

A Mixed-methods Evaluation of Teaching Evaluation: Innovative Course-Based Service-Learning Model on Program Evaluation Competencies

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Abstract: There is limited empirical study that examines effective evaluation pedagogy on evaluation competency outcomes. The purposes of this article are to (1) identify key course design features critical to integrating real-world projects in a course-based service-learning model; and (2) provide empirical data using mixed-methods evaluation to assess the impact on evaluation competencies. Data from 5 cohort doctoral students (2015-2019; n=51) showed such course design resulted in significantly increased before-after course scores on the 6-item course learning objectives (scale item means of 3.34 vs. 4.65; $p < .001$), and the 17-item program evaluation competency scale (PECS-17) (scale item means of 3.25 vs. 4.76; $p < .001$). Qualitative reflections on the five essential evaluation competency domains convergently were correlated with strong positive competency outcomes. The convergent findings from both quantitative and qualitative data provide strong empirical evidence of evaluation competencies gained. These findings have implications on teaching evaluation of graduate students for evaluator educators who strive to provide competency-based experiential learning.

Keywords: course-based service-learning, program evaluation competencies, mixed-methods evaluation, teaching evaluation, competency assessment

Why Evaluate Teaching Evaluation

As the evaluation field continues to professionalize and engage training strategies, empirical studies examining teaching and learning in evaluation training warrant attention. Given the increasingly complex conditions surrounding many pressing societal issues, evaluators need to be firmly grounded with essential evaluation competencies. At the same time, also be prepared to adapt their evaluation approaches when dealing with the messiness of reality. Although the essential competencies for evaluators have been identified (Stevahn, King, Ghere, & Minnema, 2005; Ghere, King, Stevahn, & Minnema, 2006), a validated competencies assessment tool to assess student outcomes is still lacking. Existing studies examining training and teaching program evaluation among students mostly use course learning objectives, student satisfaction, course feedback, or instructors' perception to assess how well evaluation courses are taught (Levin-Rozalis & Rosenstein, 2003; Davis, 2006). There is also limited empirical study data examining effective evaluation pedagogy on student evaluation competency outcomes (Poth, Searle, Aquilina, Ge, & Elder, 2020; Dillman, 2012).

Course-Based Service-Learning Integrating Real-World Experience Deepens Learning

Service-learning is a form of experiential learning intended to engage learners in hands-on practice with guided reflection to increase competency-based learning outcomes and enable learners to contribute to their communities (Association of Experiential Education, n.d.). It provides a pedagogical model which connects meaningful community service experiences with academic course learning objectives to better bridge the theory to practice gap (Giles and Eyler, 1994). Such an approach might provide a powerful way to train new evaluators in applying skills learned to deal with

complex real-world situations.

Kolb (1984) emphasized the importance of reflection in experiential learning with what (understanding), so what (meaning-making), and now what (doing) processes and cycles. Course-based service-learning to integrate real-world experience expands the traditional classroom walls for students to discover linkages between theory and practice in authentic settings (Hou and Pereira, 2017; Hou and Wilder, 2015; Hou, 2009). Students actively participate in organized service experiences that meet actual community needs. These academically based community service-learning opportunities provide reflective learning experiences linking intentional learning objectives to the enhanced practical application of knowledge and skills learned (LaVelle, 2020; Cauley, Canfield, Clasen, Dobbins, Hemphill, Jaballas, et al., 2001).

Empirical Evidence of Service-Learning on Learning Outcomes

Empirical service-learning studies demonstrate that incorporating service-learning opportunities with academic learning deepens student engagement in that learning and enhances personal growth and campus-community partnership building (Hou and Pereira, 2017; Lovat & Clement, 2016; Long, 2016; Hou and Wilder, 2015; Hou, 2009; Hou, 2010). A meta-analysis comparison of courses with and without a service-learning component concluded that including a service-learning component translated close to a 53% increased improvement in learning outcomes (Novak, Markey, & Allen, 2007). Another meta-analysis study summarized the extent and type of change that service-learning programs produce among participants. Analyses determined that the changes were moderate for academic outcomes, small for personal and citizenship outcomes, and in between for social outcomes. Meta-analysis of empirical studies also concluded that structured reflection activities and small or large group discussions about issues were key where more extensive changes were found (Conway, Amel, & Gerwien, 2009).

Competency-Based Evaluation Training and Assessment

High-quality and validated evaluation competency assessment tools can facilitate the improvement of an evaluation training program and better assess program impact (Christie, Quiñones, & Fierro, 2014). Key evaluator competencies have been recently updated by the American Evaluation Association (AEA, 2018) and the Canadian Evaluation Society (CES, 2018). Stevahn and colleagues defined competencies as “the background, knowledge, skills, and dispositions program evaluators need to achieve standards that make up sound evaluations.” (Stevahn, King, Ghere, & Minnema, 2005). These concurrent increased efforts focused on competencies, led by the two premier professional associations in the evaluation field, speak to the importance of competency-based evaluation training in an increasingly complex world with pressing societal issues requiring evaluation efforts. Both associations recommended the following five similar essential competency domains: (1) Professional Reflective Practice (PRP) domain, which focuses on what makes evaluators distinct as practicing professionals; (2) Methodology Technical Practice (MTP) domain which focuses on technical aspects of systematic inquiry including quantitative, qualitative, and mixed designs; (3) Context Situational Practice (CSP) domain, which focuses on understanding the unique circumstances and multiple perspectives; (4) Planning and Management Practice (PMP) domain, which focuses on applying substantive project management skills; and (5) Interpersonal Practice (IP) domain, which focuses on social and personal skills required to communicate and interact effectively with all stakeholders.

