

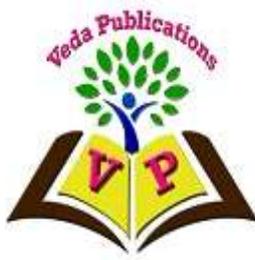
TRAINING PRE-SERVICE AND IN-SERVICE TEACHERS TO WORK WITH STUDENTS WITH ASD: AU-SOME EXPERIENCES IN COMMUNITY-BASED LEARNING

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ABSTRACT



Experts in the field of exceptional education predict that every special education teacher will work with a child with ASD during his/her career. Accordingly, teacher training programs must plan coursework, assignments, and authentic learning opportunities to meet this increasingly-growing demand. One way to provide authentic learning opportunities and experiences for teacher candidates within training programs is through service-based learning. This research study seeks to determine the perceived value of pre-service and in-service teacher candidates regarding recreationally-based community service activities. Participants were 124 teacher candidates who engaged in service learning activities in a variety of recreational, community-based settings. They were surveyed and data were collected in several ways to ascertain if teacher candidates found service learning to be an effective and valuable way to prepare them for working with students with ASD and their families. Results overwhelmingly indicated teacher candidates felt service learning was a valuable addition to ASD coursework.

Keywords: *Autism Spectrum Disorder, ASD, Teacher Preparation Programs, Service Learning, Community Understanding, Training of Instructional Personnel.*

The most recent statistics on the incidence of autism spectrum disorder (ASD) in the United States cite autism as one of the fastest growing developmental disabilities in the country, impacting 1 in every 68 children, and 1 in every 42 males (Centers for Disease Control and Prevention, 2016). This well-documented increase in the prevalence of ASD continues to inform professionals in the field of special education of the critical and immediate need to prepare pre-service and in-service teachers to work with this unique population of students, as well as their families (Maddox & Marvin, 2012). Experts in the field of exceptional education predicted that every special education teacher will work with a child with ASD during his/her career (National Association of Special Education Teachers, 2007). Common sense tells us that this training and preparation should be frontloaded into the coursework of teacher training programs, to allow institutions of higher learning to fully and effectively utilize the time teacher candidates are educated within their certification programs.

According to the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM), ASD is characterized by concerns in three main skill sets: speech and language ability, social interactions and initiations, and stereotypical or repetitive behaviors (2013). According to the DSM, children with ASD can present with varying levels of ability and/or impairment in each of these areas, further strengthening the appreciation that each child with autism is unique, requiring individualized skill and expertise in assessment, planning, and instruction. It is the responsibility of special education teacher training programs to recognize this need and plan coursework, assignments, and authentic learning opportunities to meet this increasingly-growing demand.

One such way to provide authentic learning opportunities and experiences for teacher candidates within our training programs is through service learning. Service learning differs from student teaching in that it usually takes place outside of an academic classroom and in more naturalistic environments (Anderson, Swick, & Yff, 2001). To wit, Bringle and Hatcher (1995) operationally defined service learning as:

course-based, credit bearing educational experience in which students(a) participate in an organized service activity that meets identified community needs, and (b) reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of personal values and civic responsibility. (p. 112)

Hence, service learning should align with course expectations and learning outcomes, by furthering the content contained in the course, allowing the teacher candidate to transfer and generalize previously-learned information into naturalistic and authentic learning experiences, outside of the confines of a classroom. Critical to the service learning model is the reflective component, in which a teacher candidate thoughtfully and deliberately internalizes the experience, relating the hands-on knowledge gained as a result of the opportunity to best practices, theories, and material acquired through coursework.

The reflective component can be structured in various configurations, as journal entries, reflective essays, written responses to prompts, research papers, case studies, classroom discussions, portfolios, and discussion board conversations (Sloan, n.d.). Reflections are essential components to the service learning experience as they provide teacher candidates with a forum for articulating personal perceptions of the experience while providing feedback to their peers and instructor, as well as furnishing instructors with a means of formatively assessing the authentic experience and making responsive changes, as necessary (Santos, Ruppert, & Jeans, 2012). Chambers and Lavery (2012) underscored the importance of the reflective piece, postulating that it allows teacher candidates to make connections between the service learning experience and their own lives and/or the lives of others within their own communities, further personalizing and internalizing the benefits of service learning.

Service learning can be extended to not only include opportunities to work with a target population of students, but their parents and siblings, as well (Voke, 2003). Recent literature in the field of service learning has explored this need and determined a critical component for pre-service and in-service special education teacher training programs is a family involvement factor. For example, pre-service teachers in special education training programs realized, as a result of service learning opportunities, the importance of viewing parents as equal partners in student success, and fully appreciating their value as part of a collaborative team (Novak, Murray, Scheuermann, & Curran, 2009).

