A Replicable Model for Peer Assessment in Online Courses: The Moodle Workshop Tool

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Abstract

This study was conducted to provide a replicable model for peer assessment in online courses using the Moodle Workshop Tool to produce legitimate data to be used as part of the process for assessing student-learning outcomes in an online program. The data generated from the peer assessments using the Moodle Workshop Tool for this study were examined as part of an Institutional Effectiveness Academic Plan for an online Master's degree program at a regional university in Texas. A step-by-step guide for setting up the Moodle Workshop tool was developed for this study and is included. This study provides several examples of student projects that were submitted to the Moodle Workshop Tool including research papers, web pages developed with MERLOT Content Builder, MDL 2 course links and ePortfolios. The process that was used to assess the student-learning outcomes generated from the Moodle Workshop Tool is also discussed in this study.

Key Words: Moodle Workshop Tool, assessment, student-learning outcomes, evaluation, MERLOT Content Builder, MERLOT GRAPE Camp, MDL 2, ePortfolios, peer assessment, peer learning, accreditation, institutional effectiveness

A replicable model for peer assessment in online courses is an important, current topic both from the perspective of institutional effectiveness and accreditation. The issue of program assessment (and therefore achievement of learning outcomes) is of particular importance for this program for two reasons: the program is new and the program is online. Obviously, all new programs need to be measured against a pre-determined set of criteria, a task likely built into each phase of implementation. However, because of the history of online education being questioned (Benson & Brack, 2007), it becomes even more important to prove program

effectiveness and student achievement on all levels and in all domains as well as the technologies being used to deliver online courses (Bates & Poole, 2003). While it is common practice to evaluate student achievement using quantitative measures, it is less common to see the application of qualitative measures to assess student achievement of programmatic outcomes. However, the use of qualitative measures can be extremely valuable in measuring outcomes that fall in the affective domain. In looking at Table 1, three of the programmatic learning outcomes fall under the cognitive domain, yet four of the programmatic learning outcomes fall within the affective domain of learning: Cultural Fluency, Global Fluency, Servant Leadership, and Lifelong Learning. Astin (1993) pointed out that educators are inclined to avoid assessment of the affective domain viewing such as too value laden. Accordingly, the cognitive domain became the defacto assessment area though affective assessment more closely paralleled the stated aims and goals of most institutions of higher education. The avoidance of assessment in the affective domain is well documented by Astin. The advent of social media tools coupled with e-portfolios offers some intriguing possibilities in regard to assessment in the affective behavioral domain. Astin pointed out that a change in the affective domain should translate into changed behavior. The advent of social media tools coupled with e-portfolios offers some intriguing possibilities in regard to assessment in the affective behavioral domain as well as the cognitive domain.

The online program examined in this study promotes the assimilation of an established taxonomy of seven programmatic learning competencies (outcomes) identified in the Astin Model. The student learning outcomes are provided here. The student will: 1) Evidence Meta-cognition skills; 2) Evidence effective communication; 3) Demonstrate digital fluency; 4) Evidence appreciation of cultural fluency; 5) Develop global fluency; 6) Practice servant leadership AND 7) Engage in life-long learning (see table 1).

Table 1
Programmatic Learning Outcomes

	Cognitive	Affective
Psychological	**Meta Cognition:** • Analysis • Synthesis • Evaluation *Research Paper; Voicethread; MERLOT Web Page; Oral Comp. Exam*	**Cultural Fluency:** • Self-Actualization • Understanding • Socialization *Journal; Discussion Board; Class Live Pro; Voicethread; Self-Assessment Surveys* **Global Fluency:** • Knowledge & Comprehension • Application • Evaluation *Presentations; MERLOT Web Page; Prezi, Google Site,Discussion Board, Voicthread*
Behavioral	**Communication:** • Writing • Speaking *Research Paper; Presentation; Class Live; Discussion Board; Journal; Oral Comp.; Voicethread;* **Digital Fluency:** • Adoption • Integration *Class Live Pro; Presentations; MERLOT Web Page; Prezi, MDL2 site*	**Servant Leadership:** • Ethics • Teaming • Leadership *Presentation; Group Work, MERLOT GRAPE Camp* **Life-Long Learning:** • Self Vision • Career Goals *Self-Assessment Surveys; Presentations; Publications, ePortfolio, MERLOT GRAPE Camp*

Purpose of the Study

The purpose of this study was to determine the effectiveness of the Moodle Workshop Tool to produce legitimate data to be used as part of the process for assessing student-learning outcomes in an online master's program at a regional university in Texas. The goal of this study was to provide a replicable model for peer assessment in online courses using the Moodle Workshop Tool and to demonstrate the extent to which the Moodle Workshop Tool could be engineered to produce legitimate data for assessing student-learning outcomes.

