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# Learning together: The dynamics of training teachers for disability inclusion in South Africa

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Despite the need for inclusive education in South Africa, many teachers have not been appropriately trained for the inclusion process for learners with disabilities in classrooms. A consideration of teacher education for inclusive education involves examining both the structural and professional barriers to training that prevent effective implementation. We review the outcomes of a teacher education project in South Africa through three studies that emanate from Teacher Empowerment for Disability Inclusion (TEDI) at the University of Cape Town. These studies are a situation analysis; a survey of teacher education availability for working with learners with severe disabilities; and an evaluation of short courses. We draw on these studies to develop a holistic picture of the kind of training needed to develop the knowledge, attitudes and skills of teachers to address barriers to learning that arise from disability. This entails a conceptual analysis of how the different elements of training work together to address learner needs.

## KEYWORDS

disability, education, inclusive education, South Africa, teacher training

## Introduction

The South African government's 20-year progress report on implementing Education White Paper 6 (EWP6) strategies—aimed at realizing the immediate, constitutional right to basic education of learners with disabilities by building an inclusive education system—indicate that there are many serious problems inhibiting the realization of this policy's goals (Department of Basic Education [DBE], 2015).

Despite South Africa ratifying multiple international human rights treaties to fulfill obligations to provide education for these learners, including the ([Un Convention on the Rights of Persons with Disabilities \[UNCRPD\], 2016](#)), there is substantial evidence to suggest significant breaches of such treaties and that over half a million children with disabilities are still not in school ([Human Rights Watch, 2015](#); [Khumalo and Fish Hodgson, 2017](#)). Furthermore, those children who are in school do not enjoy quality learning opportunities and are not gaining the skills needed to live independent and fulfilling adult lives ([Savolainen et al., 2012](#); [Adewumi and Mosito, 2019](#)).

Research has identified a lack of adequate teacher training in various types of schools serving learners with diverse disabilities as a significant problem ([Savolainen et al., 2012](#); [Kelly and McKenzie, 2018](#); [Adewumi and Mosito, 2019](#)). The Department of Basic Education (DBE) and the Department of Higher Education and Training (DHET) have undertaken to strengthen teacher education through various legislation and policies, there is the acknowledgment that training of teachers is necessary to boost teacher competencies ([DBE and DHET, 2011](#); [Centre for Development and Enterprise, 2017](#)). It is clear that an inclusive education system will not materialize in South Africa without the proper formal preparation and training of teachers working with learners with diverse disabilities. Without such training and preparation, learners with disabilities will not have access to a proper basic education and will not reach their potential or be able to meaningfully contribute to South African society.

The current paper is a review that draws on three research studies conducted within an in-service teacher education project, Teacher Empowerment for Disability Inclusion (TEDI), at the University of Cape Town, South Africa:

1. Analysis of existing teacher education for disability inclusion in South Africa;
2. Situation analysis on learner needs; and
3. Teachers' responses to needs in TEDI Courses.

We relate the situation analysis study that identifies the teaching and learning needs of learners with severe disabilities to the current availability of teacher education to meet these needs as well as to the experiences of teachers who have undergone training designed to address these needs. Through this analysis we develop recommendations for teacher education in South Africa that will contribute to the realization of an inclusive education system. We begin with a discussion of teacher education for inclusive education in South Africa, illuminating the policy dimension and how it accommodates teacher education needs. We then review the three TEDI studies, illuminating salient points for our discussion. We conclude with a consideration of the implications of these findings for teacher education in South Africa that will promote disability inclusion in all schooling contexts.

## Teacher education for inclusive education in South Africa

The three TEDI studies and literature advocating for the right to education of learners with disabilities reveal the lack of skilled teachers in the South African education system to meet the needs of approximately 600,000 learners with specific sensory or intellectual impairments and developmental disabilities ([Department of Basic Education \[DBE\], 2015](#)). The TEDI studies also reveal the lack of formal, specialist teacher-training opportunities and programs preparing teachers to teach such learners ([McKenzie et al., 2018](#)) and the express requests of teachers within the system for such expertise ([McKenzie et al., 2020](#)). The imperative to address these issues has been highlighted in the General Comment on Article 24 of the UNCRPD ([Un Convention on the Rights of Persons with Disabilities \[UNCRPD\], 2016](#)), which states that all teachers, at all educational levels, must be equipped with the necessary core competencies and values to work in inclusive educational environments. Pre- and in-service teacher training must, therefore, (i) develop teachers' skill levels appropriately to urgently address learner needs, and (ii) give teachers opportunities to engage in practical experiential learning. UNCRPD ([Un Convention on the Rights of Persons with Disabilities \[UNCRPD\], 2016](#)) also prohibits legislative or regulatory provisions limiting the inclusion of persons with disabilities in all regular learning environments on the basis of their impairment or the degree thereof. Therefore, teachers in all of these learning environments need to be equipped with the necessary skills and training in inclusive practices, so that a truly inclusive education system can be achieved.

