

USING RASCH SCALING METHODS TO DESCRIBE AND REPORT STUDENT ACHIEVEMENT OF INTENDED OUTCOMES

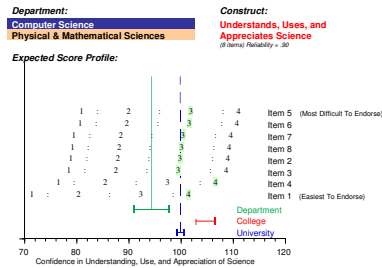
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Assessment Conference of the
American Association for Higher Education
Denver, CO
June, 2001

Rasch Scaling procedures were used to perform the following tasks:

1. Conduct item and scale analyses in order to make data-based decisions about which items to retain and which to revise or delete.
2. Construct parallel forms of each scale based on item calibrations and reliability estimates.
3. Compute a “person measure” for each respondent on each of the resulting 24 constructs to obtain an estimate of the degree to which each individual respondent possessed the trait measured by a particular scale.
4. Compute an expected score profile for each department and college that summarized how alumni from their department responded to individual items and scales

Understands, Uses, and Appreciates Science

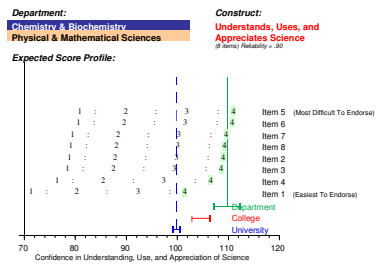


Summary Statistics:

Department	N	Mean	Std Error of Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Department	76	84.3	1.2	81.9	86.7
College/School	81	84.4	0.9	81.8	86.6
University	977	88.8	0.3	88.2	100.4

Shaded numbers represent department median item responses. Confidence intervals (95% level) are displayed below the items at the university, college, and department levels.

- Items:** How confident are you in your ability to:
1. Understand articles about scientific topics and issues written for non-professionals in magazines such as Nature, Science, Scientific American, Smithsonian, Discover, etc.
 2. Investigate an unresolved issue using methods of scientific inquiry.
 3. Critically evaluate reports of scientific research published in newspapers and news magazines.
 4. Relate scientific principles to everyday life.
 5. Explain complex scientific principles in ways someone without training could understand.
 6. Identify the assumptions which underlie traditional scientific approaches to investigation.
 7. Identify practical and conceptual implications of the findings of scientific approaches to investigation.
 8. Identify the limitations of scientific methods for answering questions of values and ethics.
- 1=Not Very Confident, 2=Somewhat Confident, 3=Quite Confident, 4=Extremely Confident



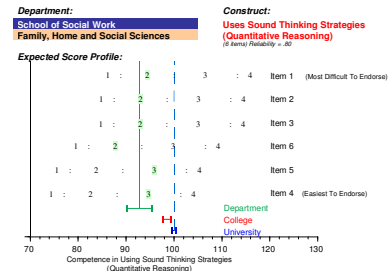
Summary Statistics:

Department	N	Mean	Std Error of Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Department	91	79.8	1.3	77.2	82.3
College/School	98	80.4	0.9	78.4	80.5
University	977	88.8	0.3	88.2	100.4

Shaded numbers represent department median item responses. Confidence intervals (95% level) are displayed below the items at the university, college, and department levels.

- Items:** How confident are you that you can successfully perform each of the following at a college general education level?
1. Understand articles about scientific topics and issues written for non-professionals in magazines such as Nature, Science, Scientific American, Smithsonian, Discover, etc.
 2. Investigate an unresolved issue using methods of scientific inquiry.
 3. Critically evaluate reports of scientific research published in newspapers and news magazines.
 4. Relate scientific principles to everyday life.
 5. Explain complex scientific principles in ways someone without training could understand.
 6. Identify the assumptions which underlie traditional scientific approaches to investigation.
 7. Identify practical and conceptual implications of the findings of scientific approaches to investigation.
 8. Identify the limitations of scientific methods for answering questions of values and ethics.
- 1=Not Very Confident, 2=Somewhat Confident, 3=Quite Confident, 4=Extremely Confident

Quantitative Reasoning

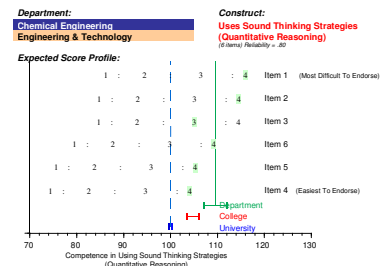


Summary Statistics:

Department	N	Mean	Std Error of Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Department	76	92.8	1.3	90.5	95.4
College/School	478	95.1	0.4	92.7	98.3
University	2034	100.0	0.2	99.6	100.4

Shaded numbers represent department median item responses. Confidence intervals (95% level) are displayed below the items at the university, college, and department levels.

