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Theme: Assistive Technology and Support Services for People with Disabilities in Low Resource Settings

Topic: Provision of assistive technology for students with disabilities in South African higher education: A decolonial perspective

Abstract

This paper used the decolonial theory to analyse provision of Assistive Technology and assistive devices at an institution of higher education in South African. It was an empirical study, in which data were collected through interviews with students with disabilities and the Disability Rights Centre staff members. The paper sought to understand the invisible hidden implications of provision of Assistive Technology and assistive devices. The finding was that it is students with disabilities who were provided with Assistive Technology and assistive devices at the institution. The institution provided them through the Centre, to support their learning. However, this way of provision was found to be stigmatising and segregative. Furthermore, while the provision on one hand enabled students with disabilities' learning, on the other, it constrained it. The argument of the paper is that when provision of Assistive Technology and assistive devices is for a particular group of students it defeats the whole purpose for it is intended, and could hinder rather than promote learning. It is hoped that the paper will contribute to contemporary debate on provision of Assistive Technology and support services for people with disabilities in low resource settings, from a South African context specifically, and in higher education broadly.

Key words: Assistive Technology, Assistive devices, Students with disabilities; Decolonial Approach; South African Higher Education; Disability Staff members, learning, Enable and Constrain

1. Introduction

Inclusion of all students in education broadly and in learning in particular has become a concern in higher education globally. Countries have ratified the international legal instruments, such as the Universal Declaration of Human Rights [1] and the Convention on the Rights of Persons with Disabilities (UNRPD) [2], to commit to an Inclusive Education for all. From the Convention on the Right of Persons with Disabilities, Assistive Technology has also been recognised as a human right [1]. It suggests that by ratifying the UN Convention, countries automatically ratify the use of Assistive Technology for the education of all persons, including those with disabilities. In essence, governments internationally, in Africa, and South Africa specifically, have committed to provision of education, through enabling of access to learning of all, including persons with disabilities. The responsible stakeholders in South African higher education specifically, are also making every effort to include students with disabilities in education broadly and learning specifically, through Assistive Technology.

By way of definition, Assistive Technology (AT) is “any product whose primary purpose is to maintain or improve an individual’s functioning and independence and thereby promote their wellbeing” [3] (p...). Assistive devices are also part of Assistive Technology and they include among other gadgets such as iPods, iPads, computers, PowerPoint [3]. One would argue that depending on the category of disabilities and their severities, AT and assistive devices can enable and empower peoples’ functionality generally, and more particularly persons with disabilities, who usually confront challenges of functionality as resulting from their impairments, as well as the physical and social environments that are inaccessible, thereby restricting their functionality. In this paper, the terms Assistive Technology (AT) and assistive devices have been used together

because they intrinsically constitute each other, and they cannot be exclusively separated as different entities.

A systemic review on the impact of use of AT on students with disabilities in higher education has revealed that it has significant positive impacts on academic engagement, psychological well-being and social participation [3]. The argument presented is that AT increases performance of academic tasks and enhances learning, improves functionality, reduces activity limitations, promotes social inclusion, and increase participation in education and in labour market, states the review [3]. From the assertion, it could be seen that AT and assistive devices add significant value to the general performance of students with disabilities in higher education, and enables them do what they would not have done. One would further argue that AT and assistive devices could be one of the ways, in which students with disabilities' learning in higher education, could be supported and enabled, for them to learn like all other students without disabilities.

Provision of AT and assistive devices in United Kingdom

Provision of AT and assistive devices in United Kingdom specifically is important in this paper because its higher education system is used as benchmark for South Africa, in terms of inclusion of students with disabilities [4]. Students with disabilities are provided with AT and assistive devices to enable their learning in higher education in United Kingdom (UK). After assessment, students with disabilities found eligible are provided with AT and assistive devices through the Disabled Students Allowance (DSA) [5]. DSA is the fund that is provided by the government through various funding authorities at institutions of higher education. It is for purchasing mainly AT and assistive devices such as screen readers or text-to-speech systems, speech recognition, alternative input devices and paying human resources, who are helpers such as note-takers and

interpreters. DSA also provides an allowance to cover things such as access to the internet, Braille paper, photocopying cost and extra travel costs [6]. It could be argued that higher education in UK's provision of AT and assistive devices is effective because there is an effective implementation of policies [7], which make the responsible authorities obligated to make every provision required of them.

Provision of AT and assistive devices in South African higher education

Like in UK, South African higher education also provides AT and assistive devices to enable the education of persons with disabilities. However, institutions of higher education are not yet fully transformed to include all diverse students in learning [9], more particularly those with disabilities. When introducing Inclusive education in the democratic South Africa, a Minister stated in the White paper that: "Let us work together to nurture our people with disabilities so that they also experience the full excitement and the joy of learning and to provide them, and our nation, with a solid foundation for lifelong learning and development" [8] (p. 4). One would argue that by way of fulfilling the Minister's words, South African context of higher education makes every effort to consider students with disabilities. Provision of AT broadly and assistive devices, in particular is one of the ways through which persons with disabilities in general are assisted to function successfully. AT and assistive devices are provided through Disability Units and are sourced through the Disability Student Allowance (DSA), like in UK. In South African higher education DSA is a fund that is part of the National Student Financial Aid (NSFAS). While NSFAS for other disadvantaged students is a loan, for students with disabilities it is a grant [10].

