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# Quality of Faculty Feedback and Its Effects on Learning and Educational Effectiveness of Online Master Degree Programs

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**Editor's Note**: Feedback plays an important role in all communication, and especially in learning. Its many values include motivation, positive and negative reinforcement and social recognition and engagement.

# Quality of faculty feedback and its effects on learning and educational effectiveness of online master degree programs Yoram Neumann, Edith Neumann, Shelia Lewis

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#### Abstract

This study assessed the unique contribution of quality of faculty feedback in the first course of online master degree programs, by itself, on a wide range of student educational effectiveness indicators: retention, degree completion, performance in the integrative capstone course, overall program GPA, and overall program time-to-degree while statistically controlling for the effects of student academic performance in the same first course. This assessment was conducted in the context of the Robust Learning Model with Spiral Curriculum. Using logistic regression and multiple regression models, the results of this study confirmed that not only the quality of faculty feedback was crucial to student learning and educational outcomes but this element was of utmost importance in the first core course in an online master degree program. The study presented several important conclusions and evidence for the improvement of online learning. One of the most promising paths for improving online degree program's educational effectiveness was the selection of faculty for teaching the core courses of the program.

#### Introduction

The quality of faculty feedback on student's learning activities played an important role in various studies in higher education and many of these studies found that effective feedback is crucial to student learning (Ackerman & Cross, 2010; Ferguson, 2011; Ghilay & Ghilay, 2015; Hattie & Thompson, 2007). High-quality faculty feedback is the single most dominant role in determining student academic performance (Hattie & Thomson, 2007). Other studies developed sustainable practices of quality feedback (Careless et al., 2011) and an entire program focused on feedback-based learning (Ghilay & Ghilay, 2015). Burksaitiene (2011) unequivocally concluded that, without the improvement of faculty feedback, student learning would not improve. Black & McCormick (2010) found a strong connection between the quality of faculty feedback and student self-reflective learning.

The quality of faculty feedback involved clear comments (Ferguson, 2011) with encouraging and constructive sentiments (Carless et al., 2011; Nicol & Macfarlane-Dick, 2006), pointing toward reducing the learning gap (Brown & Glover, 2006), developing the student self-assessment skill (Nicol & Macfarlane-Dick, 2006) and a prompt and timely faculty response (Poulos & Mahoney, 2008). Finally, the quality of faculty feedback had a strong effect on students' receptiveness and attitudes toward faculty feedback (Mulliner & Tucker, 2017).

The vast majority of the studies on faculty feedback involved traditional classroom instruction while online learning courses and degree programs have received considerably less attention, let alone studies of the effect of faculty feedback on online degree program educational effectiveness.

#### The role of faculty feedback in the robust learning model

One exception to the lack of presence of faculty feedback as a determinant of educational effectiveness in online education was the Robust Learning Model (RLM). The Robust Learning Model (Neumann & Neumann, 2010, 2016) and the revised Robust Learning Model with Spiral

Curriculum (Neumann, Neumann, & Lewis, 2017) included quality faculty feedback as part of the overall online learning experience. They developed a "multi-factorial model based on the basic belief that successful learning outcomes depend on multiple factors employed together in a holistic approach, which can be used to manage an entire university" (Neumann & Neumann, 2010, p. 28).

The pedagogy of the programs was one of the basic factors developed in the RLM and included multiple levels: university learning outcomes, degree program learning outcomes (PLOs), and course-level student learning outcomes (SLOs) (Neumann & Neumann, 2010). The main focus was on consistency across programs and courses, alignment of mission and goals of the university with those of the program, alignment of degree program learning outcomes with course level learning outcomes, and being hierarchical and exhaustive at a rigor commensurate with the degree level (Neumann & Neumann, 2010). A faculty committee assessed the degree to which the totality of the course SLOs was rigorously leading to the attainment of the PLOs (Neumann, Neumann, & Lewis, 2017).

The courses were developed as module-based across all degree programs. At the course level, students engaged in a variety of learning activities as follows:

Threaded Discussion

Case Assignment (Problem-Based Learning)

Signature Assignment

Self-Reflective Essay

In the self-reflective essay, students reflected upon what they learned or how they performed in the course by comparing those self-assessments with their own expectations or goals. Students were to address five items ranging from how they felt the course improved their knowledge, skills, and abilities to a self-report of whether course SLOs were achieved. The University used content analysis to assess the achievement of the SLOs in the Self Reflective Essays (Neumann & Neumann, 2010).

