

Perceptions of Academic Staff towards Accommodating Students with Disabilities in a Civil Engineering Undergraduate Program in a University in South Africa

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Abstract

This study explored the perceptions of academic staff towards admission of students with disabilities, and their accommodation once accepted into an undergraduate Civil Engineering program in a South African university. Qualitative responses relating to the perceptions of five academic staff were obtained through semi-structured interviews. The academic staff had limited interactions with persons with disabilities prior to the study. They were also uninformed about disability issues. However they were willing to admit and accommodate students with disabilities in the undergraduate Civil Engineering program. The perceived attitudes of the academic staff towards people with disabilities, and their knowledge and awareness about disability issues may negatively impact the accommodation of students with disabilities in the program.

In 1997, the United Nations Educational, Scientific and Cultural Organization (UNESCO) reported the outcome of a survey that gathered information on students with disabilities in 24 universities in 11 English-speaking African countries, including South Africa (UNESCO, 1997). The survey was carried out to assist universities in Africa to develop policies and practices regarding the needs of students with disabilities, as well as strengthening cooperation between universities in the field of disability. The survey was based on the principles of United Nations Standard Rules of Equalization of Opportunities for People with Disabilities (Hendriks, 1995). The questionnaire for the survey was completed by the key person responsible for students with disabilities in each participating university.

The survey revealed that a majority of students with disabilities in participating universities had physical or visual impairments, but only few of the universities had written policies regarding how to address the needs of such students. Some of the universities did not encourage students with disabilities to register for certain courses which required a lot of field work. Participating universities considered accessibility as the biggest problem in accommodating students with disabilities,

and tended to solve problems whenever they arose. The report therefore recommended the need to be pro-active in ensuring that a supportive environment is created before students with disabilities are recruited into academic programs. Similar recommendation was later made by Rao (2004) after research reported that the attitudes among students and academic staff towards persons with disabilities were part of the inhibitory factors to accommodating students with disabilities in tertiary education. Unfortunately, the attitudes of academic staff in higher institutions towards students with disabilities was least researched. Therefore, Rao (2004) specifically advocated for qualitative studies to find out the perceptions of academic staff regarding teaching students with disabilities that may involve making accommodations.

For students with disabilities, participation in higher education is a matter of equal opportunity and empowerment (Fuller, Bradley, & Healey, 2004). Globally, there are reports of marginal increases in the proportion of such students in higher education, ranging from 0.09% of students in higher education in Tanzania to 11.7% in Austria (Department for Innovation, Universities and Skills, 2009; Fuller et al., 2004; Goode,

2007; Hadjikakou & Hartas, 2008; Shevlin, Kenny, & Mcneela, 2004; Tinklin, Riddell, & Wilson, 2004). Literature on admission of students with disabilities in higher education focused on physical barriers to access, problems in accessing curricula, and negative attitudes towards the students, among others (Opie & Taylor, 2008). The literature also highlighted factors that influenced the attitudes of academics towards students with disabilities, namely previous contacts and interactions with persons with disabilities, knowledge about disability issues, and willingness to accommodate the students, among other factors (Dupoux, Wolman, & Estrada, 2005; Konur, 2006; Rao, 2004). However, the development of public policies regarding the direct access to higher education by students with disabilities has been a major driving force for increased participation (Konur, 2006). The institutions of higher education provide various forms of support to accommodate students with disabilities, the most common forms being extended time for examination or alternative test formats, course substitutions or waivers, and assistive devices including audio tapes (Quick, Lehmann, & Deniston, 2003).

It has been argued that a global perspective on disability issues is needed to avoid assuming that developments in one country are the norm (Dupoux et al., 2005). While most industrialised nations like the USA have developed systematic measures to deal with access to higher education by students with disabilities (Dupoux et al., 2005; Vogel, Leyser, Burgstahler, Sligar, & Zecker, 2006), emerging nations like South Africa, South Korea, and Haiti are still in the process of articulating and implementing policies that guarantee the accommodation of students with disabilities in higher education (Dupoux et al., 2005; Kwon, 2005; Losinsky, Levi, Saffey, & Jelsma, 2003). A cross-cultural study across four continents on the attitudes of teachers toward integration of students with disabilities revealed that teachers in Germany and the United States had more positive attitudes than those in Ghana, the Philippines, Taiwan, and Israel (Dupoux et al., 2005).

