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Article

"THE IDEA OF ACCESSIBILITY AND THE REALITY OF ACCESSIBILITY ARE VERY DIFFERENT!" USING A WHEELCHAIR EXPERIENCE TO TEACH PRESERVICE SPECIAL EDUCATORS ABOUT ACCESSIBILITY

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Abstract: P-12 students who have mobility limitations often face environmental and social barriers that have an impact on educational performance; thus, teachers who work with these students need to have an understanding of these barriers. One potential way for teachers to understand environmental and social barriers is to experience them from a first-hand perspective such as through the usage of mobility devices. The provision of such "disability simulation" experiences during university training programs is somewhat controversial. The authors of the current study do not feel it is possible to simulate the experience of having a disability; however, they feel that providing wheelchair experiences can aid preservice special education teachers in identifying the barriers that need to be considered for their students with mobility issues. Thus, the purpose of this mixed methods study was to examine the impact of an accessibility assessment assignment on preservice special education teachers. Data sources included written reflections about the experience, follow-up surveys, and interviews with preservice teachers. An overwhelming majority of preservice teachers reported positive benefits from participating in the experience, with the largest reported benefit being new insights into accessibility barriers.

Keywords: *preservice teachers; teacher education; special education; disability simulation; mobility limitations; physical disabilities*

Introduction

A position statement regarding the need for teacher certification in physical/health disabilities available on the website of the Division for Physical, Health and Multiple Disabilities (DPHMD) of the Council for Exceptional Children outlines the need for teachers to have specialized training to meet the educational, technological, and health care needs of students with physical/health disabilities. This position statement proposes that these students are at higher risk than other students served in special education if the teacher does not have the required knowledge and skills to meet their needs (Division for Physical and Health Disabilities, n.d.). One area of specialized knowledge for teachers who work with students who have physical disabilities, that include mobility limitations, is an understanding of environmental and social barriers that can impede access to learning environments and community resources. In order to learn about providing adaptations to help students overcome barriers, preservice teachers need to be involved in activities that allow them to gain direct knowledge of the variety of barriers that exist. One way of providing teachers in training with this knowledge is through experiencing the barriers from the perspective of an individual using a mobility device such as a manual wheelchair. Some people propose this form of activity as a "disability simulation," which is considered a somewhat controversial practice.

However, disability simulation experiences have been used to prepare preservice professionals in a number of fields including psychology (Wurst & Wolford, 1994), therapeutic recreation (Williams & Dattilo, 2005), rehabilitation (Crotty, Finucane, Ahern, & Crotty, 2000; Pernice & Lys, 1996), nursing (Van Boxtel, Napholz, & Gnewikow, 1995), occupational therapy (Reid, 1999), physical education (Leo & Goodwin, 2013) and general education (Stamou & Padeliadu, 2009). This practice has been deemed anywhere from objectionable (Brew-Parrish, 1997) to questionable (Flower, Burns, & Bottsford-Miller, 2007; Leo & Goodwin, 2013) to beneficial in the right context (Behler, 1993; Williams & Dattilo, 2005) by different disability advocates and researchers. For example, disability activist and newspaper columnist, Valerie Brew-Parrish (1997) has spoken out fervently against disability simulations believing they reinforce negative stereotypes and conjure up feelings of pity, which does not equate with dignity. She claims simulations rob persons with disabilities of their dignity and self-respect, portraying simulations as phony because they assume the mere appearance of a disability without the reality. In reality a person who does not have a disability can never understand what it is like to have a disability by jumping in a wheelchair, wearing a blindfold, or having blocked ears for a few minutes. Along these lines, Connor and Bejoian (2007) proposed that disability simulations, even if well-intended, may be misleading or perceived as nothing more than entertaining for individuals without disabilities. Furthermore, simulations can arouse negative reactions on the part of participants (e.g., frustration, embarrassment), and/or make people with disabilities look like victims or heroes, especially if the simulations focus on limitations rather than the abilities of people who have disabilities (Stamou & Padeliadu, 2009).

Often, the focus of providing a disability simulation experience has been to improve attitudes, empathy, or acceptance toward people with disabilities or to promote inclusion of individuals with disabilities into social, educational, or recreational environments. Flower, Burns, and Bottsford-Miller (2007) conducted a meta-analysis examining 10 studies in which participants, primarily adults, engaged in simulations of disability with the most common being blindness or

physical disabilities. Due to low effect sizes and limited research, their analysis did not support the use of disability simulations in changing attitudes or behaviors toward individuals with disabilities and caused them to question the large-scale use of this practice.

Others have documented positive benefits of wheelchair experiences for students enrolled in a therapeutic recreation program (Williams & Dattilo, 2005), such as heightened awareness of challenges, enhanced appreciation for abilities, and newly-found empathy. Williams and Dattilo (2005) believed that providing a wheelchair experience affords students with an opportunity to see the world in a previously unexperienced way and to gain valuable insights into the life experiences of people with disabilities. Behler (1993), from the perspective of a researcher and professor who happens to have first-person experience of having a disability, cautiously suggested that there are some potential benefits of disability simulations. He advocates that qualitative accounts suggest disability simulations can play an active role in participants' reevaluation of their present attitudes and value orientations toward disabilities and individuals with disabilities as well as their everyday interactive encounters with individuals with disabilities. Behler believes that truly simulating a disability is not realistic, but such experiential simulation may provide benefits related to examining physical barriers and, to a lesser extent, social barriers if framed in the correct context. It is within this context that the current study is framed.