However, though higher education makes provision of AT and assistive devices, students with disabilities continue to be excluded in learning. A number of studies have been conducted to

understand the continuous exclusion and this particular study comes from a unique angle, of using decolonial theory, to unveil what is hidden in terms of provision of AT and assistive devices.

South African higher education as a low-resource setting

South Africa has the most comprehensive policies of inclusion amongst all African countries [7]. The country has a strong political will for inclusion as seen in its Constitution [11], the legislations of non-discrimination, which are the employment equity Act, No 55 of 1998 [11], and the Promotion of Equality and Prevention of Unfair Discrimination Act, No 4 of 2000 [13] and policies of inclusion (White Paper 6: Special Needs Education: Building an Inclusive Education and Training System [14], and the Education White paper 3: Transformation of the Higher Education System [15]. However, in this paper South Africa's higher education system is considered a low resourced setting. This is because the implementation of its policies is poor and slow [16]. They have managed to increase formal access of historically disadvantaged social groups into higher education after the Apartheid demise [17]. However, all students who include both the privileged and those from the disadvantaged backgrounds continue to experience lack of access and success in higher education generally. The reason is traced to the articulation gap between schooling and higher education largely [18]. Lack of access and success are exacerbated for students with disabilities because for them, every challenge experienced by other students, for them they are doubled. Students with disabilities experience lack of access and success because for them it is not only about obstacles experienced by other students, but also impairment related barriers.

In the South African context of higher education, barriers for students with disabilities come in different shapes and sizes. Among others, are the inaccessible infrastructure [19], barriers of high entry level requirements into specific professional programmes [9], exclusive classroom

teaching practice [19-20], unwillingness to include them by academic staff [21], and lack of relevant and adequate AT and assistive devices resulting in digital divide [22]. Some of the institutions cannot even afford to accommodate some disabilities as hearing impairments because of lack technological resources, due to lack of adequate funding [23]. Thus, the inadequacies in terms of access and success for all students, including those with disabilities, which is topical in the current higher education debates in South African higher education, makes it qualify as a low resourced setting.

2. Decolonial theory as framework

The researcher selected specific theoretical concepts from decolonial theory to help understand provision of AT and assistive at the institution. The concepts selected would unveil the hidden understanding that cannot be seen at surface level, in terms of the phenomena, as decolonial theory does broadly [24]. The concepts include coloniality, coloniality of being and power, and decoloniality. The theoretical concepts are discussed briefly below.

Coloniality

Coloniality involves long patterns of colonial matrices of power, which have emerged from colonialism, and it “permeates culture, labour, intersubjectivity, relations and knowledge production” [25] (p. 234). Thus, the concept of coloniality informs the understanding of the continued existence of colonial forms of domination and oppression, through the reproduction of colonial culture and structures [26]. It is an invisible oppressive power structure that continues to operate long after colonialism came to an ostensible end [25]. The oppressed continue to live under hegemonic oppressive powers and they accept it as the state of affairs because it is disguised as the reality of modernity [27]. In reality, however coloniality is another name for the ‘darker side’ of modernity [25]. One would argue that coloniality is a disguised structure, which pose as

modernity, while its oppressive side is hidden. It sustains illegitimate means of control, domination, and exploitation while it is 'clothed' in the "language of salvation, progress, modernity and being universal for all" [25] (p. 8). When unveiled, exposed and made visible, people would not understand certain deep-seated and hidden issues of oppression. It is a specific power structure that makes some powerful and others powerless [28]. People continue to live under coloniality, they breathe it, and they will continue to do so as long as the oppressive structure is invisible and is continually sustained by the dominant society [27]. Thus, its 'darker side' needs to be unveiled because it can be perpetuated without the perpetrators knowing that they are perpetuating it, and the oppressed, not knowing that they are oppressed. In the paper, the concept will be used to unveil how coloniality is being perpetuated unknowingly in provision of AT and assistive devices at the institution.

Coloniality of being

Coloniality of being exposes how the dominant society categorises people, name them, Other them and place them in a pyramid formation they create themselves, resulting in binaries of inferior-superior and powerful-powerless being. "World ordering by dominant powers continue to differentiate the global population into bipolar binaries of inferior and superior, irrational and rational, the primitive and civilised, traditional and modern, the black and the white, the civilised and the uncivilised, the powerful and the marginalised, the 'able' and the 'disabled' [27] (p. 343). In essence, people are categorised and given identities, it is how the notion of the Other emerges. It is maintained through using normalcy as the standard measure and difference, plurality and multiplicity are denied [29]. It is how those with disabilities, specifically, are socially constructed as 'the Other' because of social ordering, which uses a 'normal body and mind' as a standard, and

all individuals with different bodies and minds are viewed as deviating from the norm, and are hence labelled 'disabled' [27].

In is also in categorisation, naming and Othering that equality and inequality emerge in society. The dominant powers use 'normalcy' as a yardstick to categorise people and place them into hierarchies. It then goes without saying that anyone falling within the margins of 'normalcy' occupies a superior position to those outside it. Those labelled as inferior become unequal to those labelled superior. In a parallel construct, what is pertinent is that those constructed as 'primitive' are inferior to the 'civilised', and the 'disabled' are inferior to the 'abled' [29]. By virtue of the persistence of such hierarchies, people become unequal. This is the way in which oppression is orchestrated, because those in superior positions tend to oppress 'the Other', who occupies the lower rank. It is the coloniality of being that exposes all this ills in society. The concept will help to illuminate the rank of students with disabilities at the institution and provision with AT and assistive devices, as a way of enabling their learning.