Recent research studies have also examined the number of teacher training programs in the United States containing a service level component which invites pre-service or in-service teachers to collaborate with families in authentic ways and found them to be scarce (Stoddard, Braun, & Koorland, 2011). Direct benefits resulting from service learning opportunities in special education training programs involving a family component included increased understanding and empathy for the challenges faced by families of children with special needs, and increased ability to hold parents in higher regard, while simultaneously refraining from passing unfounded and premature judgments upon them (Novak, et al. 2009; Stoddard, et al. 2011).

In the current study, prior to creating service learning opportunities within a special education teacher preparatory program, the Council for Exceptional Children's (CEC) Initial Specialty Set of Standards were consulted. Specifically, the initial specialty set for Developmental Disabilities and Autism Spectrum Disorder was reviewed to ascertain what essential and enduring skills and knowledge should be embedded into the community-based experiences. The Initial Specialty Set clearly aligned well with the goals of this service learning project, referencing, among other factors, the importance of family support systems, and embedding instruction into community-based settings, for example (CEC, 2017).

Informed by the Specialty Set of Standards (Developmental Disabilities and Autism Spectrum Disorder), a series of "Au-Some" programs were created within the community of a northeastern teacher training program, to provide recreational opportunities for students

with ASD and their families; that process will be described in this article. Embedded into the Au-Some programs was a research study to examine several critical questions in teacher preparation. Specifically, this research study seeks to determine the perceptions of value of pre-service and in-service teacher candidates regarding community-based service learning activities that included embedded instruction from teacher preparatory programs. Based upon their own self-reflection, this study also aims to ascertain if teacher candidates feel that service-learning opportunities can effectively enable them to work successfully with children with ASD and establish collaborative relationships with families while fostering a family support system.

METHOD

Prior to the implementation of the service learning coursework, it was necessary to lay some groundwork in the form of defining the study's participants, determining the service learning locations, formulating a means for data collection, and systematizing procedures to be put in place. Additionally, the program's Institutional Review Board (IRB) reviewed all documents, including informed consent and data collection forms and granted the Principal Investigator approval to initiate the research study.

PARTICIPANTS

Participants in this study were 124 teacher candidates in the Exceptional Education program at the State University of New York (SUNY), Buffalo State. The majority (115) of the participants were members of the graduate program, and possessed at least one teaching certification, although not necessarily in special education. The minority (nine) of the participants were upper-level undergraduate teacher candidates, who were either concurrently student teaching or preparing to begin student teaching in the following semester. Over the period of 2 years, 124 teacher candidates were eligible to participate in this research study and 100% of them volunteered to do so. Consistent with available information on current teacher demographics in the United States, the majority of the participants in this study were Caucasian females (National Center for Education Statistics, 2014). Participant characteristics are shown in Table 1.

Table 1

Participant characteristic table

Gender	Race	Academic status	Teaching status
Female (<i>n</i> =118, 95%)	Caucasian (<i>n</i> =114, 92%)	Graduate (<i>n</i> =115, 93%)	In-service (<i>n</i> =91, 73%)
Male (<i>n</i> =6, 5%)	African-American (<i>n</i> =3, 2%)	Undergraduate (<i>n</i> =9, 7%)	Pre-service (<i>n</i> =33, 27%)
	Latino (<i>n</i> =2, .2%)		
	Other (<i>n</i> =5, 4%)		

SETTING

Various settings were utilized for these service learning opportunities. The settings were largely determined by the community partners who served as collaborators in the service learning project, as most of the opportunities occurred within recreational programs generally serving children and families in the community without disabilities. Not only did this variety provide a diverse group of settings for the research study, but it also allowed for teacher candidates to select service learning opportunities based upon individual preferences, such as specific interest in extra-curricular activities, geographic convenience, transportation needs, and scheduling parameters. For example, service learning opportunities included a children's museum located in a rural area, a community music school in an urban area, a holiday party in an indoor recreational center, located adjacent to a shopping mall, a large town park pavilion in an inner or first-ring suburb, and an aquarium located near a popular tourist attraction. At the beginning of each semester, teacher candidates were provided with the description, location, and number of hours associated with each service learning opportunity and were then able to customize their individual experiences and opportunities.

DESIGN

A mixed methods research design was employed in this study, to combine the strongest attributes of quantitative and qualitative research while counterbalancing the weaknesses in each when used in a stand-alone design. This diverse methodology permits for the simultaneous collection of data in two forms within a research study, allowing the results from each individual methodology to validate and strengthen the other. Specifically, the concurrent triangulation design was implemented, which showcases qualitative and quantitative results side by side. Quantitative results are reported, and then supported by narrative accounts of participant quotations, perspectives, and reflections as provided qualitatively. This design lends itself to more robust findings and richer discussion (Creswell, 2003).