Although the idea of a disability simulation experience is controversial, the research does support increased learning outcomes in educational settings when learners are provided hands-on experiences (Carbonneau, Marley, & Selig, 2013; Konak, Clark, & Nasereddin, 2014; Leo & Goodwin, 2013; Selco, Bruno, & Sue, 2013). Experiential Learning Theory (ELT) proposes that learning is enhanced when learners engage in activities involving concrete experiences and reflections from which new concepts may be drawn (Kolb & Kolb, 2005). ELT suggests that students examine their beliefs and ideas about a topic so that they can refine, test, and integrate these ideas into existing knowledge. According to Kolb and Kolb (2005), "…learning is a holistic process of adaptation to the world. Not just the result of cognition, learning involves the integrated functioning of the total person—thinking, feeling, perceiving, and behaving" (p. 194). In other words, experiences that provide a learner with unique opportunities to view a concept in a direct, personal way may yield more meaningful learning. Within ELT, learners must reflect on their experiences in order to make the connection between these experiences and the future application of gained knowledge (Clark, Threeton, & Ewing, 2010). Along these lines, preservice teachers require knowledge and skills drawn from multiple types of educational experiences; hands-on experiences paired with accompanying reflections may be a valuable tool for teacher educators to employ.

Teaching children who have mobility limitations involves understanding that multiple factors may have an impact on a student's ability to participate in and receive maximum benefit from an educational environment. Students with physical disabilities often have different background experiences that impact foundational knowledge for content comprehension, health issues that reduce school attendance, or issues with fatigue and endurance that interfere with attending to relevant instructional stimuli (Heller, 2009). Additionally, having reduced mobility or a different physical appearance (e.g., using a wheelchair) can affect participation in some school activities because of environmental and social barriers. Special education teachers need to have an understanding of the barriers that may be faced by their students with physical disabilities. One

potential way to increase their understanding is by providing a hands-on experience where they must face barriers directly and increase their awareness of the barriers faced by their students who have physical disabilities. Thus, the wheelchair assignment was created so that preservice teachers became aware of physical barriers (e.g., curb cuts, location of ramps and elevators, accessible restrooms and doors), not as a simulation of a person with limited mobility.

Purpose and Context of Study

The authors of the current study agree that the idea of a "disability simulation" is not possible and as such a simulation does not accurately portray living with a disability that limits mobility (Lalvani & Broderick, 2013). However, we do believe that direct, personal experiences can focus participants' attention on the constraints imposed by physical and social barriers. We also note that, while disability simulations are often designed to change attitudes about people with disabilities, this was not the purpose of this study, since many individuals who enter teacher preparation programs in the field of special education tend to enter having background experiences with people who have disabilities and generally enter with positive attitudes toward disabilities. With this in mind, the first author created an "accessibility assessment" assignment for students enrolled in a course focused on the characteristics of and instructional strategies for meeting the needs of students with physical and health impairments. The purpose of this study was to document the perceived impact of the assignment and preservice special educators' awareness of accessibility issues after participating in this assignment. Specifically, the research questions were:

1. What environmental and social barriers to accessibility do participants identify after completion of a wheelchair experience?
2. What impact did the assignment have on participants' ideas and conceptions of accessibility and on their future careers working with students with mobility limitations?

Method

The research questions suggest a qualitative approach for the study, as we wanted to document preservice special education teachers' perceptions and their ability to identify physical and social barriers during the wheelchair assignment**.** Our views also aligned with prior research in that we felt simulating a disability was unrealistic, yet, it could provide benefits related to identifying the physical and social barriers that these participants' future students might face in their educational settings. Other researchers also suggested that qualitative accounts of disability simulations could play a positive role in developing attitudes toward individuals with disabilities by focusing on their abilities rather than limitations (Behler, 1993). Drawing from ELT literature, we felt that reflection upon the wheelchair assignment that provided an opportunity to view the use of a wheelchair in a direct, personal way may yield more meaningful learning.

Participants

After using this assignment for several years, the first author wanted to determine its impact on preservice special education teachers' awareness of physical and social barriers faced by those using wheelchairs and if the assignment was helpful in their current position. IRB approval was granted to use de-identified data from student papers for a three-year period. Identifying information was removed from 59 archived student papers. The de-identified papers were then saved into qualitative data mining software for analysis. An attempt was made to contact all 59 students for follow-up surveys and interviews. Twenty-one former students completed surveys and nine completed interviews.

The participants had been enrolled in a special education course regarding characteristics and instructional strategies for students with physical disabilities offered in the years 2011 ($n = 16$), 2012 ($n = 23$), and 2013 ($n = 20$). As in many teacher education programs, participants were disproportionately female with 50 females (85%) and 9 males (15%). Ethnicity or cultural background was aligned with the university population: 50 Caucasian (85%), 5 African-American (8%), 3 Asian (5%), and 1 Biracial (2%). See Table 1 for complete demographic information. One of the course requirements was the wheelchair experience assignment. This course is required for all undergraduate students majoring in special education and most often taken during their senior year. Consequently, at the time of the assignment, all participants had taken an introduction to special education and diversity course, at least one additional special education course, and completed at least one practicum experience (therapeutic recreation class camp experience, independent study working with postsecondary education students who have disabilities, and/or a semester-long practicum working in classrooms with students who have mild to moderate disabilities). Additionally, earlier in the semester, each participant had completed a case study requiring an observation of an individual with a physical disability specifically noting barriers experienced. Disability awareness/etiquette, disability-appropriate language (i.e., people-first language), and the importance of maintaining high educational expectations regardless of a student's physical limitations had been addressed prior to this assignment.

Data Sources

Data sources consisted of the wheelchair assignment, a survey, and interviews. Each source is described in more detail below.

Wheelchair assignment. This assignment required pairs of students to use a wheelchair to travel to four pre-selected locations on campus. At each location, participants engaged with people (e.g., asking for directions to the elevator, asking for the location of the vending machines). Assignment directions instructed students to note environmental barriers to accessibility, interactions with other people, accessibility-related signage, and the availability of accessible parking. Their written descriptions of the experience were to include a discussion of these four areas and a personal reflection on the experience. Although an individual who uses a wheelchair in real-life would not be able to abandon the wheelchair when perceiving danger, participants were instructed to put their safety first and get out of the wheelchair or have their partner push the wheelchair if they perceived danger in any form.