Coloniality of power

Coloniality of power exposes the invisible ways in which power operates, and how it is used by the powerful in society to dominate and oppress the Other in specific contexts. It is explained that the form of domination co-opts the capitalist model within global coloniality, and is "organised and articulated to suit the imperatives of global imperial designs" [26] (p. 50). It involves a colonial mentality of persistence of domination, in which the dominant society oppresses the Other [30]. As it is explained, "the present global structure is informed by the colonial relations at the centre and periphery of European expansion" [30] (p. 276). It implies that it is Eurocentric powers operating invisibly continues to oppress others, more specifically in the Global South, and though this is hidden, the effects are felt by the oppressed. The domination gives rise to networks of

exploitation, which dominate and control knowledge and authority, and affect all dimensions of social life [27]. The coloniality of power is therefore important in this paper to explaining the power dynamics that exist in the provision of AT and assistive devices at the institution.

Decoloniality

Decolonial theory largely is relevant to this paper because it does not only unveil coloniality but it also provides a method of fighting it. Decoloniality is that ‘method of fighting’ which is used to dismantle oppression. It begins with the recognition of “existential realities of suffering, oppression, repression, domination and exclusion” [26] (p. 15), and consequently making effort to dismantle the powers of domination. Decoloniality is not a single theoretical school of thought, but a family of diverse positions that share the view that coloniality is a problem of modernity [25]. They inform us that it is not only the long-standing epistemological stances, that people need to be liberated from but a particular way of thinking, knowing and doing that requires dismantling and revision [31]. Decoloniality seeks liberation from the hegemony as informed by coloniality and seeks to dismantle the relations of power and the hierarchies that came into being and find powerful forms of expression in the practices and structures of the modern world [32]. Decoloniality challenges universality and critiques the idea that there is one epistemic site from which all truth and universality derive, as has been hegemonised by the dominant society [33]. Decolonial epistemic perspective as a way of thinking and doing that could be applied to oppression in order to yield a different way of being is proposed [32]. Thus, Decoloniality seeks to explain that there is no single truth about everything. All in all decoloniality departs from merely problematising coloniality and its effects, and posits a number of ways of overcoming it. One would argue that when the oppressed become aware of oppression they find ways of overcome to liberate themselves. In the paper, it is the researcher who proposes

decoloniality in the way of suggesting that AT and assistive devices be located within the broad inclusive strategy of Universal Design, discussed in detail at the end of the paper.

3. Method

The study utilised purposive sampling [34]. The researcher sampled 12 students with disabilities, who were studying professional degrees of Education, Law and Medicine, to participate in the study. The sample cut across race, gender, age and schooling background in terms of mainstream and special schools. Participants were both undergraduate and postgraduate students in the final year of their degree programmes. All the student participants had disclosed their disabilities on admission and were supported by way of Assistive Technology and assistive devices from the Disability Rights Centre at the institution. This was peculiar, because literature has consistently revealed that most students with disabilities do not disclose their disabilities on admission and registration in institutions of higher education because they fear stigmatization [35], and this is common amongst students with invisible disabilities such as hearing impairments. Thus, sampling targeted students with disabilities because it can only be those with a lived experience of disability, who can attest to the effectiveness, or ineffectiveness of the assistive technology or assistive devices to their learning.

While students with disabilities were sampled from three programmes, only the voices of those studying Education are used. It is not for any special reason that Education was chosen amongst the three, but for the scope of this particular paper. Education as a programme of study is peculiar for its unique history in the South Africa, during the Apartheid era. Its history qualified it to be considered, by way of classification of professions as one of the low-level ones [37]. It was previously offered in Teacher's Colleges, in which situational knowledge was emphasised rather

than disciplinary knowledge [38]. In the democratic South Africa, there was then a shift, in which the programme was then offered in universities, in which students had to acquire both the disciplinary and situational knowledges. In this paper the researcher's interest was to understand the role of AT and assistive devices in enabling students with disabilities' learning at the institution only. The paper however does not go deep into learning of specific concepts but learning generally, at the institution and not in integrated learning settings, which are schools. Again, this was limited by the scope of the paper.

Ten members of the Disability Rights Centre were also sampled, a sample considered gender, race, age, work experience and position at the Centre. The staff members were sampled because they were the ones providing support in the way of AT and assistive devices to students with disabilities. All ten members were permanent staff members of the Disability Rights Unit, which is said to be the best in the whole country. Thus, all participants could provide rich data, required to understand provision of AT and devices in a higher education setting, that is low resourced. For anonymity and confidentiality of all participants, numbers were used as codes to identify them.

Both student and staff participant were sampled from an institution of higher education, which was formerly advantaged. The peculiarity of the institution is that it accommodated students with disabilities even during Apartheid. This is as evidenced by it having a Disability Rights Centre, which was opened in 1985 before 1994, when South Africa attained its independence. The Centre supports the learning of the students with disabilities in a number of ways, including providing the AT and assistive devices. It is said to be the best, by way of supporting a biggest number of disabilities than any other institution, having highest number of permanent staff, the only one that has started supporting learning disabilities, and has been awarded a prize for being the best by the Department of higher education and training in 2012 [36].