Most existing evaluation course training uses a content-specific model in which instructors merely organize and convey conceptual and factual knowledge to students (Darabi, 2002). It suggests a systems approach with sequenced methodology and a series of feedback loops in an ongoing revision

process. Poth and colleagues applied a systems approach to teaching evaluation. They used a mixed-methods case study examining four of the five essential evaluation domains (minus the PMP domain) among a small group of graduate students to understand intended and un-intended learning competencies (Poth et al., 2020). Linfield (2019) compared a real-world experiential evaluation program versus hypothetical evaluation projects, and results showed students gained limited value from the theoretical evaluation training. More engaging content with real-world practice and application, combined with team-based learning, has been recommended to improve students' learning outcomes while also benefitting community partners (LaVelle, 2020; Linfield, 2019; Birkby & Linfield, 2019; Bakken, Nunez, & Couture, 2014). Empirical studies have shown that the course-based service-learning approach results in powerful impacts and significantly increased student confidence in program planning competencies (Hou 2009) and program development and implementation competencies (Hou and Pereira, 2017).

Limited teaching research has examined evaluation competencies as learning outcomes. Ridde and colleagues were among the first to include evaluation competency assessment as a summative evaluation among master students taking an evaluation course in Africa's population health program (Riddle, Fournier, Banza, Tourigny, & Ouedraogo, 2009). Dillman (2012) examined evaluator competencies (i.e., contextual, management, communication, and methodological, theoretical knowledge), educational experience among novice evaluators, and their relationship. Findings indicate fieldwork contributed to the development of evaluation competencies more so than any other educational experience. Mentoring from the instructor played the second most crucial supporting role to evaluator competency development (Dillman, 2012). Still, there remains a need to have continued evaluation-specific guidance in designing and implementing an effective competency-based evaluation regime for higher education instructors and competency-based measurement for assessing the complex learning impact (Poth et al., 2020).

Purpose

To better equip our future evaluators in assessing these essential evaluation competency domains identified, creative teaching approaches incorporating hands-on practice to real-life evaluation are critical to engaging learning (LaVelle, 2020; Linfield, 2019; Hou and Pereira, 2017; Dillman, 2012). Yet, limited empirical studies have examined the role opportunities, such as integrating real-world community experience with the hands-on practice via course-based service-learning projects, contribute to evaluation training within higher education settings. Existing limited studies also use varied competency items (Riddle et al., 2009; Dillman, 2012; Poth et al., 2020). Few discussed the utility of mixed-methods evaluation on evaluation program competencies learning outcomes (Poth et al., 2020). The purposes of this article are two-fold: (1) to identify key course design features critical to integrating real-world projects via a course-based service-learning model for teaching evaluation, and (2) to provide empirical data of using mixed-methods evaluation to assess the impact of such innovative course design on program evaluation competencies. Findings from the current empirical data will provide evaluator educators practical guidance on key design features to develop and implement competency-based experiential education and an effective brief competency-based mixed-methods tool to assess student learning impact before and after the evaluation.

Methods

Design of the Policy and Program Evaluation Course

Under an intentionally structured and designed course learning environment, early exposure to real-world community partners, coupled with faculty supervision and guidance, are critical before students enter internship or career phases. The Policy and Program Evaluation is a core course for an interdisciplinary Doctoral Program in Public Affairs at a large southern university in the USA. The Policy and Program Evaluation course's key innovation is the infusion of course-based service-learning projects combined with interdisciplinary team-based learning in cooperation with real-world community partners. The purpose of various course-based service-learning projects with area agencies and organizations was to infuse hands-on, real-world learning and application experience. The instructors assigned interdisciplinary teams of students with consideration to students' research interests and prior experience. The primary purposes of integrating these course-based service-learning projects are to provide real-world, hands-on practice learning opportunities to build evaluation competency across all essential domains (Linfield, 2019; Dillman, 2012).

A utilization-focused evaluation approach was used, inviting project managers and key staff partners to participate in the evaluation design and evaluation proposal presentation to provide feedback (Ramirez, R., Brodhead, D., & Quarry, W., 2018). In this course, students were assigned to small interdisciplinary teams to work with community stakeholders developing authentic and workable evaluation proposals. This course helped facilitate a sense of ownership over processes and findings and promoted evaluative thinking. Additionally, building a campus-community partnership promoted engaged student learning and provided technical help to evaluate programs addressing complicated social issues (Bakken, Nunez, & Couture, 2014).