DATA COLLECTION

A variety of instruments were utilized in this study for data collection. First, the Principal Investigator obtained signed, informed consent to use respondents' comments in publications, or for development of subsequent service learning coursework and community opportunities. The consent forms clearly articulated to teacher candidates that their ability to be involved and participate in service learning activities was in no way contingent upon their willingness to join the research study, as involvement was completely voluntary.

Next, a survey was created by the Principal Investigator and distributed after each community-based activity. Survey items included questions regarding the teacher candidates' assessment of the value of the service learning opportunities and how effective the service-learning course component was in preparing them to work with students with ASD and their families. The surveys were completed anonymously but required respondents to include preliminary demographic information regarding gender, race, and prior experience

Figure 2. Au-Some Event expanded response reflection writing prompts distributed to teacher candidates after community-based event.

Au-Some Events

Date:

Please reflect upon your volunteering experiences at the Au-Some Event.

(use the back of this sheet, if necessary)

- What worked especially well for the children with autism and their families?
- What surprised you about this experience? Why was it surprising?
- Did you observe unanticipated events or circumstances? If so, please describe.
- Was the Au-Some event a success? Did the children with autism and their families experience an enjoyable evening? Why or why not?
- What could be done differently to enhance this experience for children with autism and their families?

Comments/thoughts/reflections:

Lastly, in the class meeting immediately following each community-based service learning event, teacher candidates were encouraged to verbally share their thoughts, perceptions, and feedback on the experience to classmates.

PROCEDURE

A multi-step procedure was followed to create the service learning opportunities within the community of the teacher training program. This procedure was based upon the foundational work of Kaye (2004) and Chambers and Lavery (2012) but modified to align with individual needs of the exceptional education teacher training program and community partners. These steps included:

1. **Identify community needs** by conducting personal interviews with stakeholders such as potential community partners, parents, and siblings of students with ASD, disseminating surveys through ASD listservs, email, and holding focus group discussions;
2. **Establish and cultivate partnerships** between community organizations that have existing programs or the potential to generate new programs to create opportunities to meet the needs articulated by parents and families of children with ASD. Many community organizations had the desire to participate in recreational opportunities for students and families with ASD but did not feel they possessed the experience, expertise, and/or trained personnel to provide safe programs of a high quality for this unique population;
3. **Establish and define who will benefit from the service learning programs.** Ideally, all involved parties would realize direct benefits from participation. For example, the teacher candidates gain valuable experience and insight in working with students and families with ASD in recreational, non-academic settings. Community partners expand their client base and may develop new programs to meet the needs of the growing population of children and families with ASD while cultivating a culture of community understanding. Teacher training programs develop and solidify community partner relationships while strengthening their

programs by integrating authentic community-based learning experiences into coursework for teacher candidates;

4. **Create learning goals** that are measurable and observable for the teacher candidates. Additionally, the learning goals must closely align with the course content and objectives to which the service learning assignments are attached. Create a crosswalk between course objectives stated on syllabi and the goals of the service learning opportunity so that teacher candidates can clearly see how the service learning experiences expand and enhance the material they have learned in coursework. Ideally, the knowledge and learning acquired by the teacher candidates through the community-based service learning opportunities will generalize to other settings with students and families with ASD;

5. **Provide training to all parties** in working with children with ASD, including descriptions of behavioral, sensory, and communication characteristics which may be demonstrated by the children. Some basic techniques of behavior management and effective interaction should be included in this training, along with strategies and suggestions for successful communication with parents and siblings. Teacher candidates and employees of the community-based service learning partners should be provided training prior to the first event, with an emphasis on safety, inclusion, social validity, and understanding and valuing diverse needs of the individuals with ASD involved;

6. **Implement programs within community**, keeping detailed and descriptive field notes of what is successful and what needs to be modified, to allow for adaptations and growth within the program, as necessary;

7. **Assess program effectiveness** by seeking feedback from all involved parties after the event as a way to formatively evaluate the experience. Some factors to evaluate and consider include event attendance, active participation from all members, and observed emotional climate of the event; and

8. **Facilitate reflection of experience by all stakeholders**, including teacher candidates, children with ASD, parents and siblings, and community partners, i.e. do these programs make a difference in your lives? Although this article focuses solely on the perceptions and feedback of teacher candidates, data were also collected and analyzed after each event from parents and community partners to determine effectiveness of the event.

