S.L.I.C.E. (Service-Learning in Communities of Elders):
A Program and Evaluation Plan

by

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ABSTRACT

Demographic data indicate that the population in the United States is aging, resulting in large numbers of older adults in the health-care system. Compared with younger adults, older patients have “significantly more family physician visits (average of 4.4 visits per person per year), emergency room visits (average of 0.22 ER visits per year per patient), diagnostic days (average of 5.1 test days per person per year), health conditions (average of 7.7 per patient), and medications (average of 8.2 medications per person).”\(^1\) Despite this large volume, there is still a “worldwide shortage” of geriatricians.\(^2\) The influx of geriatric patients has resulted in leading national medical organizations to recommend increased training in geriatrics for health professionals.

Service-learning provides a unique opportunity for medical students to discover the diversity of older adults and to reflect on these experiences with guidance from a clinician-educator. While several medical student electives at other institutions include a service-learning component, no electives require service-learning work with older adults. S.L.I.C.E. (Service-Learning in Communities of Elders) is a curriculum for the medical student elective, MEDI 286, Special Topics on Aging, at the University of North Carolina School of Medicine at Chapel Hill that introduces first and second-year medical students to older adults in their communities, outside of the medical system, through service-learning. This paper will describe the innovative design and evaluation of the piloted S.L.I.C.E. curriculum and a review and analysis of the current literature.
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INTRODUCTION AND RATIONALE

Introduction

Demographic data indicate that the population in the United States is aging, resulting in large numbers of older adults in the health-care system. Compared with younger adults, older patients have “significantly more family physician visits (average of 4.4 visits per person per year), emergency room visits (average of 0.22 ER visits per year per patient), diagnostic days (average of 5.1 test days per person per year), health conditions (average of 7.7 per patient), and medications (average of 8.2 medications per person).” Despite this large volume, there is still a “worldwide shortage” of geriatricians. The increasing volume of geriatric patients has resulted in leading national medical organizations to recommend increased training in geriatrics for health professionals. For example, in April 2008, the Institute of Medicine stated, “All licensure, certification, and maintenance of certification for healthcare professionals should include demonstration of competence in the care of older adults.” The American Geriatrics Society has developed core competencies for medical students to promote the development of “competent, compassionate care of older adults.” One of the key competencies states that medical students should be able to “recognize that the elderly are a diverse group with different personalities, different values, and different functional levels.”

Service-learning provides a unique opportunity for medical students to discover this diversity in communities of older adults and reflect on these experiences with guidance from a clinician-educator. The medical school experience often isolates students in a bubble of academics and clinical settings, separating future doctors from the communities that supply the patients who they will see and treat. As a result, medical students graduate without an understanding of where their patients live and what resources are available to them. This
understanding is important to the care of older adults as it impacts the delivery of healthcare services. For example, a hospitalized patient from a Continuing Care Retirement Community has a very different discharge plan from a hospitalized patient who lives in low-income senior housing and goes to the local senior center every day.

Service-learning with older adults has other benefits aside from community and resource exposure. First, older adults often possess a wealth of experiences, some positive and some negative, from numerous interactions with the healthcare system. When working with medical students, the older adults can share advice regarding how physicians can best interact with patients. The older adults also can provide feedback to the learner in real-time, often detecting poor communication skills or cultural insensitivity that cannot be noted by a clinician-teacher in the classroom setting. Service-learning is reciprocal learning, and the medical students will receive important lessons regarding communication and care from the older adults.

Secondly, service-learning provides an opportunity for the development of the skills needed to be a successful team-member. One of the key competencies from the American Geriatric Society states that “students should be open and willing to work with colleagues in other disciplines.” Geriatric medicine is a team-sport; physicians must work well with family members, physician colleagues, and other health-care professionals to ensure good patient care. Similarly, service-learning requires teamwork and collaboration with a variety of individuals at the community sites and within the classroom.

Finally, service-learning reminds students of the rewards of serving individuals and communities. The hope is that the interaction inherent in service-learning will restore the altruistic goals that are sometimes lost through the training process and that may be necessary for interest in providing compassionate care to the older adult. While most students will not choose
a career in geriatrics, a few may consider this career choice more strongly after the opportunity to interact with older adults in the community through this coursework.

**Rationale**

The focus of this paper will be the program plan and evaluation of the curriculum Service-Learning in Communities of Elders (S.L.I.C.E.). While several medical student electives at other institutions include a service-learning component, no electives require service-learning work with older adults. S.L.I.C.E. (Service-Learning in Communities of Elders) is a curriculum for the medical student elective, Special Topics on Aging (MEDI 286), at the University of North Carolina School of Medicine at Chapel Hill that introduces first and second-year medical students to older adults in their communities, outside of the medical system, through service-learning. After an analysis of the current literature, this paper will describe the piloted S.L.I.C.E. curriculum (Spring 2012) and the design and evaluation plan for future S.L.I.C.E. programs.

**SYSTEMATIC REVIEW OF LITERATURE**

**Introduction**

The goal of this mini-systematic review was to identify and review preclinical medical student curricula that utilize service-learning projects in order to understand the development, implementation, and evaluation of this teaching methodology for medical students. Ideas from the current programs guided the development, implementation, and evaluation of the S.L.I.C.E program at the University of North Carolina at Chapel Hill School of Medicine. The S.L.I.C.E. program was created for first and second year medical students with the following core objectives: to provide a service-learning opportunity to medical students that included a community needs-assessment and reflective final presentation, to introduce medical students to
various communities of older adults in Chapel Hill, NC, and to require medical students to create an educational product appropriate for older adults of varying health literacy backgrounds.

**Methods for Literature Search and Search Criteria**

For this literature search, the research questions were: What are the current service-learning curricula used in the preclinical years of medical school education? What do the service-learning projects entail? How much work is required of the medical students? How have the curricula been received or evaluated?

I performed a systematic literature search to find examples of service-learning projects utilized in medical education. Sixty-six articles were found by searching Medline (pubmed) with the following: “medical education” AND “service-learning.” The abstracts from the 66 articles in Medline were read to determine relevance to S.L.I.C.E. The following inclusion and exclusion criteria were used to select the articles for review and analysis of their activities, objectives, and evaluation methods and findings.

**Inclusion Criteria:**

- The article discusses a medical school course curriculum that includes a service-learning project.
- The goal of the implemented service-learning project is gaining skills and experience apart from basic clinical knowledge.
- The learners include preclinical medical students.
- The service-learning project is offered locally, in the learners’ communities.
- The article is in English.
- The article is available through the University of North Carolina at Chapel Hill library and does not require inter-library loan.
Exclusion Criteria:

- Service-learning projects developed through interest groups or resource centers were excluded.
- Systematic reviews of service-learning were excluded.
- International projects were excluded.
- Service-learning projects that were part of a longitudinal (longer than one year) medical student track were excluded.
- Projects that required volunteering, not service-learning, were excluded.