A survey of three higher education institutions in South Africa revealed that only 0.4% of the students' population reported having any form of disability (Crous, 2004), compared to about 10% or more in the more industrialized nations like the USA, UK and Germany (Fuller et al., 2004). The setting where the current study was carried out was one of the 7 universities in South Africa which participated in the survey

conducted by UNESCO (1997). The UNESCO survey revealed that there were only 30 students with disabilities out of about 10,500 students in the university (0.3%) at the time of the survey. These students were enrolled in law, arts, commercial studies, social work and administration. At the same time, the university was also working on a policy document on how to accommodate students with disabilities. However, by 2004, the university had committed itself to making tertiary education and the working environment accessible and inclusive of all students and staff, including those with disabilities (University of Kwazulu Natal [UKZN], 2004). The number of students with disabilities in the university has also increased to approximately 200 out of a student population of 36 805 in 2009 (0.5%). Units to provide academic and non-academic assistance to students with disabilities, named Disability Units, have been established on the five campuses of the university. Support services available to the students included continuous liaison with the academic departments where the students are registered, counselling, obtaining permission for extended time adjustment during exams, and providing audio tape facilities for lectures. In addition, a 5-day course on Disability Studies was offered in 2008 with a view to introducing it as part of the induction program for new university staff in order to raise awareness about disability.

In spite of the achievements in the particular university, the first author (NM), who was a staff of the Disability Unit at the time of this study, observed that students with disabilities were still under-represented in the Faculties of Science and Engineering because of a misconception among the academic staff that students with disabilities could not fulfil all the criteria required to complete the academic programs. Therefore, this study was initiated to explore the perceptions of academics towards accommodating students with disabilities who may be admitted into the undergraduate Civil Engineering program in the university.

Civil engineering is a professional engineering discipline that deals with the design, construction and maintenance of the physical and natural built environment, including bridges, roads, canals, dams, and buildings. The university offers a 4-year undergraduate program in civil engineering, comprising courses such as structures, steel and concrete materials, geotechnics, surveying, hydraulics, water supply and waste water treatment, and transportation. The program is fully accredited by the Engineering Council of South Africa (UKZN, 2004).

Methodology

Research setting

The research setting for this study was the Department of Civil Engineering in the University of Kwazulu Natal in South Africa, having a compliment of 13 academic staff on either full-time or part-time basis. After obtaining necessary ethical clearance, all the academic staff were targeted and invited to take part in the study. Academics who had been employed for less than six months in the department were however excluded in order to ensure that participants would have acquired some experience in working in the department. Out of the nine academics who met the inclusion criteria, five responded and agreed to take part in the study.

Participants

The five participants (two females and three males) were aged 40-60 years. Two participants were in the academic rank of professors, another two were senior lecturers, and the fifth person was at the lecturer level. Four of the participants had obtained doctoral qualifications in civil engineering, and all had over 10 years post qualification experiences. All the participants had between three and twelve years experience lecturing in the department. Each participant received an information sheet that provided information about the study.

Research design

A qualitative research methodology involving semi-structured interviews was adopted to gather necessary data. After obtaining informed consent, one of the authors (NM) carried out semi-structured interviews with the participants in the privacy of their offices. The following probing statements/questions, based on the factors reported by Rao (2004) to influence the attitudes of academics towards students with disabilities in higher education, were posed to each participant:

- Describe any past experience with an individual with disability.
- How would you feel if a student with disability was offered admission into the civil engineering program?
- Describe your initial thoughts when you hear the words “person with disability.”
- Describe what you know about disability issues.
- What are some of the challenges, if any, you foresee for students with disabilities in the

undergraduate program or in the practice of the profession?

- If you should become physically disabled, what are some of the practical challenges you may face to continue to practice as a civil engineer?
- What would be the best method of creating awareness regarding disability?

These statements/questions were first piloted with two academics from one of the undergraduate programs in the Faculty of Arts in the same university.

For the main study, all the interviews were open-ended to explore issues the participants considered to be important. The discussions from the interviews were audio taped, transcribed, and analyzed through thematic analyses (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006). Field notes developed during each interview were also analyzed. Ethical issues regarding anonymity, confidentiality and access to the data and research findings were discussed with each participant.

