Assessment for Learning: Integration of Assessment in a Nutrition Course with a Service-Learning Component

Sarah Misyak[1], Jennifer Culhane[2], Kathryne McConnell[3] and Elena Serrano[4]
Virginia Tech
Blacksburg, VA

NACTA
north american colleges and teachers of agriculture
connect | develop | achieve

Abstract

The inclusion of service-learning in higher education is an opportunity to enhance experiential curricula to increase student success post-graduation in the current dynamic and challenging job market. However, designing effective assessments to measure learning that takes place outside the classroom may be a difficult aspect for educators interested in including community-based learning opportunities in their curricula. A 2014 Community Nutrition course incorporating a service-learning assignment is used as an example of Assessment for Learning to achieve predetermined learning objectives. The purpose of this paper is to illustrate how educators can implement structured, multi-faceted assessment within service-learning using intentionally designed assignments that include multiple points of feedback to students, providing opportunities for reflection and learning. Examples of assessment tools that can be applied to a variety of class structures and environments are also provided.

Keywords: assessment for learning, service-learning, experiential learning

Introduction

In 2012, the Academy of Nutrition and Dietetics (AND) Council on Future Practice released a visioning document recommending to revise the undergraduate curriculum for dietetics education programs to include requirements for practicum and diverse learning experiences outside of the classroom to develop students' critical thinking, leadership, communication and management skills by providing opportunities to experience them in the context of professional work settings (ACEND, 2012). Inclusion of this kind of experiential learning in dietetic programs mirrors broader calls within higher education to expose students to more active, authentic learning experiences and represents an opportunity to enhance curricula to better prepare future health professionals to succeed in a dynamic and challenging field. Other competencies suggested in 2015 included development of communication skills to transfer knowledge, cultural communications, written and verbal communication skills, knowledge of determinants of health and diversity, critical thinking and cultural care (ACEND, 2015).

Service-learning, one of the identified high-impact practices in higher education, facilitates deep learning and fosters general, personal and practical gains through a practice that students may enjoy more than the traditional lecture (Kuh and O'Donnell, 2013; Stavrianeas, 2008). While studies illustrate the best practices within service-learning, the process of embedded assessment that is formative and ongoing throughout the semester where the activity takes place is minimal. This is imperative to provide evidence of student learning and to meet accreditation, and/or workforce expectations of employers (James et al., 2002).

Multiple challenges may discourage educators from including service-learning in curricula. These challenges include but are not limited to: (1) the difficulty of assessing service-learning assignments where the bulk of the assignment takes place out of the controlled environment of a classroom, (2) policy constraints, (3) curriculum requirements, (4) pressure to "teach to the test" and (5) classroom logistics (e.g. large classroom or limited class time). The purpose of this paper is to illustrate how educators can plan and implement multi-faceted service-learning experiences with embedded assessment measures utilizing a Community Nutrition course at a land grant university as an example. Examples of different strategies to assess student learning are also provided.

[1]Integrated Research-Extension, Food Systems and Policy Coordinator, Family Nutrition Program (ENFEP and SNAP-Ed), The Department of Human Nutrition, Foods and Exercise, smisyak@vt.edu.

[2]Director of First Year Academic Initiatives, The Office of First Year Experiences, jculhane@vt.edu.

[3]Senior Director for Research and Assessment, Association of American Colleges and Universities (AAC and U), mcconnell@aacu.org.

[4]Associate Professor, Family Nutrition Program (ENFEP and SNAP-Ed) Project Director, The Department of Human Nutrition, Foods and Exercise, serrano@vt.edu.

Conceptual Framework: Assessment for Learning

Educators must move from assessment of learning to an Assessment for Learning (AfL), where assessment is embedded in education and is, in itself a learning process (Huba and Freed, 2000; Martinez and Lipson, 1989; Schuwirth and Van der Vleuten, 2011; Swaffield, 2011). Premises of AfL include clarifying and sharing criteria and learning intentions with learners, facilitating assessments that produce evidence of student learning, providing meaningful feedback for learners and having students take ownership of their own learning while serving as resources for each other (peer and self-assessments) (Swaffield, 2011; Wareing, 2012). AfL involves moving beyond grades as a metric (summative or occurring at the end of the learning process) to use for improvement of student learning and adaptive use of pedagogical technique based on a feedback process (summative and formative, or an iterative assessment occurring during the learning process). Given that students value assessment above other elements of a curriculum, Kearney (2012) posits that educators should use this to their advantage to engage students and enhance learning. Unfortunately, this kind of authentic assessment is often the "missing part of pedagogy" (Brookhart, 1999).