Table 1. *Participant Demographics for Completion of Papers, Participants in Survey, and Participants in Interview*

Participant Demographics: Enrollment in Course/Completion of Paper (*n* = 59)

	Ethnicity or Cultural Identity				Enrollment Status	
	African-American	Asian	Biracial	Caucasian	Undergraduate	Graduate
2011 Course						
Males	0	0	0	5	5	0
Females	1	1	0	9	7	4
2012 Course						
Males	1	0	0	0	1	0
Females	2	0	0	20	19	3
2013 Course						
Males	0	0	0	3	3	0
Females	1	2	1	13	17	0
Totals	5	3	1	50	52	7

Demographics of Participants Completing Survey (*n* = 21)

	Ethnicity or Cultural Identity			
	African-American	Asian	Biracial	Caucasian
2012 Course				
Males	0	0	0	0
Females	0	0	0	2
2013 Course				
Males	0	0	0	3
Females	1	2	1	12
Survey Totals	1	2	1	17

Demographics of Participants Completing Interview (*n* = 9)

	Ethnicity or Cultural Identity			
	African-American	Asian	Biracial	Caucasian
2012 Course				
Males	0	0	0	0
Females	0	0	0	1
2013 Course				
Males	0	0	0	1
Females	1	0	1	5
Interview Totals	1	0	1	7

The campus sits in a valley characterized by long, narrow ridges, flanked by broad valleys. Thus, the campus has many hills, some of which are quite steep, contributing to its inaccessibility with a manual wheelchair. The oldest building on campus was built in 1921 and has recently been renovated to include elevators and accessible restrooms. Many campus buildings were built between 1959 and 1970 and have been retro-fitted to comply with the requirements of the Americans with Disabilities Act (ADA) of 1990. This retrofitting made buildings technically accessible and ADA compliant, but not nearly as accessible as buildings designed to comply with ADA requirements and built after 1990. For example, curb cuts and ramps were added at intersections and ramps were added alongside stairs at entrances to buildings. Extensive building and renovation was occurring across the campus at the time during which students completed the accessibility assessment assignment and at the time of this paper's submission for publication.

Survey. Twenty-one of the 59 participants completed the survey. Ethnic or cultural identity of survey completers was 17 (80%) identifying as Caucasian, 1 (5%) as African-American, 2 as Asian (10%), and 1 (5%) as Biracial. The open-ended survey questions were created after analyzing the wheelchair assignment papers. These questions asked participants to indicate barriers they remembered encountering during the assignment completion, to list five words or phrases about the assignment, and to answer specific questions about the impact of the assignment (e.g., Have you thought about this experience at any time after receiving your grade for the course? If so, please explain; Do you think this experience has had/will have an impact on how you work or will work with students who have physical disabilities? If so, please explain). Survey respondents were also asked to provide suggestions for changes to the assignment that would make it more meaningful. The final item on the survey asked if the participant would be willing and interested in participating in an interview. (The survey is available upon request from the first author).

Interviews. Nine of the survey completers also agreed to be interviewed: 8 (89%) females and 1 (11%) male. Ethnicity demographic information was 7 (78%) Caucasian, one (11%), Biracial, and one (11%) African-American. The purpose of the interview was to ask for clarification of the data collected through the survey and the written wheelchair assignment. The semi-structured interview protocol consisted of several open-ended questions designed to stimulate recollection of the assignment and reflection. Interview questions included, "What environmental barriers do you remember experiencing?" "Talk about your interactions with people during the experience." "How would you identify the purpose of the wheelchair assignment?"

Data Analysis

The 59 archived participant papers were imported into text analysis software (QDA Miner 4). The first pass through the data identified passages related to environmental barriers to accessibility, accessibility-related signage, availability of accessible parking, other accessibility issues, and the impact of the assignment on participants' ideas regarding accessibility. Each category was then reexamined and coded based on common themes that emerged. Continued passes through these excerpts led to codes being separated into two or three categories or combined. For example, the original code "elevators" was divided into three codes because the issues discussed were different: (a) elevators that were too small for a wheelchair to adequately maneuver within, (b) elevators that were difficult to find or located in inconvenient locations

within buildings, and (c) elevators that were dangerous, or closed too quickly for a wheelchair to enter. Other codes were combined such as "ramps" and "curb cuts" as some participants were using the terms incorrectly or interchangeably. After codes were refined, papers were re-examined using the revised code list. This procedure is most closely aligned with the constant comparative analysis method describe by Corbin and Strauss (2008). Descriptive statistics showing the percent of participants identifying a specific physical or social barrier were compiled to document its prevalence.

After refinement of codes, interrater agreement (IA) was calculated. Due to the large number of coded segments (1,281), a second rater coded every tenth segment. Researchers agreed on 87% of these coded segments. Disputed segments were discussed and raters agreed that some segments were lengthy, should be split into two segments for coding purposes, and would, therefore, fall into two categories. After discussion and with recoding of a few segments, IA was 100%.

The survey data were analyzed in a similar manner to the papers making several passes through the data and creating codes or themes. The themes that emerged from the analysis of the responses to the survey questions were compared to the themes from the papers. Data from the interviews, surveys, and papers of the nine students who completed all three data sources were then compared to determine if participants' responses were similar or radically different depending on the data source. Thus, comparisons were made between data sources to see if participants noted similar or different environmental barriers or social interactions.