Significance of the Study

The capability of the Moodle Workshop Tool to assess student-learning outcomes in an online program has significant implications for Institutional effectiveness, accreditation, and overall program quality. This study empowers educators with a replicable model for peer assessment in online courses by engineering the Moodle Workshop Tool to produce evidence of student-learning outcomes that may be examined for assessment.

According to Bates and Poole (2003), quality assurance continues to be a struggle in higher education especially in regard to the use of new and emerging technologies being used for delivery and instruction. Furthermore, there is a call for more clarity within the area of program outcomes and standards within programs of higher education that is well documented across the literature (Institute of Higher Education Policy, 2000; Lee & Dziuban, 2002; Leh & Jobin, 2002; Onay, 2002; Shelton & Saltsman, 2005; Stella & Gnanam, 2004; Suryanarayanaravu, Srinivasacharyulu, & Mohanraj, 1995).

Even though several tools exist which can measure the quality of a program and the programs ability to meet a variety of criteria and standards (Quality Scorecard, IHEP 24 Standards), tools within individual courses can provide timely and specific data that larger, more holistic, evaluative tools may not capture. Foreman (2003) used both problem based learning (PBL) and peer assessment to link learning outcomes, learning activities, and assessment to the students' understanding of some of the challenges they would meet in their future field of study. Evidence suggests that peer assessment can assist in the development of reflective practice (Burgess, 2006; Race, 2001), which is an important component of affective development. Studies also show peer assessments to be just as affective for formative assessments as well as summative assessments (Bostock, 2001).

Not only can course level activities help evaluate course and program level outcomes, but these tools can also serve to engage instructors in the process of program evaluation at the course level. This provides instructors a more interactive role and understanding of the program and the role of their individual courses within the program. One such tool that offers educators and administrators the opportunity to evaluate outcomes in both the cognitive and affective domains at the course level is the Moodle Workshop Tool. The Moodle Workshop tool is a plug-in for the Moodle Learning Management System. This tool has many great features to allow students to submit assignments and have them peer-reviewed by their classmates. Assignments can be submitted using the text tool or as attachments.

Method

The Moodle Workshop Tool in this study was designed to produce evidence for assessing student-learning outcomes, specifically related to a major course project. This process was replicated in many of the courses in the program. These projects included research papers; web pages developed using MERLOT Content Builder, MDL2 course links, and ePortfolios, etc. The student learning outcomes linked to these projects included metacognition, communication, digital fluency, cultural fluency, global fluency, servant leadership, and commitment to lifelong learning.

Specific instructions were provided to students to complete the peer assessment activity using the Moodle Workshop Tool. These instructions were made available on the first day of class (see figure 1).

Figure 1. Submission phase of Moodle Workshop Tool.

The faculty designed the peer assessment activity using the Moodle Workshop Tool for student interaction to be conducted in two phases. These two phases spanned two modules over a two-week period. Students were required to submit a project and to assess the project of one or more of their peers. However, it is important to note that the faculty member was required to develop the Workshop Tool to be processed through five total phases.

The first phase, is the setup phase in which the faculty member creates and determines how the workshop will be setup. Students are not able to view or adjust any of the settings in this phase. There are several settings for the faculty to edit in the setup phase. First, a name and description for the Workshop needs to be given. The next area is the grade setting. This is where a decision regarding a particular strategy for grading is made. A list of choices is provided from a drop down menu, which include accumulative grading, comments, number of errors and rubric. For the purposes of this study, the rubric option was selected. Next, a number from $0 - 100$ needs to be chosen for the maximum points students may earn for their submission and then a similar selection needs to be made on the peer assessment portion of the Workshop Tool. Next, instructions for the submission need to be entered in the submission settings editor and likewise instructions need to be provided for the peer assessment portion in assessment settings editor. The feedback setting is the next area that needs to be edited. A choice can be made regarding overall feedback to disable, enable and optional, enable and required. In the next setting, example submissions may be included in the Workshop Tool for students to practice peer assessment. Setting the availability of the Workshop Tool is the next to the last area that needs to be entered. Open and deadline dates for submissions to the Workshop need to be selected first and then the open and deadline dates for the assessments need to be selected. For the purposes of this study, the submission deadline ranged from the beginning to the end of module/week six and the assessment deadline ranged from the beginning to the end of module/week seven. The final area to be edited was the common module setting, where a determination is made on making the Workshop Tool visible or hidden. For this study, the visible setting was chosen.