The inclusion of formative assessments does not constitute AfL, which is a learning process that includes learning how to learn and therefore better positions students for lifelong learning. Formative assessment in isolation can simply be used to guide the pedagogical process and future learning activities, concentrating on curricular objectives (Swaffiled, 2011). Highly effective assessments are included in the course design process to ensure assignments elicit necessary information, align with course teaching and learning objectives and utilize multiple measures including those that provide timely feedback on learning (James, 2008; NAS, 2009; Price et al., 2010). Finally, *"because important decisions are based on information derived from classroom assessments, it is imperative that the information be of high-quality: accurate, dependable, meaningful, and appropriate"* (Brookhart, 1999, p. 13).

Course Description

The Department of Human Nutrition, Foods and Exercise at Virginia Tech offers an accredited Didactic Program in Dietetics. Community Nutrition, a senior-level dietetics course, contributes, in part, to the knowledge and skills required to maintain accreditation of the program. This is the only course within the dietetics program in which students are exposed to the practice of community nutrition as opposed to a clinical or food service management focus.

An a priori assumption when designing this course was that students can best learn to apply classroom-based skills in community settings in culturally appropriate ways by learning in communities from community members. Service-learning experiences can help students to apply knowledge in real-world settings while improving communication skills when they are given frequent and quality feedback (Gilboy, 2009). Service-learning can also provide an opportunity for students to build awareness of cultural differences and challenge previously held assumptions about the populations that students will work within after graduation (Pierce et al., 2012). As such, service-learning structured the primary assignments/activities for the course, accounting for 55% of the course grade.

Based on Kolb's experiential learning cycle, including the concepts of abstract conceptualization, active experimentation, concrete experience and reflection observation (Kolb, 1984), 38 students were required to complete 20 hours outside the classroom with one of 12 community partners during the semester. Community partners were identified by the instructor and VT Engage, The Community Learning Collaborative at Virginia Tech which is responsible for developing short and long-term community learning opportunities for Virginia Tech students, faculty and staff (VT Engage, 2014). The course community partners included food pantries (3), Extension personnel running community nutrition programs (3), child nutrition educators (1), local farmers/community gardeners (2), fresh food pantry managers (1), a subsidized assisted living facility coordinator offering a food management planning opportunity (1), and a farmers market manager and an Americorps Volunteer in Service to America serving low-income individuals and families (Corporation for National and Community Service, 2015) (1). At the beginning of the course, community partners presented briefly about their sites and the learning experience offered to students. Following the presentations, students ranked the sites in order of preference using online survey software, noting any transportation barriers and scheduling conflicts prior to community partner selection. Each community partner was assigned at least one student in accordance with their communicated needs.

In addition to standard content-based course reading selections, The Service Learning Companion was also assigned to clarify the definition, practice and benefit of a service-learning experience to prepare them for the assignment (Duncan and Kopperud, 2008). Students were also required to articulate their own learning objectives and expectations for their service-learning experience and interview their community partners to determine mutually beneficial needs and expectations.

Assessment of Student Learning

The assessment plan was designed by an assessment team consisting of multiple faculty members with varying expertise. The team worked collaboratively to build an assessment plan that would meet the needs of the new instructor and students while contributing to accreditation requirements. Several factors, including the purpose of the assignments and the type of assessment (formative vs. summative) required, were taken into account. For a list of the assignments, assessment

Table 1. The assessment scaffolding used in Community Nutrition.					
Assignment	**Assessment Type**	**Time Commitment**	**Time Point**	**Assessment Method**	**Graded (Yes/No)**
Personal Response System (e.g., "Clickers")	Formative	Minimal	Immediate	i-clickers	No
In class discussions	Formative	Medium	Immediate	Field notes and listening	Not explicitly (attendance and participation was required)
Reflective Writing assignment	Formative and Summative	Intensive	On-going	Weekly feedback Grade for completion	Yes
Needs Assessment Plan, Justification and Timelines	Formative and Summative	Intensive	Ongoing	Rubric	Yes
Poster Presentation	Summative	Medium	Immediate	Rubric evaluation by university and community members	Yes
Community Partner Evaluation	Summative and Formative	Medium	Immediate	Hour completion (honor system) and community partner feedback through rubric	Yes

method, time commitment by the instructor, and whether the assignment was graded, see Table 1. Another fairly unique consideration for service learning was how to assign grades to student progress and achievement in an activity that took place outside of the classroom. To address this issue, community partners were included in the grading process.

