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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
Background (Cont’d)

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)
(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

1. 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

2. Identify Problems with Sub-Optimal Learning Performance.
   - 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>
</tr>
</thead>
<tbody>
<tr>
<td>Professionals (n=5)</td>
<td>45.4</td>
<td>77.3</td>
<td>61.35</td>
</tr>
<tr>
<td>Faculty (n=6)</td>
<td>42.6</td>
<td>78.74</td>
<td>60.67</td>
</tr>
<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

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fac. vs. Prof.</td>
<td>1</td>
<td>2.8</td>
<td>2.80</td>
<td>0.01</td>
<td>0.910</td>
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<tr>
<td>X or Y</td>
<td>1</td>
<td>6915.6</td>
<td>6915.61</td>
<td>32.69</td>
<td>0.000</td>
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<tr>
<td>Interaction</td>
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<td>25.2</td>
<td>25.22</td>
<td>0.12</td>
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<td>Error</td>
<td>20</td>
<td>4230.7</td>
<td>211.53</td>
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<td></td>
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<tr>
<td>Total</td>
<td>23</td>
<td>11174.3</td>
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</tr>
</tbody>
</table>

\[ S = 14.54 \quad R-Sq = 62.14\% \quad R-Sq(adj) = 56.46\% \]
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.
Step 7 (Cont’d)  Further Statistical Analysis

- 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 2/3rds 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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<tr>
<th>Instr.</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<tr>
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<td>79</td>
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<td>2nd</td>
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<td>87</td>
<td>90</td>
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<td>Consensus</td>
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<td>88</td>
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<td>88</td>
<td>88</td>
<td>88</td>
<td>88.00</td>
<td></td>
</tr>
</tbody>
</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 1st to 2nd assessment ($p = 0.082$ for $n = 9$).
- Precision on 2nd grading results in an assessment precision of $\pm 6.8$ 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