The last component in each course expressed throughout the various active learning engagements was the faculty feedback. The standards of conduct for faculty were (Neumann & Neumann, 2010):

Responsiveness (24-hour turnaround on email; 72-hour turnaround for grading assignments).

Flexibility with students on course and assignment deadlines.

Constructive and supportive feedback and communications with students.

Providing timely and constructive feedback (including text-based and audio) on students' assignments for each module.

Grading of all assignments and submitting final grades.

Engaging students in meaningful learning through discussions with their peers and faculty. Recently, the RLM was revised by introducing the spiral curriculum into the degree program's pedagogy (Neumann, Neumann & Lewis, 2017). Harden (1999) building on the work of Bruner (1960) defined the following four steps as the main characteristics of the Spiral Curriculum:

- 1. Topics were revisited throughout the curriculum with increased complexity.
- 2. There were increasing levels of difficulty and/or depth throughout the curriculum.
- 3. New learning was related to previous learning.
- 4. The learner's competence increased throughout the curriculum until the overall PLOs are achieved.

The first course in each degree program was designed as the main point of introduction to the subject matter. One criterion was to introduce the students, at the minimum, to 50% of the PLOs of the degree program. A curriculum map was designed for each program where subsequent courses were sequentially built where the PLOs are identified in each course as developed, practiced, mastered, and finally integrated. Specialty courses were the last part of the curriculum map and are organized into concentrations. In the final course (the Capstone) students were required to demonstrate the full mastery and integration of course PLOs. The result was a revised RLM with Spiral Curriculum, or in short, RLM-SC. Although all courses in the degree programs were important, the first and last courses played a critical role. The first course laid the framework and foundations of the degree program and key concepts. In the last course, students demonstrated their understanding, comprehension, application, and integration of all the competencies and program learning outcomes required for successful completion of the degree program.

Neumann, Neumann, and Lewis (2017), tested the full RLM-SC that was predicated on the pedagogical principle by repeating and increasing the complexity level of the program knowledge, comprehension, application, and mastery. The end result was a fully interlinked curriculum with cause-and-effect relationship from the first course through the final Capstone as well as various educational outcomes. The components of the first course in RLM-SC (Threaded Discussion, Case Assignment, Signature Assignment, Self- Reflective Essay, and the Quality of Faculty Feedback) were then the independent variables that can predict an array of educational effectiveness outcomes (Retention Rates, Mastery of Competencies in the Capstone Course, Degree Completion, Time-To-Degree, and Overall GPA).

The goal of this study was to assess the unique contribution of quality of faculty feedback on a

wide range of student educational effectiveness indicators: retention, degree completion, integrative capstone course performance (the culminating learning experience where students are required to demonstrate the attainment of all PLOs), overall program GPA, and overall program time-to-degree. Figure 1 below illustrates the conceptual framework for this study.



Figure 1. The unique contribution of first course quality of faculty feedback on degree program outcomes

### Method

#### Subjects

All students in non-clinical online master degree programs who could have graduated under the revised RLM-SC within three years from their starting date until the end of fall 2016 were included in this study for a total of 397 cases. Although this was the total population for the revised learning model it could serve as a sample for future students of the university as the university student demographics has been quite stable over time.

#### Measures

The variables for the first (and crucial) course in the degree program were measured as follows:

