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A Methodology for Developing and Validating an Assessment Rubric

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A Methodology for Developing and Validating an Assessment Rubric

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Background

Rubrics are:

- Modality for structuring learning outcomes with a formal assessment protocol (Stevens & Levi, 2005)
- More effective when (1) academic concepts and dimensions focus on student learning skills, and (2) dimensions and grading scales consider professional input
- Assessment tools for equitability regardless of instructor or section
Rubrics development:

- Process or series of steps
  - Example: Public relations news release rubric at Columbia College Chicago.
Literature Review

- Basic primer (Stevens & Levi, 2005)
- Advice on feedback (Rucker & Thomson, 2003)
- Expert informants (McNamara, 1995)
- Methodology (Adler & Ziglio, 1996)
- Validity, reliability and fairness (Andrade, 2005; Messick, 1989)
Literature Review (Cont’d)

- (Steel, 2008; McCleneghan, 2006; & College Board, 2004) on PR news release writing
- (Rios, 2008; Tucker, et al, 1997; and McMaster & Espin, 2007) on background information
- (Hardin & Pompper, 2004) lament voids in writing skills for new hire PR practitioners
The Collaborate Professional/Academic Development and Validation of a Rubric

- Develop Learning Objectives (Course/Technique, etc.)
  - Identify a Representative Sample of Work that Demonstrates Learning Competency
    1. Review professional guidelines.
    2. Academic literature review
    3. Academic discussions
  - Develop an Evaluation Rubric for Uniformity of Teaching in All Sections
    1. Establish professional baseline
    2. Refine with academic input.
    3. Refine with professional interviews
  - Longitudinally Test Student Learning Against Professional Assessments
- Identify Problems with Sub-Optimal Learning Performance.
  - Improve the Construct Validity of the Rubric
  - Determine the Ability of the Rubric to Differentiate Submissions to the Rubric
  - Improve the Consistency of Rubric Teaching and Student Learning with Data Analysis to Further Validate the Rubric.
  - Test for Reliability of Multiple Graders to Develop Consistent Grades
Step 1 Develop Learning Objectives

Reflection stage

- Input sources
  - Faculty
  - Professional in the field
  - Certification and licensing guidelines of the profession
- Application to PR writing
Step 2  Identify a Representative Sample of Work

- Course objectives and related skills
- Select an assignment
- Review professional certification requirements
  - Example: PR news release
  - Why?
  - Example: Business field
Step 3  Develop an Evaluation Rubric for Uniformity of Teaching in All Sections

(Stevens & Levi, 2005) on skill and assignment objective

Then:

- Identify dimensions
- Develop grading scale
- Include collaborative input

Example:
- Fall 2005, PR writing rubric design
- Columbia College Chicago
Step 4  Longitudinally Test Student Learning Against Professional Assessments

- Establish a student learning baseline
- Retest student learning
- Measure areas of progress/regression.
  - Example: PR news release writing tests 2006 & 2007
Step 5  Identify Problems with Sub-Optimal Learning Performance

Identify:

- Areas of emphasis
- Student concerns
- Faculty issues
Step 5 (Cont’d) Application to PR Writing

Example

Faculty:

- Examined pedagogy
- Adopted consistency
- Agreed to use rubric as model
- Agreed to original content of rubric
- Recognized differences
- Recognized void in validation
Step 6  Improve Construct Validity of Rubric

Improved validity implies :

- Rubric dimensions apply equally in emphasis (weight) relative to the best judgments of academicians and professionals.
- Judgments should be examined and reconciled
Step 6 (Cont’d) Application of Delphi Method: Weights for Rubric

- Road to consensus: professional PR practitioners
Step 6 (Cont’d) Rubric Weights: PR Professionals and Faculty

<table>
<thead>
<tr>
<th>Rubric Category</th>
<th>Professional/Practitioner Rating</th>
<th>Faculty Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  Are the key items organized effectively?</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>2.  In the headline/lead combination, is the message clear and compelling?</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>3.  In the headline/lead combination, is the news angle compelling?</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>4.  Does the news release use a convincing journalistic style?</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>5.  Are the basics in place – grammar, sentence and paragraph mechanics?</td>
<td>20</td>
<td>15</td>
</tr>
</tbody>
</table>
Step 7  Determine Rubric’s Ability to Differentiate Between Submissions

<table>
<thead>
<tr>
<th></th>
<th>PaperX</th>
<th>PaperY</th>
<th>Averages</th>
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<tbody>
<tr>
<td>Professionals (n=5)</td>
<td>45.4</td>
<td>77.3</td>
<td>61.35</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td>Faculty (n=6)</td>
<td>42.6</td>
<td>78.74</td>
<td>60.67</td>
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<td></td>
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<td>N=6</td>
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<tr>
<td>Averages</td>
<td>43.9</td>
<td>78.05</td>
<td>60.97</td>
</tr>
</tbody>
</table>

Two-way ANOVA: Grade versus Fac. vs. Prof., X or Y

Source       | DF | SS   | MS   | F    | P     |
--------------|----|------|------|------|-------|
Fac. vs. Prof.| 1  | 2.8  | 2.80 | 0.01 | 0.910 |
X or Y        | 1  | 6915.6 | 6915.61 | 32.69 | 0.000 |
Interaction   | 1  | 25.2 | 25.22 | 0.12 | 0.734 |
Error         | 20 | 4230.7 | 211.53 |      |       |
Total         | 23 | 11174.3 |       |      |       |

S = 14.54     R-Sq = 62.14% R-Sq(adj) = 56.46%
Step 7 (Cont’d) Numerical Analysis of Data

- Significant differences existed in papers.
- No significant differences in mean grades
- Conclusion:
  - Academic graders on the average provide a realistic grading perspective relative to what students need in workplace.
- The standard deviation of the model of 14.54 indicates a precision of grading using this model on any one paper would be too large.
Step 7 (Cont’d) Further Statistical Analysis

- The variance of grades administered by faculty was significantly lower than by professionals ($p = .01$)
  - Conclusion: The precision of assessment is better when only faculty grade papers.

- The variance of grades for better papers was significantly lower than poorer papers ($p = .04$)
  - Conclusion: Poor papers need proper assessment without discouraging student learning.
When good papers are graded, the best estimate of the precision of assessment was $\pm 5.2$ points with 68% confidence (within a letter grade in $2/3$ of the cases).

When poor papers are graded, the best estimate of the precision of assessment was $\pm 14.36$ points with 68% confidence ... far from acceptable.

Improved precision in assessment is indicated as necessary.
Step 8  Improve Consistency of Assessment

- Discussions of rubric terms and applications need further discussion and clarification across all instructors.
  - Common format of numerical feedback.
  - Common presentation for rubric in all sections
- Use Delphi Method for examining variability in assessment of a common paper.
Step 8 (Cont’d)  Improve Rubric Consistency and Precision

<table>
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<th>Instr.</th>
<th>1</th>
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<th>4</th>
<th>5</th>
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</table>

- Results of assessment of a common paper by all 9 instructors along with variance reduction when the Delphi Method increases common assessment understanding.
Step 8 (Cont’d) Improve Rubric Consistency and Precision

- Precision of assessment increases from 1\textsuperscript{st} to 2\textsuperscript{nd} assessment (p = .082 for n = 9).
- Precision on 2\textsuperscript{nd} grading results in an assessment precision of ± 6.8 with 95\% confidence.
Conclusions

- Processes to develop and improve rubric validation.
- Consider differences between practicing professionals and academicians
- Teaching focus:
  - Learning outcomes
  - Student & faculty confidence
  - Reliability & precision