Using the steps outlined above, numerous service learning opportunities were created over a 2-year period. Although the events were varied, there were common elements to all opportunities. The Principal Investigator was also a parent to a child with ASD, who was in his late teens at the time of the research study. Because no inclusive opportunities were available to her family when her children were younger, she felt strongly that **all** of the events should all be inclusive, open to children with ASD, parents, siblings, relatives, and other invited guests, such as neighbors and friends. Intentionally, the events were not completely open to the general public because, as one parent noted “that is just like regular, everyday life”. Consequently, although the events were closed to the public to keep attendance numbers manageable and limit the level of subsequent environmental stimulation, they were

inclusive in every other way. Some events were regularly recurring, on a weekly or monthly basis, while others were “one-timers”. The service learning opportunities included monthly evenings at a children’s museum of play, weekly music therapy classes for children with ASD and a sibling/peer, a summer-time swim party and picnic at a local park with a large, fenced-in pavilion, evenings at the aquarium complete with a “Touch Tank” and thematic crafts, and a holiday party at an indoor bounce-house facility. All experiences were part of an “Au-Some” series of events, created for children and families with ASD by the Principal Investigator and a colleague who was the Program Coordinator of an area ASD diagnostic clinic and follow-up center, housed in a children’s hospital.

RESULTS

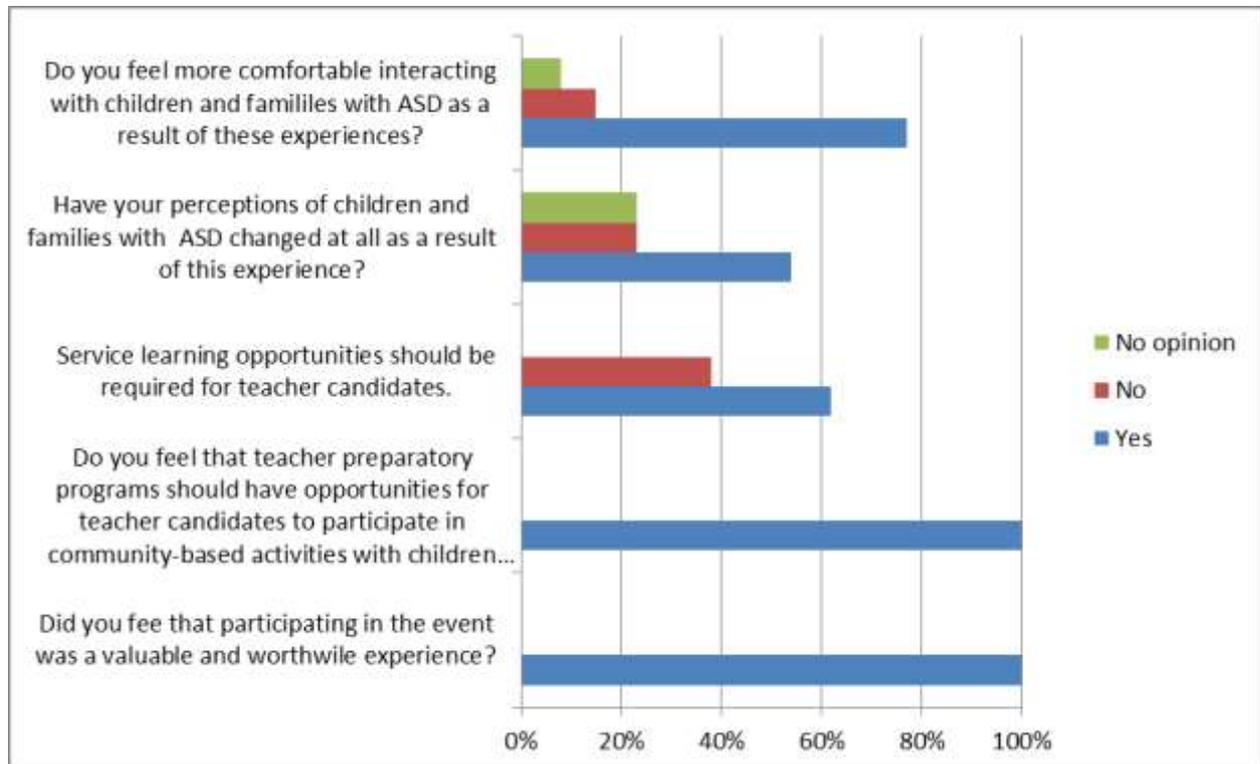
The purpose of this study was to determine teacher candidate perceptions of value when community-based service learning opportunities were embedded into exceptional education coursework to prepare pre-service and in-service teachers with opportunities to interact with students with ASD and their families. Teacher candidates were surveyed and data were collected in several ways to ascertain if teacher candidates found service learning to be an effective and valuable way to prepare them for working with students with ASD and their families.

