

Investigating the impact of adapted physical education service-learning projects on preservice teachers' attitudes toward individuals with disabilities

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Service-learning (SL) has been implemented widely in teacher education to connect knowledge and practical experiences. In the field of Physical Education Teacher Education, Adapted Physical Education (APE) Courses have been implemented SL to provide hands-on experiences to promote preservice teachers' attitudes toward individuals with disabilities. The purpose of this study is to investigate the effectiveness of two SL projects, the volunteer project, and the parasports project, in the Intro APE course on preservice teachers' attitudes toward individuals with disabilities. A total of 130 preservice teachers participated in this study taking the Multidimensional Attitude Scale Toward Persons with Disabilities (MAS) before and after completing two SL projects. The result of the *t*-test indicated that there is no difference in overall MAS scores between pre- and posttest (Meanpre = 2.954,

SDpre = 0.689, Meanpost = 3.01, SDpost = 0.679; $t(129) = 0.390$, $P = 0.784$). However, the significant increase observed in affects subscale of MAS (Meanpre = 3.47, SDpre = 0.374, Meanpost = 3.52, SDpost = 0.188; $t(129) = 0.347$, $P = 0.327$). Our finding indicated cognition and behavior of preservice teachers toward individuals with disabilities were positively increased, but not significantly improved yet. Evidence suggested that two SL projects in this study did not significantly improve the overall positive attitudes of preservice teachers toward individuals with disabilities, but it was meaningful to observe that preservice teachers increased their affects toward individuals with disabilities.


Keywords: Service-learning, Volunteer, Teacher education, Preservice teachers' attitude, Individuals with disabilities

INTRODUCTION

Service-learning (SL) is one of the pedagogical strategies that can enhance students' practical knowledge by involving them in community service projects to fulfill the community-based learning experiences structured community learning experience (Halamish, 2018; Mackenzie et al., 2019; Sabo et al., 2015). SL integrates academic course contents and objectives into community service that extends learning beyond the traditional classroom setting (Dalton et al., 2012, 2019; Marcus et al., 2011). Regardless of the nature of the studies, SL has been implemented in several areas including literacy, teacher education, medicine, and engineering (Dalton et al., 2012; Dalton et al., 2019). For successful implementation, di-

verse formats have been applied within the curriculum include, but are not limited to, a single assignment within a particular course and an intensive project that requires several hours on the site (Halamish, 2018; Mackenzie et al., 2019; Sabo et al., 2015).

In the field of Physical Education Teacher Education (PETE) and Adapted Physical Education (APE), SL is often used as a strategy to provide contacts and teaching experiences to college students who have an interest in working with individuals with disabilities (Case et al., 2021; Roper and Santiago, 2014; Valverde-Esteve et al., 2021). The American Association of Health, Physical Education, and Recreation recommended SL into the PETE curriculum could enhance teacher candidates' engagement with community agencies since 1973 (Pérez-Ordás et al., 2021). Several

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studies have been conducted to figure out the effectiveness of SL components in the PETE curriculum. In the field of the PETE program, SL component implementation into the curriculum has become popular as a method for preservice teachers to apply pedagogical mythologies, work with diverse populations, and develop a sense of civic responsibility (Chiva-Bartoll et al., 2020). More specifically, APE courses are increasingly using SL methodology.

In APE, SL is considered a valuable tool linking context and practical experiences (Case et al., 2021). Since a number of students with disabilities are included in the general education setting, SL implementation into the APE courses could provide preservice teachers opportunities to work with individuals with disabilities. The most commonly utilized methods for SL in APE are practicum experience including the learning log, analysis of events, writing journals, and semi-structured journals (Pérez-Ordás et al., 2021).