Programs of Interest

University of Kentucky College of Medicine’s PRIME Initiative

The first program of interest is the service-learning curriculum developed at the University of Kentucky College of Medicine as part of the Promoting, Reinforcing, and Improving Medical Education (PRIME) grant. This service-learning curriculum (called PRIME throughout this paper) was created as an add-on elective to the required preclinical course, Patients, Physicians, and Society (PPS). PRIME’s objectives and goals reflect the core tenets of service-learning: performance of a needs-assessment, first-hand experience in a community site, and critical reflection. An advisory of senior medical students recommended potential community agency sites based on their past volunteering experiences. The course creators contacted these agencies to determine the agencies’ willingness to allow a needs-assessment of their clients and the ability to support the students’ projects with adequate staff. Three community agencies met these criteria: a daycare center for patients with dementia, a residential addiction program, and a publicly-funded agency that targets underserved populations.
The medical students who elected to participate in the PRIME add-on to the PPS course were expected “to attend service-learning and public affairs workshops, work collaboratively with their group and perform a needs-assessment in their agency, identify a project, devise and implement an evaluation, and deliver an oral presentation summarizing their project goals and outcomes to both community and campus audiences.” The students were also encouraged to reflect on their experiences by intermittently completing questions about their experience.

The faculty preceptors and agency sites had clear responsibilities as well. The faculty committed to two years of leading a PRIME group in PPS, attended a training session on service-learning, and completed course evaluations. The agencies also committed two years to a PRIME group, attended a service-learning workshop, approved the needs assessment, and consulted with the students regarding the project “development, implementation, and evaluation.”

While the service-learning activities and course content were briefly mentioned, the authors focused on the evaluation of this program and the evaluations of the students. Evaluations of the medical students, both from the preceptors and the agencies, occurred several times throughout the elective and included ratings on qualities such as enthusiasm and dependability. The faculty preceptors reported positive experiences working with the students who seemed more self-directed than students who were in the PPS course without the PRIME add-on elective. The agencies also reported positive experiences and felt the students’ projects benefited the clients. For example, the memory books created by the medical students for the daycare center are still being used.

The PRIME students completed reflection questionnaires throughout the semester, which allowed the course directors to gain feedback about the students’ experiences. At the beginning
of the semester, the students reflected on their team function and project development process. Later in the semester, the students considered their projects’ impact as well as the personal meaning they found through the process. These evaluations revealed positive responses: the students reported improved communication and leadership skills, increased comfort level around clients from various backgrounds, and a better understanding of community agencies. Additionally, the students supported the coupling of this service-learning project to the existing PPS course and did not feel that the additional 32-hour requirement was unreasonable. The negative feedback related to the burden of logging hours; as a result, the course directors modified the course to reduce the demands of the logs.

The authors noted that the evaluations of the projects’ success were not consistent from the students’ and the agencies’ perspective. For example, the students felt that the adult daycare center project failed due to lack of support from the clients’ families; however, the agency felt that the students significantly contributed to their clients’ experiences. The agency actually continued the project after the students’ involvement ended. While this positive feedback from the agency was appreciated, the course directors more heavily valued the students’ perspective and dropped the daycare center from the program.

The University of Kentucky College of Medicine’s “Start Small, Feel Better”

The second program of interest is a corollary of the PRIME initiative in which seven first-year medical students were required to complete their community-based intervention at the Chrysalis House, a women’s residential substance abuse treatment program in Lexington, Kentucky. The age of the women seeking rehabilitation at this center was not provided but was assumed to be younger than geriatric age. This article thoroughly details the program’s design and student requirements.
The students started the program with the critical initial step of service-learning projects: a community needs assessment. This needs assessment involved interviews of the staff and surveys of the program participants. Based on the results, the students developed an educational series that targeted five major health concerns: exercise, diet, weight, stress, and smoking. The series, “Start Small, Feel Better,” consisted of individualized packets with educational materials for the participants as well as one student-led presentation every week for six weeks. Apart from the introduction and wrap-up session, which involved all seven students, the other sessions were led by pairs of students. The program participants were asked to keep a journal of their experience, highlighting their personal goals, efforts, successes, and setbacks. The participants received small rewards, such as free massages during one session and snacks during another, throughout the 6-week intervention.

The goals of each session and the primary methods for achieving them are outlined in this article. For example, the goals for Session V on Stress and Relaxation were to describe the role of stress, encourage identification of personal stressors, and provide methods for stress reduction. The participants were introduced to massage, biofeedback, diaphragmatic breathing, various muscle relaxation techniques, yoga, and meditation and provided with the opportunity to try progressive muscle relaxation, biofeedback, and massage.

The program evaluation involved a survey completed by the program participants and reflective papers completed by the students. In the survey, every resident reported that she had learned something and changed her lifestyle in some way; for example, two women stopped smoking and were still smoke-free weeks after the program ended. The reflective papers written by the students illustrated that the students “learned practical skills that enhanced their medical education.” The students felt that the success of the project exceeded their initial expectations,
and they established “excellent working relationships both with the participants and with each other.”

The authors commented on the weaknesses and strengths of their program plan. They cited time as the major limitation to the intervention both for the medical students, who had pressing academic demands, and the participants, who were involved in an intensive rehabilitation program. Regarding their program’s strengths, the authors indicated the importance of institutional support, both financial and “through commitment to service.” This program was embraced by the institution; in fact, The University of Kentucky College of Medicine now requires a service-learning component as part of the first year.

**Boston University’s “Smoking Sleuths”**

The third program of interest is another elective for medical students, both first and fourth-year, which involved creation and implementation of an educational product, entitled “Smoking Sleuths.” The key goal of the program was to train adolescents to become adolescent tobacco education leaders (ATELs). The first-year medical students participated in the course over the summer as part of an elective, completing “mentored community service-learning” and course work that included a written summary of their experience. The students did not complete a needs assessment, but the authors emphasized that the seven community sites were located in neighborhoods with “high rates of tobacco abuse.” The medical student-developed curriculum included six modules: “(1) Introduction to tobacco: What is it? What does it do to your body? (2) Cigarette chemistry: Hands-on activities exploring the chemicals in cigarettes, cigarette smoking, and your body; (3) Tobacco company marketing and tobacco counter-marketing; (4) Field research: Children, led by medical students, explored tobacco prevalence and marketing in the community; (5) Synthesis of information and training in presentation skills; and (6) Children
taught peers and adults in the community.” The authors did not provide additional information regarding the program’s content other than to say it was “paired with the Massachusetts Curriculum Frameworks standards established by the state Department of Education for preschool through high school education.” The authors emphasized that a key goal of the program was to train adolescents to become educational leaders, or adolescent tobacco education leaders (ATELs).