Results

In the wheelchair assignment, participants were required to note environmental barriers and social barriers they encountered. The focus of this paper is the assignment's impact; however, documenting the barriers identified by participants and how these barriers were perceived is important when considering how effective the assignment was in raising awareness of barriers that impact the lives of individuals with mobility limitations. The remainder of this section will focus on responses from all data sources regarding the barriers to accessibility identified by participants and the impact of the wheelchair assignment.

Barriers

Within the environmental theme, several sub-categories existed including: (a) physical barriers (e.g., hills, restrooms), (b) elevators, (c) signage and parking, and (d) legal issues. With regard to social barriers, social interactions were subdivided into neutral, friendlier, or negative. The same barriers were mentioned across the assignments, surveys, and interviews.

Environmental barriers. All but one participant mentioned more than one specific environmental barrier with 98% reporting two or more, 90% reporting four or more, 64% reporting five or more, and 35% reporting six or more. Environmental barriers were categorized into physical barriers (e.g., restrooms, doors, curb cuts, hills), elevators, parking and signage, and other barrier-related issues. The percentage of students who noted each environmental barrier in

their papers is included in Table 2. The same barriers were mentioned in surveys and interviews. Survey responses are included in Table 4. Some notable results and comments about barriers are provided below.

Table 2. *Environmental Barriers and Issues with Wheelchair Use: Number and Percentage of Students Stating Each in Wheelchair Experience Papers*

Physical Barriers	N	Percentage
Inside restroom difficult to navigate	57	96.61 %
Hills affected accessibility	46	77.97 %
Doors were difficult to open	45	76.27 %
Steepness or inappropriate location of curb cuts and ramps	41	69.49 %
Surfaces affected accessibility	34	57.63 %
Navigation required longer distance or change in route	30	50.85 %
Narrow passageways affected accessibility	28	47.46 %
Height of counters or other items affected accessibility	15	25.42 %
Elevators		
Too small and difficult to maneuver within	42	71.19 %
Located in hard to find or inconvenient part of building	33	55.93 %
Doors did not stay open long enough for wheelchair user to enter	14	23.73 %
Parking		
Sufficient parking	21	35.59 %
Insufficient parking	19	32.20 %
Signage		
Insufficient or inappropriately-worded signage	26	44.07 %
Sufficient signage	13	22.03 %
Other Barrier-Related Sub-theme		
Labeled as accessible but not truly accessible	39	66.10 %
Had to use an alternate solution (e.g., getting out of chair)	11	18.64 %
Felt University is not meeting accessibility laws	6	18.64 %
Issues with Wheelchair Use		
Physical strength or stamina required to maneuver wheelchair	49	83.05 %
Wheelchair difficult to control	15	25.42 %
Managing materials while using wheelchair was difficult	5	8.47 %

Physical barriers. Nearly 97% of participants mentioned inaccessibility of restrooms in their responses. One student noted:

> I literally was trapped in the bathroom stall. If I could not have gotten up, I would have been stuck until someone came into the bathroom to help me. I thought about how embarrassing it would be to go to the bathroom with the stall door open.

Another said:

> The bathroom on the third floor of the (name of building) is equipped with an old-fashioned handle that has to be twisted in order for the door to be opened. This was very difficult to do without repositioning the wheelchair, and when I did reposition the chair, I could open the door but I could not keep it open and turn into the bathroom.

In her response to being asked about the most memorable environmental barriers, one interviewee stated, "Doors. It was *so* hard to pull the door then roll backwards and turn to get into the door." Another participant who was interviewed mentioned curb cuts: "When you are walking, you don't think about curbs, but the curb cuts were where you had to roll into the street and in the direction of traffic, then turn and go across the street." Surfaces were mentioned as the most memorable barrier by another interviewed participant: "I never realized how detrimental a crack in the sidewalk can be. I literally flipped out of the wheelchair." These comments seem indicative of issues that would not have been noticed without the assignment including first-hand experience of barriers through use of the wheelchair.

Elevators. Approximately 97% of participants mentioned inaccessibility of elevators, either size or inconvenient location, in their papers. This is not surprising because many buildings on campus were built before the passage of the Americans with Disabilities Act (ADA) of 1990, resulting in many buildings having to be retrofitted with elevators. In an interview, one participant said, "The elevators in the library are crazy because you have to get on two different ones." In her paper and in the interview, another participant conveyed multiple concerns about elevators:

> I thought I was being smart when I decided to back into the elevator, but I learned that that wasn't always the best idea because the elevator door didn't stay open long enough for me to turn around and back in… One time, the elevator didn't come all the way down, so there was an uneven surface between the floor and the elevator. [Participant name] and I looked at each other and were like, 'What do we do now?' It was really dangerous. And, the (student center) elevator was so small that you can't even turn around inside.

Signage and parking. In the assignment, participants were told to note accessible parking and accessibility-related signage, but were not required to perform any actions related to either for the assignment. Responses were almost equally divided among the following categories: insufficient accessible parking (32.20%), sufficient accessible parking (35.59%), and no mention of accessible parking (33.9%). Regarding signage, twice as many participants felt there was not enough accessibility-related signage or that signage contained inappropriate language (e.g., "Handicapped" instead of "Accessible"), compared to those who stated signage was sufficient (see Table 1), while 35.59% did not mention signage.