The assessment was designed to facilitate the reflective portion of Kolb's experiential learning model by including both formative and summative assessments to ensure students were making progress towards meeting the learning objectives while providing ongoing feedback to the instructor on the impact of pedagogical techniques. The assessment also provided feedback and grades in accordance with student and institutional expectations. Time commitment of the educator and the time point in which a given assessment method could provide feedback to the educator and/or the students was considered. Course assignments were designed to meet students at their level of knowledge, experience and skill in the course, while setting the stage for growth and movement forward. This approach challenges students to move toward a more independent and applied learning process (Vygotsky, 1978). Both low and high-stake assessment methods were incorporated into the assessment plan. Low-stakes methods provided valuable informal feedback between the instructor and students while still allowing for formal feedback to students, administration and the institution in the form of grades through higher-stake assessments.

The objective of formative assessments in the course included: gauging student progress in meeting the learning objectives and completing assignment requirements through weekly reflective writing assignments, an assignment in which students designed a needs assessment based on their service learning experience with opportunities for feedback prior to receiving a grade, weekly reflective journals with feedback provided and feedback on their service-learning performance by community partners. An additional purpose of formative assessments included providing immediate and ongoing feedback to the instructor from the students on the service-learning experience to allow for the alteration or adjustment of pedagogy as needed through the use of personal response systems and in-class discus-

sions. Summative assessments were used to provide a final evaluation and grades to students. The summative assignments were an academic poster presentation of their service-learning experience and a final evaluation by community partners. Some assignments were both formative and summative. Students received a final aggregate grade for the reflective journal assignment and the needs assessment assignment.

Low-Stake Assessments

Personal response systems – often referred to as "clickers" – and in-class discussions were used as formative assessment measures in the course to encourage critical thinking and reflection by students. The personal response system provided an easy avenue for anonymous student feedback. The results were anonymous in class, but the instructor was able to review and match responses to specific students at a later time. This process granted the instructor insight into challenges and successes students experienced at specific time points in the course while affording the instructor a chance to address student concerns. Adaptive changes made by the instructor based on student feedback served to create a trusting relationship between the students and the instructor, emphasizing the impact student feedback had on course assignments.

Formal, in-class discussions were scheduled weekly as a low-stakes AfL activity to allow students to construct their understanding of theory and practice (Swaffield, 2011), creating a space for reflection in the classroom. Discussions were additionally valuable for collecting evidence of the learning process and informing pedagogical practices throughout the semester. Discussion topics and talking prompts were planned in advance and revised in an ongoing process to meet student needs. While in class discussions required more time and planning on the part of the instructor they enhanced student learning.

High-Stake Assessments

Using an AfL framework, assignments built upon on each other, culminating in students being able to design and propose a community nutrition needs assessment and program plan. Generally, high stakes assignments require more planning and overall time input by the edu-

cator. Course specific examples of high stakes assignments included intensive reflective writing, a needs assessment planning assignment and a poster presentation illustrating the service-learning experience. To ensure students are learning, opportunities for feedback should be included in the assessment process. While feedback is generally valued by students (Hyland, 2000; O'Donovan et al., 2011) and considered a crucial part of facilitating students' development as independent learners (Evans, 2013; Fergusun, 2011), the actual process of providing meaningful feedback can be difficult for educators given logistics of providing an authentic assessment of student learning with limited instructor time and the potential for large class sizes (Judd and Keith, 2012).

