

INTRODUCTION

Lea(R)n offers a grading protocol through which educators can share valuable insights on the classroom education technologies they encounter on a daily basis. The design and research to create and maintain a valid and valuable grading protocol for educators is a critical portion of educators providing feedback in a useful and systematic way. This system must consist of a manageable number of feedback areas, and each of these areas must be important factors that determine the utility of a given technology. Further, the grading protocol must utilize a systematic scoring algorithm that aggregates educators' insights into interpretable and actionable grades. Thus, Lea(R)n engaged in a scientific process of identifying, defining, and measuring the initial set of feedback areas, followed by a process of developing a proprietary scoring solution to make scores meaningful. The purpose of this report is to briefly summarize the methods, results, and ultimate implications for the Lea(R)n grading protocol.

METHOD & RESULTS

Lea(R)n used a scientific approach to develop a set of feedback areas (or factors) that can be used to grade education technologies to best differentiate effective technologies from the ineffective ones. First, Lea(R)n identified the initial set of factors based on professional experience, a review of extant rating systems, and interviews and focus groups with education experts, education technology experts, and educators. Lea(R)n then formed construct definitions for each factor. To establish the content validity of the initial factors, a set of subject matter experts (SMEs) rated each factor on a scale from 1 (not necessary) to 3 (essential) and also provided qualitative feedback. Based on the results, Lea(R)n retained 13 core factors for the next phase.

Using the 13 core factors, Lea(R)n generated items to measure each factor and built a survey that also included demographic variables, covariates, controls, and outcomes. Lea(R)n sent the survey to a convenience sample of educators (N = 103). Lea(R)n first conducted factor analyses to determine whether the measurement model and properties of the items and factors matched the underlying theory.

For instance, items should reliably measure their respective factors. Lea(R)n also examined descriptive statistics, the reliability of items and factors, the correlations among items and factors, and the extent to which items and factors related to outcomes. Ultimately, Lea(R)n retained psychometrically sound factors and used the items that were the best and most reliable indicators of the core factors for the Lea(R)n rating system. Filtering mechanisms were also retained, based on the research, to maximize accuracy, validity, and utility of reported usage by respondents. Then, based on the results, Lea(R)n developed a sound proprietary algorithm that normalizes and standardizes the results, while producing the best prediction of important outcomes.

CONCLUSION

Lea(R)n used a rigorous scientific approach to develop a set of core feedback areas and a scoring system for the Lea(R)n grading protocol that is grounded in and supported by both rational and empirical evidence. With the help of SMEs and educators who will ultimately use the Lea(R)n grading protocol, Lea(R)n hypothesized factors that should be important for determining the utility of education technologies. Then, Lea(R)n empirically validated the core feedback areas using data-driven evidence to substantiate the hypotheses. As educators interact with the Lea(R)n grading system, Lea(R)n will continue to monitor the reliability and validity evidence for the core feedback areas as well as the proprietary scoring protocol.

Research led by Lea(R)n Senior Research Officer
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Research-Based Rubric for Grading EdTech

CONTEXT - Gathering insights in context improves feedback and understanding.

1) Duration: For how long have you used this tool?

3) Student Group: With which student group(s) do you use this tool?

2) Frequency: How often do you use this tool?

4) Purpose: For what purpose do you use this tool?

CRITERIA



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|---|---|---|---|--|--|
| Ease of Use & Navigation | Difficult to Start; Difficult to Use; Significant Practice Required | Difficult to Start; Confusing to Use; Some Practice Required | Confusing to Start; Moderately Easy to Use; Light Practice is Helpful | Moderately Easy to Start; Easy to Use; No Practice Necessary | Easy to Start; Easy to Use; No Practice Necessary |
| Features: Comprehensiveness & Effectiveness | Features are Ineffective & Do Not Address Needs | Features Often Do Not Address Specific Needs; Limited Product Utility | Overwhelming or Insufficient Feature Set; Average Product Quality | Somewhat Cohesive Feature Set that Meets Most Needs | Cohesive, Powerful & Effective Feature Set; High Product Utility |
| Content: Comprehensiveness & Accuracy | Inaccurate, Inappropriate or Insufficient Content | Questionable Accuracy; Insufficient Content; Differentiation Impossible | Mostly Accurate; Appropriate Content; Differentiation Possible | Accurate & Sufficient Content; Differentiation Included | Accurate & Comprehensive Content; Full Differentiation |
| Technical Merit <small>(e.g., Absence of Glitches)</small> | Non-Functioning, Completely Unusable or Terminates Productivity | Significant Debilitating Technical Issue(s); Requires Assistance | Occasional Debilitating Technical Issue(s); Requires Assistance | Occasional Minimal Technical Issue(s); No Assistance Required | Zero Technical Issue(s); No Assistance required |
| Alignment with Learning Objectives & Standards | No Alignment with Intended Objectives; Revisions Impossible | Unclear Alignment with Learning Objectives; Many Revisions | Occasionally Aligned with Learning Objectives; Some Revisions | Generally Aligned with Learning Objectives; Revisions Unnecessary | Clearly Aligned with Learning Objectives; Revisions Unnecessary |
| Impact on Student Learning & Engagement | Zero or Negative Impact on Learning; Students Dislike the Tool | Slight Impact for Some Students; Not Engaging or Motivating | Moderate Impact on Some Students; Engaging & Motivating | Significant Impact on Some Students; Most Students Engaged | Strong Impact on All Students; Self-Directed and Engaged |
| Impact on Teaching Efficiency & Effectiveness | Zero or Negative Impact on Teaching Efficiency & Effectiveness | Zero Impact on Effectiveness; Some Boost in Efficiency | Some Improvements in Either Teaching Efficiency or Effectiveness | Moderate Improvements in Efficiency and Effectiveness | Substantial Positive Impacts on Efficiency and Effectiveness |
| Professional Development <small>(Quality and Amount Required)</small> | Substantial PD Required; PD is Nonexistent or Poor Quality | PD is Required; Available PD is of Minimal Value | Some PD is Required; PD Quality is Below Average | Minimal PD Required; Available PD is Satisfactory | No PD is Required; Available PD is Excellent |