### Program Information:

<table>
<thead>
<tr>
<th>Program Assessed</th>
<th>Learning &amp; Technology Ph.D. Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Educational Psychology and Higher Educational/Teaching &amp; Learning</td>
</tr>
<tr>
<td>College</td>
<td>Education</td>
</tr>
<tr>
<td>Department Chair</td>
<td>LeAnn Putney</td>
</tr>
<tr>
<td>Assessment Coordinator</td>
<td>Michael Nussbaum</td>
</tr>
<tr>
<td>Date Submitted</td>
<td>12/21/15</td>
</tr>
</tbody>
</table>

**Contact Person for This Report**

<table>
<thead>
<tr>
<th>Name</th>
<th>Michael Nussbaum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>5-2665</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:nussbaum@unlv.nevada.edu">nussbaum@unlv.nevada.edu</a></td>
</tr>
</tbody>
</table>

Please attach a narrative (not to exceed 4 pages, excluding appendices) addressing the following:

- What are the student learning outcomes? Please provide a numbered list.
- Which learning outcomes were assessed?
- How were they assessed? (Programs must use at least one direct assessment of student learning.)
- Undergraduate programs should assess at least one University Undergraduate Learning Outcome (UULO) each year, which may or may not overlap with a program learning outcome.
- Graduate programs should assess at least one outcome related to one of the following graduate level requirements each year:
  - student engagement in research, scholarship, creative expression and/or appropriate high-level professional practice.
  - activities requiring originality, critical analysis and expertise.
  - the development of extensive knowledge in the field under study.
- What was learned from the assessment results?
- How did the program respond to what was learned?

Please limit the narrative portion of your report to no more than four pages. You may attach appendices with data, tables, charts, or other materials as needed. Please explain the relevant conclusions from any appendices in your narrative. Please contact the Office of Academic Assessment if you have questions or need assistance.
Student Learning Outcomes:

1. Learning Theory: Students will explain, analyze and critique key theories related to learning, cognition, and development;
2. Technology Theory: Students will explain, analyze, and critique key theories related to educational technology;
3. Learning & Technology Application: Students will understand how to design and modify technology-rich learning environments to promote more effective learning;
4. Literature Critique: Students will develop well-written reviews of the literature that include critical analysis and evaluations of the reviewed studies.
5. Research Design & Methods- Quantitative: Students will (a) describe, select and use advanced statistical research methods (including computer technology for the analysis of data); (b) describe the role of the scientific method; and (c) identify the threats to inference posed by various research designs and methodology.
6. Research Design & Methods- Qualitative & Mixed: Students will describe (a) qualitative approaches to exploring phenomena related to educational and other social contexts; (b) the theoretical and practical considerations of collecting and interpreting observation and interview data for presentation in a qualitative manuscript, and (c) criteria for establishing trustworthiness of qualitative studies.
7. Human Measurement: Students will develop plans for test construction, item and test specification, item writing and selection, test preparation and administration, test and item analysis, item and test revision to enhance reliability and validity, and various methods for validating tests, such as factor analysis, item response theory, and current issues in measurement;
8. Professional Research Skills: Students will serve as independent scholars who can (a) design, (b) implement, and (c) prepare reports of quantitative and qualitative research studies, and (d) make significant contributions to the discipline of educational psychology or the fields of educational technology or the learning sciences;
9. Professional Identity and Community: Students will (a) develop a professional identity relative to some aspect of learning and technology, (b) actively contribute to the profession, and (c) adhere to standards of ethical and professional functioning.

Assessment Goals and Methods:

We assessed outcomes 5 and 7 related to quantitative research design/methods and human measurement. (We also began to assess outcome 8—this outcome is discussed in a later section.) Outcomes 5 and 7 were assessed in three different ways. First, regarding outcome 5, we examined student performance on various program products, specifically a required scholarly product, a preliminary exam, and completed dissertations. These products are routinely assessed using various rubrics, but for purposes of this report, we were primarily interested in whether students could competently use both basic and advanced statistical methodologies. Second, we examined whether students were enrolling and completing advanced statistical courses. Third, we examined the performance of doctoral students in required quantitative courses on specific learning objectives. Most of the doctoral students in these courses, however, were in the educational psychology (EPY) foundations program. Typically, only one or two were in the L&T program, which we deemed did not represent a large enough sample to conduct a meaningful analysis. Nevertheless, course recommendations based on the EPY foundations sample would still be relevant to L&T students, assuming similar performance (an assumption that we checked empirically).

For this reporting period, we were only able to collect data on two quantitative courses, EPY 723 (which is a course on human measurement) and EPY 733 (Multivariate statistics). Two other courses will be taught and assessed in the spring: EPY 722 (on inferential design/ANOVA) and EPY 723 (regression analysis).
Assessment Results and Reflections:

Research Design and Methods – Quantitative. One finding was that L&T students for the most part are not taking advanced statistical courses. Only six L&T students had completed the statistics core. Students are required to complete one additional methodology elective, and 50% had done so by taking a course in evaluation (EPY 716), qualitative case studies (EPY 729), or mixed methods (EPY 791). Only one student had completed additional courses beyond this elective (taking six, a mixture of qualitative and quantitative).