QUANTITATIVE

Of the 124 teacher candidates participating in the study, 100% of them indicated that participation in the community-based service learning opportunities was a valuable and worthwhile experience. When asked if teacher training programs should include service learning opportunities in coursework, 100% of them also indicated yes. When asked if these service learning opportunities should be required or voluntary, responses were mixed, with 38% of the teacher candidates indicating voluntary and 62% of the respondents indicating required. When the teacher candidates were asked if their perceptions of children and families with ASD changed as a result of these service learning opportunities, 54% answered yes, 23% answered no, and 23% had no opinion. When asked if they would feel more comfortable interacting with children and families with ASD as a result of these opportunities, 92% of the teacher candidates answered yes, and 8% answered no. Lastly, when teacher candidates were asked if their teaching practices would change as a result of these experiences, 77% answered yes, 15% answered no, and 8% had no opinion. These data are represented in graphic form in Table 2.

Table 2

Results of teacher candidate anonymous online survey

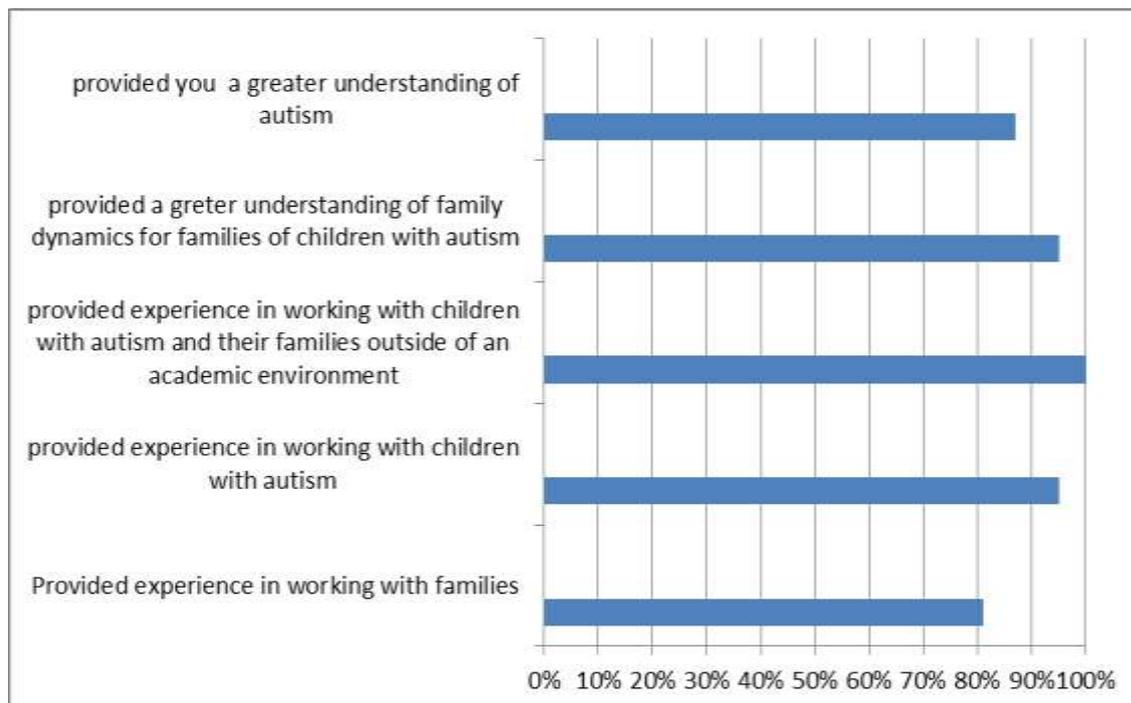


Teacher candidates were also asked to indicate in what ways they felt service learning opportunities provided a valuable addition to their coursework. They were instructed to check all items they felt applicable. Eighty-one percent responded that it provided them experience in working with *families* of children with ASD and 95% also indicated it provided them experience in working with children with ASD. A full 100% responded that the service learning opportunities provided them experience with children and families outside of an academic environment. Additionally, 87% also responded that the experiences provided them with a greater understanding of autism, and 95% indicated it gave them a greater understanding of the dynamics within a family that has a child with ASD. The last option, “other” did not yield any response. These data are represented in graphic form in Table 3.

Table 3

Feedback provided by teacher candidate anonymous online survey

Please indicate how you felt these community-based activities provided a valuable addition to your Exceptional Education coursework. Check all that apply



QUALITATIVE

Teacher candidates were asked six expanded response questions in an anonymous, online survey. Qualitative results received through data analysis of these online surveys resulted in the emergence of themes that closely mirrored the quantitative results in this study. A summary of those qualitative responses by theme and question appear below. Responses which were both positive and negative in nature are included, although the results indicated an overwhelmingly positive response to the service learning experiences. Positive responses are summarized; responses from the last prompt (what could be changed or added to these experiences?) are included in their entirety, as they proposed excellent suggestions for future service learning activities.