Two-thirds of the participants noted the inaccessibility of bathrooms, ramps, or other facilities that contained signage labeling them as accessible. As reported in Table 2, 92.86% of participants surveyed checked, *Bathrooms that **were labeled as accessible** either had no accessible stall or were too small for a wheelchair.* Certainly, participants were expecting some level of inaccessibility because they were being given the assignment; however, several participants made statements indicating surprise or outrage at the "false advertising." Interview participants, in the quotes below, noted this discrepancy between presence of accessibility signage and true accessibility, "I was most surprised that the wheelchair would not even fit in the (gestures to make air quotes) *accessible* stall." Another said, "I was shocked and saddened to see that most things were marked as accessible, but they were not. It was almost like the signs were there for show." One paper summarized this issue with:

> It seems as if accessibility is more of a surface concern. As long as there are entrance and exit ramps *somewhere*, then a building is accessible. As long as there are buttons that open doors automatically at the entrances to buildings, then that entire building is accessible. The problem is that those surface changes do not make the entire building accessible. How useful is an accessible doorway if none of the other doorways in the building can be entered independently and safely? How useful is an accessible ramp into a building if someone has to circle the entire building just to find it? Accessibility should be a legitimate concern instead of something where the minimum is enough.

Social barriers. Types of social interactions noted by students in the personal reflections associated with the wheelchair assignment were categorized by neutral or similar interactions, friendlier than usual interactions, and negative or unusual interactions. Each category was then further subdivided (see Table 3). In the wheelchair assignment papers, 64.41% of students described interactions that were friendly or nice, but not out of the ordinary when they were using the wheelchair. Some students who described these incidents also described interactions that fell into other categories (i.e., some papers contained descriptions of several interactions and not all fell into the same category.) Ten students (16.95%) specifically said that they did not notice any behavior differences at all during their experience. One-third of participants reported incidents where they felt people were nicer to them in some way when they were using the wheelchair. Six participants (10.17%) reported people going out of their way to help without asking (e.g., not just holding open a door, but rushing to push the wheelchair) and two participants (3.39%) stated that they encountered people who were unusually "smiley." Survey results indicated 90.48% indicated they thought people were friendlier than usual and 80.95% said people offered help more than usual. Survey results may have been higher than interactions reported in papers due to the fact the survey provided a list of possible social interactions. As previously noted, the assignment required students to describe environmental and social barriers. Students also were required to provide a personal reflection of the assignment. Themes regarding impact of the assignment emerged in the personal reflections.

Table 3. *Social Interactions: Number and Percentage of Students Stating Each in Wheelchair Experience Papers*

Neutral Interactions	N	Percentage
People were just friendly or nice, but not out of the ordinary	38	64.41 %
No behavior differences were noted	10	16.95 %
People could not see the wheelchair user	10	16.95 %
People were unable to provide help (had no knowledge of accessible facilities)	10	16.95 %
People acknowledged that the facilities were inaccessible in some way	9	15.25 %
Friendlier interactions	**N**	**Percentage**
People seemed friendlier or more helpful than usual	20	33.90 %
People helped without asking	6	10.17 %
People smiled excessively	2	3.39 %
Negative or unusual interactions	**N**	**Percentage**
People seemed to be staring	29	49.15 %
The interaction was unusual in some way, but not fitting into another code	19	32.20 %
People treated the wheelchair user as cognitively less capable or inappropriately for age	18	30.51 %
People acted in a way that indicated pity or sympathy	13	22.03 %
People were rude in some way	9	15.25 %
People seemed to look away or avoid eye contact	7	11.86 %
People acted as if they were uncomfortable	7	11.86 %

One participant relayed an interesting interaction in her paper and recapped it in her interview:

> Well, people were nicer to me than normal - like the guy who gave me two hot dogs and a drink but did not even say one word to (partner's name)!

Another participant noted several examples of people being overly nice in her paper:

> As a matter of fact, it seemed that people were nicer to me while I was in the wheelchair than they are when I am not. At the library, a man rushed to get ahead of us and open the door. Another man dropped his crutches so that he could keep an elevator door from closing on me and my partner. From the moment one of us sat down in the wheelchair, people began asking us if we needed help with anything.

Another participant who told a story about his partner receiving assistance with directions from multiple people at once stated, "The amount of help people kept trying to give was overwhelming at times."

Some of the negative interactions reported were people staring, people treating the participant using the wheelchair as cognitively less capable or in a manner fitting someone of a younger age, people treating the wheelchair user with pity or sympathy or people tending to look away or ignore the wheelchair user. One participant expressed:

> We (the two partners) discussed the sad reality that almost everyone seemed to stare. This was actually the most eye-opening part for me. I was shocked to see young adult college students react so unfamiliar and strange towards us.

These participants were struck by the amount of staring they encountered. However, we do acknowledge that most people using wheelchairs for permanent disabilities have motorized or custom-made chairs, of which our students did not have access. In addition, others may have recognized the student as someone they had seen on campus before who did not require a wheelchair and was, therefore, taken by surprise. In one paper, the participant stated:

> When I asked for directions to the drink machine in the nursing building, the lady who gave me the directions sort of treated me like I was not as intelligent, which was offensive.

One paper contained a variety of reactions:

> I found that there were two completely different reactions that people tended to have to someone using a wheelchair. The first was an urgency to help in whatever way they could: hold a door, quickly get out of the way, answer a question. The second was avoidance, an averted glance or a walking the other way. One student in the library walked into the bathroom where I was, stared for a moment, and immediately turned and walked out. Whether she was trying to keep the crowding in the bathroom down or just felt uncomfortable, I do not know. Either way, I felt bad for deterring her and was also a little hurt and discouraged.

Stories on which participants elaborated that reflected unusual interactions that did not fall into another coded category were found in 32.20% of papers like the story conveyed in one participant's paper:

> When I arrived at the library door, an extremely kind man said, "I would like to push you, if that's okay." I thought this was unique that he didn't ask; he said that he wanted to. He and I had a conversation about his five-year-old niece who has

cerebral palsy. He was thankful that I had an opportunity to gain wheelchair experience and that I was going into Special Education.