Guided reflection opportunities were integrated early in the semester before the first stakeholder meeting, throughout the semester, project discussions, and overall personal reflection at the end of the course (Conway, Amel, & Gerwien, 2009). Such innovative teaching approaches aimed to engage students in high-level critical thinking while working with real community partners to develop practical evaluation plans for assessing the impact of essential programs to address complex social and health issues among underserved groups. Such a design sought to strengthen student evaluation competency development in situational practice, real-world planning, management practice, interpersonal communication domains, professional practice, and methodology technical practice domains.

Instructors' reflections, qualitative course feedback, and end-of-course reflections from five cohort groups of doctoral students (n=51) were analyzed using thematic analyses to identify lessons learned on key course design themes focused on ensuring high-quality evaluation competency development (Creswell, 2016).

Mixed-methods Assessment on Student Program Evaluation Competency Outcomes

A mixed-methods approach was used to systematically examine and analyze evaluation competencies among students and the five essential domains of evaluation competencies. The power of mixed-methods evaluation lies in the added value of integrating both quantitative and qualitative data, providing nuanced insights that cannot be gained when only a single type of data is measured. Mixed-methods research design brings together quantitative numbers' strengths with rich, contextual, qualitative information to examine student learning more holistically (Creswell & Plano Clark, 2018). Essential evaluation competencies were assessed with quantitative and qualitative questions to allow corresponding comparisons on key variables (Creswell & Plano Clark, 2018; Hou, 2020). Findings

from both the quantitative and qualitative strands were analyzed separately, then convergently drawn upon to interpret and conclude student learning outcomes.

Quantitative Measures. In addition to a 6-item course learning objective scale (Table 1), a 17-item Program Evaluation Competency Scale (PECS-17) measuring detailed performance objectives for developing a sound and practical evaluation proposal was developed and tested. Quantitative measurements were developed via (1) review of content coverage and skills recommended by key evaluation textbooks (McDavid, Huse, Hawthorn, 2019; Newcomer, Hatry, & Wholey, 2015; Mertens & Wilson, 2012; Centers for Disease Control and Prevention, 2011; Rossi, Lipsey, & Freeman, 2003), (2) examination of course learning objectives and topic outlines, and (3) correlation to essential evaluation competency domains recommended by AEA and CES. Key competencies identified were translated into corresponding quantitative performance objectives measurement items, and then pilot tested among a small group of graduate students. These step-by-step performance objectives were carefully built in sequentially, practiced, and discussed during weekly class meetings. Also, two items were developed to assess the overall course impact on student evaluation competencies at the end. Table 2 provides detailed item descriptions with statistics. Paired t-tests were used to examine program evaluation competencies before and after the course.

Qualitative Measures. Five qualitative reflective questions were developed to examine the five essential domains key to evaluation competencies and gain a more holistic perspective of course impact on student learning. Students were asked to reflect, at the end of the evaluation course, on each of the essential evaluation competency domains, and describe (with scenarios or examples if possible) how well or competent students felt they were, as a result of this evaluation course and project, as compared to the beginning of the semester (Table 3). Open-ended qualitative end-of-course feedback was also analyzed to identify key course design features instrumental to students' competency development.

Data Analyses. Students enrolled in the doctoral program evaluation course during 2015-2019 completed the 6-item course learning objectives and 17-item program evaluation scale survey at the beginning and end of the course (n=51). Descriptive statistics, item-total correlation, and Cronbach's alpha coefficients were calculated to evaluate the internal consistencies. Data from before and after courses were used to compare changes in program evaluation competencies via paired t-tests (Hou, 2020).

These five cohort student groups also provided qualitative feedback on their course experience and learning impact (n=51). In addition, students from the 2019 class (n=8) also completed the five qualitative questions to reflect on their learning as related to the five essential domains of evaluation competencies specifically. An inductive approach was used to analyze these qualitative data. The instructor first read through all the database comments to gain a general familiarity, then conducted a line-by-line coding approach, assigning a code label to the text segments. Next, these codes were aggregated into themes for the current study's qualitative report (Creswell, 2016). Thematic analysis with sample quotes provided was used to identify both the impact on essential competency domains (Table 3) as well as key course design features (Table 4). Quantitative and qualitative data were cross-examined and compared for integrated interpretations of the study findings' convergences and divergences. The human subject office approved the study of PI's institution (IRB# STUDY00001671).

Results

Mixed-methods Evaluation on Program Competency Outcomes

Quantitative Findings. Data showed satisfactory reliability of the 6-item course learning objective (LO) scale with Cronbach alpha of .859 (CITC ranged .467 ~ .778), demonstrating high internal consistencies of the scale items among the 5 cohort groups of doctoral students (n=51). The item means of the 6-item LO scale was 3.34 (SD=.87) at the beginning of the course and significantly increased to 4.56 (SD=.43) at the end of the semester (see Table 1).

Analyses also showed satisfactory reliability of the 17-item Program Evaluation Competency Scale (PECS-17) with Cronbach alpha of .971 (CITC ranged .480 ~ .901), demonstrating high internal consistencies of the scale items. The item means of the PECS-17 was 3.25 (SD=.99) at the beginning of the course and significantly increased to 4.76 (SD=.28) at the end of the semester ($p < .001$). Data showed students scored significantly higher program evaluation competencies after the semester-long training and applying classroom skills to real-world evaluation projects with community partners. The two overall self-assessments items at the end of the course showed students perceived high confidence in the evaluation field (mean=4.75; SD=.53) and rated highly in their belief that the course equipped them with essential evaluation skills and competencies they may use in their future career (mean=4.80; SD=.45) (see Table 2).