The results from the study were presented as quotes from the course evaluations that were overall positive and emphasized the value of the project in teaching health education and counseling skills. For example, one medical student reported, “I learned how to efficiently and creatively present important health issues to the general public, and specifically a pediatric population.” Additionally, the authors indicated the ATELs reached over 500 peers and adults through various educational settings, such as school fairs and community day events.

Morehouse School of Medicine’s Community Health Course

The fourth program of interest is the Morehouse School of Medicine’s Community Health Course (CHC), a required service-learning course for all first-year medical students. Over two semesters, the CHC curriculum covered “community health analysis, health-related behavior, and community health promotion” through various instructional methods, ranging from team-based learning projects to reading assignments. One assignment, for example, required the students to present the findings of their needs assessment to faculty, stakeholders, and classmates. Often, the students were responsible for organizing their activities, and the faculty leaders acted only as facilitators, providing guidance more than leadership.

The community sites for CHC, which were selected based on faculty recommendations, served low-income populations in downtown Atlanta. The authors indicated that the sites must
have helpful staff, particularly an available liaison who could serve as the student contact, and an on-site space for student meetings. The students engaged in activities at this site to familiarize themselves with the site participants and conducted a “windshield survey,” in which they drove around the community and made note of their observations. Then, they conducted a needs assessment using interviews, focus groups, and surveys. For example, students assigned to a local church spoke with priests and health ministry leaders, met with two focus groups of lay members, and distributed a survey to all parishioners at a church service. This information from the needs assessment guided the program plan and program evaluation. At the church, the students created and implemented an educational program about nutrition and exercise, entitled “A New Year, A New You,” with cooking demonstrations and a healthy potluck.

The CHC’s student assessment techniques included exams, papers, presentations, class participation, and a reflection journal. In the paper, the students provided a description of the community, the results of the needs assessment, a description of the program, and the results of the evaluation. In the journal, the students answered questions such as, “What are some of the general stereotypes or misconceptions you had?” These journal entries received a complete or incomplete rather than a letter grade, perhaps allowing students to reflect more honestly and openly. The two exams covered the introductory material presented in lectures about program planning, design, and implementation.

The authors did not present feedback from the community sites or the students. The numbers of students, which exceeded 500, and health programs, approximately 56, as well as examples of partnerships with known organizations, such as the Boys and Girls Club, were provided. The authors did note that, ancecdotaly, the CHC experience did seem to weigh in to
students’ decisions to choose primary care for a career; however, no quantitative data strengthened this assertion.

**Dartmouth Medical School’s Partners in Health Education**

The fifth program of interest is the Dartmouth Medical School’s Partners in Health Education (PHE). This elective required 16 first and second-year medical students to teach elementary school students about various health topics. After an informal needs assessment in which the medical students observed their assigned elementary school classroom, the students created interactive and engaging lessons that provided information on topics such as the brain, nutrition, and tobacco use.

Evaluation of the medical students occurred through several different methods. First, the classroom teachers as well as a professional observer provided feedback to the students regarding their communication skills and lesson organization and quality. Second, the students were videotaped during their first and fourth teaching sessions, and a research assistant coded the behaviors, such as making eye contact with the students, as part of an evaluation. These videotapes served as a pre- and post-evaluation method. Interestingly, the performances did not appear to significantly change from the first to the fourth sessions based on this assessment. Finally, the students completed a Patient Video Interview in which the students were video-taped while interviewing a patient. This evaluation method, which was designed to assess communication skills, occurred at both at the beginning and the end of the semester. The results of the PVI indicated that medical students did in fact improve their communication with patients; for example, they used less medical jargon after participation in the curriculum.

Student feedback regarding this curriculum, provided as summarized answers from open-ended questions, was positive. The authors note that several medical students reported becoming
more effective communicators and that many described their role as educators as satisfying. No feedback from the elementary school students is provided but the classroom teacher ratings of the medical students’ rapport increased during the semester.

In conclusion, the authors of this article do not elaborate on the needs assessment, program components, classroom didactics, and critical reflection requirements of PHE; instead, the authors focus on the use of novel evaluation techniques, specifically the pre- and post-Patient Video Interview.

**Analysis**

Despite meeting the inclusion and exclusion criteria, these five programs varied considerably in the target communities, target topics, and time requirements. The target audiences ranged from church members to elementary school students. Only the PRIME elective included a program at a daycare center for older adults with dementia. No other program targeted the unique needs of communities of older adults. Most of the educational products focused on nutrition, exercise, or tobacco abuse. The time commitments required of the students were unclear, except for the PRIME elective, which required an additional 32 hours in addition to the standard Patient, Physicians, and Society course requirements.

These five programs greatly differed in how strictly they adhered to the service-learning methodology: the requirement of a community needs assessment and assignments to promote critical reflection. Morehouses’s Community Health Course (CHC), the only required first-year course, best exemplified the service-learning principles. The CHC students completed a comprehensive community needs assessment and critically reflected on their experience in journals, papers, and presentations. Other programs, such as Smoking Sleuths and Partners in Health Education (PHE), adhered much more loosely to these guiding principles. Smoking
Sleuths did not appear to include formal a needs assessment, and PHE only required a classroom observation.

Of the programs selected, the PRIME add-on elective to the required Patient, Physician, and Society Course best exemplified a service-learning curriculum for preclinical medical students. This elective required a community needs assessment, provided the opportunity for ample reflection, and immersed the students in a unique community setting. In addition, the elective included an extensive discussion of methods used to evaluate PRIME. Using both the preceptors and the agencies to evaluate the students was unique to PRIME. Understandably, this method requires more effort and coordination and, as a result, may be avoided by many instructors. However, given the preceptors of PRIME do not observe the students at the sites, the agencies provided key formative and summative feedback that contributed to the students’ growth and development.

One notable common thread across all 5 programs was that the curricula evaluation relied heavily on qualitative data. The success of the program was often demonstrated solely through qualitative comments made by the students or agencies. Dartmouth Medical School’s Partners in Health Education demonstrated the most extensive and unique evaluation techniques. The students were videotaped twice in both the classroom setting and in patient interviews. The change observed in the students’ communication styles when interviewing patients strengthened the program evaluation for PHE, emphasizing that quantitative pre- and post-evaluations best demonstrated a program’s effectiveness.

Only the PRIME elective included a program at a daycare center for older adults with dementia. No other program targeted the unique needs of communities of older adults. As a result, most of the service-learning educational products did not address the unique needs of
older adults. Therefore, our program, S.L.I.C.E., fills a niche in the service-learning curricula for preclinical medical students.