There are several practical articles in the field of APE proposing how to plan SL assignments for preservice PE teachers and children with disabilities (Roper and Santiago, 2014). Roper and Santiago proposed how to utilize SL on PETE courses for developing competencies required for accreditation giving specific examples (Roper and Santiago, 2014). However, there are limited studies that explore the effectiveness of APE courses in the SL in the PETE program. Pérez-Ordás et al. (2021) also proposed how to incorporate SL into PETE program at the department level considering each characteristic. These articles indicated that SL across PETE curriculum could provide sequential and progressive experiences for preservice teachers to have chances to apply pedagogical knowledge.

Researches in APE also have investigated how SL influenced teachers' attitudes toward individuals with disabilities. Researchers observed PETE teachers' personalities and attitudes toward teaching students with disabilities before and after completing the SL projects (Chiva-Bartoll et al., 2020). Preservice teachers who engaged in the SL project showed a significantly greater in the social self-realization and resolute self-efficacy dimensions than the control group.

Although several articles documented the implementation strategies for SL into PETE program, such studies limit the effectiveness of the practicum experiences. The purpose of the study was to investigate the impact of SL projects in the Intro APE course on preservice teachers' attitudes toward people with disabilities.

MATERIALS AND METHODS

SL course assignment

Two projects, a volunteer project, and a parasport event project

were developed for the SL component implementation into the Introductory APE course. This study was approved by Texas A&M University-San Antonio's IRB (2018-73).

Volunteer project

The purpose of this assignment is to provide hands-on experience in teaching sports-related skills to individuals with disabilities. First, participants contacted local agencies that provided physical activity classes or disabled sports programs to individuals with disabilities. After the participants were approved to volunteer at one of the local agencies, he/she teaches or helps to teach physical activity classes or disabled sports practices for at least 5 hr. To verify the project completion, participants submitted the volunteer log. The volunteer log included information regarding the name of the agency, dates and times for volunteer, name and contact information of the supervisor at the agency, and finally signature of the site supervisor. After completing hours at the site, participants wrote a reflection paper describing their overall experience at the site such as characteristics of the program, strengths, and weaknesses of the program.

Parasports event project

This project allowed participants to observe local parasports event-acquiring understanding toward parasport events and at the same time interacting with para-athletes and coaches of parasports. There are having three goals for this assignment. The first is to learn how to find information on parasports. The second is to attend a parasporting event for approximately 3 hr observing the level of competition, the atmosphere at the event, and characteristics of audiences. Finally, participants contacted the athletes asking athletes' year(s) of competing in that particular sport, motivation. All the experiences throughout the parasports event described in a paper discuss their expectations before the event and how they compared with what you observed. After participating in the parasports event, participants were asked to write a reflection paper describing what they have observed and learned about para-athletes and parasports events

Instruments

The Multidimensional Attitudes Scale Toward Persons with Disabilities (MAS) was implemented to measure participants' attitudes toward individuals with disabilities before and after their SL projects. MAS is a self-report instrument including a total of 34 items in three domains; affect, cognition, and behavior (Lu and Kim, 2017). The MAS initiated a scenario in which a person in a

wheelchair joined a group conversation during lunchtime. The scenario continued one person without disability remained seated right next to the individual with disability after all others left. Questions asked to rate the possible response individual without disability might raise toward the individual with disability about affect, cognition, and behavior. In the affective domain, there are 16 items including 13 negative and three positive feelings. In the cognitive domain, eight items are positively worded. For example, "I enjoy meeting new people." The behavioral domain pinpoints 10 types of behaviors toward individuals with disability, including two-approach behaviors (e.g., "starts a conversation") and eight avoidant behaviors (e.g., "moves away"). The items that demonstrate approach behaviors are coded reversely. Participants rated their responses on a 5-point Likert scale, ranging from 1 (not at all) to 5 (very much). The higher scores indicated more negative attitudes. This MAS original scenario was modified replacing a person in a wheelchair with a person with visual impairment.

