiple intelligences.* New York: Basic.

Lim, W., Plucker, J., & Im, K. (2002). We are more alike than we think we are: Implicit theories of intelligence with a Korean sample. *Intelligence, 20*, 185-208.

Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence.* New York: Cambridge University Press.