The study was a small-scale study, which well suited a qualitative research methodology. Semi-structured interviews were to solicit data on provision of AT and assistive devices at the institution and how it enabled the students to access learning. The interview used ascertained that the researcher is flexible in the way of asking questions [39], thus obtain rich data from the participants. Participants were also afforded opportunity of depth in their responses [40]. Audio recording and verbatim transcription of all interviews were done with the consent of the participants.

The tables below show the demographic information of the participants, who were students with disabilities and the staff from Disability Rights Centre. Disability categories of students and of those members, who were disabled, have been purposely left out. The researcher views stating the disabilities as perpetuating labelling and segregation that she is so much opposed to. Again the focus of the study is on provision of AT and assistive devices, which has nothing associated with the disabilities of the participants in particular.

Table 1a: Demographic Information of Students with Disabilities

Characteristics		Number
Sex	Male	6
	Female	6
Race	Black	7
	White	5
Age	21-25	6
	26-30	4
	31-40	0
	41 and above	2

Schooling Background	Special Education	4
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Table 1b: Demographic Information of DRC Staff Members

Characteristics		Number
Sex	Male	5
	Female	5
Race	Black	6
	White	3
Position in the Disability Unit	Head of Unit	1
	Adaptive technician	1
	Administrators	5
	Sign language Interpreter	1
	Learning disability coordinator	1
Work Experience	0-5 years	3
	6-10years	2
	11-20years	3
	21-30years	1

Ethical considerations were made for the study and permission from the gatekeepers at the institution was obtained as required [34]. All participants who participated in the study volunteered their participation. All the participants were informed about the focus of the study, their right to withdraw from the study, not to answer any questions they were uncomfortable with, the right to end the interview at any time when they feel like, and even to amend transcribed interview where there is a misrepresentation. In addition, confidentiality and anonymity were guaranteed for those who volunteered to take part in the study [34].

In getting the student participants, the Disability Right Centre staff member assisted by referring the researcher to students registered with them. In accessing the students, the researcher was referred to other students with disabilities, by those who first volunteered to participate. They were requested to indicate their interest by contacting the researcher through email, and indicating the time convenient for them for interviews, and place they felt comfortable to be interviewed from. It was the same way, with the staff members from the Disability Rights Centre. In essence, snowballing was used as the main strategy to access participants [41].

The researcher first did data analysis independently, reading and re-reading each individual interview many times, coding, grouping and regrouping codes until major themes emerged from the data. ATLAS T could have been used for data analysis but the researcher did not use any software because the transcripts were few. Three experts in qualitative research were requested to analyse data as critical readers. A constant comparative approach to data was utilised, in which the researcher and other the critical readers continued to compare their analyses [39]. To ascertain the trustworthiness of the findings, code-recode, and examination of analysis of all peers were done [39] and similar major themes emerged from data.

3. Result

Provision of AT and assistive devices at the institution

The major themes that emerged from the data could be grouped under three major questions, which were analysed, using specific concepts from decolonial theory. The major themes were as follows: (a). Students with disabilities provided with AT and assistive devices at the institution. (b). The institution providing AT and assistive devices. (c). Not all AT and assistive enable students with disabilities' learning. The major themes that emerged from data were used to help answer the

three fundamental questions the researcher is asking in the study: (a). who are provided with AT and assistive? (b). who decides on the AT and assistive devices to be provided? (c). do AT and assistive devices provided enable students with disabilities' learning?

Provision of AT and assistive devices to students with disabilities

It emerged from data that it is not all diverse students who are provided with AT and assistive devices but those with disabilities. The utterance from both the staff members from the Centre and students with themselves pointed to that. One member stated:

We have devices available to students with disabilities; we do have i-pads. In addition, students with disabilities have real benefitted from those device. For example, a student will really benefit from an i-pad, because they do not need to carry many books around the campus (Member 1)

Still justifying that the assistive devices are provided to students with disabilities, another member also added:

We cater for different disabilities and now we have someone who is using a Dragon. It is a computer that you just talk and it types, and the student will not have much of the spelling errors. The computer does the writing for the student (Member 10).

Another one had the same view about providing AT and assistive devices to students with disabilities at the institution:

Why people see us as number one, it is because we have been so long in the business of assisting different disabilities. Something new that we have recently got, it is a new device called eye tracker. It is for students with physical and nervous disability, who cannot use their hands to type, who cannot handle a mouse. With this device, a student uses his eyes; a student can control the mouse with their eyes. We spent about sixty thousand on it. It is something new that other universities do not have (Member 4).