- 1. **Threaded Discussion Performance** (TDP) was assessed by the average grade that the instructor assigned to each of the student's required 16 unique postings throughout the course (twice per week). The grades (A-F) assessed the extent to which the student demonstrated: (a) the complete understanding, comprehension, and application of the key concepts and quality constructive feedback to other postings, (b) used citations to support opinions, interpretations, and facts, and (c) expressed new ideas in an articulated and concise form. The letter grades are transformed to the regular (0 to 4) scale.
- 2. **Case Analysis Performance** (CAP) was assessed by a rubric comprised of six areas. The first area was completeness where the case analysis needed to be complete in all aspects and a reflection all requirements. The second area was students' understanding of the topics and issues covered in the case. The third area was analysis, evaluation and recommendations where the rubric examined the extent to which the case analysis: (a) represented an insightful and thorough analysis of all issues identified in the case; (b) made powerful connections among the various concepts, and (c) supported opinions with strong arguments and evidence while presenting critical and objective interpretations. The fourth area was the accuracy and clarity of the case analysis. The last area was the completeness of the presentation, citations and bibliography. The CSP was assigned an A to F grade with the corresponding numerical interpretation.
- 3. The Signature Assignment Performance (SAP) was assessed by direct evidence that all the Student Learning Outcomes (SLOs) for the course (including skills and competencies) were fully demonstrated at all levels (knowledge, comprehension, application, critical thinking, communication and integration). The SAP was assigned an F to A grade with the corresponding numerical interpretation.
- 4. **Self-Reflective Learning** (SRL) was based on a Self-Reflective Essay that students completed at the end of each course. The students responded to five 5 statements in the self-reflective essays which included the following:
  - a. Descriptions of how the student felt he/she improved their knowledge, skills, abilities, and self through the course.
  - b. Evaluation of the work the student did during the session and explanations of ways he/she could have performed better.
  - c. Topics that the student did not understand or applied suggestions about how to improve the course materials on those topics.
  - d. Students self-reported measures regarding the future effects of what he/she learned in the course.
- 5. A student statement of whether or not he/she achieved the course outcomes (Student Learning Outcomes). The SRE performance was assessed by the extent to which a student completely

responded to all five items and also employed the self-reflection to increase his/her ability to self-regulate the mastery of learning outcomes and competencies of the course (a dominant dimension of self-reflection). If the assessment is "Yes" on each of the 5 items, then the student scored 1 on SRE performance, otherwise the score was 0.

- 6. The Quality of Faculty Feedback (QFF) was a main differentiating factor in the Robust Learning Model. All university faculty were trained on effective feedback and their performance was regularly assessed by the Director of Quality Assurance. In the revised RLM-SC, the role of the faculty was as crucial as in the traditional RLM. QFF performance was measured by four major factors:
  - a. Timeliness of the feedback on all required course assignments meaning that feedback on threaded discussions were received within 24 hours, and the feedback on the case study and signature assignment were received within 72 hours.
  - b. The constructiveness of the feedback needed for effective student positive reinforcements.
  - c. The substantiveness and clarity of the feedback.
  - d. The extent to which the feedback guided students in how to strengthen their learning efficacy.
  - e. If the assessment by an independent expert of each of the four items was "Yes" then the QFF score was 1, otherwise the QFF score was 0.

The Educational Effectiveness variables are measured as follows:

- 1. Retention Rates was the percentage of master degree students returning the following 12 months after their initial enrollment.
- 2. Degree Completion Rates (or Graduation Rates) was the percentage of students who completed their degree requirements within 36 months after their initial enrollment.
- 3. Capstone Course Performance (CCP) was the student performance in their Capstone Integrative at the end of their master degree program (see description above). Students in this course should have demonstrated an understanding, application, and integration of all the PLOs in the program. A rubric was developed to assess the depth to rigor to which students demonstrate the attainment of the degree PLOs acquired through core, advanced, and concentration courses. CCP was graded from F to A with its 0-4 corresponding numerical interpretation.
- 4. The GPA measure was the cumulative grade point average on a 0 to 4 range based on the A through F grade assessment.
- 5. Time-to-Degree was measured as the time between student's initial enrollment and degree completion.

#### Analysis

Assessing the unique contribution of QFF on the educational effectiveness indicators involved two stages. For retention and degree completion (each served as the binary dependent variable), stage one involved a logistic regression with TDP, CAP, SAP, and SRL as the independent variables. In stage two, FQQ was added to the model. The difference between the Nagelkerke R<sup>2</sup> coefficients for stage one and stage two was the unique contribution due to QFF.

For the other educational effectiveness indicators (Capstone Course Performance, GPA, or Timeto-Degree), they are the dependent variables and were assessed by a two-stage multiple regression analysis needed to assess the unique contribution of QFF. In stage one, TDP, CAP, SAP, and SRL were entered as the independent variables. In the second stage, the QFF was added to the model as an independent variable. The differences in  $R^2$  coefficients between stage one and stage two was the unique contribution of QFF on the specific dimension of educational effectiveness.