The assessment form was the last area that needed to be edited in the setup phase. Since the rubric was selected for the grading strategy above, descriptions and a level grade and definition was provide for each criterion of the rubric. Five criterion were entered along with four definitions and level grades. The definitions and level grades included the following: unacceptable: 5, below expectations: 10, meets expectations: 15, exceeds expectations: 20.

The submission phase is the second phase of the Workshop Tool. In this phase, students were instructed to submit a URL link or attach a document of their project. Once all of the students' projects were submitted, at the end of module/week six, the Workshop Tool was transferred to the assessment phase at the beginning of module/week seven where peer evaluations were allocated to students. These allocations were made through Workshop administration by choosing either the manual or random tab. For this study, the random allocation tab was chosen and enabled to allow students to evaluate multiple projects of their peers. An option to override the grades generated by the peer evaluations is available through the grading evaluation settings (see figure 2).
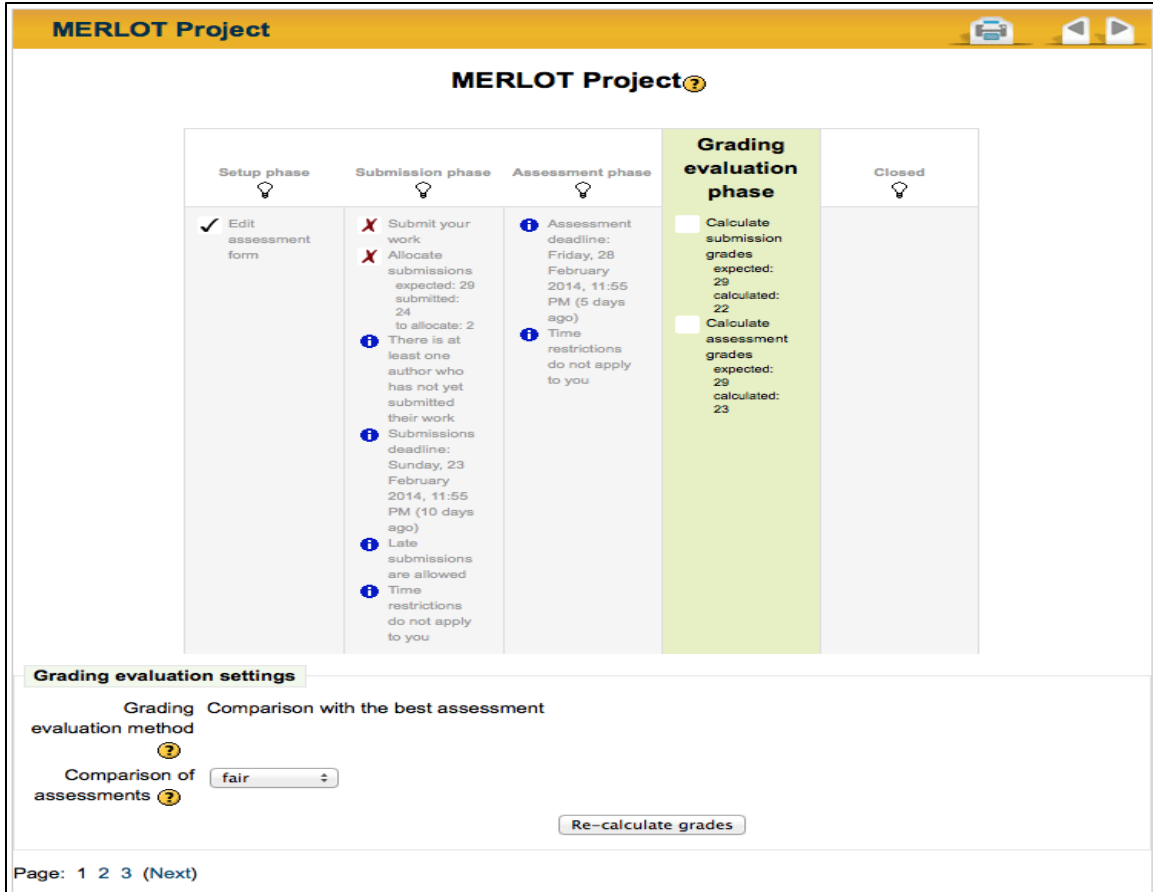
Figure 2. Grading evaluation phase of Moodle Workshop Tool.

