

**Using Doctoral Evaluation Data as a Metric for Learning Outcome Assessment (LOA):
Implications for Improving Graduate Education**

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Introduction: Colleges and universities across the United States have been asked to carry out graduate program assessments as part of the accreditation process. The Middle States Commission on Higher Education expects that all graduate programs to develop program-level learning objectives, outcomes assessments, and program improvement plans. In that, Middle States Accreditation requires that all graduate degree programs articulate program learning objectives, show evidence of formal assessment measures, and show evidence that programs uses the data for program improvement.

Learning outcomes describe what students are expected to demonstrate and describes what students are able to demonstrate in terms of knowledge, skills, and values upon completion of a course or courses or a degree program (Osters and Tiu, 2008; Suskie, 2009). Student learning outcomes should clearly indicate the level and the type of competence required of graduates enrolled in a program, including depth of knowledge, abilities, values, and attitudes expected of a student in a graduate program (Banta, Jones, & Black, 2009; Kennedy, Hyland, and Ryan, 2007). These competencies are categorized into three levels or milestones during which the graduate students are expected to the knowledge, skills, and values. These include *Introductory (I)* milestone in which students are receivers of knowledge, and demonstrate comprehension and ability to apply knowledge within the field of study. In the *Practice (P) milestone*, students expand abilities to apply, synthesize, critique knowledge. Students begin development of higher order abilities of research and practice in creation of research proposals or project ideas. In *Demonstrate Mastery (D)* milestone, students demonstrate mastery of knowledge domain and proficiency in using skills to create substantial works in their fields. For each of these levels, the [State] university has identified goals, outcomes, assessment methods, and outcome criteria.

As in many graduate programs across the country doctoral dissertations are evaluated by the student committee members, including an external or outside member and [State] university is no exception. The outside member must complete a written evaluation of the dissertation by completing a form prescribed by the Graduate School. The evaluation is conducted at the time of the students' doctoral defense. The completed evaluations forms are sent to the Office of the Dean of the Graduate School who in turn sends it to the respective college associate deans of research and graduate education with copies made available to the chair of the doctoral committee and head of the graduate program. In this poster abstract, we use doctoral dissertation evaluation data as a metric for LOA for the *Demonstrate Master (D)* milestone.

Methodology: Between February 2012 and June 2016, the CAS Office of Research and Graduate Education received 132 dissertation evaluation forms completed by outside (external) members. The evaluation form consists of six items or criteria provided by the Graduate School. Collectively, these six items assess the quality, rigor; organization, writing, and level of scholarship presented in the dissertation (see Table 1 for description of items). The six items were rated using a scale 1=poor, 2=fair, 3=good, 4=very good, 5=excellent. Additionally, an overall rating was also completed using the scale 1=minimal quality, 2=average quality, 3=above average quality, and 4=true distinction. Descriptive statistics were used to summarize the data.

Results: A total of 96 graduate faculty advised or served as chair for the 132 doctoral student committees. A total of 62 faculty members served as outside or external members to evaluate the

doctoral dissertations. Agricultural Economics, Sociology and Education department had the highest number of completed evaluation forms (n=28), followed by Entomology and Agricultural and Biological Engineering (n=17 each), Food Science (n=16), Plant Sciences and Veterinary and Biomedical Sciences (n=13 each), and Ecosystem Science Management (n=10).

As shown in Table 1, overall, the means for the six items ranged from 3.56 (quality of writing) to a high of 4.23 (importance of the subject). The highest rating was for *importance of the subject* (M=4.23), followed by *potential for publishing the work* (M=4.01), and *originality/creativity of the work* (M=3.85). The lowest rated item was for quality of writing (M=3.56) followed by *organization and presentation of dissertation* (M=3.65). Table 1 also provides the spread of data for each of the anchors in the scale (poor to excellent).

Table 1:
Doctoral Dissertation Evaluation Ratings by Outside Members (n=132)

Criteria	Poor (%)	Fair (%)	Good (%)	Very Good (%)	Excellent (%)	Mean/SD
Importance of the subject	-	1	15	45	39	4.23/0.72
Originality/Creativity of the work	-	2	30	50	18	3.85/0.73
Quality of candidate's scholarship indicated in the dissertation	1	8	31	39	21	3.70/0.91
Potential for publishing the work	2	4	20	37	36	4.01/0.98
Organization and presentation of dissertation	1	13	29	35	22	3.65/0.99
Quality of writing	2	14	31	36	18	3.56/0.75

For the *overall rating* criterion, 25% of dissertations were rated as *true distinction*, 51.5% rated as *above average quality*, 21.2% *average quality*, and 2.3% *minimal quality*.

Conclusions and Recommendations: Overall, the ratings of outside doctoral committee members were positive across all criteria identified by the Graduate School and serves as a metric to demonstrate mastery. Potential exists for improvements in the areas of quality of writing and organization and presentation of dissertation. Given the fact that over 50% of the 132 graduate students were from non-English speaking countries, these findings are not surprising.

Graduate advisors and doctoral committee members should use these findings to improve graduate students' writing and presentation skills in their respective programs. We have shared this finding to all directors of graduate studies, department heads and graduate faculty in CAS. Additionally, the findings were shared with the Dean of the Graduate School at The Pennsylvania State University.

As a result of these findings, a number of professional development activities have been started and planned to improve graduate education, especially quality of doctoral dissertations. Examples include workshop on technical writing and presentation of scientific information, competitive grants writing workshops to all graduate students and. A new course to prepare graduate students for NSF-Graduate Research Fellowship Program is being offered in fall 2016 semester. The focus of this course is on writing as well as organizing and presenting research plan and writing broader impact.

References

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