- Items:** How confident are you in your ability to:
1. Compare and use descriptive statistics (mean, median, proportion, correlation coefficient, and measures of variability) to summarize numerical data.
 2. Make and test inferences about characteristics of a population based on information obtained from a sample.
 3. Recognize misuses of mathematical and statistical reasoning.
 4. Correctly interpret quantitative information presented in graphs and charts in newspapers, magazines, books, and advertisements, etc.
 5. Evaluate the arguments encountered in newspapers, magazines, books, at work, or elsewhere that are based on analysis of quantitative data.
 6. Conduct adjustments to support a conclusion you have reached based on analysis of numerical data.
- 1=Not Very Competent, 2=Somewhat Competent, 3=Quite Competent, 4=Extremely Competent



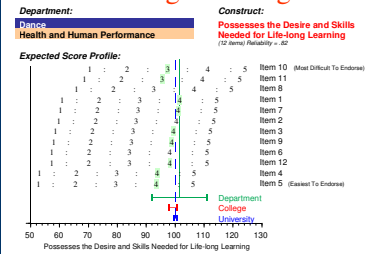
Summary Statistics:

Department	N	Mean	Std Error of Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Department	30	109.6	1.2	107.1	112.1
College/School	162	104.7	0.6	103.5	105.9
University	2034	100.0	0.2	99.6	100.4

Shaded numbers represent department median item responses. Confidence intervals (95% level) are displayed below the items at the university, college, and department levels.

- Items:** How confident are you in your ability to:
1. Compare and use descriptive statistics (mean, median, proportion, correlation coefficient, and measures of variability) to summarize numerical data.
 2. Make and test inferences about characteristics of a population based on information obtained from a sample.
 3. Recognize misuses of mathematical and statistical reasoning.
 4. Correctly interpret quantitative information presented in graphs and charts in newspapers, magazines, books, and advertisements, etc.
 5. Evaluate the arguments encountered in newspapers, magazines, books, at work, or elsewhere that are based on analysis of quantitative data.
 6. Conduct adjustments to support a conclusion you have reached based on analysis of numerical data.
- 1=Not Very Competent, 2=Somewhat Competent, 3=Quite Competent, 4=Extremely Competent

Desire and Skills for Life-long Learning

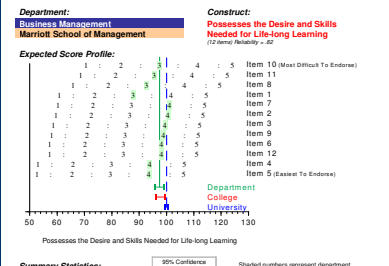


Summary Statistics:

Department	N	Mean	Std Error of Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Department	7	101.5	4.8	91.9	111.9
College/School	150	99.2	0.7	97.8	100.7
University	2042	100.0	0.2	99.6	100.4

Shaded numbers represent department median item responses. Confidence intervals (95% level) are displayed below the items at the university, college, and department levels.

- Items:** Indicate how well each of the following statements describes you:
1. I regularly explore new interests and ideas.
 2. When I study, I consciously choose or create an environment conducive to learning.
 3. I persist in searching for solutions to unresolved problems in spite of previous failures.
 4. I consistently enjoy learning new skills and ideas.
 5. I accept responsibility for my own learning, including what I have learned incompletely or noncomple.
 6. I consistently seek to clarify ideas that I don't understand.
 7. I consistently assess the new individual learning needs.
 8. I select and use different learning strategies (e.g., flash cards, practice, study sessions) to match what I am trying to do.
 9. I strive to develop new skills to keep up with change.
 10. I regularly monitor and evaluate the processes I use to study so that I can adjust them in order to learn more effectively.
 11. I allocate adequate time for accumulating learning tasks.
 12. I consistently try to improve my skills and develop new abilities so that I can serve more effectively.
- 1=Not At All, 2=Poorly, 3=Somewhat Well, 4=Quite Well, 5=Extremely Well



Summary Statistics:

Department	N	Mean	Std Error of Mean	95% Confidence Interval	
				Lower Bound	Upper Bound
Department	111	97.5	0.8	95.8	99.1
College/School	154	97.8	0.7	96.3	99.2
University	2042	100.0	0.2	99.6	100.4

Shaded numbers represent department median item responses. Confidence intervals (95% level) are displayed below the items at the university, college, and department levels.

- Items:** Indicate how well each of the following statements describes you:
1. I regularly explore new interests and ideas.
 2. When I study, I consciously choose or create an environment conducive to learning.
 3. I persist in searching for solutions to unresolved problems in spite of previous failures.
 4. I consistently enjoy learning new skills and ideas.
 5. I accept responsibility for my own learning, including what I have learned incompletely or noncomple.
 6. I consistently seek to clarify ideas that I don't understand.
 7. I consistently assess the new individual learning needs.
 8. I select and use different learning strategies (e.g., flash cards, practice, study sessions) to match what I am trying to do.
 9. I strive to develop new skills to keep up with change.
 10. I regularly monitor and evaluate the processes I use to study so that I can adjust them in order to learn more effectively.
 11. I allocate adequate time for accumulating learning tasks.
 12. I consistently try to improve my skills and develop new abilities so that I can serve more effectively.
- 1=Not At All, 2=Poorly, 3=Somewhat Well, 4=Quite Well, 5=Extremely Well