It is important that the DHET ensures that higher education institutions make provision in their programs to meet the demand for teaching expertise for specific impairment types (e.g., education for learners with visual or hearing impairments). This necessitates a review of and change in policies regulating initial teacher education and setting imperatives for higher education institutions to optimally prepare pre-service teachers to meet these learners' educational requirements.

## Implications of inclusive education policy on the roles of schools and teachers

At the end of apartheid, children with disabilities had access to 380 special schools which were segregated from mainstream schooling ([Khumalo and Fish Hodgson, 2017](#)). By adopting a social model of disability, the South African inclusive education policy framework set out to effect systemic change to ensure children with disabilities were catered for by all schools in the education system. To achieve this, four school categories

were identified (Department of Basic Education [DBE], 2015; Khumalo and Fish Hodgson, 2017).

## Mainstream/ordinary

Schools that all children attend. They are required to reasonably accommodate children with disabilities and all learners with low support needs.

## Full-service

Specially designated and converted mainstream schools that are resourced and equipped by government to accommodate learners with a range of disabilities and learning needs (low- to moderate-intensive). These schools are not provided for in the South African School's Act 79 of 1996 and are transitional entities (Department of Basic Education [DBE], 2010).

## Special

Equipped to deliver a specialized education program to learners requiring access to highly intensive educational support (learners with high support needs).

## Special schools as resource centers

Special schools in each province that are defined as resource centers and equipped to provide a range of significant support services to other schools in their area.

EWP6 (Department of Basic Education [DBE], 2015) states that low-intensive educational support will be provided by ordinary schools, moderate-intensive support by full-service schools, and high-intensive needs by special schools. However, this does not imply that all children with disabilities have high support needs and should receive education in special schools. Rather, the placement of any child should, according to policy and the South African Schools Act (No. 84 of 1996), be determined by the extent to which the school is able to reasonably accommodate the learner. This places responsibility on teachers in mainstream schools to adapt their teaching and learning methods to meet the needs of learners with impairments. Specialized training is needed on how to differentiate the school curriculum for specific needs, assessment and teaching adaptation, and the use of suitable assistive devices.

With an increase in the number of full-service and special schools—approximately 700 and 450 schools, respectively (Department of Basic Education [DBE], 2015)—comes an increase in demand for more teachers qualified in special

needs education (DBE and DHET, 2011). However, measures to meet these changing demands have not been put in place. For example, in KwaZulu-Natal's uMkhanyakude district, full-service schools regularly do not receive their mandatory additional funding to provide necessary learner support, class sizes are often at 50 learners to one teacher, and teachers are unable, without specialized or impairment-specific training, to adapt the curriculum appropriately (DBE and DHET, 2011; McKenzie et al., 2020). Having discussed the implication of policies, it is now appropriate to look at the current position of policy influence.

## Policy influences on teachers' abilities to cater for learners with impairments

### Department of higher education and training policies

Developed out of the National Qualifications Framework, minimum requirements for teacher qualifications (MRTEQ) is the DHET's main policy to which higher education institutions must adhere (DHET, 2015). It provides guiding principles for the development of initial teacher education programs and continued professional academic development for teachers. This policy acknowledges that inclusive education is an important aspect of teachers' specialized knowledge. However, the only requirements it makes of initial teacher education program is that all Bachelor of Education and Postgraduate Certificate in Education graduates (the two formal initial teacher education pathways), Advanced certificate in Teaching graduates, and Grade R (reception year) teachers, "must be knowledgeable about inclusive education and skilled in identifying and addressing barriers to learners, as well as in curriculum differentiation to address the needs of individual learners within a grade" (DHET, 2015, p. 9). There is no stipulation about how inclusive or special needs education is constituted in higher education institutions' initial teacher education programs, and no time is prescribed for the work-integrated learning component at full-service or special schools. This means that higher education institutions can construct their curricula in any manner, provided graduates can demonstrate competence in overcoming barriers to learning on completion of their qualification.

However, Department of Basic Education [DBE] (2015) has reported that qualified teachers lack specialized knowledge in many key areas of disability, such as education for learners with visual, auditory and intellectual impairments, and developmental disabilities. Recent research confirms this, with key role-players in initial teacher education, including university deans and non-governmental organizations (NGOs)

representatives involved in continued professional teacher development, expressing their concern about qualified teachers' abilities to provide intervention strategies for learners with impairments (Kelly and McKenzie, 2018).