Qualitative Findings. Qualitative responses of the five essential evaluation domains from the 2019 cohort group (n=8) were overall positive, demonstrating convergent evidence of the impact of the evaluation course and projects on student learning outcomes (see Table 3).

Key themes identified under the professional practice reflection domain were increased confidence in critical evaluation skills and the belief that the real-world evaluation project provided invaluable insights and deepened application competency. Students commented, “[a]t the beginning... I didn’t know much... however now... I can critically analyze, and design an evaluation” (Student A), and “[t]he project gave me invaluable insight on how to apply the knowledge learned in the class to a real-world example” (Student B).

Key themes identified under the methodology technical practice domain were increased competency and appreciation of the mixed-methods evaluation design and increased confidence in choosing an appropriate design and justifying it. Student comments included “. . . It is interesting to note all of our groups opted for a mixed-methods evaluation design . . .” (Student D), and “. . . after talking to the professor and considering other parts of the project, not only were we able to choose a methodology, but we were also able to justify it, which is a new skill to me . . .” (Student B).

Key themes identified under the context situational practice domain included strengthened relationship building with community partners and deepened appreciation of real-world complexity and cultural values. Students noted, “[t]his course helps understand stakeholders’ unique circumstances and cultures . . .” (Student D), and “. . . completing the evaluation project helped me to understand such complexities . . .” (Student E).

Key themes identified under the planning and management practice domain included improved team communications and stimulated excitement in planning for practical use. Student B reflected, “I learned how to brainstorm with my group and how to communicate with our community partners in order to share ideas or to gain information about their program.” Student D stated the course “. . . gave us a chance to develop a version for potential practical use, which was exciting given that we had to interview our community partner to figure out the best plan of action.”

Key themes noted for the interpersonal practice domain were strengthened by internal team communication and increased effective communication with external community partners. Sample student notes included “. . . We have all grown to understand one another and how we work . . .”

(Student A), and “[t]his class helped improve my professional correspondence and communication . . . with stakeholders . . .” (Student F).

Key Course Design Features with Student Comments

Qualitative course feedback and end-of-course reflections from five cohort groups of students (2015-2019; n=51) were analyzed using thematic analyses to identify key course design features with supporting empirical quotes from students (Cresswell, 2016). Table 4 described five key design features identified with sample student quotes and impact.

(1) *Overall, a carefully structured course with sequential design to facilitate progressive learning.* Students enjoyed the structure and sequence design of the course. Students commented how motivating it was that “each week we learned something that could be immediately used in our final proposal” and “class discussions were lively and useful.” Also, “[t]he sequence of course content, alignment of activities with the course objectives, and the overall organization... helped... remember the essentials...”

(2) *Incremental and relevant assignments for continuous feedback.* To ensure sufficient progress and quality development of the evaluation proposal, multiple intermediate progress reports were built in for students to get input from stakeholders and receive feedback from both the instructor and student peers. Students commented, “the partial submission of each component . . . really assisted with refining the final product as we could get peer and expert [the instructor] feedback.”

(3) *Integrated hands-on, real-world service-learning experience to deepen engagement.* Students appreciated the engagement with stakeholder activity, which was crucial to deepening students’ understanding of communities’ authentic life issues. Gaining the “critical insights on addressing potential challenges and issues during the evaluation process” was invaluable. “The ability to connect directly with stakeholders” has been “an amazing opportunity” which students really appreciated, and “learning content and applying it to the project allowed...[us] immediately [to] use what [we] learned in real-world situations.”

(4) *Guided personal reflections to link academic learning with project experience.* Students practiced guided reflection early in class before interacting with community stakeholders. In-class group debriefing was facilitated to address anxiety, concerns, or misconceptions students may have had. Students reflected they now “know what questions to ask, [and] what direction to take to construct a strong and thorough evaluation proposal.”

(5) *Constructive, safe, and relaxed learning environment boosted learning.* Studies indicate emotion plays a significant role in affecting humans’ cognitive process, including learning and memory (Tyng, Amin, Saad, and Malik, 2017). Creating a caring and safe environment is critical to help ease anxiety and facilitate learning. Student feedback reinforced this critical yet often overlooked factor: “[the instructor] created a learning environment that is encouraging and conducive to classroom discussion surrounding the topic.” “The instructor made this class fun and interesting . . . facilitated a meaningful course,” and “demonstrated interest in helping me succeed, . . . boosted my confidence and enabled me to relax and learn!”

