



## Training socially responsive healthcare graduates: Is Service Learning an effective educational approach?

Title	Training socially responsive healthcare graduates: Is Service Learning an effective educational approach?
Author(s)	Mc Menamin, Ruth;Mc Grath, Margaret;Cantillon, Peter;MacFarlane, Anne
Publication Date	2014-02-06
Publisher	Taylor & Francis

***Training socially responsive healthcare graduates: Is service learning an effective educational approach?***

RUTH MC MENAMIN<sup>1</sup>, MARGARET MC GRATH<sup>1</sup>, PETER CANTILLON<sup>1</sup> & ANNE MAC FARLANE<sup>2</sup>

<sup>1</sup>National University of Ireland, Ireland,

<sup>2</sup>University of Limerick, Ireland

**Abstract**

**Background**

Health care educators strive to train graduates who are socially responsive and can act as “change agents” for communities they serve. Service learning (SL) is increasingly being used to teach the social aspects of health care and develop students’ social responsiveness. However, the effectiveness of SL as an educational intervention has not been established.

**Aim**

To assess the evidence for the effectiveness of SL.

**Method**

Seven electronic databases were searched up to 2012 and included all articles on SL for pre-professional health care students. Hand searching was also conducted.

**Results**

A total of 1485 articles were identified, 53 fulfilled the search and quality appraisal criteria and were reviewed across six domains of potential SL effects: (i) personal and interpersonal development; (ii) understanding and applying knowledge; (iii) engagement, curiosity and reflective practice; (iv) critical thinking; (v) perspective transformation and (vi) citizenship.

**Conclusion**

While SL experiences appear highly valued by educators and students the effectiveness of SL remains unclear. SL is different from other forms of experiential learning because it explicitly aims to establish reciprocity between all partners and increase students’ social responsiveness. Impact

studies based on the interpretative paradigm, aligned with the principles of social accountability and including all stakeholder perspectives are necessary.

### **Practice Points**

- Service learning is a complex educational approach involving communities, students and institutions with the aspiration that partnerships are equally beneficial and reciprocal.
- Social accountability is being integrated as a core standard in the accreditation of health care education and service learning has been used to teach students social accountability.
- Working in partnership with the “different other” appears to help students develop a deeper appreciation of the vulnerabilities that marginalised segments of the population experience and nurture a purposeful sense of social responsibility.
- The unique nature of SL experiences makes it difficult to generate define and generalisable outcomes
- Future research should aim to conduct more robust evaluations in this increasingly important and life changing aspect of medical education.

### **Introduction**

Traditional didactic classroom or clinical settings have been criticized for failing to prepare graduates for 21<sup>st</sup> century practice (Hoppes & Hellman, 2007; Cole & Carlin, 2009). Modern health care professionals must be capable of developing collaborative partnerships with the health sector, policy-makers and communities in order to identify and treat priority health needs (Frenk et al., 2010; Sales & Schlaff, 2010). Furthermore, the internationalization of health care education requires that graduates become global citizens with the skills, knowledge and experience to positively influence the health and well-being of global populations (McKimm & McLean, 2011). Health care systems, whether local or global, depend on health care professionals to be socially responsive and willing to act as “enlightened change agents” in diverse contexts and communities (Larkins et al., 2013). There is growing international commitment to meet this challenge for example, the Global Consensus for social accountability

of Medical Schools (2011) is working to integrate social accountability as a core standard in the accreditation of health care education, while the Training for Health Equity Network (2008) are developing a common evaluation framework for social accountability. AMEE's (Association for Medical Education in Europe) and ASPIRE (International recognition of excellence in Medical Education) initiative have piloted criteria for the assessment of social accountability in 20 Countries to date. Key reports including the Institute of Medicine's: (1) Health Professions Education: A Bridge to Quality, (2) Educating Physicians: A Call for Reform of Medical Schools and Residency and The Independent Global Commission on Education of Health Professionals for the 21st Century' (Frenk et al., 2010) emphasize the importance of teaching and evaluating social accountability in health care education. Accreditation bodies are creating education and training standards which include community engagement and public health dimensions (McKimm & McLean, 2011). This drive to graduate socially responsive students creates the need for a suitable pedagogical approach to teach the social aspects of health. Educators have explored a variety of innovative pedagogies; however, service learning (SL) has been suggested as an experiential and transformative educational approach. SL supports building collaborative partnerships between communities and institutions with a balance between meeting identified community needs and defined student learning outcomes (Seifer et al., 2000).

### **Service Learning Theoretical Framework**

Service learning was developed in the USA, and has been championed by Cashman & Seifer (2008). This pedagogy is largely based upon theories embedded in the experiential learning paradigm first posited by Dewey (1938, 1963) and later elaborated by Kolb (1984). These theories suggest that students' learning is enhanced with active engagement in experiential problem solving and decision-making involving iterative reflection and (re)conceptualization. SL adds to the normal interpretation of experiential learning as an individual learning cycle with its emphasis on learning activities that establish reciprocity between learners/institutions and communities (McMenamin et al., 2010). The aim of SL to collaborate with local communities in a reciprocal way is in keeping with (Freire, 1972) social justice framework.

### **Service Learning Outcomes**

SL is reported to have several educational benefits including supporting students to: apply theory to practice in the community; develop skills that are difficult to learn with traditional educational approaches; gain an appreciation of the social determinants of health and foster a sense of social responsibility, accountability and caring for others (Azer et al., 2013). SL also supports students' professional identity formation, a core component of "professionalism", and a key strand in health care curricula (Woollard, 2006; Bentley & Ellison, 2007; Batra et al., 2009). North American studies have dominated research focused on evaluating SL (Eyler, 2000). Eyler & Giles (1999) propose a theoretical framework identifying six broad categories of student learning outcomes including: (i) personal and interpersonal development, (ii) understanding and applying knowledge, (iii) engagement curiosity and reflective practice, (iv) critical thinking, (v) perspective transformation and (vi) citizenship (Eyler & Giles, 1999). The relevance of these learning outcomes to contexts beyond North America is uncertain as transferring curriculum innovation from one culture to another involves a process of localization which may influence the application of the innovation and the outcomes achieved (Boland & McIlrath, 2007). SL is a resource intensive pedagogy (Eyler, 2000) as building relationships between communities, students and universities requires considerable effort. The commitment to maintain equal and collaborative relationships over time means that SL partnerships are continually changing and are unique (Karasik & Wallingford, 2007). Given the demands of intensive health care curricula and the short academic year some educators and students may prefer more predictable traditional approaches to teaching and learning social accountability (Dharamsi et al., 2010a). New approaches in educational policy and practice should be supported by evidence (Evans & Benefield, 2001) with thorough evaluation prior to implementation (Dorfman et al., 2007). However, in the absence of clear evidence of SL effectiveness or understanding of localization educators cannot make informed decisions about the implementation of this pedagogy. There are a range of resources describing the features of SL (e.g. Zlotkowski, 2002; Holland, 2005) including a number of discipline specific texts, (Elam et al., 2003; Flecky & Gitlow, 2011; Mitschke & Petrovich, 2011; Kazemi et al., 2011). Neither these texts, nor the current evidence on the impacts of SL, which is largely based on North American

data can inform international SL and social accountability agenda's.

This review is necessary and timely as it considers the new and emerging international SL literature and aims to (i) discuss the nature of evaluation approaches; (ii) identify the reported impacts of SL for health care students focusing on social accountability outcomes and (iii) provide guidance on priority areas for future research.

## **Methods**

### **Search Strategy**

A systematic approach based on Best Evidence Medical Education (BEME, 2003) guidelines was used to search the following seven databases for English language, peer-reviewed studies, with a timeframe up to and including February 2012: CINHAL Plus; British Education Index; Australian Education Index; PubMed; PsychInfo; SCOPUS and ProQuest. The term "Service Learning" originated in North America however a wide range of terminology exists to describe the work of SL internationally (Hunt & Swiggum, 2007). The diversity in SL terminology became apparent during the search process. Combinations of the following keywords were used to identify relevant studies on the impacts of SL for pre-professional health care students: service learning; community based learning; pedagogies for civic engagement; civic engagement; civic awareness and undergraduate health care and learning outcomes.

### ***Inclusion/exclusion criteria***

Bringle & Hatcher's (1996) definition of SL guided the SL inclusion criteria: ...SL is a credit-bearing educational experience in which students participate in an organised service activity that meets identified community needs....unlike extracurricular voluntary service....meaningful service activities are related to course materials...unlike practica and internships...the experiential activity is not necessarily skill-based within the context of professional education. (Bringle & Hatcher, 1996, p222).

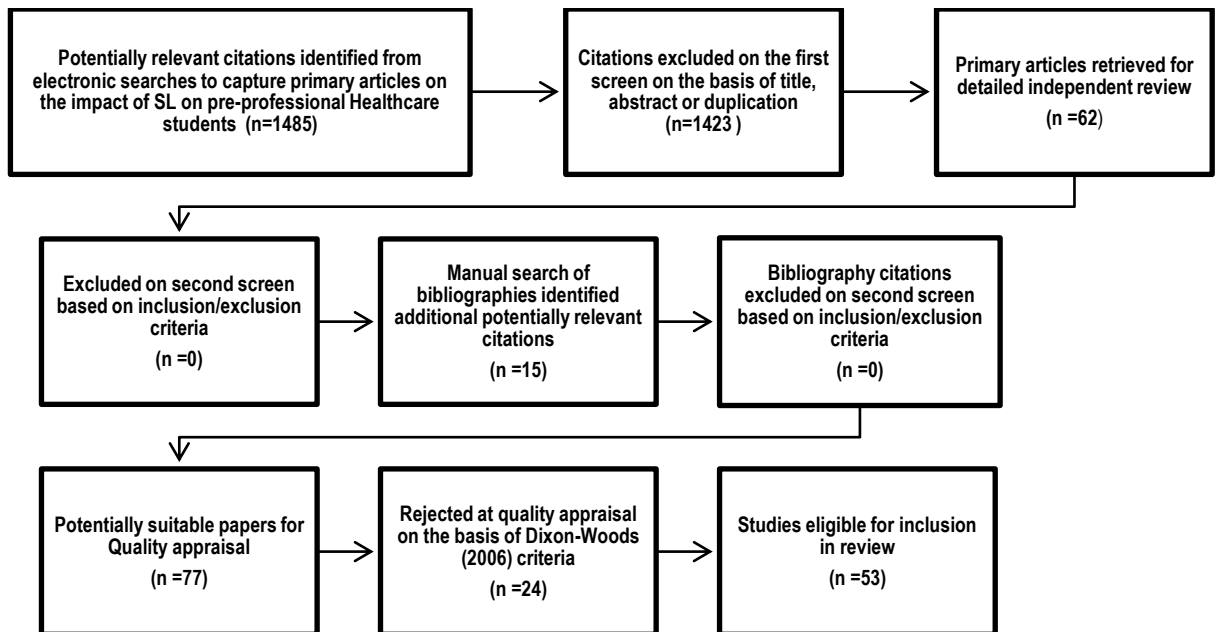
Papers relating to student volunteer experiences that were not credit-bearing and experiential learning activities that were not identified as SL were excluded. Student disciplines were restricted to pre-professional medicine, nursing and midwifery, physiotherapy, occupational therapy,

speech and language therapy, human nutrition and dietetics, pharmacy, psychology, podiatry, and social work. Studies involving other student groups were included if any of the eligible disciplines were involved in the same study (e.g. Krout et al., 2010); however, only data relating to the outcomes of the eligible student disciplines were considered.