#### Results

# Table 1The unique contribution of QFF to explaining retention<br/>(Educational Effectiveness Indicator)

Comparison Between The Model Without SRL and the Model With QFF (the first core course in the program)	Nagelkerke R <sup>2</sup>	Dominant Predictors of Capstone Performance
Logistic Regression Model Without QFF	0.52**	Self-Reflective Learning and Case Analysis Performance
Logistic Regression Model wWith QFF	0.56**	Self-Reflective Learning and Case Analysis Performance
Unique Contribution by QFF to the Nagelkerke R <sup>2</sup>	0.04**	

\*p < 0.05 \*\*p < 0.01

Table 1 presented the logistic regression where one-year retention was the dependent variable and the first course indicators in the degree program were the independent variables. The Nagelkerke  $R^2$  for the entire model was 0.56, and the percent with the same coefficient without QFF was only 0.52. Quality of faculty feedback added 4% the explained variation of retention (p < 0.01). In both models the dominant predictors remained the same, i.e., student performance on the first course's self-reflected learning (SRL) and student performance on the first course's case analysis (CAP). Although, the unique contribution of QFF was statically significant, it was not one of the dominant predictors.

Table 2The unique contribution of QFF to explaining degree completion<br/>(Educational Effectiveness Indicator)

Comparison Between The Model Without SRL and the Model With QFF (the first core course in the program)	Nagelkerke R <sup>2</sup>	Dominant Predictors of Capstone Performance
Model Without QFF	0.51**	Case Analysis Performance
Model With QFF	0.56**	Self-Reflective Learning, Case Analysis Performance, and Quality of Faculty Feedback
Unique Contribution by QFF to the Nagelkerke R <sup>2</sup>	0.05**	

\*p < 0.05 \*\*p < 0.01

Degree completion was significantly affected, with and without QFF, by all the first course's independent variables as Table 2 presented. In the model without QFF, case analysis performance played a significant role in explaining degree completion (Nagelkerke  $R^2$  of 0.51; p < 0.01). The Nagelkerke  $R^2$  for the whole model including QFF was 0.56 with an increase of 0.05 in the

explained variation due to QFF's unique contribution (p < 0.01). In the full model, QF, SRL, and CAP were the dominant predictors of degree completion.

# Table 3The Unique Contribution of QFF to explaining capstone performance<br/>(Educational Effectiveness Indicator)

Comparison Between The Model Without SRL and the Model With QFF (the first core course in the program)	R <sup>2</sup>	Dominant Predictors of Capstone Performance
Model Without QFF	0.64**	Self-Reflective Learning and Case Analysis Performance
Model With QFF	0.79**	Quality of Faculty Feedback and Self-Reflective Learning
Unique Contribution by QFF to the $R^2$	0.15**	

\* p < 0.05 \*\*p < 0.01

The capstone course was the last course in the online master degree program. As presented in Table 3, the model without the quality of faculty feedback (QFF) explained 64% of the capstone performance's variation. The dominant predictors for this model were the student's self-reflective learning and student's case analysis performance, both in the first core course of the degree program. The addition of the QFF in the first course increased the R<sup>2</sup> from 0.64 (the model without QFF) to 0.79 (the model with QFF). This 15% increment in the explained variation was significant (p < .01). The dominant determinants in the model with SRL were self-reflective learning and the quality of the faculty feedback.

Table 4The unique contribution of QFF to explaining time-to-degree<br/>(Educational Effectiveness Indicator)

Comparison Between The Model Without SRL and the Model With QFF (the first core course in the program)	R <sup>2</sup>	Dominant Predictors of Capstone Performance
Model Without QFF	0.31**	Self-Reflective Learning and Signature Assignment
Model With QFF	0.63**	Quality of Faculty Feedback and Self-Reflective Learning
Unique Contribution by QFF to the R <sup>2</sup>	0.32**	

\*p < 0.05 \*\*p < 0.01

Time-to-Degree was the dependent variable in Table 4. The model without QFF resulted in a low level of predictability ( $R^2 = 0.31$ ; p < 0.01). Self-reflective learning and student's performance on signature assignment were the most dominant predictors on reducing time-to-degree in the first model. Adding the QFF into the second model substantially increased the predictability of the model from 0.31 to 0.63 with a statistically significant increase (p < 0.01). The dominant predictors on reducing time-to-degree in the second model were self-reflective learning and

quality of faculty feedback. Just to iterate, all independent variables were measured in the first course of the degree program.