Findings

All five participants reported very limited interactions with persons with disabilities prior to the study. Two participants interacted with friends with disabilities, but they were uncertain about the types of disabilities. Another participant had a family member with disability who was restricted to life in a wheelchair due to problems with mobility. However, all the participants welcomed the possibility of admitting students with disabilities into the undergraduate program in civil engineering, and expressed their willingness, with some apprehension, to accommodate the students:

- *“I would do whatever, if the person is passionate about doing civil engineering, to accommodate the person.”*
- *“If we admit, we should provide the facilities. But what are the challenges which they will face on daily basis?”*

One participant expressed additional thoughts about the possible impact on persons without disability:

- *“A student with disability is an embarrassment on the part of non-disabled students.”*

When asked to describe their initial thoughts on hearing the words “person with disability,” the participants expressed thoughts around “ability” and “mobility.”

- *“I think of someone who is unable to do what others can do! People who have special needs.”*
- *“In civil engineering, everything involves a lot of mobility, especially if you work in contracting. People with disabilities will find it difficult to cope with the environment.”*

The participants described only one disability issue they perceived could affect students with disabilities in the civil engineering program, namely access:

- *“One of the problems we have in this program is access, the laboratories are not accessible and some of the features are fixed and difficult to change.”*
- *“Civil Engineering department is not accessible at present. We have upstairs laboratory, there is no access to the lab for people with disability. However, it is not impossible to make changes to create access to the lab.”*

All the participants described the challenges they anticipated students with disabilities could encounter while going through the undergraduate program in civil engineering or in the practice of the profession. The participants also proffered solutions. Within the curriculum of the program, laboratory work was considered a major challenge:

- *“There could be some problems in carrying out some of the practicals in the laboratory. Though the laboratory may be accessible and the worktable may be at the level of the student in a wheelchair, some of the equipment could be hazardous.”*
- *“Since students work in groups for certain projects, students without disabilities could assist students with disabilities where necessary. This buddy system or employing laboratory assistants would help students with disabilities to participate to some degree in science labs.”*

In the practice of the profession, the participants expressed the following comments:

- *“The challenges of site work as all students have to complete eleven weeks of site work to complete their degree. The site work or vacation work does not have to be in a construction company. Most of the students make a mistake in thinking that the requirement can only be met by working in a construction company.”*
- *“Civil engineering is an extremely broad field and students with disability can create their own path in the profession. There are basically two broad areas of activity – the contractual side and the consultancy side, which would suit different personalities. I would counsel a student with physical disability who wishes to study civil engineering to go the consultancy pathway, as they would find it difficult to go into the contractual pathway.”*
- *“Traditional civil engineering might involve areas that are difficult for students with physical disability to access. However, as a civil engineer, you can be an academic, researcher, or a designer. There is a scope for someone with physical disability to have a career in civil engineering, though it would be something that is not necessarily conventional.”*

Should the participants become disabled, they all believed that they would continue to practice the profession of civil engineering though with some modification:

- *“Of course, civil engineering is my passion! Yes I would. I would change the emphasis a bit. I like field work. It will be a little difficult to do that. So I would lean towards modelling, computer modelling, simulation, that kind of thing.”*

A follow up question as to what the participants would do should a current student in the program suddenly develop some disabilities elicited mainly general responses like “It depends on the needs of the particular student.”

Finally, the participants made recommendations on what would be the best method of creating awareness about disability, especially within their university. All participants recommended that regular disability

awareness workshops/seminars be conducted in the university. The comments of one of the participants was representative of the views of all the participants:

- *“I think education of the general public as well as those of us in educational institutions will be very helpful. We lack that. The awareness in the country is not high!”*

Discussion

There is a need for caution in making inferences from the findings of this study. The participants expressed the willingness to admit and accommodate students with disabilities in the undergraduate civil engineering program in the university. The expressed willingness may be part of the impact of the ongoing efforts of the Disability Units to increase awareness about disability issues in order to accelerate the process of inclusiveness within the university environment. This could be considered a positive development in the university as it would contribute to the success of the students when they are enrolled in the program (Goode, 2007). However, it is not evident that the willingness expressed was based on appropriate knowledge and attitudes about disability and disability issues.

The initial thoughts of the participants about disability seemed to focus on the perceived limitations of persons with disability. In addition, the perception of one of the participants that a student with disabilities could be an embarrassment to students without disabilities should not be ignored. These perceptions suggest a poor awareness and image of disability, and likely the reflection of a negative attitude. Attitudes, beliefs, and misconceptions of society towards disability constitute major barriers for persons with disabilities as a person's disability is often perceived as a negative trait (Amosun, Volmink & Rosin, 2005). This is why persons with disabilities in South Africa continue to battle with marginalization because of the perpetuation of such stereotypes of disability in the society (de Klerk & Ampousah, 2003; Integrated National Disability Strategy [INDS], 1997). Such negative attitude will not enhance the accommodation of students with disabilities in the civil engineering program.