In conclusion, this mini-systematic review reveals that most elective service-learning curriculum for medical students do not address the unique needs of older adults. Therefore, our program, S.L.I.C.E., fills a niche in the service-learning curricula for preclinical medical students.
Table 1. Summary of studies reviewed

<table>
<thead>
<tr>
<th>Authors, Journal, Year Published</th>
<th>Program description</th>
<th>Target community</th>
<th>Student Evaluation Strategies</th>
<th>Program Evaluation Strategies</th>
<th>Program Strengths and Limitations</th>
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<tbody>
<tr>
<td>Elam, CL, Sauer MJ, Stratton TD, Skelton I, Crocker D, Musick DW. <em>Teach Learn Med.</em> 2003.</td>
<td>Elective add-on to PPS course, required 32 additional hours at a community site, funded by PRIME grant</td>
<td>Residential addiction treatment center, daycare center for adults with dementia, community agency targeting under-served populations</td>
<td>Agency and preceptor evaluations, Oral Presentation</td>
<td>Student reflection questionaires, Agency and Preceptor feedback</td>
<td>Strengths: Adhered to service-learning principles, multiple student evaluation strategies Limitations: No clear discussion of didactic content or program content, weak program evaluation</td>
</tr>
<tr>
<td>Powers CA, Thomson CC, Feuerstein I, Cross M, Powers EM, Prout M, Geller AC. <em>J Cancer Educ.</em> 2008.</td>
<td>“Smoking Sleuths” series that targeted tobacco abuse</td>
<td>Seven community sites in Boston</td>
<td>Not addressed</td>
<td>Course evaluations, record of numbers reached</td>
<td>Strengths: Use of adolescent tobacco education leaders to reach more numbers Limitations: No detailed program description, weak evaluation, loose adherence to service-</td>
</tr>
<tr>
<td>Authors</td>
<td>Course Description</td>
<td>Location</td>
<td>Evaluation Methods</td>
<td>Limitations</td>
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<tr>
<td>Buckner AV, Ndjakani YD, Banks B, Blumenthal DS.</td>
<td>Community Health Course: A required service-learning course for all first year medical students with different projects implemented at the various sites.</td>
<td>Multiple sites in downtown Atlanta</td>
<td>Exams, papers, presentations, class participation, reflection journal</td>
<td>Not addressed, record of numbers reached</td>
<td>Extensive information regarding course and student evaluations</td>
</tr>
<tr>
<td>Olm-Shipman C, Reed V, Christian JG.</td>
<td>Partners in Health Education elective for first and second year medical students. Required teaching elementary school students about health topics.</td>
<td>Elementary school classrooms</td>
<td>Evaluations by the classroom teachers and professional observer Videotapes of the classroom lessons Patient Video Interview</td>
<td>Open-ended feedback from students and elementary school teacher ratings</td>
<td>Novel evaluation methods</td>
</tr>
</tbody>
</table>
PROGRAM PLAN

This mini-systematic review of five elective service-learning courses helped guide the development of the pilot phase of the S.L.I.C.E. curriculum, which was completed Spring Semester 2012. Thirteen medical students from the preclinical years participated in this service-learning course; half of the students were assigned to the Cedars of Chapel Hill, a continuing care retirement community in Chapel Hill, NC, and the other half were assigned to the Robert and Pearl Seymour Center, a senior center in Chapel Hill, NC. Both sites had wellness coordinators that assisted the students in their projects. The students, supported by in-class didactics and one-on-one interaction with the course instructors, developed educational products on health literacy, falls prevention, and community resources that they shared with the older adults at these two sites.

The program context as well as program theories at the individual, interpersonal, and community levels will guide the program plan for the next phase (post-pilot) of the S.L.I.C.E. curriculum. Many factors, including the political environment, state and local priorities, program funding, program acceptability, program stakeholders, and anticipated challenges will be considered when expanding and modifying the pilot curriculum.

Program Context

Political Environment: The two community sites, the Robert and Pearl Seymour Center, a senior center in Chapel Hill, NC, and the Cedars of Chapel Hill, a continuing care retirement community in Chapel Hill, NC, are sites with large numbers of older adults, ideal given the aging of the population on a local and national level. S.L.I.C.E. is consistent with the current political environment that is increasingly aware of the needs of older adults. For example, older adults were not included in the objectives of Healthy People 2010 but are included in the objectives of
Healthy People 2020. Additionally, service-learning is endorsed by the national medical school accrediting authority, the Liaison Committee on Medical Education. This organization has written a new standard regarding service-learning that states “medical schools should make available sufficient opportunities for medical students to participate in service-learning sites and should encourage and support student participation.”

State and Local Priorities: On a local level, several of UNC School of Medicine’s milestones for medical students can be met through service-learning. For example, one milestone, states that medical students should be able to counsel patients about preventive care. A service-learning curriculum can provide medical students with the opportunity to practice counseling on preventive services outside of the often-rushed clinic experience.

Program Acceptability: Despite the advantages to this type of curriculum, the general acceptability to the majority of medical students remains uncertain. Medical students are typically averse to work outside of the classroom in electives such as MEDI 286. Given the essence of service-learning lies in work outside the classroom, this problem cannot be completely solved. However, the amount of time in the classroom will be reduced to help offset the time expectations. Additionally, the students will encouraged to reflect on the time outside of the classroom as a positive experience that cannot be duplicated during class time.

The two sites chosen for the pilot semester are the Robert and Pearl Seymour Center and the Cedars of Chapel Hill, two locations that are closely tied with the instructors and sites likely to accept the program given they are sites with on-going educational programs and community involvement.

Program Funding: Both locations have the space to support this program, and the UNC School of Medicine supported the instructors’ salaries. The financial resources to fund S.L.I.C.E.
educational products came from the UNC Division of Geriatric Medicine and the Center for Aging and Health, thanks to the support of Dr. Jan Busby-Whitehead.

Program Stakeholders: A key factor to our program’s success is the support offered by the older adults at the two sites. Stakeholders include these older adults as well as our students and instructors.

Challenges: Although our program has potential to succeed, several challenges exist. First, the two community sites already have ongoing educational program that compete with S.L.I.C.E. Additionally, the students have ongoing educational demands that limited their time and participation.

Application of Program Theories

Several program theories at the individual, interpersonal, and community levels will influence the modification of our pilot phase curriculum of S.L.I.C.E.

Individual Level: On the individual level, two theories, The Consumer Information Processing Theory\textsuperscript{13} and the Health Belief Model\textsuperscript{13}, are important in guiding how students provide information to the older adults at the community sites.

\textit{The Consumer Information Processing Theory} reflects the belief that people are limited in the amount of information they can acquire, use, and remember depending partly on their motivation, attention, and perception as well as the amount, location, and convenience of the information provided.\textsuperscript{13} This theory emphasizes that consumers relate new information to their knowledge base and past experiences, which may be particularly important in an older adult population. This model will be introduced to the students through a didactic session on health literacy, which is the “degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”\textsuperscript{14}
Many older adults have low health literacy; for example, one study found that 81% of older adults could not understand basic prescription labels. The medical students will be encouraged to use *The Consumer Information Processing Theory* as well as their knowledge of health literacy to create useful educational materials for the participants.