Study population and sampling

Ideally, based on G* Power 3 calculations, a total of 102 participants will be required with the following conditions: two groups, two measures, the effect size of 0.25, alpha level of 0.05, power of 0.80. Fifty-one participants will be recruited for each group. Participants were current Kinesiology major students taking motor learnings for special populations. The course, Motor Skills for Special Population, is an introductory APE course in the Texas A&M University-San Antonio. Participants who identified neither taking APE courses nor having any experience in teaching physical education and/or physical activity to individuals with disabilities were randomly divided into two groups, treatment group and control group.

Both treatment group and control group took the precontent and MAS survey at the beginning of the semester and the postcontent and MAS survey at the end of the semester. The treatment group were asked to complete two projects that was encompassed service-learning components, volunteer project, and disabled sports project. However, control group did not engage any of this project.

Data analyses

Descriptive statistics was conducted to analyze the survey for demographic questions. Multiple independent *t*-tests were conducted to reveal if the means of the independent samples differed significantly. The mean score difference between pretest scores and posttest in items in MAS determined if there is a difference between pre- and posttest.

RESULTS

Total 130 students ($N = 130$) were participated into the study ($n_{\text{male}} = 65$, $n_{\text{female}} = 55$). Average ages of participants were 23.3 years old, and 99% of participants were senior 1% of students were junior. All the participants were submitted two reflection papers for both assignments and document with the supervisor's signature that could verify participants' volunteer hours.

Multidimensional Attitudes Scale Toward Persons with Disabilities

Data modification was conducted to reversely code the questions that indicate the higher scores indicated attitudes that are more negative. Total 21 items, 13 items in affective domain and eight items in behavior domain are coded reversely. The result of *t*-test indicated that there is no difference in overall MAS scores between pre-and posttest (Meanpre = 2.954, SDpre = 0.689, Meanpost = 3.01, SDpost = 0.679; $t(129) = 0.390$, $P = 0.784$). More specifically, in affective domain, there has been significantly increased from pretest (Meanpre = 2.58, SDpre = 0.475) to posttest (Meanpost = 2.90, SDpost = 0.682; $t(129) = -1.561$, $P = 0.059$). In the cognitive domain, there is no significant difference between pre-and posttest (Meanpre = 3.47, SDpre = 0.374, Meanpost = 3.52, SDpost = 0.188; $t(129) = 0.347$, $P = 0.327$). Scores in behavior domain increased from (Meanpre = 2.36, SDpre = 0.586) to (Meanpost = 2.50, SDpost = 0.651; $t(129) = 0.440$, $P = 0.837$). Mean scores for each item are indicated in Table 1.

DISCUSSION

SL is one of the widely implemented strategies to implemented strategies in teacher education (Mackenzie et al., 2019). Since SL is one of the strategies to extend practical learning experiences and social and psychological development of preservice teachers, this study sought to investigate SL projects in Introductory APE courses impact on preservice teachers' attitudes toward individuals with disabilities (Pérez-Ordás et al., 2021; Roper and Santiago, 2014).

The results provided insight changes in preservice teachers' attitudes toward individuals with disabilities. This study indicated that there are no significant changes in preservice teachers' attitudes toward individuals with disabilities after the SL projects completion. This is aligned with the study of Chiva-Bartoll et al. (2020). Their study also reported no significant changes in PETE students' attitudes and personalities after the practicum experience. However, PETE students of their study indicated significantly improve

Table 1. Result of the Multidimensional Attitude Scale Toward Persons with Disabilities (MAS) toward persons with disabilities