Also, the initial thoughts of the participants about disability did not reflect any knowledge about the different types of disabilities. Though the UNESCO survey (1997) reported that majority of the students

with disabilities had physical or visual impairments, the types of impairments reported by persons with disabilities are not limited to these (INDS, 1997). In addition, the UNESCO survey reported that accessibility was the biggest problem in accommodating students with disabilities in universities. This is similar to the perceptions of participants in this study. However, disability issues are much broader than access. None of the participants raised issues around the different types of disabilities, nor about various legislations around disability (INDS, 1997). The provision of accessible environments for students with disabilities is still a major challenge (Amosun et al., 2005), as access is often restricted by architectural (Losinsky et al., 2003) and budgetary constraints (Johnson, 2006).

The limited knowledge about disability and disability issues may be related to the limited prior contacts and interactions the participants had with people with disabilities. The participants' knowledge seemed to relate only to “visible” and not “hidden” disabilities. The concern this raises is that the civil engineering program may be unable to accommodate students having certain types of disabilities, but the students may be offered admission because the participants are uninformed while participating in the student selection processes. It is critical that appropriate educational support and accommodation are in place to ensure the progress and success of students with disabilities in the program. Therefore the limited knowledge about disability and the limited prior contacts and interactions with people with disabilities will further inhibit the accommodation of students with disabilities in the civil engineering program (Dupoux et al., 2005).

Understanding the challenges that students with disabilities may encounter in the program is vital and these should be discussed with students from onset. This emphasizes the need for the participants and each student with disabilities to negotiate a career path that is best suited to the student that would not compromise the ultimate career goal of the student nor the academic quality of the degree (Konur, 2006). In order for students with disabilities to gain optimum experience working in a laboratory to meet academic requirements, adaptation and modifications may need to be created within the laboratories. With a little creativity and teamwork between the participants and students with disabilities, a learning environment can be created where all students will participate fully. The students and the participants must work creatively and

cooperatively to address the obstacles to laboratory learning, which are by no means insurmountable.

Overall, the findings of this study did not suggest that the participants had any concerns about the academic ability of students with disabilities to successfully complete the undergraduate program in civil engineering. Rather, the issues raised by the participants related more to accommodating the students if they are admitted into the program. One of the recommendations from the UNESCO survey (1997) was that universities should be proactive in ensuring that a supportive environment is created before students with disabilities are recruited into academic programs. In the United Kingdom, pro-active programs were designed to bring students with disabilities into the higher education ethos and make university staff more aware of the needs, opinions, hopes and fears of potential students (Taylor, 2004). The pro-active programs were effective in increasing the numbers of students with disabilities who subsequently made successful applications to higher education. For the participants in this study, it is necessary to strengthen ongoing university programs in raising awareness about disability and disability issues, especially in the Department of Civil Engineering. The programs should focus on improving the level of awareness about the different types of disabilities, as well as the various legislations around disability in South Africa. In addition, the programs should seek to improve the attitudes of the participants about persons with disabilities, as well as allay the concerns about accommodating students with disabilities in the Civil Engineering program in the university.

Acknowledging the achievements in industrialised countries, like the US, in dealing with access to higher education by students with disabilities (Dupoux et al., 2005; Vogel et al., 2006), the authors of this manuscript hereby recommend that attempts to broaden collaboration programs between higher education institutions in industrialised countries and developing countries should be pursued (Altbach & Knight, 2007; Teferra & Altbachi, 2004). The staff exchange programs will offer participants in this study the opportunity to interact with other academics and learn from their experiences in the accommodation of students with disabilities.

Limitations

The reported perceptions of the participants in this study were based on interviews rather than observations. It is therefore uncertain if the behaviours of the partici-

pants will align with their reported perceptions. Another limitation relates to the small number of participants in the study. Only the full-time and part-time academic staff took part in the study, excluding tutorial teaching assistants, laboratory assistants, administrative staff and other staff who also play significant roles in creating a conducive environment for the academic success of students with disabilities. Inferences from the findings should therefore be made with necessary caution, and future research should target all staff in the department.

Conclusion

The participants in this study expressed the willingness to admit and accommodate students with disabilities in the undergraduate civil engineering program. However, their level of knowledge and awareness about disability can have negative impact in accommodating the students whenever they are admitted into the program.

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