The second model that is important in this program plan is the *Health Belief Model*, which will help the students develop educational messages that were persuasive and effective in promoting change. The students will be encouraged to include in their educational materials a self-assessment to help the older adult have an idea of how susceptible he/she is to the medical condition of interest as well as information about the severity of the health condition. The students will include cues to action to instruct older adults of when to seek additional care or more information. Finally, the older adults’ confidence in their ability to learn the new material will be enhanced by having the students meet with them in the natural community setting that is less intimidating than a clinical setting.

*Interpersonal Level:*

*Social Learning Theory*, particularly the concepts of observational learning and reinforcement, plays an important role in this program plan at the interpersonal level. Observational learning assumes that people learn what to expect through others’ experiences or modeling from others. The students will have the opportunity to observe each other interacting with the older adults, learning communication strategies through positive and negative reinforcement provided by the older adults’ feedback. This feedback from the older adults’ will be included in the students’ final presentations and discussed as a class at the end of the semester.

*Community Level:*

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A couple of community level models, *The Community Organization Theory*\(^\text{13}\) and *The Diffusion of Innovations Theory*\(^\text{13}\), will complement the individual and interpersonal level theories. For the purpose of this program development, the class of medical students will be considered a community. *The Community Organization Theory* utilizes the specific concepts of empowerment, community competence, and issue selection.\(^\text{13}\) This theory relates to the medical students ability to work together in teams to educate older adults in the community on a health or social problem.\(^\text{13}\) In small groups, the medical students will identify a common problem (i.e. issue selection) and goal for their educational product. They will hopefully discover a sense of empowerment in working together to overcome obstacles and challenges (i.e. community competence). The didactic sessions will provide useful tools and strategies to enhance competence and confidence and stimulate problem solving.

Second, *The Diffusion of Innovations Theory* utilizes the specific concepts of compatibility and trialability.\(^\text{13}\) This theory related to how the Service-Learning curriculum was disseminated.\(^\text{13}\) Our initial program sites were the pilot sites (i.e. trialability). Based on the success at the sites during the next post-pilot phase, the program may be expanded to other sites in the future. The program may be more compatible with a continuing care retirement community, such as the Cedars, than with a Senior Center, such as the Seymour Center, or vice versa (i.e. compatibility). Feedback from the students and site participants will guide future site selections. In the meantime, there is no commitment to continuing this program at the two current sites.

**Implementation Plan and Objectives**

The post-pilot curriculum plan and objectives will be implemented in Spring 2013. This course will be taught by two clinician-educators trained in Geriatric Medicine and certified to
teach Health Literacy, Christine Kandelwahl, DO and Lindsay Wilson, MD. The class will be offered as an elective (MEDI 286, Special Topics in Aging) for the UNC School of Medicine. The students will once again be assigned one of the two community sites, The Cedars of Chapel Hill (to be called the Cedars in this paper) or The Robert and Pearl Seymour Center (to be called the Seymour Center in this paper).

During class, the instructors will provide background instruction on health literacy and abnormal and normal sensory and cognitive changes of older adults. After this introduction, the students will receive advice on how to design effective written material for older adults. For example, written material for older adults should include larger font, significant contrast between font color and background color, and adequate white space. The students will have the opportunity to evaluate examples of written materials, noting ways to improve the format for easier readability. They will then create their own written material on a relevant health topic, using their newly acquired skills.

The health topic for the written material will be chosen based on an informal needs assessment the students conducted at their community sites. The students will attend the sites, participate in a class or event such as Happy Hour, and interview the Wellness Coordinators as well as a couple of site participants. Through these interviews, the students will understand knowledge gaps and key health concerns that they want to address in their educational intervention.

After the topic selection, the course instructors will provide lectures and resources so that students have the needed knowledge base to confidently create and distribute educational materials on the topic. For example, if the students choose to address falls, the course instructors will present a lecture and share a journal review article or web-based module on falls. The
students will select the salient points they wish to share with their community participants in their educational material. The instructors will be available to answer questions, provide recommendations, and address concerns during the educational material creation phase.

After development, the educational materials will be distributed at the sites to at least 50 participants. The students will obtain feedback from at least half of these participants regarding effectiveness and readability of their educational product. The students will reflect on this feedback as well as the overall experience. At the end of the semester, the students will formally present their reflections to the class, discussing successes and failures and lessons learned. They will be encouraged to comment on changes in their attitudes toward working with older adults.

*The following goals will apply to the post-pilot phase of the S.L.I.C.E. curriculum:*

At the end of the first 6 weeks (short-term goals):

- 50% of students will have visited either the Cedars or the Seymour Center
- 50% of students will have participated in a class or activity at the site
- Students will have increased their face-time interaction with older adults by at least 50%

At the end of the semester (long-term goals):

- 100% of students will have visited either the Cedars or the Seymour Center
- 100% of students will demonstrate knowledge of health literacy and a medical concern of older adults by designing an appropriate educational material
- Student-designed educational materials will be delivered to at least 50 older adults at the sites
- At least 25 older adults will provide the students with feedback on the educational material
- Students will report improved attitudes about working with older adults
- Students will report increased confidence in working with older adults
- The student-designed educational materials will be delivered to over 100 older adults
The class will obtain support from another community site and expand to that site.

At the end of each year (long-term goals):

- Enrollment in the course will increase by 10% annually.

### Table 2. Logic Model

<table>
<thead>
<tr>
<th>RESOURCES</th>
<th>ACTIVITIES</th>
<th>OUTPUT</th>
<th>OUTCOMES</th>
<th>IMPACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>financial:</td>
<td><em>Solidify partnership with the Cedars and Seymour Center by maintaining support from key staff and older adults</em></td>
<td><em>100% of students will attend one of the sites</em></td>
<td><em>Students will have increased their face-time interaction with older adults by 50%</em></td>
<td><em>The program will obtain support from another community site and expand to that site</em></td>
</tr>
<tr>
<td>- UNC Division of geriatric medicine, The Center of aging and health</td>
<td><em>Formalize curriculum on Older Adult health concerns and health literacy for in-class time</em></td>
<td><em>50% of students will attend a class or event at the sites</em></td>
<td><em>Students will demonstrate an understanding of health literacy in designing educational materials</em></td>
<td><em>Students will have increased confidence in interacting with older adults</em></td>
</tr>
<tr>
<td><em>Organizational:</em></td>
<td><em>Have students perform a needs-assessment at their community site</em></td>
<td><em>100% of students will present an educational material to the site participants</em></td>
<td><em>Students will obtain feedback from 50% of program participants</em></td>
<td><em>The class participants will have increased knowledge of a medical concern</em></td>
</tr>
<tr>
<td>- Stakeholder buy-in</td>
<td><em>Students develop and present educational materials based on the needs-assessment to participants</em></td>
<td><em>50% of students will present their work to the class</em></td>
<td><em>The class will grow in size by 10% annually</em></td>
<td><em>The program will have improved attitudes about working with older adults</em></td>
</tr>
<tr>
<td>- Support from Cedars physicians, Seymour Multidisciplinary clinic</td>
<td><em>Students obtain feedback on educational materials from participants</em></td>
<td><em>Student-designed materials will be delivered to at least 50 site participants</em></td>
<td><em>The number of site participants will increase to over 100</em></td>
<td><em>The program will have increased confidence in working with older adults</em></td>
</tr>
<tr>
<td><em>infrastructure:</em></td>
<td><em>Students present their experiences to</em></td>
<td><em>50% of students will present an educational material to the site participants</em></td>
<td><em>Students will develop an educational program</em></td>
<td><em>Students will have increased confidence in working with older adults</em></td>
</tr>
<tr>
<td>- Cedars Seymour center - Bondurant hall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>people:</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Wellness coordinators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Instructors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Site participants (older adults)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>material:</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pamphlets, brochures depending on student design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>equipment:</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- AV equipment in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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classroom