Why or why not was this experience valuable to you?

Teacher candidates remarked that it was rewarding to see parents be able to “take a bit of a break”. They also enjoyed how the siblings of children with ASD looked out for their brother/sister, and how they appreciated the opportunity to see children interacting with parents, as this is rarely seen in a school setting.

In what ways do you feel participation in community-based activities create a more meaningful educational experience within your Exceptional Education coursework?

Teacher candidates appreciated the real life experience of interacting with a child with ASD, as opposed to merely reading about children in textbooks. One teacher candidate commented “No matter how much you learn about children with autism, not until you work with these students do you really apply these skills and strategies you have learned in a college classroom”.

Have your perceptions of children and families with ASD changed at all as a result of these experiences?

Several of the responses to this prompt regarded how eye opening it was to see parents in action, as teachers routinely focus on students and not parents. The teacher candidates remarked on how much energy, patience, and effort was required to raise a child with ASD. As one teacher candidate eloquently observed, “It makes me realize that parents are working twice as hard as we are as teachers!”

Do you feel that your teaching practices will change as a result of these experiences?

Teacher candidates responded that service learning events provided them with opportunities to interact with parents that would not otherwise be available to them. They appreciated that the events provided them with opportunities to interact with parents in comfortable, non-threatening settings, affording them valuable practice allowing them to be “more welcoming and open with parents”.

What did you like best about these opportunities to interact with children and families with ASD?

Although the teacher candidates expressed themselves in various ways, many of them commented on the aspect of “fun” they witnessed throughout the evening: fun that the children experienced, fun that the parents seemed to have connecting with others in similar situations, and how much fun it was to be able to see children relaxed and comfortable enough to be themselves.

What could be changed or added to these experiences to make them more valuable to you as teacher candidates?

- I think adding a Big Sister or Big Brother component to these experiences would be great, especially for children with ASD who do not have a strong support system at home. This would allow the child with ASD to attend the event with someone and would allow a teacher candidate who is not used to being around someone with ASD the opportunity to see how great they are and a connection could be made.
- Maybe include a session during class explaining the process in how these programs were set up in case the occasion were to arise where we moved out of the area and would like to set up something similar.
- Please make more of these opportunities available, possibly on a more frequent and/or regular basis.

DISCUSSION

The purpose of this study was to determine if pre-service and in-service teacher candidates felt participating in recreationally-based service learning opportunities within their communities was a valuable and effective addition to existing exceptional education coursework in preparing them to work with students with ASD. A total of 124 teacher candidates participated in the service learning opportunities and also voluntarily opted to be a

part of this research study. Teacher candidates were surveyed in several ways during the duration of the research study. Questions of both a quantitative and qualitative nature were posed to them anonymously.

Teacher candidate responses in all surveys firmly established that they believed there was high level of value in service learning. They felt recreationally-based service learning opportunities embedded into exceptional education coursework were an effective means of expanding teacher training education to work with students with ASD outside of the tradition lecture-based classroom setting. This perception was conclusively demonstrated by the data; 100% of all study respondents indicated service learning was a valuable and worthwhile experience. Similarly, 100% of the respondents indicated these recreational types of service learning opportunities should be embedded into coursework preparing pre-service and in-service teachers to work with students with ASD. However, teacher candidates indicated mixed feelings as to whether these service learning opportunities should be voluntary (38%) or required (62%) components of their coursework.

The findings of the study are consistent with those of previous studies in that parental involvement is a critical component of teacher training programs for pre-service and in-service teachers and is often not addressed in higher education programs (Scheuermann, Webber, Boutot, & Goodwin, 2003). The results of the study are also consistent with the findings of an earlier study illustrating the importance of service learning opportunities in teacher training programs to allow teacher candidates to gain a better understanding of the individual and unique needs of students by directly observing students in non-traditional settings (Buchanan, Baldwin, & Rudisill, 2002). Lastly, the results of this study are also consistent with the results of research indicating that service learning opportunities changed teacher candidate perceptions of individuals and families in situations which differed from their own (Hildenbrand & Schultz, 2015).

LIMITATIONS

As always, findings of this or any research study should be reviewed with some degree of caution, as no one study can yield results representative of an entire population of individuals. In this case, the majority of the participants were graduate students in a highly-regarded teacher training program. There are documented differences in undergraduate versus graduate learning styles. For example, one research study comparing undergraduate and graduate students demonstrated that graduate students tend to be more cognitively oriented about their studies, and have higher levels of understanding a concept or situation after *experiencing* it, versus merely thinking or learning about it (Drozdenko, Tesch, & Coelho, 2012). Additionally, all of the participants in the student, both undergraduate and graduate, were exceptional education majors. Because of their chosen major, it stands to reason that the in-service or pre-service graduate students would have a predisposed interest in working with students and families with special needs or ASD, specifically. At 124 participants, the sample size of the study was relatively small, and from a public state university; hence, they should not be considered representational of all teacher training

programs across the country. It is necessary to conduct similar studies with more diverse groups of participants to determine if these results would generalize into other regional groups of teacher candidates, private institutes of higher learning, or non-traditional teacher training programs such as Teach for America.