Finally, Table 5 showcased weekly course topics with readings and assignment activities and corresponding competency-based measurement items to provide practical guidance on the course design and logistic timeline for teaching implementation. Article reviews (AR) were arranged throughout the semesters. Each article review engaged a pair of students from different disciplines to analyze and critique an evaluation article of students’ choice to encourage critical thinking. The instructor taught essential evaluation concepts through the weekly informative lectures with examples and exercises to build the week’s targeted evaluation competencies. Partial submissions of each

evaluation proposal component with feedback from peers and instructors were built in throughout the semester, including an early progress report, regular checkpoints with stakeholders, project discussions, peer critics on drafts, and final oral and written proposals. These were aimed to challenge students to balance the rigor required for evaluation with stakeholder perspectives and constraints in real life while assisting with refinement for quality final proposal development. Finally, mini-assignments were designed to engage students with a deeper understanding and application of the various threats to validities and different evaluation designs to further strengthen the critical evaluation competency in the methodology technical practice domain. Further course design elements and pedagogy details were documented elsewhere (Hou, in press).

Discussion

Integrating course-based interdisciplinary service-learning projects to bridge stakeholder engagement and authentic learning demonstrated a profound impact on developing (training) program evaluation competencies among students. Quantitative data showed such engaged community service-learning experience with hands-on practice in real-life evaluation projects significantly increased confidence in the 6-item course learning objectives, the Program Evaluation Competency Scale (PECS-17), and the two overall evaluation competency assessment. Also, qualitative reflections on the five essential domains of evaluation competencies convergently showed positive outcomes. These convergent findings from both quantitative scales and qualitative reflections demonstrated strong empirical evidence of program evaluation competencies gained among study participants.

Identifying meaningful community service opportunities linked to carefully designed course activities addressing academic learning objectives requires experience and training (Hou and Wilder, 2015; Hou, 2010; Hou, 2009). Such a high-impact learning approach is time-consuming and needs significant advanced planning and follow-up debriefing to continue building positive campus-community partnerships. Faculty teaching and learning workshops on course-based service-learning pedagogy and strategies are recommended to better prepare competent instructors for developing qualified future evaluators.

Bridging the gap between academic learning and community implementation can reward all parties involved, including students, community partners, faculty, and the institution (Hou and Wilder, 2015; Hou, 2010). Creating evaluation proposals for community partners who may adopt and implement has been a life-changing experience that many students cherish. The current empirical study shows “[i]nteracting first-hand directly with real community partners [has] been very eye-opening” and re-shaped students' views towards high-risk communities, besides developing “increased self-confidence we didn’t have before.” Community partners have genuinely appreciated the “professional and objective insight students provided” to their projects and assessments. Such an arrangement helps partners “reflect on their own practice from new points of view.” The first-hand experience, seeing how such course-based service-learning approaches can deepen and internalize skills learned, can reinforce an instructor’s passion and commitment to such teaching and learning approaches. This is also “an important way to fulfill the civic roles of higher education institutions and increase university’s visibility while building trusting academic-community partnerships” (Bakken et al., 2014; Conway, 2009; Cauley et al., 2001).

A few limitations of this study should be noted. This mixed-methods evaluation was a one-arm before and after study with no comparison group and subject to potential validity threats (Rossi et al., 2003). Although data were collected during 2015-2019 from five cohort groups of students, the sample size was still relatively modest. In addition, only the 2019 cohort group was given the five qualitative questions specifically probing the five essential evaluation domains. The PECS-17 was also not developed with the purpose to equally map out the five essential competency domains. Instead,

key step-by-step performance objectives critical to designing a complex evaluation study were identified to address more of the evaluation competencies' technical skills domain. Thus, not surprisingly, nearly 60% of the competency items measured were primarily in the methodology technical practice domain. The study used the five-item qualitative measurement tool to examine student learning in all five essential competency domains in a more balanced way. Additional items may be added to allow for potential sub-scale analyses in the future. A larger sample size and comparison group would also strengthen this mixed-methods evaluation design. All cohorts were taught by the same instructor, and the course's success could be due to the instructor's skills in addition to the course's design.

Implications on Teaching

This study contributes to the much-needed empirical study data examining the role of course-based service-learning opportunities that integrate real-world experience with hands-on practice for student evaluation competency development. The current study's empirical data demonstrates such teaching approaches have significantly impacted student development and showed significant increases in evaluation competencies and student confidence. This study identified five key course design features with empirical student quotes illustrating the impact on student learning. The PECS-17, along with the five qualitative questions examining essential evaluation competency domains, provide a short yet effective research-tested mixed-methods measurement tool to assess evaluation competency outcomes. This study has implications on teaching evaluation among graduate students. Evaluator educators who strive to provide competency-based experiential learning to develop competent evaluators can gain practical guidance on key course design features and corresponding competency-based measurement tools to assess evaluation competency outcomes.

Appendix

Appendix 1. Table 1. Baseline and End Course Self-assessment on Course Learning Objectives.

I feel confident to ...	Baseline (n=46) Mean (SD)	End-Course (n=51) Mean (SD)
LO1 – Apply evaluation concepts & terminology.	2.70 (1.25)	4.61 (.60)
LO2 – Apply principles of research design to evaluation questions.	3.17 (1.22)	4.69 (.62)
LO3 – Apply qualitative and quantitative data collection methods for evaluation.	3.22 (1.05)	4.57 (.67)
LO4 – Describe economic evaluation.	3.17 (1.22)	3.98 (.93)
LO5 – Demonstrate oral and written communication skills in the delivery of evaluation proposal.	3.54 (1.11)	4.75 (.48)
LO6 – Collaborate interdisciplinary with group members to work on presentation(s) and/or paper(s).	4.26 (.95)	4.71 (.58)

LO(6) ^a _Item mean (SD) ***	3.34 (.87)	4.56 (.43)
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Note: ^a LO (6) = Learning Objective scale; Cronbach alpha was .859 (CITC ranged .467~.778)
 *** p<.001

Appendix 2. Table 2. Baseline and End Course Assessment on the 17-item Program Evaluation Competency Scale (PECS-17)^a.