*Students evaluate the course
older adults at the sites

**Detailed Estimate Budget**

*Budget Year 2 (Post-Pilot Semester)*

<table>
<thead>
<tr>
<th>PERSONNEL</th>
<th>Salary</th>
<th>%Effort</th>
<th>Subtotal</th>
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</thead>
<tbody>
<tr>
<td>Lead Course Instructor</td>
<td>48,000</td>
<td>5%</td>
<td>2,400.00</td>
</tr>
<tr>
<td>Course Instructor #2</td>
<td>96,000</td>
<td>2.5%</td>
<td>2,400.00</td>
</tr>
</tbody>
</table>

**TRAVEL**

N/a

**SUPPLIES**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Cost</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posters</td>
<td>4</td>
<td>25</td>
<td>100.00</td>
</tr>
<tr>
<td>Brochures</td>
<td>100</td>
<td>2.00</td>
<td>200.00</td>
</tr>
</tbody>
</table>

**TOTAL:** $5,100.00
PROGRAM EVALUATION

The pilot semester of S.L.I.C.E., completed Spring 2012, did not include a quantitative evaluation component; nonetheless, informal qualitative feedback from the students, instructors, and older adults revealed strengths and weaknesses in the program plan that will help guide the post-pilot program plan and evaluation plan.

The Cedars students started the semester with a visit to the Health Center’s Happy Hour, an hour of entertainment for the members with dementia, which was followed by an interview with a member who was recovering in the Health Center from a recent surgery. The students reported that both of these activities provided a helpful introduction to the Cedars. The students then worked with the Wellness Coordinator to identify the needs of the community. Due to members’ interests in falls prevention, the students designed and distributed a falls-risk reduction pamphlet for adults with low or average health literacy to all 400 members of the Cedars community. The students received positive feedback from approximately 25 older adults; for example, the older adults appreciated the large font and easy-to-read text. The support and guidance from the Wellness Coordinator as well as the obvious need for falls prevention education ensured a successful experience for the students assigned to the Cedars.

Unlike the Cedars students, the Seymour Center students encountered a few challenges. The students struggled to find a “need” as the Seymour Center appeared inundated with health education materials and resources. They noted that every health condition had a well-designed and informative brochure on the wall and that classes were provided on everything from Facebook to lace-making. The students also felt discouraged that they were unable to visit the Seymour Center during the busiest hours, mid-morning until after lunch, due to their class schedule.
For example, the Cedars Wellness Committee had recently focused its attention on the dangers of falls. The students assisted this committee in providing educational pamphlets on risk factors for falls and community resources, such as balance classes and home safety evaluations, which target these risk factors.

Despite these challenges, the instructors noted several significant benefits of including the Seymour Center as a site. First, the students learned about the outstanding resources provided at this center to older adults in Chapel Hill. The students educated their classmates about these resources in their final presentation, which included illustrative pictures of the beautiful building and grounds, the comprehensive newsletters and pamphlets, and the active and social older adults. Second, the Seymour Center group learned about and educated their classmates about the Wellness Clinic, a multidisciplinary free clinic that focuses on screening and support for memory, mood, and mobility disorders. The students discussed the roles of the pharmacist, physical therapist, occupational therapist, social worker, and geriatrician in their final presentation, again informing their classmates about this important resource for older adults and the benefits of a team-approach to care. Finally, unlike the Cedars, which is a predominantly white, upper class community, the Seymour Center exposed the students to older adults from a variety of socioeconomic and racial backgrounds, which is important given one of the objectives for this curriculum is exposure to the diversity of older adults.

The qualitative feedback from my informal interviews with the students and my co-instructor this semester, in addition to lessons learned from the mini-systematic review, will guide the formative and summative evaluations needed for the next semester of S.L.I.C.E.
Study Design

The program evaluation for the post-pilot phase will use a mixed approach, relying on several qualitative and quantitative techniques to ensure a comprehensive assessment of the program implementation and outcomes. Assessment of the outcomes will be completed using a quasi-experimental design with pre- and post- surveys. The primary outcomes will be students’ attitudes toward older adults and confidence in working with older adults. A key part of the survey will be the Carolina Opinions on Care of Older Adults (COCOA), a validated instrument tested with first year medical students at the University of North Carolina School of Medicine at Chapel Hill. Secondary outcomes will include the number and type of educational products delivered to older adults in these communities.

Study Methods

The quantitative strategies will include pre-and post-tests and an activity log review. The pre-test will be administered to the students at the beginning of the semester and will ask questions regarding the amount of time the students spend at baseline with older adults and the attitudes the students have toward working with older adults. The post-test delivered at the end of the semester will evaluate program implementation and outcomes. Both the pre-test and the post-test will include the COCOA survey. The post-test survey will also include questions regarding feasibility of the assignments and ways the course could improve. The activity log review will be completed by the students and will include their activities and hours.

The qualitative strategies include open-ended interviews and document reviews of the reflection papers and final presentations. Open-ended questions of the medical students, wellness coordinators, older adults, and course instructors will be essential in examining the
program implementation for strengths and weaknesses. Review of the reflection papers and final presentations will provide additional information regarding the success of the program.

The open-ended interviews will be conducted with the students throughout the semester but particularly at the end of the semester. The students will be prompted to comment on the barriers to site visitation, utility of attending the class or activity at the site, and amount of time required to produce their educational product. The students will also have the opportunity to suggest ways the program could improve to better meet the objectives.

Open-ended phone interviews with wellness coordinators at the end of the semester will illicit information regarding the types and quality of education materials, as well as the overall experience of having students at the community sites. The wellness coordinators will be invited to suggest ways to improve the students’ experience as well as the older adults’ experience. Given they interact with both the students and the older adults, the wellness coordinators offer a unique perspective of the course and should be thoughtfully interviewed at the end of the course. An electronic survey may also gather the needed information from the wellness coordinators, and this alternative method may be easier given the busy schedules of the wellness coordinators and the data collectors.