From the utterances above from the staff members at the Disability Rights Centre, it is revealed verbatim that AT and assistive devices at the institution are provided to students with disabilities, and there is a perception that they make learning easier for them, even those who have severe central nervous conditions, who cannot use their limbs. From literature this is different from other

institutions, in low resource settings, who cannot provide students with disabilities with AT and assistive devices. One study reveals that at the University of Zimbabwe, considered a prestigious institution of higher education in Zimbabwe, there is lack of assistive devices to use by students with disabilities, and moreover, the academic staff lacked competencies and skills in using assistive devices such as Perkins and reading braille and simple adjusting a hearing aid when it made noise [42]. Furthermore, students with disabilities with a lived experience of disability, studying at the university stated that, it was difficult for them to understand the content matter taught by lecturers without assistive devices [42]. From the students with disabilities in the Zimbabwean context, it is confirmed that AT and assistive devices assist learning and for them, it is difficult to learn without assistive devices. However, it cannot be over-generalised that in the South African context, by virtue of availability of AT and assistive devices, students with disabilities access learning at the specific institution. Literature has revealed that the academic staff who are central in the practice of teaching and learning lack training and expertise to teach students with disabilities [20]. It is also reported that they are unwilling to attend workshops organized by Disability units to learn about teaching different categories of disabilities [23]. It may not be assumed that when lecturers lack training and are unwilling on students with disabilities, they can have expertise with AT and assistive devices to enhance learning.

The lack of training by the academic staff to teach students with disabilities is not the issue of South African higher education only, but of other low resourced contexts. With specific reference to the Zimbabwean higher education again, lecturers also lack training on using assistive technology [43-44]. In essence, in low resourced settings, the teaching staff are not only incompetent in teaching but also in using the AT and assistive devices. Against the background therefore, it cannot be assumed that mere availability of AT and assistive devices at the institution,

could imply enablement of access to learning by students with disabilities. Thus, availability alone does not guarantee access to learning.

As the Disability Right Centre stated that, they provided AT and assistive device to students with disabilities, the students themselves confirmed being provided with those gadgets. The students not only confirmed the provision but also their usefulness in assisting their learning at the institution. The words of the student:

I have two impairment needs. I am partially deaf and because of this, the Disability Unit gave me a voice recorder to use in my lecturers. The thing was, I found it very useful because I did not have enough time to study and transcribe my lecture notes. The other impairment is scoliosis, which is the physical curvature of the spine. They helped me by giving me a kindle, which allows me to download books and then I do not have to carry heavy books around (Student 1).

Still on the usefulness of assistive devices, another student had this utterance:

Lecturers know how to make work assessable. Computers are taking away, helping deaf students a lot more, for example, computers are taking over someone's head and helping him when writing notes. I think technology helps there (Student, 3)

The students themselves, with a lived experience of disability confirm the usefulness of the assistive devices, they are provided with at the institution through the Disability Rights Centre. The student with more than one impairment confirmed that she was provided with assistive devices that helped her functionality, by overcoming the limitations from two different impairments. When coming straight from students with a lived experience of disability that AT and assistive devices provided to them enabled learning, it cannot be contested.

While both the staff and the students stated that there was provision of AT and assistive devices, there was a contradiction, in terms of adequacy of provision. Staff members stated that AT and

assistive devices were adequate at the institution while according to the students, they were not. A staff member commenting on the adequacy of funding for AT and assistive devices stated:

We are buying more adaptive devices for students with disabilities through the University fund. I am waiting for that student who says there is no fund, to tell us exactly what does he needs that he cannot get. Recently, eight got brand new laptops, some got hearing aids. We are even extending the support to a human resource, I mean an assistant who is paid from Disability Fund. DSA is more than good enough for students (Member 4).

It is while the staff members so say that a student states the contrary:

There was a time that they said we should list the assistive devices that we want, and hey, I listed, after sometime they said they did not have enough for those assistive devices. Many students had asked for assistive devices but the requests were cancelled. I think maybe funding is not enough to cater for everybody with disabilities. I really need resources and assistive devices. Like I need a Braille machine. I will be able to prepare teaching aids. (Student 4)

Another one also stated:

The funding covers assistive devices, yes, but assistive devices are very expensive. Like when someone needs a scientific calculator, the Braille one is R4 000-00. Braille machine its R4 000-00. There was a time, I did not have a laptop, I went to the Disability Unit and they told me to go to the Financial Aid office, I went there but I did not get assistance (Student 2).

The contradiction between the utterances of the staff members and the students about adequacy of AT and assistive devices reveals that when persons without a lived experience of disability speak for those with a lived experience, there is always a contradiction. The staff could be genuine in seeing AT and assistive devices as enough to enable the learning of students with disabilities. However, to them with a lived experience, they are not adequate. Literature has also revealed that top down approaches in which persons without disabilities impose on those with disabilities as the main reason for their exclusion [45]. Previous research has also revealed that lack of adequate resources, largely and AT and assistive devices in Disability Rights Centres hindered students with disabilities' access to learning in higher education [46]. It is reported that in the South African

context of higher education specifically, there is no adequate funding for Disability Units to effectively support students with disabilities' learning [4]. With lack of funding broadly, the adequacy of provision of AT and assistive devices may not be ascertained. In the case of the specific institution that seems to have adequate funding, the adequacy or inadequacy of AT and assistive devices could be ascertained through those with a lived experience of disability. However, from their utterances, it seems they also lack some gadgets they need for their learning. It could be argued then that without adequate AT and assistive devices, learning might not be fully accessed.

Decision on the AT and assistive devices to be provided

From the utterances of both students and the staff, AT and assistive devices provided are decided by the Institution, and distributed through the Disability Rights Centre, by the staff. The technician employed by the university is responsible for designing and ordering the AT and assistive device.