Reflective writing assignments served as an opportunity to provide detailed feedback to students on their service-learning experience, their ability to reflect on that experience and synthesize that knowledge with course concepts and their writing competency. In this course, reflective writing assignments were used to encourage reflection on the service-learning experience, leading students to tie course concepts into their reflections while developing their own writing style. Sampling, or the selection of a subset of students to receive feedback at a given time point, is one strategy for providing feedback to students without overburdening the instructor. In this course, ten students were chosen per week to receive meaningful, in-depth comments on their reflective writing assignments. Of the ten students chosen each week, any student who did not successfully tie in course concepts or use an appropriate writing style were required to revise their reflections based on the provided feedback and resubmit in order to receive credit on the assignment. Students not chosen that week received full credit for turning in a reflection on time.

Feedback given before a final grade is assigned may be more helpful to students than feedback given after an assignment is completed (O'Donovan et al., 2011). In this case, the reflective writing assignments helped students to develop a knowledge base and under-

standing of community nutrition concepts and practice that was necessary to complete their high-stakes poster presentation assignment. Working in groups, students used their service-learning experience as an anchor. This was the culminating assignment, tying in a needs assessment to a proposed project at the end of the semester with concepts and theories learned throughout the semester. Students expressed some discomfort with the unfamiliar structure and broad criteria of the reflective writing assignment, so the poster presentations, which were given in lieu of a final exam, were very structured. The poster presentation had a formalized rubric so students had a clear understanding of requirements and expectations (Table 2). This formalized rubric was one of many adaptations made during the semester in response to student feedback.

Inclusion of Community Partners in the Grading Process

The purpose of including service-learning as a course assignment was to create space for students to learn about community nutrition within community settings from community practitioners. Community practitioners took on the role of community-based educators showing students practical aspects of community nutrition. This type of community-based learning was an explicit goal of this course, hence it was logical to ask community partners to provide input on student grades. Instead of having students log their service-learning hours for accountability, community partners evaluated students in a formal capacity upon completion of their required 20 hours of service. Community partners also provided qualitative feedback to students on their performance that addressed student competencies.

Community partners, along with other faculty members from The Department of Human Nutrition, Foods and Exercise and VT Engage, were also invited to the end of course poster presentation session, which served to showcase the culmination of the semester experience by presenting their plan for a community nutrition educa-

Criterion Measured	Capstone Points 23-25	Milestones Points 20-22	Points 18-19	Benchmark Points ≤17	Points Earned
Communication *Oral and Written Communication of Context, Perspective and Central Message*	•Thorough understanding of context, audience and purpose of service-learning site •Articulates a compelling and innovative central message	•Adequate understanding of context, audience and purpose of service-learning site •Clear central message	•Awareness of context, audience and purpose of service-learning site •Basic and/or understandable central message	•Minimal attention to context, audience and purpose of their service-learning site. •Central message is deducible but not explicit	
Critical Thinking *Explanation of Community Need*	•Considered critically, stated clearly and comprehensively •Delivered all relevant information	•Some omissions of community need •Understanding is not seriously impeded by omissions	•Description leaves some terms undefined and other ambiguities	•Not considered critically •Stated without clarification or description	
Intercultural Knowledge *Knowledge of cultural worldview frameworks*	•Sophisticated understanding of another culture in relation to its history, values, politics, communication styles, economy, or beliefs and practices	•Adequate understanding of another culture in relation to its history, values, politics, communication styles, economy, or beliefs and practices	•Partial understanding of another culture in relation to its history, values, politics, communication styles, economy, or beliefs and practices	•Surface understanding of another culture in relation to its history, values, politics, communication styles, economy, or beliefs and practices	
Civic Engagement *Civic Context and Structure*	•Demonstrates ability and commitment work collaboratively in community for a civic aim	•Demonstrates ability and commitment to work actively in community for a civic aim	•Demonstrates experience identifying ways to participate in civic contexts and structures	•Experiments with civic contexts and structures	
Total Points					/100

Table 2. Poster presentation evaluation rubric for Community Nutrition.

tion program based on their service-learning site needs assessment. The poster presentation evaluation rubric (Table 2) was also designed to incorporate community partner and stakeholder perspective and feedback into grading the presentations. The poster evaluation scores were then averaged for each student group to calculate the final grade for the poster presentation. Incorporating community partner feedback and establishing clear roles for participation in the service-learning experience for students, faculty and community partners enhances the opportunity to create real world experiences and clarity of employer expectations before undergraduates enter the workforce.