**Study identification**

The seven databases searched identified 1485 potential papers. The abstract of each paper was independently reviewed and this double coding system produced the initial results. One-thousand four-hundred and twenty-three papers were excluded as they did not comply with the inclusion criteria. Where there was disagreement or uncertainty regarding the relevance of citations the full text article was retrieved and read independently by two authors. Any discrepancies in classifying outcomes were discussed prior to making final decisions regarding the inclusion or exclusion of the article. Hand searching the bibliographies of the 62 papers fulfilling the inclusion criteria identified a further 15 relevant papers. Full text papers of the 77 potentially relevant studies were assessed independently by two authors (Figure 7.1).

**Figure 7.1: Literature search and article identification**



**Data extraction**

Data extraction and quality appraisal from the set of 77 identified studies

were carried out by two authors and checked by a third author using a specifically designed coding form. Coding differences were resolved through discussion between the authors. The coding process in a critical review usually involves making a judgement on the quality of studies included which determines the quality of data analysed and ultimately informs conclusions. Conventional critical reviews frequently adopt a quality appraisal system that results in a “hierarchy of evidence”. However, this approach was not easily applied to the current review for two reasons: (i) it was essential to consider the wider social, philosophical and ethical issues underpinning policy and practice (Evans & Benefield, 2001) and (ii) the literature set included both quantitative and qualitative methodologies. Therefore we adopted a more inclusive approach to quality appraisal using criteria suggested by Dixon-Woods et al. (2006) including:

- Clarity of the research aims and objectives.
- Clarity and appropriateness of the research method.
- Description of the research process.
- Availability of data to support the research findings and conclusions.
- Clarity and appropriateness of the data analysis method.

Based on these criteria papers that failed to provide sufficient detail regarding the research method and/or research process were excluded resulting in a further ( $n = 24$ ) ineligible papers. A total of ( $n = 53$ ) papers were accepted for final detailed review. Key features of the studies are summarised in Tables 1 and 2. Given the nature of this study, ethical approval was not required.



**Table 7.1: Papers included in the Review**

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
<b>Green et al.( 2011)</b>	To determine the effect of an international service-learning experience in Honduras on the cultural competence of the participants.	Mixed Methods: Questionnaire – pre-test and post-test scores compared.  Interviews analysed	Quantitative component did not use self-report	Nursing and medical students ( <i>n</i> = 7)	<b>Positive Impact Reported:</b> International service-learning experience was successful in increasing the participants' ability to provide culturally congruent care.
<b>Groh et al. (2011)</b>	To examine the impact of a service learning experience on senior nursing students' self-rated competency in leadership skills	Quasi experimental: Questionnaire – Self- evaluation pre and post experience	Some self- report- students rated themselves on 10 items.	Nursing students ( <i>n</i> = 306)	<b>Positive Impact Reported:</b> Significant positive difference demonstrated for both leadership skills scores and social justice

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	and social justice interest.				scores
<b>Kaf et al. (2011)</b>	To examine changes in students' attitudes toward adults with dementia following an SL experience.	Mixed Methods: Questionnaire Reflective Journal	Quantitative component did not use self-report	Audiology ( <i>n</i> = 19) Speech Pathology ( <i>n</i> = 24)  Total ( <i>n</i> = 43)	<b>Positive Impact Reported:</b> Direct contact with older adults through Service Learning resulted in more positive attitudes toward older adults in residential facilities.
<b>Leung et al. (2011)</b>	To compare the effects of a Service Learning project with a self-directed online	Experimental: Randomised controlled trial	Not self-report	Medical ( <i>n</i> = 28) Nursing ( <i>n</i> = 75)  Total ( <i>n</i> = 103)	<b>Positive impact immediately post SL experience but gains not maintained:</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	learning programme on medical and nursing students' knowledge about aging and their attitudes towards older adults.				Participants in the service learning group showed significantly greater knowledge of aging, understanding of mental health needs in old age & had a more positive attitude toward older adults. At 1 month these results were not maintained.
<b>Liang En et al. (2011a)</b>	To compare the ability of two programs	Quasi-experimental: Cross-sectional	Some Self Report measures – students rated their	Medical students (n = 64)	<b>Positive impact reported:</b> Service Learning

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	<p>providing medical care to low-income populations (clinic-based v home-based approach) to teach community medicine skills in an Asian medical school.</p>	<p>study - self-administered anonymised questionnaire</p>	<p>perception of gains across 9 domains</p>		<p>superior at teaching communication skills, teamwork, identifying social issues, gaining knowledge, and applying knowledge. Improved knowledge on long-term management of chronic diseases. Service-learning programs, in the Asian context, have potential educational value for medical</p>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					students in a wide range of domains.
<b>Loewenson &amp; Hunt) &amp;(2011)</b>	To examine nursing students' attitudes toward homelessness before and after participation in a service-learning clinical rotation with families experiencing homelessness.	Quasi-experimental: Questionnaire – Pre-and post-test	Some self-report measures - students rated their perception of attitude change.	Nursing students ( <i>n</i> = 23)	<b>Positive impact reported:</b> Results suggest a positive influence on students' attitudes and support the value of integrating service-learning clinical opportunities with homeless individuals into nursing curricula.
<b>Long et al. (2011)</b>	To determine the impact of an 8-	Quasi-experimental :	Some self-report – students rated their	Medical students ( <i>n</i> = 41)	<b>Positive impact reported:</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	<p>week service learning programme on medical students reported comfort, effectiveness and willingness to lead and the extent of their self-knowledge about their own leadership abilities.</p>	<p>Questionnaire – Pre- and Post- test</p>	<p>perceptions of changes in their leadership skills post SL</p>		<p>Significant positive improvement in perceived comfort in leadership activities. No perceived effectiveness or willingness to take a leadership role. No significant difference found in perceived comfort or willingness to change leadership style.</p>
<p><b>Meili et al. (2011)</b></p>	<p>To explore student reflections on their experiences during the MTL</p>	<p>Qualitative: Two structured open-ended written response</p>	<p>Not Self-report</p>	<p>Medical students (<i>n</i> = 14)</p>	<p><b>Positive impact reported:</b> Service-learning can encourage</p>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	programme which is designed to teach medical students the social aspects of medicine via service learning.	questionnaires.			altruistic medicine and teach social accountability to medical students.
<b>Mitschke &amp; Petrovich (2011)</b>	To examine student learning outcomes that resulted from a service learning partnership between graduate-level social work students in a diversity course and a community health clinic serving Latino	Qualitative: Inductive technique for deriving conclusions from general observations using content analysis. Review of student papers and reflections to identify themes.	Not Self-report	Social work students ( $n = 24$ )	<b>Positive impact for some reported:</b> For some students, service learning can provide a unique opportunity to alter the way that they see others and their personal and professional responsibility they

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	immigrants and Burmese refugees.				have to community. For others service learning created a passion for advocacy, a commitment to social justice, or a vow of service that can follow students throughout their lifetime.
<b>Pakulski (2011)</b>	To examine the utility of a university-based service learning clinical intervention programme that provides education	Quasi-experimental: Self-rating questionnaires - Pre- and post-service learning experience	Some self-report measures – Students rated their perception of their knowledge and skills pre- and post- service	Speech & Language Pathology students ( <i>n</i> = 28)	<b>Positive Impact Reported:</b> Statistically significant improvement between pre- and post-



Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	and clinical experience for pre-service Speech & Language Pathologists and other pre-professionals.		learning experience		questionnaires of knowledge and skill related to intervention for families of children who are deaf or hard of hearing and who are auditory based language learners by a single group of students.
<b>Reading &amp; Padgett) (2011)</b>	The development of ASL skills through a service learning experience.	Experimental: Controlled trial	Not self-report	Speech & Language Therapy and Audiology Total ( <i>n</i> = 32)	<b>Positive impact reported:</b> SL valuable teaching method for ASL. Service learning increases cultural

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					awareness and skill level.
<b>Schindler (2011)</b>	To teach research skills, clinical skills, and increase comfort in working with the mental health population to Occupational Therapy students using a Service learning approach.	Quasi-experimental: Survey – pre and post	Some self-report measures – Students rated their perceptions of changes in their competence and comfort of working with people with mental health issues.	Occupational Therapy students <i>n</i> = 78	<b>Positive impact reported:</b> Results indicated that the Occupational Therapy students gained comfort with the population and competence in their clinical and research skills
<b>Vogt et al. (2011)</b>	To examine the experiences of student nurses at a summer residential camp	Qualitative: Reflective journals analysed through a process of coding, content analysis,	Not self-report	Nursing students ( <i>n</i> = 26)	<b>Positive impact reported:</b> Camp positively increased students' knowledge of

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	for children with diabetes using a service-learning framework.	and theme development.			diabetes. Reflective journals identified themes of anxiety, fatigue, responsibility, and increased student confidence. Also empathy for the lifestyle of children with diabetes.
<b>Liang En et al. (2011b)</b>	To evaluate the learner reported educational value of a service learning program for medical and nursing students.	Mixed methods: Cross-sectional survey Qualitative feedback on experiences analysed using thematic analysis	Some self-report measures – Students rated their perceived gains from SL experience	Medical ( <i>n</i> = 240) Nursing students ( <i>n</i> = 34) Total ( <i>n</i> = 274)	<b>Positive impact reported:</b> Students reported that the service learning experience benefited their learning in leadership skills;

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					communication skills; teamwork; critical thinking skills; ability to identify social issues; action skills; ability to see consequences; acquisition of knowledge and application of knowledge.
<b>Zuccherò (2011)</b>	To explore student learning outcomes following a service learning experience in a lifespan developmental	Mixed methods: Pre- and post- test Quiz Qualitative analysis of student reflections	Not Self Report Measures	Psychology and Occupational Therapy students Total ( <i>n</i> = 66)	<b>Positive impact reported:</b> Students' knowledge of older adults increased significantly from pre-test to post-

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	psychology course.				test. Qualitative analysis found that service learning resulted in positive outcomes in three groups; intrapersonal development, emotional learning, value/ benefit.
<b>Amerson (2010)</b>	To evaluate the self- perceived cultural competence of nursing students on completion of service learning projects with local and international communities as	Quasi- experimental: Questionnaire - Pre and post	Some self-report measures - Self Perceived cultural competence after SL	Nursing students ( <i>n</i> = 69)	<b>Positive impact reported:</b> Following service learning students had significantly higher levels of self- assessed cultural competence.