Following are the utterances:

If we have a new student who is coming with a disability, that is part of my job, to design technologies for new disabilities. We need to improve technology because every technology in life need a user and I as well, must always have something new in my mind (Member 5).

From the statement above, one would say that it is somebody's job to decide what AT and assistive devices students with disabilities need for them to access learning. Of interest is that those who determine the kind of AT and assistive devices students with disabilities require, are they themselves not disabled. Literature is outpouring with instances of those without disabilities deciding, designing and implementing what they think it's rightful for those with disabilities. In one study, students with disabilities themselves stated that they feel patronized by those without disabilities, when they impose on them in the way of enabling their access to learning [42]. One

would argue that while the intention of deciding what AT and assistive devices students with disabilities require; is to enable their learning, it could defeat the good intention when its somebody from without who makes the decision.

From both the students with disabilities and the staff members from the Centre, a variety of students AT and assistive devices were provided. They included computers with JAWS, Braille machines, kindles, magnifying glasses, computers known as Dragon, eye tracker and ipads. They are the kind of AT and assistive devices mentioned in different instances by both students with disabilities and the staff from the Centre. One of the staff member, who a technician explained how, some of the AT and assistive devices work:

To some students I have loaned ipads because they need them. We have again have the kindle, it is a simple device, it is almost like an ipad, a small ipad and it is handy for books (Member, 5).

A student with disabilities who confirmed being provided by a kindle also expressed the same experience that it enabled her to carry books, which she could have not managed to carry because of the category of disabilities she had.

Assistive devices and learning of students with disabilities

While there was an indication that most of AT and assistive devices assisted students with disabilities' learning, it also emerged from the students with disabilities themselves, that not all of assisted their learning at the institution. Some of them hindered learning in different ways. Students with disabilities talk of the problems they encountered with some assistive devices they were provided with. Their utterances:

The computers we use have screen readers. They have JAWS, but it cannot read signs, Mathematical signs and graphs. JAWS does not read pictures. And Maths also, there are

signs JAWS cannot read. Sometimes they teach in power point but in my case, Jaws cannot read power point (Student 6).

Another student also confirmed that computers with JAWS has limitation that hinder them to access to learning. She added:

As I said, learning is not accessible sometimes because they are sending notes on power point, JAWS does not read power point, and you miss those notes. In addition, this SAKAI thing, my computer does not read all things that are there, so you have to ask every time, what is happening here. It is good that we are learning through the computers but to us with visual problems, it is not so accessible (Student 2).

The issue of AT and assistive devices hindering learning for students with disabilities has been raised in literature that the JAWS screen readers not reading mathematical signs [47]. It implies that students with visual impairment are limited in acquiring the disciplinary knowledge in the learning area of Mathematics in their learning in higher education. As practicing teachers in the schools, they may counter the same limitation if screen readers with JAWS are used. It could be argued that while screen readers with JAWS seem to be an improvement on Braille, they have their own constraints on learning. One would argue that though the institution has a variety of AT and assistive, it is not all that enable the learning of students with disabilities.

4. Findings and discussion

The findings in the study were that firstly, it is the students with disabilities who are provided with AT and assistive devices at the institution. Secondly, the institution is the one that designs a variety of AT and assistive, decides which ones are relevant, and make provision through the staff at the Disability Rights Centre. Thirdly, not all AT and assistive devices enable students with disabilities' learning at the institution. The researcher then attempts to use the concepts of coloniality, coloniality of being and of power, drawn from decolonial theory, to show the invisible and hidden

explanations of the three findings about the AT and assistive provision at the institution and enablement or constraint in access to learning by students with disabilities. The unveiling of the hidden underlying invisible explanations helps the understanding of provision of AT to students with disabilities, not only at the specific institution in South Africa, but also other institutions with a similar context, in South Africa specifically, in Africa and international. Understanding the invisible underlying cause, can influence interventions that could improve provision and support through AT and assistive to students with disabilities, which might offer an alternative that could improve their learning. In this paper, the researcher further proposes decoloniality in the way of UDL, as an intervention that might assist learning through provision of AT and assistive devices.

Provision of AT and assistive devices to students with disabilities

Coloniality of being exposes the provision of AT and assistive devices to students with disabilities only, as Othering [47]. Students are Othered and categorised into the ‘disabled’ and ‘non-disabled’. The ‘us and them’ othering is manifested. There was no mention of students without disabilities being provided with AT and assistive devices at the institution, but the Other. On the surface level, providing the available AT and assistive devices to students with disabilities could be seen in the light of aiding their learning. However, from the deep unseen and invisible that coloniality of being unveils, the provision could be explained in the light of denial of difference, multiplicity and plurality of being, resulting in those falling out of the criteria of ‘normal’ being labelled, separated [27, 47] and assisted through AT and assistive devices, to learn. The provision of AT and assistive devices could be seen as some kind of normalization and ableism, so that the students with disabilities are also accommodated in learning. Normalisation and ableism are

contested and critiqued because it is one way society tries to make those with disabilities what they are not [48].