It is also important to note that the families with children with ASD who attended these recreationally-based service learning opportunities were quite profuse in their thanks and expressions of gratitude to the in-service and pre-service teacher candidates for their time and involvement into the programs. It is possible that the perceptions of the participants were influenced by the extremely positive and welcoming reception they received from parents and families of children with ASD.

Although all surveys were conducted anonymously, teacher candidates may have been unintentionally predisposed towards responses of a more positive nature, knowing that their professor was reading and reviewing their feedback. Because the service learning opportunity was open to 124 teacher candidates, and they all opted to participate in the study, there was no “hiding” behind the premise that a particular teacher candidate’s perceptions may not have been represented in the study’s results. However, the overall demeanor observed by the Principal Investigator at all events certainly indicated a high level of enthusiasm and interest, which was completely consistent with the survey responses. Therefore, there were no compelling reasons to believe that the teacher candidates’ comments were anything less than genuine.

Lastly, it is necessary to consider that the teacher candidates may have welcomed any excuse to escape from a traditional classroom setting and textbook-learning scenario. However, more time, effort, and transportation logistics went into the participation of these recreationally-based service learning opportunities in the larger community than showing up to a class meeting in many cases. Several teacher candidates indicated that real-life observations will always prevail over textbook-written case studies in terms of effectiveness and value.

RESEARCH IMPLICATIONS

This study sought to determine if pre-service and in-service teacher candidates felt that recreationally-based service learning opportunities in the community where valuable additions to the teacher training program in exceptional education, specifically targeted to working with students with ASD. The incidence of ASD is increasing at 10-17% annually (AutismSpeaks, 2014). Consequently, there is an immediate and critical need to prepare teacher candidates to work with this population of students. Additionally, it is the responsibility of teacher training programs to ensure that teacher candidates exit our programs with a strong foundation in working with this unique population, to ensure safety for all involved and to allow students with ASD to reach highest levels of potential. The Natural Assessment of IDEA Overview (United States Department of Education, 2011) cited a shortage of teachers with necessary expertise and experience to work with students with ASD; 46% of all districts in the United States reported difficulty in routinely finding qualified

teachers to work with students with ASD. It is imperative that teacher candidates leave our programs ready, as students with ASD have an instant need for highly-qualified teachers, precluding “on the job” learning curves.

Various methods of preparing teachers to work with students with ASD have been explored in the literature (Barnhill, Sumutka, Polloway, & Lee, 2014; Leblanc, Richardson, & Burns, 2009). Program components such as field experiences with students with ASD and direct contact hours with individuals on the spectrum were among the list of desired components of teacher training programs (Barnhill, et al., 2014). The same study also concluded that only about 90 teacher training programs in the U.S. contained a component specific for training teacher candidates to work with students with ASD. Knowledge regarding the characteristics and behaviors of students with ASD were also referenced as key components to effective ASD teacher training programs, as well as knowledge of anxiety-reducing strategies and ways to encourage the social interactions of students with ASD (Leblanc, et al., 2009). Research also confirms that pre-service teachers particularly value authentic experiences made available to them during special education teacher training programs so they can better “make a difference” in the lives of their future students (Paquette & Reig, 2016). The service learning opportunities embedded into community based settings in this study included all of the above-referenced components and provided the teacher candidates with authentic opportunities to directly observe and gather information about working with students with ASD and their families.

There is also literature to support the use of service learning opportunities in teacher training education programs (Anderson, et al., 2001). Research does support that effective training programs for instructional personnel in the field of autism spectrum disorders include curriculum that provide hands-on learning through practice and community engagement (Shyman, 2012). This study provides a strong initial foundation; however, considerable more research needs to be conducted in regard to teacher training programs that specifically prepare teacher candidates in how to effectively work with students and families with ASD. The limited number of research studies in this area clearly indicates the need for future research.