I feel confident to ... (Evaluator Competency Domain) ^b	Baseline (n=46) Mean (SD)	End-Course (n=51) Mean (SD)
PECS-1. Identify and analyze key stakeholders. (CSP).	3.77 (1.09)	4.78 (.42)
PECS-2. Work ethically and respect all stakeholders. (PRP).	4.63 (.81)	4.97 (.18)
PECS-3. Apply professional evaluation standards. (PRP).	3.51 (1.34)	4.57 (.64)
PECS-4. Describe a policy or program for evaluation purposes. (CSP).	3.37 (1.11)	4.80 (.45)
PECS-5. Articulate or develop a policy / program logic model for evaluation. (MTP).	3.06 (1.33)	4.73 (.45)
PECS-6. Describe different types of exploratory evaluation. (MTP).	2.77 (1.22)	4.55 (.57)
PECS-7. Frame evaluation questions based on different types of evaluation purposes. (MTP).	2.77 (1.24)	4.65 (.63)
PECS-8. Explain similarities and differences between process and outcome evaluations. (MTP).	3.09 (1.40)	4.61 (.64)
PECS-9. Identify threats to evaluation validities. (MTP).	3.11 (1.18)	4.69 (.47)
PECS-10. Discuss strengths and weakness of various evaluation designs. (MTP).	3.20 (1.26)	4.47 (.46)
PECS-11. Develop sound evaluation designs to address threats to validities. (MTP).	2.91 (1.31)	4.55 (.64)
PECS-12. Discuss strengths and weakness of various data collection methods. (MTP).	3.60 (.91)	4.69 (.62)
PECS-13. Develop appropriate data collection and sampling plan to answer evaluation questions.	3.31 (1.18)	4.51 (.64)
PECS-14. Provide rationales and evidence for decision-making throughout the evaluation planning process. (MTP).	3.06 (1.26)	4.69 (.55)

PECS-15. Develop thoughtful evaluation management plan (including timeline, activities, budget, etc.). (PMP).	3.00 (1.26)	4.61 (.64)
PECS-16. Provide constructive comments and feedback to other evaluation proposals. (IP).	3.26 (1.20)	4.67 (.52)
PECS-17. Prepare a sound evaluation proposal including key evaluation components. (PRP).	2.89 (1.21)	4.71 (.46)
PECS-17 ^a Scale item mean (SD) ***	3.25 (.99)	4.76 (.28)
Overall Program Evaluation Competency (end-course)		
ProgEval_OV1 – Overall, this course increased my confidence in the evaluation field.	NA	4.75 (.53)
ProgEval_OV2 – Overall, this course equipped me with important evaluation skills and competencies I may use for my future career.	NA	4.80 (.45)

Note: ^a PECS (17) = Program Evaluation Competency Scale (17-item): Cronbach alpha was .971 (CITC ranged .480~.901)

^b Evaluator Competency Domains: PRP = Professional Reflective Practice; CSP = Context Situational Practice; MTP = Methodology Technical Practice; PMP = Planning & Management Practice; IP = Interpersonal Practice

*** p<.001

Appendix 3. Table 3. Qualitative Summary on the Five Essential Program Evaluation Domains (n=8).

Evaluation Competency Domains	Key sub-Themes Identified	Sample Quotes
Professional Reflection Practice	Increased confidence on critical evaluation skills	<p><i>At the beginning ... I didn't know much ... However now ... I can critically analyze, as well as design an evaluation. (A)</i></p> <p><i>I feel more confident to work on an evaluation project (either policy or program) in the future as I have gained the necessary skills in this area. (B)</i></p> <p><i>Much more confident to critically examine the structure of a program and tie to literature. (C)</i></p>
	Real-world eval Project gave invaluable insights and deepened application competency	<p><i>The project gave me invaluable insights as to how to apply the knowledge learned in the class to a real-world example. (B)</i></p> <p><i>... What stands out most is the stark difference between idealistic evaluation I have been told to consider in the past and the messy reality of dealing with a complex multifaceted program that may not have a theoretical basis to start with. (D)</i></p>