Table 5
The unique contribution of QFF to explaining overall GPA
(Educational Effectiveness Indicator)

Comparison Between The Model Without SRL and the Model With QFF (the first core course in the program)	R <sup>2</sup>	Dominant Predictors of Capstone Performance
Model Without QFF	0.62**	Self-Reflective Learning and Signature Assignment Performance
Model With QFF	0.74**	Self-Reflective Learning and Signature Assignment
Unique Contribution by QFF to the $R^2$	0.11**	

\*p < 0.05 \*\*p < 0.01

The first course's indicators predicted the program GPA in Table 5. The Model without QFF resulted in a strong level of predictability ( $R^2 = 0.62$ ; p < 0.01). Self-Reflective Learning and Signature Assignment Performance were the most dominant predictors on reducing time-to-degree in the first model. Adding the QFF into the second model increased the predictability of the model from 0.62 to 0.74, and this increase was also statistically significant (p < 0.01). The dominant predictors on reducing time-to-degree in the second model were self-reflective learning and quality of faculty feedback.

### Conclusion

The results of this study confirmed that not only the quality of faculty feedback was crucial to student learning and educational outcomes, but was of utmost importance in the first core course in an online master degree program. Engagement in a variety of learning activities and assignments (problem identification, problem solving, analytical tools, projects, discussions, critical thinking, and self-reflective learning) enhanced program educational outcomes when a component of quality faculty feedback was added to each of those activities. In each indicator of overall degree program educational effectiveness, QFF adds significantly to the explained variation beyond the first course of student's performance predictors. However, QFF played the most dominant roles in predicting student's time-to-degree, student's capstone course performance, and degree completion. In each of these three facets of outcomes assessment, QFF was one of the dominant variables. Among the three, QFF was the most dominant predictor in determining time-to-degree (beta coefficient of -0.57; p < 0.01).

The adaptation of the Robust Learning Model (Neumann & Neumann, 2010) to an RLM with Spiral Curriculum (Neumann, Neumann, & Lewis, 2017) places an increasing emphasis on the first course in a degree program curricula. Therefore, the instructors for these courses were carefully selected and trained by the Academic Quality Assurance function of the University in the areas of effective and continuous interaction with their students while providing cognitive, metacognitive, and affective feedback to each component of the course. While this faculty orientation and development were done for all courses, the first course deserved special attention. The involvement of faculty in all stages of the course development was paramount to quality faculty feedback. Neumann (2016) further elaborated on this point: "The professor's direct involvement in all facets of course development and management, including design, instruction, meaningful and frequent interactions with the learners and assessment, enhances student learning outcomes across all degree levels and programs. When the learning experience is divided (unbundled) among several segments, student learning outcomes are considerably lower. We have tried unbundling the learning process and have experimented with course developers and designers, teaching assistants, mentors, success coaches and a learning team, and consequently, we have always received inferior results compared to when a faculty member is fully involved in all facets of the course."

The faculty direct involvement led to faculty initiations of new forms of feedback (Neumann & Neumann, 2016), in that "students who received weekly tips directly from their professors encouraging them to take control of their learning activities outperform students who do not receive such tips. Based on this finding, the weekly tips are implanted as a practice as part of the threaded discussion".

Quality faculty feedback was key to enhancing the student learning-to-learn ability (Neumann & Neumann, 2016), which is described as the "ability to persist in learning through an awareness of his or her learning needs, to effectively search for information and raise questions, to manage time to focus on learning, and to acquire or use support mechanisms to overcome challenges. Students with a high learning-to-learn ability will successfully prepare in advance how to progress and benefit from their learning experiences as well as persevere in finding the path to learning, despite adverse circumstances."

This study found that the overall quality of educational experience of the students in their first course (including their level of engagement and performance in a variety of learning activities) had a pronounced effect on the overall program performance when enhanced by the quality of faculty feedback in the first course.

The results of this study has implications for faculty, leadership, and policy makers who are actively looking for ways to effectively and efficiently develop or improve their online degree programs. The emphasis on faculty selection for core courses in an online degree program is a promising path for improving online degree program's educational effectiveness. The aforementioned conclusion received unequivocal evidence from this study.

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Return to Table of Contents