Conclusions/Implications

The assessment plan for this course serves as an example of one approach for assessing student learning, providing ongoing feedback to the instructor to allow for adaptation of pedagogical practices, and providing a framework for assigning grades to students. The assessment plan, which included a variety of methods that met the needs of the instructor, the students, the community partners and the institution to meet accreditation requirements, was a logical approach for a community-focused class comprised of 38 students. The same approach may not be applicable to courses with larger numbers or those without a community focus. However, many assessment methods exist that could be used to meet the needs of educators of varying course subjects and class sizes. Suggestions are provided in Table 3.

Different approaches to assessment of service-learning can be chosen based on the educators'

and students' needs. The above mentioned table offers suggested assignments that may be appropriate for a variety of settings and which can be used to overcome several logistical considerations including available time for in-class activities, creating a manageable workload for grading assignments with or without a teaching assistant, high student to educator ratios, the educational level of students and the need to develop other necessary skills (e.g. writing, effective communication, etc.). In this specific course, learning objectives were aligned with the Association of American Colleges and Universities (2015) VALUE Rubrics for authentic assessment of student learning that included assessment criteria for oral and written communication, critical thinking, cultural sensitivity/intercultural knowledge and civic engagement. These criteria aligned with accreditation requirements for Nutrition and Dietetics programs, development of communication skills to transfer knowledge, cultural communications, written and verbal communication skills, knowledge of determinants of health and diversity, critical thinking and cultural care (ACEND, 2015).

By intentionally switching to an AfL approach, educators can ensure their assessment strategies not only guide education practice but also serve as a way for institutions to demonstrate their proficiency in meeting the needs of accreditation bodies, such as ACEND. A structured, multi-faceted assessment approach to assessing student learning provides educators with a feasible strategy to demonstrate their effectiveness and impact in meeting learning objectives set forth by accrediting bodies while providing valuable and desired feedback to students.

Table 3. Various assessment methods that can be used to meet the needs of educators based on class size and course subject.

What	How	Why
Prior Knowledge Self-Assessment	Ask students to reflect and comment on their level of: • Knowledge • Skills • Experiences	• Prerequisite to your course • Valuable but not essential to the course • Addressed in the course
Observations	Short notes written on: • Notebook • Sticky notes • Note cards	• Picture of student learning over time • Adjust instruction based on student needs
Discussions	Ask good questions: • Explore issues • Ask open ended questions • Online forums • Check in with each student or student group • Small groups	• Foster dialogue/enhance student learning • Insight into the depth of student understanding • Develop critical thinking skills
Ticket-out(in)-the-Door	• Student response to a question on a notecard • Turned in when leaving or entering the next class session	• Insight into the depth of student understanding
Minute Paper	• Post open ended question • Students have 60 seconds • Share on volunteer basis	• Insight into the depth of student understanding • Starts the class discussion
25 Word Summary Assignment for class readings	• Write a 25-word summary that captures the authors purpose • Students turn it in at the beginning of class- share on a voluntary basis	• Insight into the depth of student understanding
Journal	• Blogs • Scaffold reflective writing assignments • Give descriptive feedback	• Capture student learning as a process • Students formulate questions/make connections • Develop critical thinking skills
Think-Pair-Share	• Students pair to discuss topic • Share main theme with class	• Insight into the depth of student understanding • Students formulate questions/make connections • Develop critical thinking skills • Peer Learning
Think-Pair-Square-Share	• Students pair to discuss topic • Share with neighboring pair main theme of discussion • Share main theme with class	• Insight into the depth of student understanding • Students formulate questions/make connections • Develop critical thinking skills • Peer Learning

Literature Cited

Accreditation Council for Education in Nutrition and Dietetics. 2015. Rationale for future education preparation of nutrition and dietetics practitioners. Using the internet for publication http://www.eatrightacend.org/ACEND/content.aspx?id=6442485290. May 19, 2015.

Academy of Nutrition and Dietetics. 2015. http://www.eatrightacend.org/ACEND/. May 19, 2015.

Association of American Colleges and Universities. 2015. Value rubrics. https://www.aacu.org/value/rubrics. October 22, 2014.

Brookhart, S.M. 1999. The art and science of classroom assessment: The missing part of pedagogy. Higher Education Report 27(1).

Corporation for National and Community Service. 2015. http://www.nationalservice.gov/programs/americorps/americorps-vista. May 20, 2015.