One would argue that without ill intentions, students with disabilities are invisibly segregated and discriminated against by way of being provided with AT and assistive devices. As already highlighted above, the provision of AT and assistive specifically for students with disabilities, is stigmatising and filling the void that the particular social group are different from other students. The provision carries with it a stigma and it can be viewed as segregative because it separate students with disabilities from other students. “Good intentions do not automatically translate to a good strategy...they can lead to even worse experiences of modernity/coloniality if they are not supported by carefully thought-out strategies” [50] (p. 12). The same observation has been made earlier that, “The road to hell, at least for the colonised has always been paved with good intentions [51] (p. 12). It could be argued in this case that the institution’s intention, through staff members of the Disability Right Centre, is not to isolate and Other students with disabilities, however it is the strategy used to provide for them, that is Othering. One would argue that while on one hand AT and assistive devices can enable those with disabilities’ functioning, and learning, on the other, their provision to persons with disabilities as a separate social group, could be seen as informed by the individual model. Scholars like Oliver Michael [52] heavily critiques the model and sees it as a deficit model, arguing that it locates the limitation in an individual, and not in the social and physical environment [52]. Mike Oliver has a lived experience of disability, and his critique of a deficit model cannot be ignored.

Though the provision of some AT and assistive devices could enable students with disabilities’ learning, it is only an individual accommodation, and not inclusion of all diverse students at the

institution. A term hospitality is used in the analysis of the metaphors used in the context of individual accommodation in schooling. It is argued that when the term is used to shape and inform provision, other social group as those with disabilities could be seen as guests who are not belonging by right [53]. One would also contest and critique provision of AT and assistive device as a way of individual accommodation of students with disabilities, and not inclusion. Individual accommodation denotes un-belonging; students with disabilities do not belong; they are there by way of the demands of the Constitution [11], non-discrimination legislations [12], and inclusive policies, White Paper Six: special needs education [14]. In addition, since they have formally accessed the institution, accommodation in the way of AT and assistive devices have to be provided to them so that they are also enabled learning. It has also been noted that terms as ‘individual *accommodation*’ are justifiably used for the purposes of making provision and support for students with disabilities in institution of higher education in institutional policies, one of which is provision of AT and assistive devices. It is argued that the way inclusion is thought about determines the way in which it is practised [54]. In this case, individual accommodation is taken for inclusion, in the way AT and assistive are provided.

The institution determining what AT and assistive devices to provide

Coloniality of power would explain the way of the institution deciding what provision to make to students with disabilities in terms of AT and assistive devices, as a dynamic of power, in which the powerful decides what is rightful for the powerless [28]. As already highlighted above, the AT and assistive devices provided to students with disabilities is decided by the institution, through a specific structure, the Disability Rights Centre. The staff at the Centre are responsible for the design of AT and assistive devices and make provision to students with disabilities at the

institution. However, it should be decision of the students with disabilities on what AT and assistive devices should be provided to them because they have a lived experience of disability [45]. They know exactly what is suitable for them. Those without disabilities however continue to speak and misrepresent them [55]. In the particular case they were misrepresented in the way of provision of AT and assistive devices which were found not relevant, and not fully enabling their learning, more especially with regards to provision of computers with JAWS, which hindered the learning of Mathematics.

Through the spectacles of coloniality of power, the availability of a structure as the Disability Rights Centre at the institution on its own is colonial and exudes power of oppression. At this institution, the Centre has been responsible for supporting students with disabilities specifically, since the period before democracy. Its presence cements the idea of Othering by the dominant society [27]. It could be argued that students with disabilities at the institution are not viewed as like other students, but a separate group, which needs to be supported by a 'special' structure, and accommodated in their learning through AT and assistive devices, specifically designed for them. While on the surface the structure could be applauded for providing students with disabilities by way of AT and assistive, from the unseen perspective, the Disability Rights Centre, with the sole purpose of serving the needs for students with disabilities, is an invisible representative of coloniality, that it is continuing from the time of Apartheid to date. During Apartheid, the system of education was separated into mainstream and special needs education [56]. The way the Centre is operating its still reproducing the previous system in a subtle way that cannot be seen without using the coloniality of power spectacles.

AT and assistive devices promoting access to learning

Coloniality of being explains the unforeseen reason why some of the available AT and assistive devices provided to students; do not enable access to learning. They are designed by a people who have no lived experience of disability, for a people with a lived experience of disability. Furthermore, students with disabilities who have a lived experience of disability were not consulted, to understand what AT and assistive devices they need for their learning. It is those with a lived experience of disability who knows exactly what they need [45]. In the particular case, it suggests that had students with disabilities been consulted, the problem encountered in the specific AT and assistive device might have been avoided.

Besides, the learning context itself was not originally designed for all diverse students. Coloniality of being explains the learning context at the institution as has been originally designed for a 'normal' student and as result excluding those considered 'not normal' by way of having impairments. While the institution is making significant efforts of providing even the most expensive AT and an assistive device, as the eye tracker, it is not addressing the deep underlying cause of exclusion of those with disability, which is coloniality. The cause of exclusion is deeper than seen at surface level. The structures, practices and processes exclude those who are considered as not 'normal' and in this case, even when AT and assistive are provided, they are still exclusive one way or the other, hence some of them, do not enable learning but constrain it.