Interviews with the older adults at the community sites will also be part of the evaluation process. The older adults will be asked for feedback regarding the educational products and any barriers to receiving the products or interacting with the students. This feedback may be elicited by the students; however, the students may be biased in their data collection given they created and distributed the educational products. An alternative method would utilize paper surveys distributed to the older adults and collected by the students. Finally, the course instructors will
be interviewed at the end of the second semester regarding the long-term objectives to increase
the number of students enrolled and expand the course to an additional community site.

Document review of the reflection papers and final presentations will augment the
information provided by the open-ended interviews. More concrete information regarding types
and quality of educational materials produced as well as the numbers of older adults reached and
the feedback from the older adults will be shared in these assignments. The students are
encouraged to reflect on their experiences and offer feedback on ways the course could be
improved in their final presentation. This information will be useful evaluating S.L.I.C.E.

**Dissemination Plan**

At the end of the post-pilot semester, a final report will be written that will include
descriptions of the students’ projects as well as feedback from the students and the community
members. This report will be disseminated to the stakeholders, specifically to the Division of
Geriatric Medicine and the Department of Family Medicine teaching faculty and the wellness
coordinators at the community sites. The wellness coordinators will be encouraged to share the
results with the community members, perhaps through the sites’ monthly or quarterly
newsletters.

**Presentations**

The curriculum as well as the findings from the pre- and post- surveys from S.L.I.C.E.
will be presented to the Division of Geriatric Medicine teaching faculty at the University of
North Carolina at Chapel Hill during one of the weekly division meetings. If the program
appears to be associated with improved student attitudes and confidence levels, the program will
be potentially be presented regionally or nationally. Abstract summaries of the curriculum will
be submitted to The Donald W. Reynolds’ Foundation National meeting and The Donald W.
Reynolds’ Foundation Gerolina meeting, an annual meeting for all of the Reynolds-funded schools in North and South Carolina. Both of these meetings provide a forum for geriatric medicine clinician educators to present products and curricula. If accepted, the curriculum could be presented as a poster or as a workshop describing how to create and evaluate a service-learning curriculum. Finally, an abstract will be submitted to the American Geriatric Society meeting for a poster session.

Publications

The first publication will be a web-based curriculum guide for POGOe, an online portal of geriatric medical education, and MedEdPORTAL, an online peer-reviewed publication service provided by the Association of American Medical Colleges (AAMC). This guide will include the syllabus, assignments, and lectures for use at other institutions. The requirements put forth by both POGOe and MedEdPORTAL will be followed to ensure successful submission.

The second phase of publication will focus on the program plan and evaluation. This manuscript will discuss the program design, participants, evaluation techniques, and evaluation results. Potential journals for submission include Medical Teacher, Education in Medicine, Academic Medicine, Gerontology and Geriatrics Education, and the Journal of American Geriatric Society.

CONCLUSION

In conclusion, this curriculum serves a critical need in medical student education by requiring service-learning with healthy older adults in the community, outside of the medical system. Demographic data indicate that the population in the United States is aging, resulting in large numbers of older adults in the health-care system. The influx of geriatric patients has resulted in leading national medical organizations to recommend increased training in geriatrics.
for health professionals  Service-learning provides a unique opportunity for medical students to discover the diversity of older adults and to reflect on these experiences with guidance from a clinician-educator.

S.L.I.C.E. (Service-Learning in Communities of Elders) is a curriculum for the medical student elective, MEDI 286, Special Topics on Aging, at the University of North Carolina School of Medicine at Chapel Hill that introduces first and second-year medical students to older adults in their communities, outside of the medical system, through service-learning. During the pilot semester of S.L.I.C.E., important lessons were learned that will guide improvement of the in-class didactics and creation of evaluation tools for the next phase of the curriculum development.

Prior to the next phase of S.L.I.C.E., in-class didactic sessions that complement the service-learning assignments will be improved and formalized. During the pilot semester, in-class didactics were given on health literacy, sensory and cognitive changes associated with aging, and falls. Prior to the post-pilot phase, the in-class didactics will need to be enhanced regarding content and presentation, ensuring that they meet the needs of the students as well as the requirements for publication (based on POGOe and MedEdPortal guidelines).

Additionally, prior to next semester, surveys for the students and wellness coordinators will be created that evaluate the program components as outlined in the program evaluation section of this paper. This data, in addition to data from the pre- and post- COCOA, will determine the impact of the program, resulting in a stronger program evaluation than those used by the programs in the systematic review.
The hope is that the end-product will be a formal service-learning curriculum that improves students’ attitudes toward and knowledge about older adults and can be re-created at other institutions for preclinical medical students.
APPENDIX

**Definition of Service-Learning:** a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities.\(^\text{16}\)

**Evaluation Tables**

These tables outline the evaluation plan for the post-pilot phase of S.L.I.C.E.

*Short-term Objective 1:* (Participant Objective)

By 6 weeks, 50% of students will have visited either the Cedars Retirement Community or the Seymour Senior Center.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 6 weeks, had 50% of the students visited the Cedars Retirement Community or the Seymour Senior Center?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, activity logs, survey at 6 weeks or the end of the semester</td>
</tr>
<tr>
<td>What were the barriers to the visitation, i.e. site’s schedule, transportation, competing demands?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester</td>
</tr>
<tr>
<td>How could the visitation be improved, i.e. meet with Wellness Coordinator, attend the Seymour Wellness Clinic?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester</td>
</tr>
<tr>
<td>How many students (percentage) had visited by six weeks?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester</td>
</tr>
</tbody>
</table>

*Short-term Objective 2:* (Participant Objective)

By 6 weeks, 50% of students will have participated in a class or activity at the site.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wilson 39
By 6 weeks, had 50% of the students participated in a class or activity at the sites? | Students | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester |
---|---|---|
What classes and activities did the students attend? Why did the students choose these activities? | Students | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester |
Did the students benefit from attending these classes and activities, i.e. social cohesion, self-efficacy, knowledge about the sites, information to guide the needs assessment? | Students | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester, first reflection paper, final presentation |
How many of the students (percentage) attended a class or activity at the sites? Why did some of the students not attend a class or activity? | Students | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester |
Do the sites support the students’ visitation of the classes and activities? How were the students supported? | Students, Wellness Coordinators | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester, open-ended phone interview with the wellness coordinators |
What were the barriers to the visitation of the classes, i.e. site’s schedule, transportation, competing demands? | Students | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester |
How could the activities/classes be improved, i.e. provide a calendar, recommend classes, require a specific class? | Students | Feedback during class time via open-ended questions, survey at 6 weeks or the end of the semester |

*Short-term Objective 3*: (Participant Objective)

By 6 weeks, students will have increased their face-time interaction with older adults by at least 50%.
What was the initial contact time with older adults prior to the semester?  