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	part of a community health nursing course.				
<b>Dauenhauer et al. (2010)</b>	To develop and evaluate an intergenerational service-learning course designed to promote social work gerocompetencies.	Mixed methods: Survey & analysis of electronic journal & Interviews.	Survey – Some self-report measures	Social Work Graduate ( $n = 9$ ) & Undergraduate ( $n = 2$ ) Nursing ( $n = 1$ ) Interdisciplinary health ( $n = 1$ ) Total ( $n = 13$ )	<b>Potential positive impact:</b> Intergenerational service learning coursework may help foster geriatric competencies among graduate & undergraduate social work students.
<b>Faria et al. (2010)</b>	To report qualitative student outcomes as a result of participating in a	Qualitative: Inductive content analysis to analyse students' reflective journals	Not self-report	Social Work Graduate ( $n = 24$ ) & Undergraduate ( $n = 7$ ) Nursing ( $n = 2$ )	<b>Positive impact reported:</b> Service learning fosters competencies in

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	university-community partnership course			Interdisciplinary health ( <i>n</i> = 2) Non matriculated graduate student ( <i>n</i> = 1) Total ( <i>n</i> = 37)	working with older people. Students' experienced educational growth, personal and professional learning.
<b>Horowitz et al. (2010)</b>	To explore students' perceptions of their service learning experience and intergenerational sessions.	Quasi-experimental: Questionnaire.	Some self-report measures	Occupational Therapy Students ( <i>n</i> = 22)	<b>Positive impact reported:</b> Positive perception of service learning.
<b>Krout et al. (2010)</b>	To build a multidisciplinary base for gerontology	Quasi-experimental: Student satisfaction pre-	Some self-report	Gerontology, Psychology, Occupational Therapy, and	<b>Positive impact reported:</b> Increased understanding of:

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	<p>Service Learning (SL) at the college by extending SL activities to other departments and to engage students from many majors with elders to identify, plan, and execute activities that benefited them and the community.</p>	<p>and post- test survey</p>		<p>Health Promotion and Physical Education, Speech Pathology and Therapeutic Recreation students  Total (<i>n</i> = 129)</p>	<p>ability to work and communicate with elders (96.6%) and of service-learning (95.1%). Students reported experience was: relevant to course (99.2%) and valuable educationally (98.3%). Almost 9 in 10 reported more positive attitudes toward elders, and 92% were pleased with their service learning experience. High</p>



Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					levels of student satisfaction.
<b>Dharamsi et al. (2010a)</b>	To conduct a detailed exploration of the international service-learning (ISL) experience of three medical students.	Qualitative: Phenomenological approach - critical incident technique used to analyse student reflections and essays.	Not self-report	Medical students ( <i>n</i> = 3)	<b>Positive impact reported:</b> Increased meaningful sense of what it means to be vulnerable & marginalised, heightened awareness of the social determinants of health and the related importance of community engagement. Greater appreciation of the health advocate

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					role.
<b>McMenamin et al. (2010)</b>	To investigate the impact(s) of Service Learning on students, community partners, and educators in an Irish context.	Qualitative: Thematic content analysis used to analyse data from Focus groups & Interviews with students, community partners and educators.	Not self-report	Educators ( $n = 8$ ) Undergraduate OT & SLT students ( $n = 16$ ); Graduate OT & SLT ( $n = 8$ ) Community partners( $n = 7$ ) Total ( $n = 38$ )	<b>Potential positive impact:</b> Student outcomes: Service learning has the capacity to support personal development, enhance academic performance and increase civic awareness.
<b>Brown (2009)</b>	To determine if a faith based Service Learning activity would improve nursing students' knowledge and skills related to	Quasi-experimental: Questionnaire – comparison of Pre- and Post-self-assessment results.	Some self-report measures	Nursing students ( $n = 55$ )	<b>Positive impact reported:</b> Significant increase in self-rated knowledge of service learning, community needs, enthusiasm for

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	community mental health.				<p>service learning. A significant change was found in self-reported group skills and oral communication skills</p> <p>No significant change was found for communication, creativity or written skills.</p>
<b>Horacek et al. (2009)</b>	To challenge the students development of inter-professional competencies and to contribute to the	Quasi-experimental: Questionnaire – Pre- and Post-self-assessment survey.	Some self-report measures	Dietetic, nursing, social work, child and family studies students Total ( <i>n</i> = 41)	<b>Positive impact reported:</b> Interdisciplinary education is necessary and can be implemented

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	creation of community partnerships.				successfully via service learning for upper-class health care students. Interdisciplinary education can improve university-community relationships and enhance students' cultural and professional competence.
<b>Ngai (2009)</b>	To examine how service learning programme characteristics - involvement with users, agency	Quasi-experimental: Survey	Some self-report	Medical ( <i>n</i> = 12) Social science ( <i>n</i> = 24) Total ( <i>n</i> = 113)	<b>Positive impact reported:</b> Involvement with service users and psychological engagement has a

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	support & class experience – and psychological engagement interact to affect students' learning outcomes.				significant positive effect on personal development and civic engagement. Agency support and class experience have no significant effect on personal development or civic engagement but they are predictors of psychological engagement.
<b>Casey &amp; Murphy (2008)</b>	To explore student experiences' of service learning.	Qualitative: Thematic analysis of focus groups; individual interview	Not self-report	Nursing students (n = 30)	<b>Positive impact reported:</b> Participants reported that

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
		and group interview data.			service learning supported development of cultural sensitivity, to learn about caring for people in different cultures.
<b>Furze et al. (2008)</b>	To evaluate the impact of an inter-professional community-based educational project on students' attitudes toward other health care professions and older adults.	Mixed Methods: Survey Reflective journals Focus Group	Not self-report	Nursing, Occupational Therapy, Physical Therapy, and Pharmacy students Total ( <i>n</i> = 64)	<b>Positive impact reported:</b> Inter-professional community-based learning had a significant impact on some students' attitudes toward older adults. Positive impact on some students' perceptions of

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					other health care professions.
<b>Kearney (2008)</b>	To describe the design of a Service Learning course for Pharmacy and to assess outcomes in terms of student learning and relevance of learning.	Quasi-experimental: Questionnaire	Not self-report	Pharmacy students ( <i>n</i> = 195)	<b>Positive impact reported:</b> Students were able to articulate knowledge in the areas addressed by the Service Learning course, relevant to the education of pharmacists.
<b>McWilliams et al. (2008)</b>	UNCMSHAC is a voluntary SL programme which aims to influence students' attitudes toward older	Quasi-experimental Pre/post- test questionnaire	Not self-report	Inter-disciplinary health professional students Total ( <i>n</i> = 100 approx. annually)	<b>Positive impact reported:</b> Programme evaluation (qualitative and quantitative)

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	adults, meet core competencies and serve the needs of the community.				showed that UNCM SHAC is an effective Service Learning programme and is satisfactory to the majority of students.
<b>Johnson (2007)</b>	To assess the effectiveness of a Service-Learning advanced pharmacy practice experience (APPE) in a diabetes camp to improve student confidence in diabetes -	Quasi-experimental: Survey, Reflections and online quizzes.	Some self-report measures	Pharmacy students ( <i>n</i> = 8)	<b>Positive impact reported:</b> APPE experience in a diabetes camp improved students' confidence in their knowledge and ability to manage diabetes, and gain experience working with an



Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	knowledge and related skills.				interdisciplinary team in a unique real-world environment.
<b>Neill et al. (2007)</b>	To measure student perceptions of inter-professional practice following a collaborative learning experience in rural community offering mobile wellness services to the older adult.	Quasi-experimental: Pre/post -test Questionnaire	Not self-report	Nursing ( <i>n</i> = 56) Physical and Occupational Therapy ( <i>n</i> = 24), Dietetics ( <i>n</i> = 20), Physician assistant Pharmacy, Social work & Health education students ( <i>n</i> = 14) Total ( <i>n</i> = 114)	<b>Positive impact reported:</b> Significant change in students' perception of professional competence and autonomy. Co-operation and resource sharing within and across professions. Understanding of value and contributions of

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					other professionals from pre-test to post-test.
<b>Champagne (2006)</b>	To develop an innovative approach for determining the effectiveness of Service Learning projects in developing students' competency in the 7 areas of responsibility for entry-level health educators identified by NCHEC.	Mixed Methods: Survey questionnaire Written Reflections Annotated Portfolios Triangulation of data from the 3 assessment methods.	Some self-report measures	Mixed Healthcare students Total ( <i>n</i> = 12)	<b>Positive impact for some reported:</b> 3/5 groups perceived SL contributed to competency development. Early assessment may allow for modification of SL to increase the possibility of students developing professional skills and competencies.