		<p>... This course allowed for the professional practices of evaluated a program, identifying stakeholder and in a structured manner provide meaningful feedback on evaluation. (G)</p> <p>I felt competent enough to speak to stakeholders, present to them with knowledge we had, and convey our thoughts in a professional manner. (H)</p>
Methodology Technical Practice	Increased competency and appreciation of the Mixed Methods Evaluation Design	<p>I now feel more competent in technical aspects of the evaluation designs... when conducting a process evaluation, one is most likely to use a qualitative method as it would provide detailed information describing the program / policy's process. On the other hand, an outcome evaluation could benefit from both qualitative and quantitative (mixed) as the quantitative method helps to measure outcomes and changes over time. The qualitative component of an outcome evaluation would be helpful in providing more in-depth information to further validate the quantitative findings. (E)</p> <p>...It is interesting to note all of our groups opted for a mixed methods evaluation design...(D).</p> <p>We used a mixed method approach to evaluation. I feel competent in the area of using both a structured interview and quantitative survey instrument. (G).</p>
	Increased confidence in choosing appropriate design and justify it	<p>... we thoroughly reviewed various designs and methods that had been used in similar research studies ... It was not easy to choose the best method for our study. After talking to the professor and considering other parts of the project, not only we were able to choose a methodology, but also we were able to justify it, which is a new skill to me ... (B).</p> <p>I feel significantly more confident in ... practical methodologies for program evaluation ... the research designs ... issues that came up while working with our community partners revealed the complexity of developing an evaluation design. (D).</p>
Context Situational Practice	Strengthened relationship building with community partners	<p>I was a bit nervous ... the staff were always with us, so we did not feel abandoned... we made sure we were extra considerate of their time and tried to be as transparent with them in our goals and intentions... (A).</p> <p>This course certainly assisted in understanding stakeholders unique circumstances and cultures ... (D).</p> <p>... such partnerships provide the ability of multiple perspectives and mutual learning experiences. (E)</p>
	Real-world complexity and cultural values	<p>... Our interaction with the community partner informed us of the values and culture of the participants, and enabled us to design our evaluation project accordingly. (B).</p> <p>This semester reminded me of the complexities of social services and direct practice... completing the evaluation project helped me to understand such complexities from the perspective of a researcher ... (E).</p>

Planning & Management Practice	Improved team communications	<i>We had a good communication system in place within our group... used OneDrive to share documents ... and set up in-person meetings... (A).</i> <i>I learned .. how to effectively brainstorm with my group and how to communicate with our community partners in order to share ideas or to gain information about their program. (B).</i> <i>My planning and management skills have definitely improved ... My pre-existing skills are more developed as a result of this course. (C).</i>
	Planning for practical use was exciting	<i>... gave us a chance to develop a version for potential practical use which was exciting and interesting given that we had to interview our community partner to figure out the best plan of action. (D).</i>
Interpersonal Practice	Strengthened Internal team communication	<i>... we have all grown to understand one another and how we work... (A).</i> <i>The course challenged my interpersonal skills in a positive way. Working in groups, it is common that group members will have varying views, opinions, and even comprehension of certain content. The course project helped to better communicate my perspective and to do so assertively. The course helped me to also adopt admirable interpersonal skills from group members. (E).</i>
	Increased effective communication with external community partners	<i>... I learned how to effectively communicate with my group, the community partner, and other stakeholders involved. (B).</i> <i>This class helped improve my professional correspondence and communication... with stakeholders... (F.).</i> <i>The interpersonal exchange of information both internal [classmates] and external [program] stakeholders went well. I feel confident in the area of interpersonal skills. (G).</i>

Table 4. Key Course Design Features with Student Quotes (n=51).

Successful Course Design Features	Student Sample Quotes
Overall carefully structured course with sequential design to facilitate progressive learning	<i>The class lectures were informative & the discussions were lively and useful. It is very helpful to apply what we learned in class to the real field.</i> <i>A well-designed high-quality course, the content is sequential & transparent. The threats to validity was an extremely helpful exercise as it allowed the class to collectively pick apart the nuances of threats.</i> <i>I'm 100% love this class & its organization! Each week we learned something that could be immediately used in our final proposal. I appreciate the active learning style.</i> <i>The sequence of course content, alignment of activities with the course objectives, and the overall organization of the course helped me remember the essentials of eval research years from now.</i>

Incremental and relevant assignments for continuous feedback	<p><i>I enjoyed the course structure, the partial submission of each component of the major assignment really assisted with refining the final product as we were able to get peers & expert [the instructor] feedback.</i></p> <p><i>Instructor is great at giving feedback & direction throughout the course.</i></p> <p><i>[The instructor] keeps everyone on a really reasonable timeline that ensures the completion of our papers in a timely manner while reaching our learning objectives too.</i></p>
Integrated hands-on real-world service-learning experience to deepen engagement	<p><i>The course has challenged me to assess evaluation outcomes from different stakeholder perspectives. I gained invaluable critical insights on addressing potential challenges and issues during the evaluation process.</i></p> <p><i>The ability to actually create evaluation proposals for programs that may actually be implemented is an amazing opportunity which I appreciated.</i></p> <p><i>Learning content & applying it to the project allowed me to immediately use what learned in real-world situations.</i></p> <p><i>I appreciate the opportunity to connect directly with stakeholders and to have them present during the presentations. This was such a large undertaking.</i></p> <p><i>The class was extremely hands-on & the professor was always available for additional assistance. This class was phenomenal & by far my best experience as a doctoral student.</i></p>
Guided personal reflections to link academic learning with project experience	<p><i>I feel that I know what questions to ask & what direction to take to construct a strong & thorough proposal!</i></p> <p><i>Overall, I really enjoy this class and have learned so many useful things here, and really look forward to ... do the real program evaluation in my future career.</i></p>
Constructive, safe, and relaxed learning environment boosted learning	<p><i>[The instructor] created a learning environment that is encouraging and conducive to classroom discussion surrounding the topic.</i></p> <p><i>[The instructor] made this class fun & interesting! I really enjoyed the class! [Instructor] is programmatic & flexible. This facilitated a meaningful course.</i></p> <p><i>[The instructor] demonstrated interest in helping me succeed boosted my confidence & enabled me to relax & learn!</i></p> <p><i>Very organized and clear professor! Teaching core concepts through informative lecture with examples and exercises were very impressive. Truly appreciated!</i></p>