Next, a drop down menu offers the choice of five settings to choose from for the comparison of assessments. This setting specifies how strict the comparison of assessments should be. The stricter the comparison, the more similar the assessments need to be in order for a high grade to be obtained. After the comparison of assessments selection has been made, the faculty member needs to click the re-calculate grades button (see figure 3) so the grades can be re-calculated to reflect the comparison preference. At this point, the Workshop Tool may be moved to the closed phase, which will enter the grades into the grade book.

Instructions were also provided to students to complete the assigned projects. For example, MERLOT web pages created by former students were posted as models for current students who were developing web pages.

Figure 3. Grading evaluation settings.

Findings

Engineering the Moodle Workshop Tool according to the process outlined in this study produced evidence that was examined as part of an annual institutional effectiveness academic program plan of student-learning outcomes. Examples are included here. First, evidence was generated for digital fluency in the adoption and integration of appropriate technologies into digital presentations. A random sample of student digital presentations submitted to the Workshop Tool were selected and evaluated. Scores were considered acceptable with an average of 45 on a 50 point scale in the area of technology. The average score for technology was 45.33, meaning the standard was met. The faculty noted that some students tended to use more familiar software and avoided the utilization of emerging software. Accordingly, an upcoming course has been modified to include requirements for all students to utilize at least one Web 2.0 software program to complete their MERLOT web page.

Another example of evidence supplied through the use of the Workshop Tool for assessment was the ability to communicate ideas and content to actively engage participants. Working with MERLOT's Content Builder, students were required to develop a web page that demonstrated their ability to effectively communicate educational content to an intended audience. A random sample of student developed web pages posted to the Workshop Tool were chosen and analyzed. Scores were deemed acceptable with an average of 42 on a 50-point scale in each of the five areas of purpose, organization, content, language, and voice & tone. The average score for purpose was 45.33. The average score for organization was 46.67. The average score for content was 46.00. The average score for language was 44.00. The average score for voice and tone was 44. Though all standards were met, faculty noted that language scored the lowest. Therefore, the faculty modified an assignment in one of the intercultural courses to provide students an opportunity to develop their language skills. This project was developed to provide students a heightened sensitivity to language that might be offensive in other cultures. The faculty will conduct further assessments in the next annual year evaluation.

The final example examined in this study in which the Workshop Tool provided evidence of a student-learning outcome was commitment to life-long learning. Students will evidence a commitment to lifelong learning in the production and evaluation of learning materials. A random sample of students were selected and scores were deemed acceptable at an average of 3.0 or higher on a 4 point scale in each of the areas of production of educational materials, publications, presentations, including personal response, personal evaluation, and interpretive skills. The average score for MERLOT web pages was 3.4. The average score for presentations was 3.8. The average score for peer-evaluations was 3.6. Even though the standard was met a few problems were noted in the effective feedback of the peer-evaluation assignment of the Workshop Tool. Accordingly, it was determined to include MERLOT GRAPE Camp as part of the overall program to provide training on conducting peer-evaluations. All students will be required to complete MERLOT GRAPE Camp training. These changes will be enacted in all new course sections.

Conclusions and Recommendations

This study has successfully demonstrated a replicable model for peer assessment in online courses using the Moodle Workshop Tool. This study has also demonstrated that the Moodle Workshop Tool can be effectively engineered to produce legitimate data for assessing student-learning outcomes in an online program. The data generated from the Moodle Workshop Tool in this study was examined as part of an Institutional Effectiveness Academic Plan for an online Master's degree program at a regional university in Texas.

This study has shown the capability of the Moodle Workshop Tool and its significant implications for Institutional Effectiveness, accreditation, and overall program quality. Educators should replicate the model presented in this study to produce evidence of the student-learning outcomes for the courses and programs they teach. Then, further research could be conducted by comparing the results from these findings with other disciplines that used the Moodle Workshop Tool to determine if student-learning outcomes were being met in other programs and disciplines.

A recommendation for future study would be to develop an instrument that will assess students on the outcomes before and after they use the Moodle Workshop Tool. Another recommendation for future study would be to have one course in which students only assess their

own work and another course in which students assess the work of others and have this research focus on the Moodle Workshop Tool's ability to develop the student learning outcomes of Cultural and Global Fluency, Metacognition, Communication, and Servant leadership. An instrument could be incorporated to have students answer a few simple questions after taking the workshop.

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