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
<b>Goldberg et al. (2006)</b>	To determine the impact of a Service Learning experience on students' self-reported competency in relation to dysphagia.	Quasi-experimental: Questionnaire - self-report	Some self-report measures	Speech Pathology Students ( $n = 83$ )	<b>Positive impact reported:</b> Each group had a significant positive change in self-reported levels of competency across all relevant domains.
<b>Michaels &amp; Bilek-Sawhney (2006)</b>	To evaluate students' perceptions of the effectiveness of a service learning course in developing advocacy skills.	Quasi-experimental: Questionnaire	Some self-report measures	Physical Therapy Students ( $n = 26$ )	<b>Positive impact reported:</b> 92% of respondents ( $n = 24$ ) felt that the service learning experience enabled them to act as an

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					advocate.
<b>Ngai (2006)</b>	To explore the impact of a Service learning programme on student outcomes.	Quasi-experimental: Questionnaire	Some self-report measures	Arts, science and medical students Total ( <i>n</i> = 93)	<b>Positive impact reported:</b>  90% of students reported that the service learning programme enhanced personal development and social commitment.
<b>Poulin et al. (2006)</b>	To compare traditional field placements with a service learning experience in relation to development of micro and macro	Mixed Methods: Questionnaire Content analysis used to analyse Focus Groups	Some self-report measures	Social work students ( <i>n</i> = 62)	<b>Positive impact for some reported:</b>  No differences were identified between groups on scores relating to micro skills. The

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	practice skills.				service learning group had significantly higher scores relating to macro practice skills. SL provided a richer learning experience than traditional learning. SL allowed integration of theory and practice. Enhanced sense of commitment to social work practice.
<b>Bentley &amp; Ellison (2005)</b>	To explore the impact of a service	Quasi-experimental:	Some self-report measures	Nursing students (n = 58)	<b>Positive impact for majority</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	learning project on nursing students.	Questionnaire			<p><b>reported:</b></p> <p>16/20 students reported that SL increased their understanding and application of knowledge.</p> <p>18/20 reported increased awareness of needs of community. 19/20 reported a belief of responsibility towards community and ability to make a difference. 18/20 more comfortable working with people different</p>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					<p>from themselves.  15/20 more aware of own prejudices.  No significant difference was found for test scores on either exam.</p>
<p><b>Nokes et al. (2005)</b></p>	<p>To explore whether participation in a service learning programme made a difference in critical thinking, cultural competence and civic engagement.</p>	<p>Quasi-experimental:  Pre- and Post-Questionnaire</p>	<p>Not self-report</p>	<p>Nursing students  (<i>n</i> = 16)</p>	<p><b>Negative impact on critical thinking and cultural competence scores.</b>  <b>Positive impact on civic engagement scores.</b> Following completion of</p>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					<p>service learning: Critical thinking scores were significantly lower. Cultural competence scores were significantly lower. Significant increases in civic engagement scores.</p>
<p><b>Reynolds et al. (2005)</b></p>	<p>To develop a substantive theory to explain how the service learning experiences of students linked with the</p>	<p>Mixed Methods: Qualitative - Constant comparative method of analysis of student reflections.</p>	<p>Not self-report</p>	<p>Physical Therapy students (<i>n</i> = 165)</p>	<p><b>Positive impact reported:</b> Service learning complemented existing clinical education programmes</p>



Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	educational objectives for preparation of physical therapists.	Quantitative data from survey for 1 cohort of students analysed.			through providing opportunities for (i) expected learning outcomes - social responsibility, understanding individual and cultural difference, communication, education professional behaviour and professional development. (ii) unexpected outcomes of lesser interest - examination, intervention, outcome

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					measurement evaluation. SL provided opportunities not available in clinical education e.g. consultation, administration, management in various care delivery systems, prevention and Wellness.
<b>Beling (2004)</b>	To examine the impact of service learning on Physical Therapy Students' knowledge and	Experimental: Controlled Trial	Not self-report	Physical Therapy Students ( $n = 40$ )	<b>No difference with SL reported:</b> Both groups demonstrated increased knowledge and

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	attitudes about elderly people or its impact on the development of critical thinking.				attitudes towards older people. There was no significant difference between groups in relation to improvements. The service learning group did not demonstrate significant improvement in critical thinking skills.
<b>Dorfman et al. (2004 )</b>	To compare attitude change in five successive cohorts of inter-generational	Quasi-experimental: Questionnaire	Not self-report	Social Work , Aging Studies Nursing, Health, Leisure, and Sport Studies students.	<b>Positive impact on some measures. No impact on other measures.</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	service learning students.			Total ( $n = 59$ )	Significant positive attitudinal changes towards older people. No significant change in attitudes toward working with older people or in attitude toward own ageing.
<b>Kearney (2004)</b>	To determine what students learn through Service Learning based on their self-assessment of their learning.	Quasi-experimental: Questionnaire	Some self-report measures	Pharmacy Students ( $n = 127$ )	<b>Positive impact reported:</b> Statistical increases in students' oral communication, written communication, analytical and

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					critical thinking, and leadership skills from SL course; students' SL experiences and reflective activities will make them more competent professionals, more aware of the needs of the populations they serve, and more aware of ethical issues in the public arena.
<b>Williams &amp; Reeves ( 2004)</b>	To explore the impact of a service	Qualitative: Constant	Not self-report	Medical social work students ( <i>n</i> =	<b>Positive impact reported:</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	learning experience on students' learning.	comparative analysis of journals, focus groups, course evaluations.		21)	Service learning experience positively impacted learning about personal and professional self.
<b>Beling (2003)</b>	To determine whether service learning influences knowledge, misconceptions and bias regarding ageing among physical therapy students.	Experimental: Randomised Controlled Trial	Not self-report	Physical Therapy Students ( $n = 40$ )	<b>No difference with SL Reported:</b> Experimental and control groups demonstrated significant improvements with educational intervention. There was no significant difference in overall knowledge scores between the groups

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					following intervention.
<b>Elam et al. (2003)</b>	To examine elective Service Learning programmes based in local community agencies where small groups of students perform an asset-needs assessment and design a service project based on their findings.	Mixed Methods: Surveys, interviews, reflection questionnaires, evaluations.	Some self-report measures	Medical students ( <i>n</i> = 23)	<b>Positive impact reported:</b> The SL experience humanized medical education and grounded priorities toward helping others. Also opened some students' eyes to community needs. Intent to volunteer in community clinics on entering medical practice expressed by some.
<b>Dorfman et al.</b>	To determine the	Mixed Methods:	Not self-report	Social work and	<b>No difference</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
<b>(2003)</b>	impact of a service learning experience on attitudes towards older people and community service.	Controlled Trial Student open ended questions analysed using constant comparative methods.		non-social work students. Total ( <i>n</i> = 49)	<b>with SL for some measures</b> <b>Positive Impact on other measures.</b> No significant difference between groups in attitudes towards community service or attitudes toward older people. SL group had more positive attitude toward working with older people and toward their own ageing.
<b>Hegeman et al. (2003)</b>	To explore changes in student attitude toward the	Quasi-experimental: Pre-test/post-test	Some self-report measures	Gerontology, social sciences, nursing, allied health,	<b>Positive impact on some measures. No</b>



Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
	Aged, community service work and working with the elderly and chronically ill or disabled.	design		architectural technology, management/ communication. Total ( <i>n</i> = 912)	<p><b>Impact on other measures.</b></p> <p>Statistically significant changes in attitudes towards older people.</p> <p>No statistically significant change in attitude toward community service or toward careers in ageing services.</p>
<b>Sedlak et al. (2003)</b>	To describe the growth in critical thinking skills as a result of service learning	Qualitative : Content analysis of students' reflective journals.	Not self-report	Nursing students ( <i>n</i> = 94)	<p><b>Positive impact reported:</b></p> <p>SL had positive impact on development of students': (1) professional perspective (caring</p>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
					for others & communication skills), (2) community perspective (focus on promoting health & awareness of diversity); (3) critical thinking skills in written reflections.
<b>Burrows et al. (1999)</b>	To help promote positive relations between medical schools and the communities they serve.	Quasi-experimental: Questionnaire including qualitative analysis of open ended questions. Review of student	Some self-report measures	Medical students ( <i>n</i> = 148)	<b>Positive impact reported:</b> Positive impact on student learning e.g. better prepared to face the “real world” of medical care. SL

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
		feedback.			has at least a short-term beneficial impact.
<b>Peterson &amp; Schaffer ( 1999)</b>	To determine how effective a service learning experience is at promoting student learning?	Mixed Methods: Questionnaire Focus Group	Some self-report measures	Nursing students ( <i>n</i> = 28)	<b>Impact of SL inconclusive:</b> Only significant difference related to students opinions that the SL programme had provided a service. Focus group data indicated mixed opinions about whether SL had improved students' collaboration & research skills.
<b>Astin &amp; Sax</b>	To assess the	Quasi-	Not self-report	Healthcare	<b>Positive impact</b>

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
<b>(1998)</b>	effects of Service Learning on a wide range of student developmental outcomes.	experimental: Survey with follow up survey.		students Total ( <i>n</i> = 3450)	<b>reported:</b> SL substantially enhances students' academic development, life skill development and sense of civic responsibility. 35 outcome measures all positively impacted.
<b>Osborne et al. (1998)</b>	To assess the impacts of a service learning experience on student participants.	Experimental: Randomised Controlled Trial.	Not self-report	Pharmacy students ( <i>n</i> = 93)  48 students undertook a service learning experience	<b>Positive impact on some measures. No impact on other measures:</b> Students participating in SL showed statistically

Source	Aim(s)	Study Design & Data collection	Self-Report vs. Non Self-Report Measures used	Study Population & Sample Size	Key findings
				45 students undertook traditional curriculum	significant positive change in cognitive complexity, social competency, perceived ability to work with diverse others, and self-worth in social situations compared to non-SL learning participants. No significant difference between groups in level of self-esteem.
<b>Forte (1997)</b>	1/4 of the project objectives related to SL, i.e. giving social work	Mixed: Survey Analysis of student reports.	Some self-report measures	Social work students ( $n = 20$ )	<b>Positive impact reported:</b> Students' perception of

<b>Source</b>	<b>Aim(s)</b>	<b>Study Design &amp; Data collection</b>	<b>Self-Report vs. Non Self-Report Measures used</b>	<b>Study Population &amp; Sample Size</b>	<b>Key findings</b>
	students macro-level experiences related to community through SL. Aim to increase student volunteerism.				altruism and campus community expectations significantly increased. Positive changes observed on service related friends, volunteer role.