MAS factor	Pretest	Posttest	t-test
Affects			
Tension*	2.47	3.30	4.849
Stress*	2.61	3.39	3.997
Helplessness*	2.83	3.42	3.303
Nervousness*	3.00	3.44	2.045
Shame*	1.90	3.17	6.185
Relaxation	3.22	3.31	0.427
Serenity	2.91	3.08	0.796
Calmness	3.00	3.50	2.299
Depression*	2.26	3.58	6.936
Fear*	2.30	3.56	6.761
Upset*	2.04	1.89	0.802
Guilt*	2.35	1.78	3.412
Shyness*	3.22	2.33	4.770
Pity*	2.52	2.86	1.711
Disgust*	1.65	1.97	1.943
Alertness*	1.89	3.00	6.015
Cognitive domain			
He/she seems to be an interesting guy/girl.	3.31	3.48	1.140
He/she looks like an OK person.	3.39	3.78	2.706
We may get along really well.	3.41	3.39	0.157
He/she looks friendly.	4.44	3.61	0.953
I enjoy meeting new people.	3.17	3.57	1.837
He/she will enjoy getting to know me.	3.31	3.39	0.443
I can always talk with him/her about things that interest both us.	3.08	3.13	0.232
I can make him/her feel more comfortable.	3.50	3.52	0.103
Why not get to know him/her better?	3.58	3.60	0.136
He/she will appreciate it if I start a conversation.	3.56	3.74	0.962
Behavior domain			
Move away*	1.89	2.17	1.474
Get up and leave*	1.78	2.04	1.500
Read the newspaper or talk on a cell phone*	2.30	2.48	0.757
Continue what he/she was doing*	2.86	2.87	0.420
Find an excuse to leave*	1.97	1.87	0.642
Move to another table*	1.89	1.83	0.387
Initiate a conversation if he/she doesn't make the first move*	2.89	3.09	0.794
Start a conversation*	3.33	3.65	1.701

*Reverse coded.

in their perceived competence in teaching children. This trend was observed in current study in the result of significant increase in affects subscale.

The significant increase observed in affects subscales that are related with broad psychosocial context toward individuals with

disabilities (Mackenzie et al., 2019). Since the range of this result indicated the emotion of participants toward individuals with disabilities, the SL assignments in this study promoted preservice teachers' emotional status from discomfort and anxiousness to calmness and relaxation. It could be interpreted contact hours with individuals with disabilities promoted the positive emotion toward individuals with disabilities. Since specific emotions such as personal distress and empathy can be considered as determinants of helping (Carlson et al., 1988), completing SL projects could enhance preservice teachers' intention to help toward individuals with disabilities bringing personal and social development (Roper and Santiago, 2014).

The SL project of this study provided preservice teachers chances to promote positive emotional development toward individuals with disabilities. However, the result of this study indicated that 6-hr SL projects in different settings were not effective enough to improve preservice teachers' cognition and behavior toward individuals with disabilities. To provide meaningful SL implementation, it is critical to consider various factors such as diverse environments and SL assignment designs. Chiva-Bartoll et al. (2020) found that PETE students improved attitudes and personality toward teaching children with disabilities after completing service-learning project. This study diversified locations of SL projects to provide different levels of interaction with individuals with disabilities. These diversified experiences may give a chance to participants to promote positive emotional development toward individuals with disabilities.

SL components were considered a bridge the gap between theory and practice (Marcus et al., 2011; Pérez-Ordás et al., 2021). In this study, two SL projects in Introductory APE course allowed the preservice teachers to contact individuals with disabilities for minimum 6 hr. The result indicated the preservice teachers increased affects toward individuals with disabilities that could potentially promote their positive behavior such as helping individuals with disabilities. Findings indicated cognition and behavior of preservice teachers toward individuals with disabilities were positively increased, but not significantly improved yet. Evidence suggested that two SL projects in this study did not significantly improve the overall positive attitudes of preservice teachers toward individuals with disabilities, but it was meaningful to observe that preservice teachers increased their affects toward individuals with disabilities.

For future studies, it is recommended to diversity the level of contact hours among participants to see what would be minimum hours that could positively affect the behavior of preservice teach-

ers toward individuals with disabilities. Diversifying sites to contact individuals with disabilities needs to be considered for future studies as well to see the most effective locations of sites that could increase positive affective, cognitive, and behavior patterns toward individuals with disabilities.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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