By 6 weeks, did students increase their face-time with older adults by at least 50%?  

Were students interacting with older adults outside of the required sessions?  

How many hours were students spending with older adults as part of the class requirements?  

---

**Short-term Objective 4: (Participant Objective)**

At the end of the semester, 100% of students will have visited either the Cedars Retirement Community or the Seymour Senior Center.

---

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the semester, had 100% of the students visited the Cedars Retirement Community or the Seymour Senior Center?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, activity logs, end-of-semester survey</td>
</tr>
<tr>
<td>How many times did the students visit their assigned site?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, activity logs, end-of-semester survey</td>
</tr>
<tr>
<td>Did the students feel that the number of visits sufficiently introduced them to the site? Why or why not?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, end-of-semester survey</td>
</tr>
</tbody>
</table>

---

**Short-term Objective 5: (Process Objective)**
At the end of the semester, 100% of students will demonstrate knowledge of health literacy and a medical concern of older adults by designing an appropriate educational material.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the semester, had 100% of the students demonstrated knowledge of health literacy and a concern of older adults by designing an appropriate educational material?</td>
<td>Students, instructors</td>
<td>End-of-semester presentation, pre- and post-survey, open-ended phone interview with the instructors</td>
</tr>
<tr>
<td>What were the barriers in completing the appropriate educational materials, i.e. cost, time, insufficient didactics?</td>
<td>Students, instructors, wellness coordinators</td>
<td>Feedback during class time via open-ended questions, survey at the end of the semester, open-ended phone interview with the wellness coordinators</td>
</tr>
<tr>
<td>What led to the best quality of educational materials?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, survey at the end of the semester</td>
</tr>
<tr>
<td>Did the students gain other benefits besides knowledge of health literacy and the medical condition, i.e. teamwork experience, poster design experience?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, survey at the end of the semester, pre- and post-survey</td>
</tr>
</tbody>
</table>

**Short-term Objective 6: (Process Objective)**

At the end of the semester, student-designed educational materials will be delivered to at least 50 older adults at the sites.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the semester, had student-designed educational materials been delivered to at least 50 older adults at the sites?</td>
<td>Students</td>
<td>Analysis of activity logs, end-of-semester presentation, end-of-semester survey</td>
</tr>
<tr>
<td>Did the students produce the expected</td>
<td>Instructors,</td>
<td>Open-ended phone interview</td>
</tr>
</tbody>
</table>
quality of educational materials? What types of materials were created?  

wellness coordinators with the wellness coordinators and instructors

What were the barriers to delivering the educational materials, i.e. location, scheduling conflicts, transportation?

Students  Feedback during class time via open-ended questions, end-of-semester survey

How many older adults received the educational materials?

Students  Analysis of activity logs, end-of-semester presentation

**Short-term Objective 7: (Process Objective)**

At the end of the semester, at least 25 older adults will provide the students with feedback on the educational material.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the semester, had at least 25 older adults provided the students with feedback on the educational material?</td>
<td>Students, older adults</td>
<td>Feedback during class time via open-ended questions, end-of-class presentation, end-of-semester survey at the end of the semester, paper survey to older adults</td>
</tr>
<tr>
<td>What were the barriers to obtaining this feedback, i.e. time, comfort level of students, willingness of older adults?</td>
<td>Students, older adults</td>
<td>Feedback during class time via open-ended questions, end-of-class presentation, survey at the end of the semester, paper survey to older adults</td>
</tr>
<tr>
<td>Did the students gain other feedback from the participants regarding their professionalism, communication styles, or appearance?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, end-of-class presentation, survey at the end of the semester</td>
</tr>
<tr>
<td>How many older adults provided feedback?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, end-of-class presentation, survey at the end of the semester</td>
</tr>
</tbody>
</table>

**Short-term Objective 8: (Participant Objective)**
At the end of the semester, students will report improved attitudes about working with older adults.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the semester, did students report improved attitudes about working with older adults?</td>
<td>Students</td>
<td>Pre- and post- attitudes survey (COCOA), feedback during class time via open-ended questions</td>
</tr>
</tbody>
</table>

**Short-term Objective 9: (Participant Objective)**

At the end of the semester, students will report increased confidence in working with older adults.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the semester, did students report increased confidence in working with older adults?</td>
<td>Students</td>
<td>Pre- and post- attitudes survey (COCOA), feedback during class time via open-ended questions</td>
</tr>
</tbody>
</table>

**Long-term Objective A: (Process Objective)**

By the end of the second semester of S.L.I.C.E., the student-designed educational materials will be demonstrated to over 100 older adults.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of the second semester, were the student-designed educational materials demonstrated to over 100 older adults?</td>
<td>Students</td>
<td>Feedback during class time via open-ended questions, end-of-class presentation, survey at the end of the semester</td>
</tr>
<tr>
<td>By the end of the second semester, how many older adults received the educational materials?</td>
<td>Students, wellness coordinators</td>
<td>Feedback during class time via open-ended questions, end-of-class presentation, survey at the end of the semester, open-ended phone call at the end of the semester</td>
</tr>
<tr>
<td>Evaluation Questions</td>
<td>Participants</td>
<td>Evaluation Methods</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>By the end of the second semester, did the class expand to another site?</td>
<td>Instructors</td>
<td>Open-ended phone interview with the wellness coordinators</td>
</tr>
<tr>
<td>How was the site chosen? What relationships were required in order to expand to the site?</td>
<td>Instructors, students</td>
<td>Open-ended phone interview with the instructors</td>
</tr>
<tr>
<td>What were the barriers to expansion, i.e. support from the site, instructor support?</td>
<td>Instructors</td>
<td>Open-ended phone interview with the instructors</td>
</tr>
</tbody>
</table>

**Long-term Objective B: (Process Objective)**

By the end of the second-semester of S.L.I.C.E., the class will obtain support from another community site and expand to that site.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Participants</th>
<th>Evaluation Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over two years, was their a 10% annual increase in the number of students enrolled?</td>
<td>Instructors</td>
<td>Open-ended phone interview with the instructors</td>
</tr>
<tr>
<td>Were new methods for advertising the class enlisted? If so, were they considered successful? Why or why</td>
<td>Instructors</td>
<td>Open-ended phone interview with the instructors</td>
</tr>
<tr>
<td>not?</td>
<td>instructors</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Did the instructors feel that the increase in class size affected implementation of the curriculum? Why or why not?</td>
<td>Instructors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open-ended phone interview with the instructors</td>
<td></td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Dr. Diane Calleson and Dr. Ellen Roberts for their leadership, support, and guidance throughout the process of creating both the S.L.I.C.E. curriculum and this Master’s Paper. I feel very blessed to have their mentorship. I also thank Dr. Christine Kandelwahl for her idea of adding service-learning to MEDI 286 and all of the students in MEDI 286 who continually impress me with their enthusiasm for and commitment to learning.
REFERENCES