Table 4. *Responses to Survey Items by Percentages*

Environmental Issues and Wheelchair Use	Percentage
Navigation requiring longer distance or change in route because of inaccessibility	95.24%
Elevators with inadequate space	95.24%
Hills affected accessibility	95.24%
Physical difficulty of using the wheelchair	95.24%
Bathrooms labeled as accessible either had no stall or were too small for a wheelchair	92.86%
Steepness or inappropriate location of curb cuts and ramps	90.48%
Elevators in inconvenient or hard-to-find location	80.95%
Doors were difficult to open	80.95%
Lack of signage or inappropriately labeled signage	45.24%
Social Interactions	
Friendlier than usual	90.48%
Offered help more than usual	80.95%
Tended to look away or ignore	28.57%
Treated wheelchair user in a way that seemed to indicate cognitive or age-level difference	23.81%
Behaviors no different than usual	9.53%

Impact of the Assignment

Although part of the assignment was to provide a personal reflection of the experience, participants were not given specific instructions on how to respond. Out of 59 papers, fifty-five participants (93.22%) acknowledged some benefit from completion of the assignment. The most common statements in participants' papers expressed how the assignment provided new awareness or new realizations about the barriers encountered by wheelchair users which occurred in 80% of papers. This indicates that the instructional goal for providing this assignment was met (see Table 5).

Table 5. *Benefits and Emotions Experienced: Number and Percentage of Students Stating Each in Wheelchair Experience Papers*

Benefits of Assignment	N	Percentage
Stated that assignment led to new realizations or new awareness about barriers encountered by people with disabilities	47	79.66 %
Stated experience was beneficial	25	42.37 %
Stated that assignment will affect teaching and/or advocacy for people with disabilities	20	33.90 %
Stated thankful for having experience	7	11.86 %
Stated experience will not be forgotten	3	5.08 %
No positive impact stated	4	6.78 %

Emotions Experienced	N	Percentage
Perceived danger or risky situation due to campus inaccessibility or actions of others	27	45.76 %
Felt helpless or loss of independence	12	20.34 %
Felt thankful for own abilities / felt take own abilities for granted	11	18.64 %
Felt awkward or embarrassed	11	18.64 %
Felt disappointed that University does not do more to make sure facilities are accessible	8	13.56 %
Felt maneuvering on campus in a wheelchair is much more difficult than expected	7	11.86 %

Some of the new realizations had to do with accessibility, such as:

> The experience navigating campus using a wheelchair was certainly an eye-opener. I noticed so many things I had previously overlooked, such as how large an accessible stall needs to be to actually be accessible, how even the slightest incline makes it almost impossible to gain momentum when wheeling yourself,

and how confusing and stressful it can be to try to find [accessible] entrances into buildings and elevators.

One participant noted,

This experience has shown me that little details like the placement of a trashcan can make all the difference for someone using a wheelchair.

Other participants summarized how using the wheelchair brings about a different perspective than just observing barriers during one's regular routine in comments such as, "The wheelchair experience made me think that what I had previously considered accessible is not truly accessible for people who use wheelchairs," and

This wheelchair experience was both difficult and invaluable. My eyes were opened to both the physical and relational barriers that wheelchair users face on a daily basis, barriers that I had never even thought of until I was sitting in the chair.

Other segments of participants' papers coded as bringing about new realizations had to do with interacting with people who use wheelchairs:

We felt emotionally exhausted after being ignored and stared at by other students, being cut off, having doors slammed in our faces, and being belittled by others who were trying to be kind and offer help to us. I not only gained respect for how physically exhausting using a wheelchair can be, but I also took mental notes of how I should start treating individuals who use wheelchairs. They are individuals just like the rest of us and do not want to be babied or belittled in any way. Slamming doors in their faces is completely unacceptable but going out of your way to jump in front of them to press the elevator button is not necessary when they are completely capable of doing it on their own.

Some participants wished this assignment on their peers who are not majoring in special education, stating things like, "I really believe everyone needs to spend a day in a wheelchair and experience the different obstacles a person encounters," and

I believe that maybe I have been ignorant to the needs of individuals with a physical disability. This assignment was definitely an eye opener for life in general and I wish participants from every major had to complete this assignment as a first year prerequisite class. This assignment made me take a close look at myself and for me to evaluate how I treat individuals in general both with and without a physical disability.

In one third of papers (34%), participants specifically stated how the assignment will impact their future careers either related to teaching or advocating for their future students with physical disabilities. One participant elaborated with,

When I think about my personal experiences in light of what I have learned from this assignment, I now better understand how I can help my students who use wheelchairs or have limited mobility. I am first going to make sure that the environment that I can control is set up in a way that allows them to navigate in the easiest way possible. I found from my time in the chair that figuring out how to get somewhere was enough to worry about without bumping into things, but having freedom to move in the way you want also helps you learn those things that come from being able to explore your environment. I want my students to be as independent as possible, so I want to do whatever I can to help them with that.

> One thing I can do is make sure that anything they might need like pencils, papers, or books are in a place where they can easily access them as opposed to being on a high shelf or in low cabinets.

Other discussions related to applications to future practice included,

> I will also make sure to get on my student's level when speaking with him or her. I really did not enjoy having to look up at everyone I needed to talk to or have them look down at me. Not only is it uncomfortable, but there is something gained from social interaction when you can look the person you are talking to in the eye. Again, I really think this was a worthwhile experience, and I am glad for the knowledge I've gained.

Further positive statements about the wheelchair experience included participants specifically stating that the assignment was beneficial (42%), participants thanking the instructor for providing the experience (12%), or participants stating that the experience will not be forgotten (5%). One participant stated, "This was an eye opening activity. It was difficult, but I'm glad we got the opportunity to have this meaningful experience." Another said,

> Overall I feel that the wheelchair experience has been one of the most educational experiences throughout my college career. I learned so much about the lack of accessibility on campus and got a glimpse of the barriers and difficulties that individuals using wheelchairs face on a daily basis. I will use this knowledge not only in my future classroom but also in my day-to-day interactions with individuals who use wheelchairs.