REFERENCES

1. Anderson, J.B., Swick, K.J., & Yff, J. (2001). *Service learning in teacher education: Enhancing the growth of new teachers, their students, and their communities*. Washington, D.C.: AACTE.
2. American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. 5th ed. Washington DC.
3. Autism Speaks. (2014). *Autism Speaks, Inc.* Retrieved September 16, 2016, from <http://www.autismspeaks.org/node/12736>
4. Barnhill, G.P., Sumutka, B., Polloway, E.A., & Lee, E. (2014). Personnel preparation practices in ASD: A follow-up analysis of contemporary practices. *Focus on Autism and Other Developmental Disabilities*, 29, 39-49.
5. Bringle, R. G., & Hatcher, J. A. (1995). A Service-Learning Curriculum for Faculty. *Michigan Journal of Community Service-learning*, 2, 112-122.

6. Buchanan, A.M., Baldwin, S.C., & Rudisill, M.E. (2002). Service learning as scholarship in teaching education. *Educational Researcher*, 31(8), 30-36.
7. Centers for Disease Control and Prevention (CDC). (2016). Prevalence of autism spectrum disorders among children aged 8 years: Autism and developmental disabilities monitoring network. *Morbidity and Mortality Weekly Surveillance Summaries*, 63, 1-21.
8. Chambers, D.J., & Lavery, S.(2012). Service-Learning: A valuable component of pre-service teacher education. *Australian Journal of Teacher Education*, 37, 128-137.
9. Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches*. Thousand Oaks, CA: Sage.
10. Council for Exceptional Children, (2017). Initial specialty set: Developmental disabilities and autism spectrum disorder. Retrieved October 17, 2016, from <http://www.cec.sped.org/Standards/Special-Educator-Professional-Preparation-Standards/CEC-Initial-and-Advanced-Specialty-Sets>
11. Drozdenko, R., Tesch, F., & Coelho, D. (2012). Learning styles and classroom distractions: A comparison of undergraduate and graduate students. *Proceedings of ASBBS*, 19(1), 268-277.
12. Hildenbrand, S.M., & Schultz, S.M. (2015). Implementing service learning in pre-service teacher coursework. *Journal of Experiential Education*, 38, 262-279.
13. Kaye, C. (2004). *The complete guide to service learning*. Minneapolis: Free Spirit.
14. Leblanc, L., Richardson, W., & Burns, K.A. (2009). Autism spectrum disorder and the inclusive classroom: Effective training to enhance knowledge of ASD and evidence-based practices. *Teacher Education and Special Education*; 32, 166-179.
15. Maddox, L.L., & Marvin, C.A. (2012). A preliminary evaluation of statewide professional development program on autism spectrum disorders. *Teacher Education and Special Education*, 36(1), 37-50.
16. National Association for Special Education Teachers, (2007). Autism Spectrum Disorder Series. *Overview, Assessment, Interventions and Strategies for Success*, Retrieved November 21, 2016, from <https://www.naset.org/2561.0.html>
17. Novak, J., Murray, M., Scheuermann, A., & Curran, E. (2009). Enhancing the preparation of special educators through service learning: Evidence from two preservice courses. *International Journal of Special Education* 24(1), 32-44.
18. Paquette, K.R., & Reig, S.A. (2016). Stressors and coping strategies through the lens of Early Childhood/Special Education pre-service teachers. *Teacher and Teacher Education*, 57, 51-58.
19. Santos, R.M., Ruppard, A.L., & Jeans, L.M. (2012). Immersing students in the culture of disability through service learning. *Teacher Education and Special Education*, 35(1), 49-63.
20. Scheuermann, B., Webber, J., Boutot, E.A., & Goodwin, M. (2003). Problems with personnel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 18, 197-206.
21. Shyman, E. (2012). Teacher education in autism spectrum disorders: A potential blueprint. *Education and Training in Autism and Developmental Disabilities*, 47, 187-197.
22. Sloan, D. (n.d.) Tried and true teaching methods to enhance students' service-learning experience [course handouts]. Retrieved September 16, 2016, from mncampuscompact.org/.../Reflection-Activities-for-All-Classrooms.pdf
23. Snyder, T.D., de Brey, C., and Dillow, S.A. (2016). Digest of Education Statistics 2014 (NCES 2016-006). *National Center for Education Statistics*, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

24. Stoddard, K., Braun, B., & Koorland, M. (2011). Beyond the schoolhouse: Understanding families through preservice experiences in the community. *Preventing School Failure: Alternative Education for Children and Youth*, 55, 158-163.
 25. United States Department of Education. (2011). Institute of Education Sciences. *National Assessment of IDEA Overview*. Retrieved February 5, 2017, from <https://ies.ed.gov/ncee/pubs/20114026/pdf/20114026.pdf>
 26. Voke, H. (2003). A new wave of evidence: The impact of school, family, and community connections on student achievement. *AYFP Forum Brief*. Summary of presentation by Henderson, K. Mapp, & C.Jordan at American Youth Policy Forum. Retrieved October 1, 2016, from <http://www.aypf.org/forumbriefs/2003/fb050903.html>.
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