Nevertheless, a few students were mastering advanced methodologies on their own, under the supervision of a faculty member. One student, although she has not yet completed advanced coursework, employed a simple path model in her scholarly product (under supervision of a faculty member).

One dissertation was completed during Fall, 2015. The student used nonparametric statistics for her data analysis, but had not taken the course offered by the department on this subject, or any advanced statistical courses at all. The chair indicated that her analysis of the data was competent but she had a tenuous grasp on the actual statistical procedures and the underlying theory.

Overall, many students may need more encouragement to take advanced courses. The faculty added EPY 732 (multiple regression) to the required statistics core a couple years ago but the effect of this change is not yet showing up in these data. (All of the six students analyzed here were admitted before this program change took effect.)

Although students do seem to be mastering basic statistical skills, and this may be sufficient for those planning to become instructional designers, mastering advanced skills is beneficial if our graduates are to be competitive for academic jobs. For example, conducting research on computer-supported discussions would require knowledge of multilevel modeling and categorical statistical methods. Research on intelligent tutoring systems or in learning analytics for online courses would require knowledge of advanced methods such as data mining. The program faculty is considering transitioning the L&T program into a learning sciences program, with one strand of the program dedicated to educational data science. This change may help signal to our doctoral students the importance and potential enhancements in marketability from completing advanced courses.

Regarding L&T student performance in courses, there was one student enrolled in EPY 733 (multivariate statistics); this student performed extremely well. (EPY 733 has learning objectives tied to student learning outcomes 5 and 8.) Her performance was stellar, with the instructor (Dr. Tiberio Gaza) indicating that she received an A grade-level average on all tests and assignments. Based on his analysis of the EPY foundations doctoral students’ performance, Dr. Gaza recommended that students be provided with more experience interpreting output, as well as instruction on how to choose the most appropriate statistical tests for a given situation. These recommendations would likely benefit L&T students as well, assuming more can be encouraged to enroll in this particular course.

Human Measurement. EPY 723, taught by Dr. Alice Corkill, makes the largest contribution to the measurement outcome. Only two L&T students were enrolled in the course, both students received grades of B. The majority of the doctoral students in the course received grades of B, so this level of proficiency is typical. Based on a detailed analysis of EPY foundations doctoral student performance (discussed below), Dr. Corkill made several recommendations which would also benefit L&T students.

The course learning outcomes in the course were: (1) plans for test construction, (2) item and test specification, (3) item writing and selection, (4) test preparation and administration, (5) test and item analysis, (6) item and test revision to enhance reliability and validity, (7) various methods for validating tests such as factor analysis, item response theory, and current issues in measurement, and (8) interpreting test results (norms) and standard setting. On the exams, students displayed satisfactory performance.
(80.95% correct) on course outcome 1 (plans for test construction) and borderline performance (70% to 79%) on all other outcomes, except for course outcome 5 (test and item analysis), which was 66.28% correct on 43 items. However, the mean score on the homework assignments for this outcome was 91.89%, so there is some evidence of student proficiency. Likewise, homework mean scores for outcomes 3, 5, 6, and 8 ranged from 84.03% to 95.71%, indicating that students were able to transfer their skills to practical situations.

One change being contemplated for the course is the addition of a homework assignment related to item and test specification. This change was motivated not only by the borderline performance of the doctoral students here, but also of those of master’s students (who also are required to take this course).

**Student Engagement in Research, Scholarship, and Professional Practice**

Of the three outcomes specified by the Assessment Office for graduate programs, we elected to analyze student engagement in research, scholarship, and professional practice, as this outcome relates well to the program’s Learning Outcome #8, Professional Research Skills. The following analysis is based on a survey that was disseminated to students as part of their annual review. All L&T students responded to the survey except for two first-year students.

Results indicated that most students were involved with research and were attending professional conferences (and/or had conference proposals in submission). These conferences included the Northern Rocky Mountain Educational Research Association, the American Association for the Advancement of Science, the American Educational Research Association, Association for Science Teacher Education, the Ethnographic and Qualitative Research Conference, the National Educational Computing Conference, and the Nevada Conference on Digital Learning. Non-research oriented conferences included Blackboard World, Alliance, and League for Innovation in Community Colleges. One student received travel funding from a research grant; others received funding from their employer (UNLV or Community Colleges). One student submitted to the Hawaii International Conference on Education but did not have funding to go. Only two students were not active in research or presenting at conferences, either because of family health issues or being new to the program.

In respect to research and publications, all students with at least 36 credits (n = 5) had completed their scholarly product requirement. One student was author or coauthor on two empirical publication and three in submission; some of these were garnered through a research grant she was part of, but two were related to original empirical research that she conducted with another student. Only two other student have been participating in an on-going research project with a faculty member; one of these is also collecting dissertation data.

Overall, student participation in research activity is moderate but could be improved in two ways. First, participation in more high profile conferences could be encouraged. Program faculty might consider a venue where L&T students could share the research presented at conferences with other students and discuss funding opportunities, as well as what the different conferences attended have to offer. Second, although some progress has been made, program faculty members need to secure more external grants so as to increase the research opportunities for graduate students.