**Table 7.2: Features of Papers Reviewed**

<b>Features of papers reviewed</b>	<b>Numbers</b>
<b>Type of Study</b>	
Quasi-experimental	<i>N</i> = 26
Qualitative	<i>N</i> = 9
Mixed Methods	<i>N</i> = 13
Experimental	<i>N</i> = 5
<b>Total number of papers reviewed</b>	<b>53</b>
<b>Journals where papers are published</b>	
<b>Nursing:</b>	
Journal of Nursing Education	<i>N</i> = 3
Journal of Psychiatric and Mental Health Nursing	<i>N</i> = 1
Nursing and Health Sciences	<i>N</i> = 2
Nursing Education Perspectives	<i>N</i> = 4
Paediatric Nursing	<i>N</i> = 1
<b>Total number of papers submitted to Nursing Journals</b>	<b>11</b>
<b>Allied Health Care:</b>	
Advances in Health Science Education	<i>N</i> = 1
American Journal of Audiology	<i>N</i> = 3
American Journal of Pharmaceutical Education	<i>N</i> = 3
Communication Disorders Quarterly	<i>N</i> = 1
Journal of Allied Health	<i>N</i> = 1
Journal of Gerontological Social Work	<i>N</i> = 2
Journal of Inter-professional Care	<i>N</i> = 1
Journal of Physical Therapy Education	<i>N</i> = 3
Journal of Social Work Education	<i>N</i> = 2
Occupational Therapy in Health Care	<i>N</i> = 1
Social Work Education	<i>N</i> = 1
Topics in Clinical Nutrition	<i>N</i> = 1
<b>Total Number of papers submitted to allied health journals</b>	<b>20</b>
<b>Medicine:</b>	
Academic Medicine	<i>N</i> = 1

Medical Teacher	<i>N</i> = 3
Teaching and Learning in Medicine	<i>N</i> = 2
<b>Total number of papers submitted to medical journals</b>	<b>6</b>
<b>Education:</b>	
American Journal of Health Education	<i>N</i> = 1
College Teaching	<i>N</i> = 1
Educational Gerontology	<i>N</i> = 3
Gerontology & Geriatrics Education	<i>N</i> = 5
Michigan Journal of Community Service Learning	<i>N</i> = 2
<b>Total number of papers submitted to education journals</b>	<b>12</b>
<b>Other Journals:</b>	
Adolescence	<i>N</i> = 2
Journal of Human Behaviour in the Social Environment	<i>N</i> = 1
Journal of Public Health Management and Practice	<i>N</i> = 1
<b>Total number of papers submitted to other journals</b>	<b>4</b>
<b>Geographical Location of Research</b>	
<b>Location:</b>	
Canada	<i>N</i> = 2
Europe (Ireland)	<i>N</i> = 2
Asia (Hong Kong and Singapore)	<i>N</i> = 5
North America	<i>N</i> = 44

## Results

Quantitative methods were used in (*n* = 31) papers; (*n* = 26) were quasi-experimental with pre- and post-questionnaires as their primary data collection tool, (*n* = 3) were Randomised Controlled Trials (RCTs) and the remaining (*n* = 2) were controlled trials. A mixed methods approach involving a combination of questionnaires and analysis of student reflections were used in (*n* = 13) studies while (*n* = 9) were qualitative. In all (*n* = 53) studies data were collected from students of various health related disciplines; the majority focused on student learning outcomes from a singular discipline (*n* = 33), with a minority from multidisciplinary student groups (*n* = 20). Sample sizes ranged from (*n* = 3) medical students in one qualitative study (Dharamsi et al., 2010b) to (*n* = 3450) students from multiple disciplines in a



quasi experimental study (Astin & Sax, 1998). Examples of the methodological weaknesses identified included samples from single institutions (Beling, 2004; Bentley & Ellison, 2005; Champagne, 2006; Horacek et al., 2009; Leung et al., 2011; Liang En et al., 2011b; Loewenson and Hunt, 2011) with a variety of potential biases, for example, self-selection bias for students (Ngai, 2009; Green et al., 2011; Reading & Padgett, 2011) possible positive reporting bias (Kearney, 2004; Reynolds, 2005; Brown, 2009; Liang En et al., 2011b; Loewenson & Hunt, 2011) and social desirability bias (Casey and Murphy, 2008; Loewenson & Hunt, 2011). Of the 26 Quasi-experimental studies the majority ( $n = 20$ ) used some form of self-report measure as did ( $n = 6$ ) of the mixed method studies. Change over time was difficult to assess in some of the experimental, quasi experimental and mixed methods studies as no pre-test or control groups were included. Randomisation of participants did not occur in some studies (e.g. Beling, 2004; Ngai, 2006; McWilliams et al., 2008; Groh et al., 2011; Pakulski, 2011; Zuccherro, 2011) with results being confounded by potential non-random differences within groups. We do appreciate that true random assignment is difficult and often not feasible. In a minority of studies outcome measures were assessed with tools not validated beyond that particular study (e.g. Groh et al., 2011; Schindler, 2011) or the outcome measures used had not been tested for cultural sensitivity (e.g. Leung et al., 2011). In other studies, the reported changes in students' knowledge or attitude was not definitely attributable to the SL programme (Kearney, 2008; Kaf et al., 2011; Loewenson & Hunt, 2011) while the generalisation of results from the quantitative studies was often problematic. Many studies reviewed (e.g. Forte, 1997; Elam et al., 2003; Dorfman et al., 2003, 2004; Champagne, 2006; Furze et al., 2008; Dauenhauer et al., 2010; Green et al., 2011; Kaf et al., 2011; Liang En et al., 2011a; Zuccherro, 2011) used mixed methods to capture the variety of student learning outcomes described. Identifying the rationale for mixing methods, the specific techniques used or the type of analysis applied was frequently not clear.

***Review aim 2: The impact(s) of SL for health care students***

The results of each study were analysed using (Eyler & Giles, 1999) theoretical framework of student learning outcomes (Table 3). The six learning outcomes included in the framework are italicized in the results section for ease of identification.

**Table 7.3: Theoretical Framework of Learning Outcomes (Eyler & Giles 1999)**

<b>Six categories of student learning outcomes</b>	<b>Description of each category in the theoretical framework</b>
<b><i>Personal and interpersonal development</i></b>	Self-awareness; communication skills; leadership skills; accept and tolerate diversity; cultural competence;

Studies identified in review ( $n = 38$ )	connection and building relationships with others
<b><i>Understanding and applying knowledge</i></b> Studies identified in review ( $n = 28$ )	Understanding is more than acquisition of information or memorisation of theories; enabled to apply learning to real world problems.
<b><i>Engagement curiosity and reflective practice</i></b> Studies identified in review ( $n = 4$ )	Engaged in activities; curiosity and need to know more; remember material and use it to solve complex issues.
<b><i>Critical thinking</i></b> Studies identified in review ( $n = 6$ )	Face difficult community problems not easily understood or resolved; increased ability to self-monitor and analyse complex situations.
<b><i>Perspective transformation</i></b> Studies identified in review ( $n = 19$ )	New lenses for the world; moving from charity to active committed citizenship; agents for social change.
<b><i>Citizenship</i></b> Studies identified in review ( $n = 7$ )	Sense of social responsibility; connection to community; importance of social-justice; commitment to service; understanding social problems.

Given that the majority of studies reviewed ( $n = 38$ ) reported student learning outcomes related to the category *Personal and interpersonal development* this group deserves particular attention. We will also focus on the categories *Perspective Transformation* and *Citizenship* as these categories resonate with the principles of social accountability.

Studies identifying impacts in the domain of students' *personal and interpersonal development* gathered data from the analysis of a combination of student reflective reports, focus groups and interviews. Key issues identified and reported in a number of studies (e.g. Burrows et al., 1999; Elam et al., 2003; Williams & Reeves, 2004; Bentley & Ellison, 2005; Amerson, 2010; McMenemy et al., 2010; Green et al., 2011; Casey & Murphy, 2008; Groh et al., 2011; Long et al., 2011; Zuccherro, 2011) include: (i) self-awareness, (ii) communication skills, (iii) leadership skills, (iv) capacity to accept and tolerate diversity, (v) cultural competence, and (vi) capacity to connect and build relationships with others.

Self-reflection is a metacognitive process that can occur before, during and after SL

engagements and it helps students to understand themselves and the community situation (Azer et al., 2013). All of the studies reviewed identified reflection as a key feature of SL and an important process for enabling students to recognize underlying personal biases that display as professional attitudes and contribute to the development of professional identity.

SL provides opportunities for students to critically examine their values and belief systems through reflective practice which prompts questions about personal stereotypes and prejudices (Williams & Reeves, 2004; Casey & Murphy, 2008; Faria et al., 2010; McMenamin et al., 2010; Green et al., 2011; Mitschke & Petrovich, 2011; Zuccherro, 2011). For example Groh et al. (2011) found that nursing students ( $n = 306$ ) had a significant positive change in self-rated leadership skills following a SL experience, while Long et al. (2011) reported no change in medical students' perceived effectiveness, willingness or understanding of leadership skills despite a greater appreciation of leadership roles.

SL takes place in community-based settings which introduces students to the concepts of health systems and disparity. This context may be suitable for teaching and learning social accountability. Many of the programmes supported students to feel increasingly comfortable with people who are excluded and marginalised in mainstream society. Partnerships often involved groups that students may not have previously encountered, e.g. people who are homeless, people with HIV, people experiencing poverty and health inequities, etc. (Burrows et al., 1999; Elam et al., 2003; Bentley & Ellison, 2005; Casey & Murphy, 2008; Amerson, 2010; Horowitz et al., 2010; McMenamin et al., 2010; Green et al., 2011; Liang En et al., 2011b; Mitschke & Petrovich, 2011; Reading & Padgett, 2011; Schindler, 2011). Working in partnership with the "different other" appeared to help students develop a deeper appreciation of the vulnerabilities that marginalized segments of the population experience and nurture a purposeful sense of social responsibility. Students began to question and reflect on the reasons for the health inequalities they encountered during their SL engagements. Making the Links (MTL) programme (Meili et al., 2011) was specifically designed to teach medical students the social aspects of healthcare through SL. The authors concluded that students learn social accountability by participating in SL and the experiences gained may encourage students to remain altruistic in their outlook and prompt future work in underserved areas.