6. Decolonising through Universal Design

The researcher has revealed the hidden structure of coloniality as influencing the provision of AT and assistive devices at the institution in the whole discussion section. In so doing, an attempt was

also made to reveal the invisible reasons, underlying the continual exclusion of students with disabilities despite the efforts of provision of AT and assistive devices. The rationale was to use the revelation as the springboard, from which to move on in a way that could assist the learning of all diverse students, including those with disabilities. It has been understood that in the contemporary scholarship, both the Global South and the West currently experience common problems, because "...the modern is at crossroads, dominating rather than leading in the domains of knowledges...producing numerous modern problems to which it is not in a positions to provide modern solutions" [57] (p. 8). Constantly arguing on how the West has oppressed the South could be seen as having been taken over by events and having been overly emphasised. It is time that contemporary scholarship concerns itself with finding solutions, in which there is conversation between the Global South and the West, to solve common problems. In the way of decoloniality, it is emphasised that no voice should be stifled because all knowledges have value and are useful [32].

Against the background above, the researcher therefore is suggesting the way of decolonising using Universal Design in Learning (UDL), in which the provision of AT and assistive to aid learning is planned from outset for all diverse students, and not only for students with disabilities. Other scholars have also proposed that AT should be considered in the UD, if inclusive educational and social environments are to be created for all diverse people [3]. This paper adds on the assertion by considering that AT and assistive devices should be incorporated into UDL, which is more specific to teaching and learning because what is sought to be achieved is that all students with and without disabilities are enabled access to learning.

UDL is a teaching approach born out of Universal Design (UD). UD as the mother framework is informed by principles, which also guide it. The principles are listed as equitable use, flexibility in use, simplicity and intuition, perceptible information, tolerance of error, low physical effort, and size and space for approach and use [58]. Considering these principles enables creation of physical and social environments that caters for the needs of all people, with and without disabilities. The UDL teaching approach also has its core principles, which include flexibility, engagement, representation, action and expression [59]. It emphasises flexible goals, methods, assessments and materials [60]. It involves thinking about, and planning for all diverse students, even before they come into the classroom [61]. There is an understanding that human beings have different learning styles and preferences [60]. One would argue that such a teaching approach could suit all students, including those with disabilities because it considers the diversity of all students from the start.

By decolonising through UDL, the researcher is suggesting that provision of AT and assistive is planned for all diverse students, and not for students with disabilities, from the outset. By so doing, the provision would not stigmatise those with disabilities, but becomes an enabler for learning for all students. Locating provision of AT and assistive devices within UDL could thus go a long way in enabling learning because of the principle of flexibility. For an example, when computers with JAWS do not read mathematical signs, alternatives could be found easily because flexible goals are emphasised. The core principles speak to consideration of diversity and active engagement of all diverse students in learning. UDL thus optimises opportunities for learning and the key to its success is the creation of maximum flexibility from the start [60]. One would argue that incorporating provision of AT and assistive devices into UDL could go a long way into creating a transformed learning environment that is suitable for all diverse students, and not individual

accommodation of some categories of students as in the case in higher education broadly and at the specific institution.

Possibility for learning in decolonising using UDL

As has already been highlighted, incorporating the provision of AT and assistive devices into UDL could enable learning, not only of students with disabilities but all diverse students at the institution and in South African higher education broadly. While UDL is an American idea by origin, it is not a new teaching strategy in South Africa. Practices and pedagogies aligning with the principles of UDL are used in special-needs schools in South Africa [62]. It has also been noted that some teachers in inclusive educational settings apply the principles of UDL in their teaching, without them knowing [62]. Basic and higher education has porous boundaries that if UDL is successful in the former, it could also be, with the latter. It is argued that the UD broadly, and the UDL in particular, are necessary to inform South African higher education curricula if all diverse students are to be included in teaching and learning [4]. Thus when AT and assistive devices are provided within UDL framework, it could assist the learning of all diverse students, including those with disabilities. Decolonising this way could be effective as decoloniality is all about “pluri-versal, a redemptive and liberatory epistemology that seeks to delink from the tyranny of abstract universals” [26] (p. 13).

Decolonising through including AT and assistive devices in UDL could be seen as a way of soliciting a unified solution that can solve the issues of exclusion of those with disabilities in both the global South and West. The rationale is that it has become imperative that scholarship moves from unveiling coloniality, to finding solutions so they could be sustainable development in education broadly, and in classroom teaching and learning of all students. Decolonisation of

provision of AT and assistive devices through UDL could thus delve deep and further push the boundaries of both worlds, to enhance inclusion broadly and Inclusive Education for all as purported in the UN Convention [2].

7. Conclusion

AT broadly and assistive devices are provided to students with disabilities at the institution and the providers, who are the staff of the Disability Right Centre consider the provision as a way of supporting students with disabilities to learning like other students. Students with disabilities themselves view the provision of AT as enabling their learning, despite some hiccups with some assistive devices. While it so believed, questions of whom the AT and assistive devices are provided to and who decides on the AT and assistive devices to be provided, makes the whole thing colonial, segregative and discriminatory. Besides not all AT and assistive devices enable learning to those whom they are provided to, who are students with disabilities. The researcher thus suggests decolonising through UDL, in which the provision of AT and assistive devices in planned and included in teaching approach for all diversity of students from the outset. There is a possibility of success because UDL has been tried out, and proved successful in South Africa. By virtue of UD broadly, and UDL specifically being an American idea, but successful in South Africa, it could mean bringing together knowledges from the South and the West, to solve the common global problem, which is a move the contemporary scholarship seeks to achieve.

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