Table 5. Evaluation Course Topics, Assignment Activities, and Corresponding PECS-17 Performance Competency Measurement.

Week	Topic	Readings	Assignment Activities	PECS-17 Measures
Week 1	Introduction to Program Evaluation & Performance Management	<ul style="list-style-type: none"> • CDC Guidebook (p.1-12) • Wholey ch 1 • AEA Cultural Competence in Evaluation 	Identify a program or policy for eval	PECS-1 PECS-2
Week 2	Potential Project opportunities Evaluation Standards & Ethical Guidelines	<ul style="list-style-type: none"> • AEA Eval principles • JCSEE Eval Std Statements • Ethical principles cases – Interdisciplinary group discussion 	Human subjects training Discuss article review rubric	PECS-2 PECS-3
Week 3	Analyzing & Engaging Stakeholders	<ul style="list-style-type: none"> • CDC Guidebook (p.13-20) • Wholey ch 2 • Article review (1) 	Confirm Eval Project Program & stakeholder description <i>Before project reflections</i>	PECS-1 PECS-2 PECS-3
Week 4	Program theory & Logic Models	<ul style="list-style-type: none"> • CDC Guidebook (p.21-41) • Wholey ch 3 • Kellogg Logic Model Guide 	Draft logic model Human subjects training (completed)	PECS-4 PECS-5
Week 5	Exploratory Evaluation	<ul style="list-style-type: none"> • Wholey ch 4 	Eval purpose statement Progress Report <i>Early project reflections</i>	PECS-4 PECS-5 PECS-6
Week 6	Eval Designs (1) / Threats to Validities	<ul style="list-style-type: none"> • Mertens & Wilson ch 9 • Wholey ch 26 • Cook & Campbell Ch 2-3 	Come prepared to discuss validity threats Mini-assignment (1)	PECS-7 PECS-9
Week 7	Evaluation Designs (2) / Experiment & Non-Experiment Designs & Reporting	<ul style="list-style-type: none"> • Mertens & Wilson ch 9 • Wholey ch 6, 7, 9 • Cook & Campbell Ch 4-8 • Article review (2) 	Draft evaluation design & discuss validity threats Mini-assignment (2)	PECS-9 PECS-10
Week 8	Data Collection (1) / Methods Overview	<ul style="list-style-type: none"> • Wholey ch13-14,17-18, 23 • Mertens & Wilson ch 10 	Draft / identify instrument & data collection plan	PECS-10 PECS-11

				PECS-12
Week 9	Data Collection (2) / Sampling & Human Subject	<ul style="list-style-type: none"> • Wholey ch 16, 19-22 • CDC Guidebook (p.56-73) • Valera (2014) 	Draft sample plan & consent document	PECS-2 PECS-12 PECS-13
Week 10	Process & Outcome & Performance Evaluation <i>Withdrawal deadline</i>	<ul style="list-style-type: none"> • Mertens & Wilson ch 9 • Wholey ch 8 • Article review (3) 	Eval Questions (process & outcomes) Progress discussion (eval design + threats to validity) <i>mid-term course feedback</i>	PECS-7 PECS-8
Week 11	CBA & CEA Evaluations	<ul style="list-style-type: none"> • CDC Guidebook (p.42-55) • Wholey ch 5 • Article review (4) 	Eval proposal consultations	PECS-7 PECS-14
Week 12	Policy Evaluation	<ul style="list-style-type: none"> • CDC Guidebook (p.74-81) 	Eval proposal consultations Policy vs. Program Evaluation Reflection (Discussion post)	PECS-11 PECS-14
Week 13	Peer Critique Eval Proposals <i>Re-Cap & Q/A</i>	<ul style="list-style-type: none"> • Wholey ch 24 	Bring one copy of your proposal draft for peer critique	PECS-14 PECS-15 PECS-16
Week 14	Providing Recommendations	<ul style="list-style-type: none"> • Wholey ch 21, 27 	Final Evaluation Proposal Presentations (1)	PECS-16 PECS-17
Week 15	Writing for Impact	<ul style="list-style-type: none"> • Wholey ch 28 	Final Evaluation Proposal Presentations (2) <i>Final course feedback</i>	PECS-14 PECS-16 PECS-17
Week 16		<ul style="list-style-type: none"> • Final Eval Written Proposal Due @ 7pm 	Written eval proposal due <i>Final project & course reflections</i>	PECS-17

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