Duncan, D. and J. Kopperud. 2008. The service learning companion. Boston, MA: Wadsworth, Cengage Learning.

Evans, C. 2013. Making sense of assessment feedback in higher education. Review of Educational Research 83(1): 70-120.

Ferguson, P. 2011. Student perceptions of quality feedback in teacher education. Assessment and Evaluation in Higher Education 36: 51–62.

Gilboy, M.B.R. 2009. Incorporating service learning in community nutrition. Topics in Clinical Nutrition 24(1): 16-24.

Holston, D.M. and C.E. O'Neil. 2008. Students' evaluation of a communication-intensive service-learning project in a dietetics course. NACTA Journal 52(3): 2-8.

Huba, M.E., J.E. Freed. 2000. Learner-centered assessment on college campuses: Shifting the focus from teaching to learning. Needham Heights, MA: Allyn and Bacon.

Hyland, P. 2000. Learning from feedback on assessment. In Hyland, P. and A. Booth. (eds.). The practice of university history teaching. Manchester: Manchester University Press.

James, M. 2008. Assessment and learning. In Swaffield, S. (ed.). Unlocking assessment: Understanding for reflection and application. Abingdon, UK: Routledge.

James, R., C. McInnis and M. Devlin. 2002. Assessing learning in Australian universities. The University of Melbourne: Centre for the Study of Higher Education.

Judd, T. and B. Keith. 2012. Student learning outcomes assessment at the program and institutional levels. In Secolsky, C. and B. Denison. (eds.), Handbook on measurement, assessment, and evaluation in higher education. New York, NY: Taylor and Francis.

Kearney, S. 2012. Improving engagement: The use of authentic self- and peer-assessment for learning to enhance the student learning experience. Assessment and Evaluation in Higher Education 38(7): 875-891.

Kessler, L.A. and B. Burns-Whitmore. 2011. Student perception of reflection tools used in a service learning community nutrition course. NACTA Journal 55(3): 67-69.

Kolb, D.A. 1984. Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice Hall.

Kuh, G.D. and K. O'Donnell. 2013. Ensuring quality and taking high-impact practices to scale. Washington, DC: AACandU.

Lambert, L.G., K.A. Gabel and J. Culbertson. 2004. Integration of service learning activities into three food and nutrition courses: Benefits and challenges. NACTA Journal 48(3): 53-59.

Martinez, M.E. and J.L. Lipson. 1989. Assessment for learning. Educational Leadership 46(7): 73-75.

O'Donovan, B., M. Price and C. Rust. 2004. 'Know what I mean?' Enhancing student understanding of assessment standards and criteria. Teaching in Higher Education 9(3): 145–58.

Pierce, M.B., E.K. Havens, M. Poehlitz and A.M. Ferris. 2012. Evaluation of a community nutrition service-learning program: Changes to student leadership and cultural competence. NACTA Journal 56(3): 10-16.

Price, M., J. Carroll, B. O'Donovan and C. Rust. 2010. If I was going there I wouldn't start from here: A critical commentary on current assessment practice. Assessment and Evaluation in Higher Education 36(4): 479-492.

Raspberry, C.N. 2006. Teaching nutrition concepts through service learning. Journal of Nutrition Education and Behavior 38(1): 59-60.

Schuwirth, L.W.T. and C.P.M. Van der Vleuten. 2011. Programmatic assessment: From assessment of learning to assessment for learning. Medical Teacher 33(6): 478-485.

Stavrianeas, S. 2008. Students prefer service learning over traditional lecture in a nutrition course. The FASEB Journal 22: 683.1.

Swaffield, S. 2011. Getting to the heart of authentic Assessment for Learning. Assessment in Education: Principles, Policy and Practice 18(4): 433-449.

Tande, D.L. and D.J. Wang. 2013. Developing an effective service learning program: Student perceptions of their experience. Journal of Nutrition Education and Behavior 45(4): 377-379.

VT Engage. 2014. About VT Engage. http://www.engage.vt.edu/about/. May 19, 2015.

Vygotsky, L.S. 1978. Mind in society: The development of higher mental processes. Cambridge, MA: Harvard University Press.

Wareing, R. 2012. Assessment for Learning (AfL). Teaching Business and Economics 16(2): 8-10.