SL is reported to encourage the formation of positive relationships with people of different socio-cultural backgrounds, leading to the development of communication skills and cross-cultural understanding (Meili et al., 2011). The opportunities to learn about and accept diversity appears to contribute to the development of students' cultural competence. Green

et al. (2011) reporting on an international SL experience in Honduras found that nursing and medical students ( $n = 74$ ) improved their ability to provide culturally congruent care. Similar findings are evident in other studies (e.g. Casey & Murphy, 2008; Amerson, 2010; Reading and Padgett, 2011). Interestingly, Nokes et al. (2005) reported conflicting results with students' cultural competence decreasing following SL engagement. The findings from Astin & Sax (1998) quasi-experimental multidisciplinary study involving 3450 students suggest that SL enhances students' knowledge and acceptance of different races and cultures, understanding of indigenous social problems and fosters an increased commitment to future community service.

*Perspective transformation* appears to be strongly linked to social accountability as this category relates to how students view social problems, personal values and stereotypes. SL partners focus on the development of social capital (Hawe & Shiell, 2000), sharing resources and knowledge to promote advocacy and address differences in underserved communities locally and overseas. Nineteen studies reported that students had a desire to become agents for social change as they viewed the world through different lenses following SL engagements. Closely connected to *Perspective Transformation* is the category of *Citizenship*. Changes in this category were reported in several studies (e.g. Hegeman et al., 2003; Bentley & Ellison, 2005; Nokes et al., 2005; Ngai, 2006; Casey and Murphy, 2008; Brown, 2009; Groh et al., 2011) where students developed a new understanding of social problems, feelings of social responsibility and connection with community.

SL extends the learning environment by linking students' academic study to practice through meaningful and relevant service to the community (Furco, 2007). SL projects are designed, implemented and evaluated collaboratively with the intent of applying students' theory to practice while simultaneously targeting community identified needs. A number of studies (Burrows et al., 1999; Peterson & Schaffer, 1999; Beling, 2003; Bentley & Ellison, 2005; Goldberg et al., 2006; Johnson, 2007; Neill et al., 2007; Casey & Murphy, 2008; Kearney, 2008; Dauenhauer et al., 2010; Liang En et al., 2011b; Long et al., 2011; Pakulski, 2011; Reading & Padgett, 2011; Vogt et al., 2011; Zuccherro, 2011) found that students gained a deeper *understanding and application of knowledge* through SL projects and experiences. *Critical thinking* is central to the understanding and application of knowledge. It is a complex process that is believed to involve cognitive skills and affective domains of reasoning and attitude (Scheffer & Rubinfeld, 2000). To develop critical thinking skills students must engage in a purposeful process that involves self-regulation, analysis, evaluation, interpretation, and assessment. Positive changes in students' *critical thinking* were reported in (Astin and Sax, 1998; Osborne et al., 1998; Sedlak et al., 2003; Beling, 2004; Reynolds,

2005; Liang En et al., 2011b) studies with improvements in *engagement, curiosity and reflective practice* in (Beling, 2003; Ngai, 2006; Casey & Murphy, 2008; Faria et al., 2010) others. While many studies (Poulin et al., 2006; McWilliams et al., 2008; Brown, 2009; Horowitz et al., 2010; Krout et al., 2010) reported that students valued SL experiences this outcome may indicate “little more than that the students liked the innovation” (Abassi & Smith, 1999, p. 1265) and we must be wary of what Norman calls “me-too” research (Norman, 2006, p. 1). In these instances another form of experiential learning may have been equally, or indeed more suited, to achieve desired learning outcomes. Only a minority of studies reviewed (Forte, 1997; Astin and Sax, 1998; Kearney, 2004; Bentley & Ellison, 2005; Nokes et al., 2005; Michaels & Billek-Sawhney, 2006; Ngai, 2006, 2009; McMenamin et al., 2010) included measures related to the specific aims of SL creating uncertainty about the impact of SL on students’ social responsiveness and the level of reciprocity achieved between partners.

Finally, participating in SL may support students to learn about interdisciplinary working (Meili et al., 2011). The health needs of people who are vulnerable are varied and complex. Involving inter-professional teams of students in SL engagements may facilitate collaborative approaches to service delivery and positively impact the health outcomes for community partners (Dharamsi et al., 2010b). Twenty (n=20) studies reviewed involved SL programmes with inter-professional student groups and all reported that SL positively influenced students’ engagement in inter-professional learning.

### ***Review aim 3: Priority areas for future research***

The studies included in this review did fit with (Eyler & Giles, 1999) theoretical framework in terms of themes and content. However notwithstanding the limits of the six categorizations several of the areas identified in the single category *personal and interpersonal development* appear to overlap with the remaining five categories of learning outcomes. While we would not discourage researches from applying this framework to future impact studies in the domain of SL we would highlight the considerable overlap between categorizations and caution that the broad nature of the categories may not be helpful to identify specific learning outcomes. The difficulty in delineating between identified student learning outcomes may be a reflection of the challenges in definition and terminology which we experienced during the design of the search strategy, and which seems to permeate the field of SL. Clarifying what we mean by SL and “civic engagement” in different contexts and establishing a consistent terminology is an important area for future research.

The idiosyncratic nature of SL experiences poses challenges in identifying generalisable

learning outcomes. The majority of studies reviewed used some form of self-report measure to evaluate the impact(s) of SL which do not provide objective assessment of student learning outcomes. The use of self-report measures may reflect the fact that most of the published studies in the field appear to be evaluation rather than research studies. Researchers should aim to evaluate the specific aims of SL, clearly identifying the impact(s) of SL on students' social responsiveness and the level of reciprocity achieved between partners. There is evidence that the interpretative approach has contributed to the evaluation of other complex strategies for civic engagement, e.g. participatory research (Jagosh et al., 2012). This is a valuable paradigm to consider in future work. Studies focused on process rather than outcomes may expand our understanding of the impacts of SL. Many studies identified the need for long-term follow-up (e.g. Green et al., 2011; Long et al., 2011; Liang En et al., 2011a; Zuccherro, 2011); however, only a minority (Burrows et al., 1999; Leung et al., 2011) described outcomes over time. This gap creates uncertainty about the long term effect and effectiveness of SL, another key focus for future research.

Finally, none of the studies reviewed directly addressed the issue of localization. The similar learning outcomes identified in Canada (Dharamsi et al., 2010b; Meili et al., 2011), Europe (Casey & Murphy, 2008; McMEnamin et al., 2010) and Asia (Ngai, 2006, 2009; Leung et al., 2011; Liang En et al., 2011a) may indicate successful attempts at localizing SL internationally. Liang En et al. (2011b) concluded that SL programmes have potential educational value in an Asian context. However, we have highlighted the issue of localization (Boland & McIlrath, 2007) to encourage researchers and educators worldwide to consider the cultural adaption of SL and to address this issue in the literature.

## **Discussion**

This study aimed to assess the evidence for the effectiveness of SL in pre-professional health care students by conducting a critical review of the literature which involved collecting, abstracting, analysing and synthesising data from 53 primary studies. Currently the published literature appears weak and diverse in nature and has not yielded compelling evidence about the impacts of SL on student learning outcomes.

We acknowledge that our results may be affected by various reporting biases including a potential: "language bias" as non-English-language publications were excluded, "location bias" as most of the papers reviewed originated in the global North, "publication bias" as unpublished material was not searched and "sampling bias" as specific databases were selected (Sterne et al., 2008). Our decision to limit the search strategy through definition and learning outcomes was a pragmatic response to the apparent lack of agreed definition and

range of language in the field of SL. We acknowledge that our interpretations have impacted the results obtained and that our limiting criteria are debatable, not definitive. By restricting our search through definition and learning outcomes we may have excluded other potentially relevant papers. However, we do not claim, nor did we aspire to absolute comprehensiveness (Eva, 2008). Rather, we aimed to represent the available evidence fairly. We accept that our personal perspectives will affect our interpretations and that these are likely to be different from other authors. While we accept that our study has limitations, the findings suggest that we should question our rationale for implementing SL in the absence of convincing outcome evidence or rigorous evaluation methods. Furthermore, a key strength of this review is the consideration of the emerging SL evidence from research beyond the North American context allowing us to consider the potential impact of localization.

The findings from this review are consistent with early reviews of SL which identified a resource intensive pedagogy with an unconvincing evidence base (Eyler et al., 2001). Despite this uncertainty, SL is being integrated in international healthcare education (Liang En et al., 2011b), necessitating radical curricula change (Casey & Murphy, 2008). The studies reviewed reported an extensive range of positive impacts for students participating in SL programmes. The finding that students learn social accountability by participating in SL and that SL experiences may encourage altruism and prompt future work in underserved areas (Meili et al., 2011) is consistent with previous research. Previous studies have reported that SL increases students' awareness of community health needs whether local or global and the responsibility to address health inequities in marginalized populations (Smith et al., 2006; Saffran, 2013). Other studies have supported the finding that when students are given opportunities to engage with vulnerable groups the experience has a positive influence on their "comfort" levels and future willingness to work with these communities (Kuthy et al., 2005). The similarities between some of the reported outcomes of SL with existing research is encouraging however given the methodological weaknesses identified in many of the studies reviewed we suggest interpreting outcomes in the field of SL with caution. The reported effectiveness of SL is influenced by the type of methods and evaluation tools utilised. The diversity in terminology internationally to describe the work of SL is recognised in the literature (Hunt & Swiggum, 2007). Perhaps the range of terminology and the ongoing debate about what constitutes civic awareness and "good citizenship" led educators to evaluate learning outcomes that were more easily measured as the majority of studies reviewed did not include measures related to the explicit aims of SL, i.e. (i) to enhance students' civic awareness and (ii) create reciprocity in the partnerships between the university and community. Research focused on creating an agreed and consistent language

to describe SL and the evaluation of SL in relation to the explicit aims of the pedagogy appear to be fundamental in progressing SL as an educational approach.