Another participant expressed gratitude for the assignment:

> I want to thank you for requiring us to do this assignment. It helped me understand just a fraction of what students with physical disabilities go through, and how I can become a better advocate for them.

As previously indicated, the survey and interviews asked participants to reflect on the assignment in more specific ways than were required for the wheelchair experience assignment. On the follow-up survey, when participants were asked to provide five words or phrases describing the assignment, the most used words (clumped together semantically) were "eye-opening," "enlightening," or "insightful." Other words used were "educational," "informative," and "learning experience." One participant took the five-word limit very literally and wrote only, "Mind blowing world changing experience." Others included, "Everyone should experience this," and "Two hours 'in another's shoes' I will never forget."

When asked on the survey if they have thought about the experience since receiving the grade for the course (which ranged from six months to 18 months), all participants said that they had thought about it. Some of the responses included lasting effects such as, "Yes – anytime I'm walking somewhere or using the bathroom in public, I am aware of how accessible it is," and "Yes. I have since been in restrooms and thought, 'There is no way you could maneuver a wheelchair in here.' I also have been very conscious of 'handicapped' parking signs and even had my company at my summer job begin switching their old signs out for 'van accessible' or 'reserved' signs."

Another question on the survey asked about the impact of the assignment on how the participants work with or will work with students who have physical disabilities. Participants responded that they are more aware of accessibility or making sure not to treat people who use wheelchairs differently. Some of the responses included, "I will set up my room with accessibility in mind," "I will make sure to double check all areas when planning field trips and so forth," "I'll be so much more understanding of exhaustion and time," and "It made me realize not to pity or allow learned helplessness."

Interview responses to the same question regarding impact on teaching were similar. One participant said, "I realize the smaller hurdles that my kids might face, not just things that are more obvious." Another participant summed up one of the assignment's major purposes with,

> I realize that things that are supposed to be accessible are not really accessible… I know I have to be more intentional with accessibility. I need to try doing activities from my students' perspective.

Emotions experienced. Even though participants were not given any guidance about how to reflect in the wheelchair experience paper, three-fourths mentioned specific emotions surfacing during the experience. Responses about emotions are located in Table 5. The more commonly mentioned emotions were (a) perceived danger or risky situation due to campus inaccessibility or actions, (b) feelings of helplessness or loss of independence, (c) feelings of awkwardness or embarrassment, or (d) feeling thankful for own abilities or feelings of taking own abilities for granted. Others expressed disappointment that the University does not make more effort to be truly accessible. Most of the dangerous situations reported were about participants tipping or almost tipping out of the wheelchair due to cracks in the sidewalk or steep hills or ramps. One story in particular confirmed the need to maintain the assignment directions instructing participants to push each other across the street if they do not have time to cross independently using the wheelchair:

> When trying to cross the road during our assignment, my partner pushed me through three lanes of traffic and before we could make it across the fourth lane, a car rolled right in front of us, literally almost hitting me. She was texting while driving and did not even see me. Had my partner not been pushing me, I do not know if I would have been able to stop in time to avoid being hit.

Understanding of the assignment's purpose. During the interviews, participants were asked to state their understanding of the assignment's purpose. None of the participants stated the purpose as being to simulate a disability or increase empathy. Most of the participants provided statements that explicated the assignment's intended purpose. The first participant stated, "My understanding was that we were not simulating a disability because there is no way to really have that experience. I thought it was just to investigate the actual accessibility of buildings." Similar responses included, "To increase awareness of the environment that you wouldn't notice otherwise," and, "I think the purpose was to experience accessibility from a different perspective."

When the survey and interview questions asked participants for suggestions to improve the assignment and make it more meaningful for future students in the course, most of the participants responded they felt the assignment was meaningful as it was and did not have

substantial recommendations for changes. Some suggestions for minor changes to the assignment included (a) having participants go into a bathroom that had been recently adapted with an automatic door opener, (b) having participants visit more (or different) locations on campus, (d) requiring more social interactions, (e) surveying/interviewing people who use wheelchairs regularly as part of the assignment, and (f) having general education preservice teachers participate (e.g., "Bring one non-special education individual along," or "I think having all teacher interns doing the assignment would be beneficial because it would be insightful").

None of the recommendations would substantially alter the assignment and no participants indicated that the assignment should not be given. This also seems indicative of the overall beneficial nature of the assignment's main component, examining barriers. One change we felt might help preservice teachers connect information gleaned from the experience to classroom practice was to add a component requiring students to create a barriers checklist during the on-campus experience and then use the checklist to examine the accessibility of school settings or field trip sites for students with physical disabilities. This change has been incorporated into the course assignment, but did not occur until after data were analyzed for this study.

Anecdotally, the course instructor (first author) remains in contact with a lot of former students via social media. When soliciting participants for follow-up, several former students contacted her and were disappointed to learn they would not be able to participate because they took the course prior to the years in which data from the assignment were collected. Several former students stated things like, "That was the best assignment of my entire college career," and, "I think about that assignment all the time when I see that places are not accessible."

Discussion

Certainly, participants were expecting some level of inaccessibility because they were being given the assignment; however, they were not told what barriers constituted inaccessibility. We expected participants to identify obvious barriers such as ramps and curb cuts, but the depth of their reflections surprised us. For example, while many had seen signs for elevators, accessible entrances, and restrooms, they were surprised at the distances they had to travel or how difficult it was to maneuver a wheelchair in these tight spaces (elevators and restrooms). Some even realized that a small crack in the sidewalk becomes an issue when using a manual wheelchair. It is also not surprising that so many mentioned the inaccessibility of elevators as many buildings on campus were built before the passage of the ADA, resulting in many buildings having to be retrofitted with elevators. As mentioned before, our campus is hilly, so it is not surprising that a lot of participants mentioned hills as a barrier or the need for more upper body strength to navigate campus with a wheelchair. Participants were required to document accessibility signage which perhaps led to more discussion about signage that probably would not have been noticed if this was not a requirement.