Finally, as we strive to produce graduates with a sense of social accountability and ability to work in diverse local and global communities we encourage educators to continue transforming tacit knowledge into tangible research questions. Currently, outcomes based research in the field appears weak and unconvincing which is perhaps what we might expect in terms of not being able to extrapolate outcomes from the particular to the general. Given the idiosyncratic nature of SL, exploring questions via the interpretive paradigm around, (1) the terminology of SL; (2) how SL experiences lead to particular academic and partner outcomes; (3) evaluation approaches particularly focused on the aims of SL and (4) the long term impacts will address the gaps in our understanding of this educational approach. This new evidence will empower educators to make informed decisions about the implementation of SL and whether it is a suitable pedagogy for integrating social accountability into healthcare curricula.

## **Conclusion**

SL is a complex educational approach involving communities, students and institutions with the aspiration that partnerships are equally beneficial and reciprocal. Little is known about the effectiveness of SL and this paper confirms that outcomes based research in the field is problematic. Difficulties with definition, clear and distinct learning outcomes and the significant methodological weakness of existing data reflect the complex nature of SL, but this should not deter SL educators from attempting to conduct more robust evaluation studies that are located in the interpretive paradigm and that can elucidate the process and effects of SL interventions.

## **Acknowledgements**

The authors would like to thank Edel Tierney, Research Fellow, Primary Health Care Research Group, Graduate Entry Medical School University of Limerick, Limerick, Ireland for her guidance and support.

## **Declaration of Interest**

This study was partially funded by the Health Research Board (HRB) HPF/2010/60 for Ruth Mc Menamin. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.



## References

- ABASSI, K. & SMITH, R. 1999. Guidelines for evaluating papers on educational interventions. *BMJ*, 318(7193), 1265-1267.
- AMERSON, R. 2010. The impact of service-learning on cultural competence. *Nursing Education Perspectives*, 31: 18-22.
- ASTIN, A. W. & SAX, L. J. 1998. How undergraduates are affected by service participation. *Journal of College Student Development*, 39: 251-263.
- AZER, S. A., GUERRERO, A. P. & WALSH, A. 2013. Enhancing learning approaches: Practical tips for students and teachers. *Med Teach*, 35: 433-443.
- BATRA, P., CHERTOK, J. S., FISHER, C. E., MANSEAU, M. W., MANUELLI, V. N. 2009. The Columbia-Harlem Homeless Medical Partnership: A New Model for Learning in the Service of Those in Medical Need. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 86: 781-790.
- BELING, J. 2003. Effect of service-learning on knowledge about older people and faculty teaching evaluations in a physical therapy class. *Gerontology & Geriatrics Education*, 24: 31-46.
- BELING, J. 2004. Impact of service learning on physical therapist students' knowledge of and attitudes toward older adults and on their critical thinking ability. *Journal of Physical Therapy Education*, 18: 13-21.
- BEME, S. G. 2003. Guide for topic review groups on carrying out BEME systematic reviews. [Accessed 29/10/2013] Available from: <http://www.bemecollaboration.org/Training+and+Support/>.
- BENTLEY, R. & ELLISON, K. 2005. Impact of a service-learning project on nursing students. *Nursing Education Perspectives*, 26: 287-290.
- BENTLEY, R. & ELLISON, K. 2007. Increasing cultural competence in nursing through international service learning experiences. *Nurse Educator*, 32: 207-211.
- BOLAND, J. A. & McILRATH, L. 2007. The process of localising pedagogies for civic engagement in Ireland: The significance of conceptions, culture and context. *In*: McILRATH, L. & Mac LABHRAINN, I., editors. Higher education and civic engagement: international perspectives. Hampshire: Ashgate Publishing, Corporate Social Responsibility Series. pp. 83-103.

- BRINGLE, R. G. & HATCHER, J. A. 1996. Implementing service learning in higher education. *Journal of Higher Education*, 67; 221-239.
- BROWN, J. F. 2009. Faith-based mental health education. *Journal of Psychiatric and Mental Health Nursing*, 16: 581-588.
- BURROWS, M. S., CHAUVIN, S., LAZARUS, C. J., CHEHARDY, P. 1999. Required service learning for medical students: Program description and student response. *Teaching and Learning in Medicine*, 11: 223-231.
- CASEY, D. & MURPHY, K. 2008. Irish nursing students' experiences of service learning. *Nursing & Health Sciences*, 10: 306-311.
- CASHMAN, S. B. & SEIFER, S. D. 2008. Service-learning: An integral part of undergraduate public health. *American Journal of Preventive Medicine*, 35; 273-278.
- CHAMPAGNE, N. 2006. Using the NCHEC areas of responsibility to assess service learning outcomes in undergraduate health education students. *American Journal of Health Education*, 37; 137.
- COLE, T. & CARLIN, N. 2009. The art of medicine: The suffering of physicians. *Lancet*, 374; 1414 -1415.
- DAUENHAUER, J. A., STEITZ, D. W., APONTE, C. I., FROMM FARIA, D. 2010. Enhancing student gerocompetencies: Evaluation of an intergenerational service learning course. *Journal of Gerontological Social Work*, 53: 319-335.
- DEWEY, J. 1938. *Experience and Education*. New York, Macmillian.
- DEWEY, J. 1963. *Experience in Education*, New York, Macmillian.
- DHARAMSI, S., ESPINOZA, N., CRAMER, C., AMIN, M., BAINBRIDGE, L. & POOLE, G. 2010a. Nurturing social responsibility through community service-learning: Lessons learned from a pilot project. *Medical Teacher*, 32; 905–911.
- DHARAMSI, S., RICHARDS, M., LOUIE, D., MURRAY, D., BERLAND, A., WHITFIELD, M. & SCOTT, I. 2010b. Enhancing medical students' conceptions of the CanMEDS Health Advocate Role through international service-learning and critical reflection: A phenomenological study. *Medical Teacher*, 32; 977-82.
- DIXON-WOODS, M., CAVERS, D., AGARWAL, S., ANNANDALE, E., ARTHUR, A., HARVEY, J., HSU, R., KATBAMNA, S., OLSEN, R., SMITH, L., et al. 2006. Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. *BMC Medical Research Methodology*, 6:35.
- DORFMAN, L. T., MURTY, S., INGRAM, J. G. EVANS, R. J. 2003. Incorporating intergenerational service-learning into an Introductory Gerontology Course. *Journal of Gerontological Social Work*, 39: 219 - 240.
- DORFMAN, L. T., MURTY, S. A., INGRAM, J. G., EVANS, R. J. & POWER, J. R. 2004. Intergenerational service-learning in five cohorts of students: Is attitude change

- robust? *Educational Gerontology*, 30: 39-55.
- DORFMAN, L. T., MURTY, S. A., INGRAM, J. G., HAN, L. 2007. Evaluating the outcomes of gerontological curriculum enrichment: A multi-method approach. *Gerontology & Geriatrics Education*, 27: 1-21.
- ELAM, C. L., SAUER, M. J., STRATTON, T. D., SKELTON, J., CROCKER, D. & MUSICK, D. W. 2003. Service learning in the medical curriculum: Developing and evaluating an elective experience. *Teaching and Learning in Medicine*, 15: 194-203.
- EVA, K. W. 2008. On the limits of systematicity. *Med Educ*, 42: 852-3.
- EVANS, J. & BENEFIELD, P. 2001. Systematic reviews of educational research: Does the medical model fit? *British Educational Research Journal*, 27: 527-541.
- EYLER, J. 2000. What do we most need to know about the impact of service learning on student learning? *Michigan Journal of Community Service Learning*, Special Issue: 11-17.
- EYLER, J. & GILES, D. J. 1999. *Where's the Learning in Service-Learning?* , Jossey-Bass higher and adult education series. San Francisco, CA: Jossey-Bass, Inc..
- EYLER, J. S. G., D. E STENSON, C.M., GREY, C.J. 2001. *At a Glance: What we know about the effects of service-learning on college students, faculty, institutions and communities 1993-2000*. Vanderbilt University, Corporation for National Service Learn and Serve America National Service Learning Clearinghouse.
- FARIA, D., DAUENHAUER, J., STEITZ, D. 2010. Fostering social work gerontological Competencies: Qualitative analysis of an intergenerational service-learning course. *Gerontology & Geriatrics Education*, 31: 92-113.
- FLECKY, K. & GITLOW, L. (eds.) 2011. *Service-learning in occupational therapy education philosophy and practice*. Sudbury, MA: Jones and Bartlett Publishers Inc.
- FORTE, J. A. 1997. Calling students to serve the homeless: A project to promote altruism and community service. *Journal of Social Work Education*, 33: 151.
- FREIRE, P. 1972. *Cultural action for freedom*, Harmondsworth: Penguin.
- FRENK, J., CHEN, L., BHUTTA, Z., COHEN, J., CRISP, N., EVANS, T., FINEBERG, H., GARCIA, P., YANG KE, KELLEY, P., et al. 2010. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet*, 376: 1923-1958.
- FURCO, A. 2007. Institutionalising Service-Learning in Higher Education. In: McILRATH, L. & Mac LABHRAINN, I., editors. *Higher Education and Civic Engagement: International Perspectives*. Hampshire: Ashgate Publishing. pp. 65-83.
- FURZE, J., LOHMAN, H. & MU, K. 2008. Impact of an interprofessional community-based educational experience on students' perceptions of other health professions and older adults. *Journal of Allied Health*, 37: 71-77.

- GOLDBERG, L., McCORMICK RICHBURG, C., WOOD, L. 2006. Active learning through service-learning *Communication Disorders Quarterly*, 27: 131–145.
- GREEN, S. S., COMER, L., ELLIOTT, L., NEUBRANDER, J., 2011. Exploring the value of an international service-learning experience in Honduras. *Nursing Education Perspectives*, 32: 302-307.
- GROH, C. J., STALLWOOD, L. G., DANIELS, J. J., 2011. Service-learning in nursing education: Its impact on leadership and social justice. *Nursing Education Perspectives*, 32: 400-405.
- HAWE, P. & SHIELL, A., 2000. Social capital and health promotion: A review. *Social Science & Medicine*, 51: 871-885.
- HEGEMAN, C. R., HOROWITZ, B., TEPPER, L., PILLEMER, K., SCHULTZ, L. 2003. Service learning in elder care - Ten years of growth and assessment. *Journal of Gerontological Social Work*, 39: 177 - 194.
- HOLLAND, B., 2005. The growing role of community engagement in US higher education. *BHERT News*. 21 ed.
- HOPPE, S. & HELLMAN, C., 2007. Understanding occupational therapy students' attitudes, intentions and behaviours regarding community service. *American Journal of Occupational Therapy*, 61: 527-534.
- HORACEK, T., BRANN, L., ERDMAN, M., MIDDLEMISS, M., RAJ, S., 2009. Interprofessional learning community: Educating dietetic and other health profession students through an interdisciplinary, service-learning experience. *Topics in Clinical Nutrition* Jan-Mar 24: 6-15.
- HOROWITZ, B. P., WONG, S.D., DECHELLO, K., 2010. Intergenerational service learning: To promote active aging, and occupational therapy gerontology practice. *Gerontology & Geriatrics Education*, 31: 75-91.
- HUNT, R. J., SWIGGUM, P., 2007. Being in another world: Transcultural student experiences using service learning with families who are homeless. *Journal of Transcultural Nursing*, 18: 167-174.
- JAGOSH, J., MACAULAY, A. C., PLUYE, P., SALSBERG, J., BUSH, P. L., HENDERSON, J., SIRETT, E., WONG, G., CARGO, M., HERBERT, C. P. et al., 2012. Uncovering the benefits of participatory research: Implications of a realist review for health research and practice. *The Milbank Quarterly*, 90.
- JOHNSON, J. F., 2007. A diabetes camp as the service-learning capstone experience in a diabetes concentration. *American Journal of Pharmaceutical Education*, 71: 119-128.
- KAF, W. A., BARBOA, L. S., FISHER, B. J., SNAVELY, L. A., 2011. Effect of interdisciplinary service learning experience for audiology and speech-language pathology students working with adults with dementia. *American Journal of Audiology*, 20: 241-249.

- KARASIK, R. J. & WALLINGFORD, M. S., 2007. Finding community: Developing and maintaining effective intergenerational service-learning partnerships. *Educational Gerontology*, 33: 775-793.
- KAZEMI, D., BEHAN, J., BONIAUTO, M., 2011. Improving teaching strategies in an undergraduate community health nursing (CHN) program: Implementation of a service-learning preceptor program. *Nurse Educ Today*, 31: 547-52.
- KEARNEY, K. R., 2004. Students' self-assessment of learning through service-learning. *American Journal of Pharmaceutical Education*, 68(1):29.
- KEARNEY, K. R., 2008. A service-learning course for first-year pharmacy students. *American Journal of Pharmaceutical Education*, 72(4):86.
- KOLB, D. A. 1984. *Experiential learning: Experience as the source of learning and development*. Upper Saddle River, NJ: Prentice Hall.
- KROUT, J. A., BERGMAN, E., BIANCONI, P., CALDWELL, K., DORSEY, J., DURNFORD, S., ERICKSON, M. A., LAPP, J., MONROE, J. E., POGORZALA, C., TAVES, J. V., 2010. Intergenerational service learning with elders: Multidisciplinary activities and outcomes. *Gerontology & Geriatrics Education*, 31:55 - 74.
- KUTHY, R., McQUISTAN, M., RINIKER, K., HELLER, K., QIAN, F., 2005. Students' comfort level in treating vulnerable populations and future willingness to treat: Results prior to extramural participation. *Journal of Dental Education*, 69: 1307-1314.
- LARKINS, S., PRESTON, R., MATTE, M., LINDEMANN, I., SAMSON, R., TANDINCO, F., BUSO, D., ROSS, S., PALSDOTTIR, B., NEUSY, A., 2013. Measuring social accountability in health professional education: Development and international pilot testing of an evaluation framework on behalf of the Training for Health Equity Network (THEnet). *Medical Teacher*, 35: 32-45.
- LEUNG, A. Y., CHAN, S. S., KWAN, C. W., CHEUNG, M. K., LEUNG, S. S., FONG, D. Y., 2011. Service learning in medical and nursing training: A randomized controlled trial. *Advances in Health Science Education: Theory and Practice*, 17:529-45.
- LIANG EN, W., KOH, G. C. H., LIM, V. K. G., 2011a. Caring for underserved patients through neighborhood health screening: Outcomes of a longitudinal, interprofessional, student-run home visit program in Singapore. *Academic Medicine*, 86:829-839.
- LIANG EN, W., YEO, W. X., CHOON-HUAT, K., 2011b. Doctors-to-be at the doorstep – Comparing service-learning programs in an Asian medical school. *Medical Teacher*, 2011: 471-478.
- LOEWENSON, K. M., HUNT, R. J., 2011. Transforming attitudes of nursing students: Evaluating a service-learning experience. *Journal of Nursing Education*, 50:345-349.
- LONG, J. A., LEE, R. S., FEDERICO, S., BATTAGLIA, C., WONG, S., EARNEST, M., 2011.

- Developing leadership and advocacy skills in medical students through service learning. *Journal of Public Health Management and Practice*, 17:369-372.
- McKIMM, J. & McLEAN, M., 2011. Developing a global health practitioner: Time to act? *Medical Teacher*, 33: 626–631.
- McMENAMIN, R., McGRATH, M. D'EATH, M., 2010. Impacts of service learning on Irish healthcare students, educators, and communities. *Nursing & Health Sciences*, 12:499-506.
- McWILLIAMS, A., ROSEMOND, C., ROBERTS, E., CALLESON, D. & BUSBY-WHITEHEAD, J., 2008. An innovative home-based interdisciplinary service-learning experience. *Gerontology & Geriatrics Education*, 28:89-104.
- MEILI, R., FULLER, D., LYDIATE, J., 2011. Teaching social accountability by making the links: Qualitative evaluation of student experiences in a service-learning project. *Medical Teacher*, 33:659–666.
- MICHAELS, M. B. & BILLEK-SAWHNEY, B., 2006. Service learning: Advocating for reduction of fall risks in the elderly. *Journal of Physical Therapy Education*, 20:64-66.
- MITSCHKE, D. B. & PETROVICH, J. C., 2011. Improving social work students' understanding of health and social justice knowledge through the implementation of service learning at a free community health clinic. *Journal of Human Behavior in the Social Environment*, 21:97-108.
- NEILL, M., HAYWARD, K. S., PETERSON, T., 2007. Students' perceptions of the interprofessional team in practice through the application of servant leadership principles. *Journal of Interprofessional Care*, 21:425-432.
- NGAI, S. S.-Y. 2006. Service-learning, personal development, and social commitment: A case study of university students in Hong Kong. *Adolescence* 41:165.
- NGAI, S. S.-Y. 2009. The effects of program characteristics and psychological engagement on service learning outcomes: A study of university students in Hong Kong. *Adolescence*, 44:375-389.
- NOKES, K., NICKITAS, D. M., KEIDA, R., & NEVILLE, S. 2005. Does service-learning increase cultural competency, critical thinking, and civic engagement? *Journal of Nursing Education*, 44:65-70.
- NORMAN, G. 2006. Editorial - The Joy of Science. *Adv Health Science Education*, 11:1-4.
- OSBORNE, R. E., HAMMERICH, S., & HENSLEY, C., 1998. Student effects of service-learning: Tracking change across a semester. *Michigan Journal of Community Service Learning*, 5:5-13.
- PAKULSKI, L. A., 2011. Addressing qualified personnel shortages for children who are deaf or hard of hearing with an interdisciplinary service learning program. *American Journal of Audiology*, 20:203-219.

- PETERSON, S. J. & SCHAFFER, M. J. 1999. Service learning: A strategy to develop group collaboration and research skills. *The Journal of Nursing Education*, 38:208-14.
- POULIN, J., SILVER, P. & KAUFFMAN, S., 2006. Serving the community and training social workers: Service outputs and student outcomes. *Journal of Social Work Education*, 42:171-184.
- READING, S. & PADGETT, R. J., 2011. Communication connections: Service learning and American Sign Language. *American Journal of Audiology*, 20:197-202.
- REYNOLDS, P. J., 2005. How service-learning experiences benefit physical therapist students' professional development: A grounded theory study. *Journal of Physical Therapy Education*, 19:41-54.
- SAFFRAN, L., 2013. Dancing through cape coast: Ethical and practical considerations for health-related service-learning programs. *Acad Med*, 88:1212-1214.
- SALES, C. S. & SCHLAFF, A. L., 2010. Reforming medical education: A review and synthesis of five critiques of medical practice. *Soc Sci Med*, 70:1665-1668.
- SCHEFFER, B. & RUBENFELD, G., 2000. A consensus statement on critical thinking in nursing. *Journal of Nursing Education*, 39:352-359.
- SCHINDLER, V. P., 2011. Using service-learning to teach mental health and research skills. *Occupational Therapy in Health Care*, 25:54-64.
- SEDLAK, C., DOHNEY, M., PANTHOFER, N. & ANAYA, E., 2003. Critical thinking in students' service learning experiences *College Teaching*, 51:99-103.
- SEIFER, S.D.E., HERMANN, K.E. & LEWIS, J.E., 2000. *Creating community-responsive physicians: Concepts and models for service-learning in medical education. AAHE's series on service-learning in the disciplines*. Washington, DC: American Association for Higher Education
- SMITH, C., ESTER, T. & INGLEHART, M. 2006. Dental education and care for underserved patients: An analysis of students' intentions and alumni behavior. *Journal of Dental Education* 70:398-408.
- STERNE, J., EGGER, M. & MOHER, D., 2008. *Cochrane handbook for systematic reviews of interventions*. Chichester: Wiley-Blackwell.
- VOGT, M. A., CHAVEZ, R. & SCHAFFNER, B. 2011. Baccalaureate nursing student experiences at a camp for children with diabetes: The impact of a service-learning model. *Pediatric nursing*, 37:69-73.
- WILLIAMS, N. R. & REEVES, P. M., 2004. MSW students go to burn camp: Exploring social work values through service-learning. *Social Work Education*, 23:383-398.
- WOOLLARD, R. F., 2006. Caring for a common future: Medical schools' social accountability. *Medical Education*, 40:301-313.
- ZLOTKOWSKI, E. E., 2002. Service-learning and the first-year experience: Preparing

students for personal success and civic responsibility (Monograph No. 34): Columbia, SC: University of South Carolina, National Resource Center for The First-Year Experience and Students in Transition.

ZUCCHERO, R., 2011. A co-mentoring project: An international service-learning experience. *Educational Gerontology*, 37:687-702.