A few of the participants' statements (e.g., feeling grateful for own abilities) may also corroborate the notion of ableism, or the idea that having a disability is in some way tragic or detrimental to quality of life (Lalvani & Broderick, 2013). However, over 93% of papers stated at least one positive impact of the assignment and all participants surveyed and interviewed felt the assignment was beneficial while none felt the assignment was inappropriate. This suggests

that the benefits of such an experience may outweigh the negatives for preservice special educators.

On the survey, more participants noted barriers that they had not mentioned specifically in their papers, resulting in higher percentages of students reporting those items as barriers. This is not surprising given that participants were not told specific barriers to note during completion of the paper, but were given options to check on the survey. Other coding discrepancies also occurred. For example, when researchers were coding social interactions segments from the papers, segments were coded as "Friendlier than usual" only if the participant explicitly stated that the person's friendliness was out of the ordinary in some way. While in the survey, some of the same interactions coded "Friendly or nice" in papers may have been brought to participants' minds as being exceedingly friendly when responding on the survey due to the lapse in time.

There were additional limitations to this study. As with any type of research requiring coding, there could have been some subjectivity in the data analysis process because the primary researcher and the co-authors came with their own biases and had preconceived ideas about accessibility and what students should take away from the assignment. For example, the first author's bias stemmed from providing and grading the assignment for several years, teaching P-12 students with physical disabilities for over a decade, and having to participate in a similar (but more in-depth) experience during college. The second author experienced accessibility issues first hand after having a hip replaced. The third author is a former physical education instructor who adapted activities for students with disabilities, including mobility limitations, and has served over a decade as dean of a university unit that prepares students in education as well as therapeutic recreation. Bias may also exist based on the nature of the data sources and analysis methods even though interrater agreement was high.

Conclusion

The purpose of this study was to determine the environmental and social barriers faced by individuals who use wheelchairs reported by preservice teachers as a result of completing a wheelchair experience assignment and to examine the impact of the assignment as reported by the participants. Results indicated that participants did achieve the assignment's purpose. All participants gained some understanding of environmental and social barriers from direct personal experience. As seen in the tables and comments, numerous environmental and social barriers were noted, many of which were only noticeable to someone using a wheelchair (e.g., opening the bathroom door required excessive maneuvering of the wheelchair).

Additionally, results showed that participants believed the assignment was beneficial and had an impact on their future careers as special education teachers. Given that participants were not told how to reflect, the high percentage of responses noting that the assignment had positive benefits is interesting. These findings suggest that such an assignment can have a meaningful and lasting impact on preservice teachers. Particularly during follow-up surveys and interviews, students noted that using the wheelchair gave them an understanding of barriers they would not have gained otherwise. Thus, despite admonishments from some researchers and disability advocates regarding the use of "disability simulations," the authors feel that providing an "accessibility assessment experience" may be valuable to participants who are preparing to be special

education teachers. As demonstrated by survey results, participants did not perceive the assignment as a disability simulation, but rather saw its purpose as assessing accessibility, which was the instructor's intent.

The authors agree with Connor and Bejoian (2007) that disability simulation experiences are not realistic; thus, we were pleased that students did not view the assignment as a simulation. This also follows along Behler's (1993) suggestion that there is no way to simulate having a disability, but provision of an experiential simulation can provide insights into physical barriers and, to a lesser extent, social barriers, if framed in the correct context.

Certainly, there are potential negatives that arise with this type of assignment (e.g., participants almost being hit by a texting driver, participants feeling uncomfortable or embarrassed when using the wheelchair). This is aligned with the concerns of Brew-Parrish (2007),

> People who have never been disabled who simulate a disability are often terrified… They breathe a collective sigh of relief knowing full well that their charade will soon come to an end and their momentary disability will gratefully vanish. (Paragraph 5)

Because "disability simulation" is controversial, future research is needed to examine situations and circumstances in which such experiences as using mobility devices may be warranted. Future research might include getting perspectives on the assignment from individuals who use mobility devices or from a larger range of individuals with interest in disability-related issues. This would provide unique insight into various issues surrounding provision of an accessibility assessment assignment for preservice special educators or in other contexts (e.g., therapeutic recreation students). Additional research should be designed to determine the best format in which to provide this type of experience. The assignment in this study involved two students traveling together and switching places at predetermined points in the assigned route. The on-campus experience was designed to last no more than a few hours. When the first author completed a similar assignment over two decades ago, she was required to take the wheelchair home and spend at least eight hours using it, but was not given specific tasks to complete. Future studies could be designed to determine how to provide an assignment that is most meaningful and appropriate.

Given the positive benefits of completing a wheelchair experience noted by participants in this study, it seems that the provision of such an experience may be appropriate for preservice special educators. Lalvani and Broderick (2013) stated, "Rather than throwing out the idea of disability simulation altogether, we propose recasting it as a powerful tool of social justice pedagogy with which to enable teacher candidates to think more critically about and, indeed, to work to disrupt the sociocultural and political-economic dimensions of disability oppression" (p. 480). This may be a loftier goal than that of the course instructor; however, using the assignment as a tool to teach preservice special educators to assess accessibility and improve awareness of barriers to accessibility seems to have merit. If situated in an appropriate context, preservice teachers can benefit from "hands-on" experiences that forced them to examine accessibility barriers in a manner not afforded in any other way. Personal experience can be important to teachers who will be designing instruction for students with physical disabilities since, as stated by one interviewee, "The idea of accessibility and the reality of accessibility are very different!"

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