With the exception of centers of excellence established at the universities of the Witwatersrand, Johannesburg, and Pretoria, which offer formal qualifications for teachers in impairment-specific education specializations, there are minimal formal learning opportunities for pre-service and qualified teachers in this field of teacher education. This educational space has largely been serviced by special interest NGOs (e.g., Cape Mental Health, South African National Council for the Blind) through short courses or workshop-based training for continued professional teacher development. Provincial, departmental, regional or district offices have also offered opportunities to teachers, but these can often only be taken up by specific school representatives and tend to be theoretical in nature, rather than providing practical upskilling (McKenzie et al., 2020).

## Improvement plans for initial teacher education

Over the last 10 years, policymakers have made a concerted effort to improve teacher education. The overarching plan to do this—the Integrated Strategic Planning Framework for Teacher Education and Development 2011–2025 (ISPFTED) (DBE and DHET, 2011)—clearly acknowledges (among many other complex problematic areas) the shortage of special needs teachers, the need for upskilling teachers in impairment-specific methodologies such as competence in Sign Language and Braille, and identifies the “need both for the upgrading of the qualifications of special needs teachers and the development of entry-level specialist qualifications (such as an Advanced Diploma in Education) to prepare such teachers better for the contexts in which they teach” (DBE and DHET, 2011, p 10).

Arising from the ISPFTED (DBE and DHET, 2011), the South African Council for Educators' (SACE) draft professional standards for all teachers confirms teachers' professional identities as promoters of social justice and agents of social inclusion by stating that teachers should be “committed to affording every learner equitable and high quality learning opportunities” (SACE, 2018, p. 4) and “have a moral responsibility to identify, confront and resist the marginalization and exclusion of learners from accessing quality learning opportunities” (SACE, 2018, p. 4). Consequently, a noticeable onus has been created on higher education institutions to provide access for pre-service teachers to high quality, formal learning opportunities in specialized education to accommodate learners with disabilities—including training on impairment-specific methodologies—so that they are able to fulfill their professional obligations.

## Teacher empowerment for disability inclusion research on the provision of inclusive and special needs training

The TEDI project was developed in response to a call to address the exclusion and poor quality education of children with disabilities in South Africa, where the national prevalence rate of disability among school-aged children is between 2.6 and 10.8% (Statistics South Africa [SSA], 2011). Its overarching aim was to empower teachers to provide quality education for learners with severe to profound disabilities through training that is focused on inclusivity, diversity and addressing learners' impairment-specific needs. This section will discuss the three research studies from the TEDI research conducted between 2017 and 2019.

### Background to the three teacher empowerment for disability inclusion research studies

Each of the three independent studies (with their own separate ethical approvals from University of Cape Town Human Research Ethics Committee) reviewed in this article had a specific purpose. The purpose of the first study was to analyze the availability of teacher education addressing the educational needs of learners with severe to profound sensory or intellectual impairments. For this first study, data were collected from three sources: (i) A review of university faculty handbooks; (ii) online surveys with deans of education at South African universities and directors of NGOs and disabled people's organizations (DPOs) that have specific focus on disabilities, and (iii) interviews with personnel at the centers of excellence at the University of Pretoria and the University of Johannesburg in South Africa.

The second study entailed a situational analysis of the educational needs of learners with severe to profound sensory or intellectual disabilities in South Africa. The methodology employed here was a qualitative descriptive research design, which was conducted in eight schools (six special schools and two full-service schools) across the Western Cape, Eastern Cape, and Gauteng provinces in South Africa.

The third study involved an evaluation of the effectiveness of TEDI's face-to-face courses that were carried out based on the two previous research studies. A convergent mixed-methods research design was employed, collecting and analyzing both qualitative and quantitative data. Data was collected from the course participants through pre- and post-course surveys. A final survey and focus group discussions (FGD) were conducted 2 months after course completion. Data were also obtained from course facilitators through FGDs.

TABLE 1 Teacher education programs with impairment specific.

Type of training	Inclusive-education focus	Impairment-specific focus
Initial teacher education full qualification	0	2
Continued professional academic development	9	11
Module	27	4
Short learning program	4	1
Theme	3	1
Short courses	3	5

The current paper provides an integrated perspective, based on the three TEDI research studies, on teacher education in South Africa.

## Teacher empowerment for disability inclusion study 1: Analysis of existing teacher education for disability inclusion in South Africa

To further investigate and understand possible reasons for the lack of provision of quality education for learners with severe to profound sensory and developmental disabilities in South Africa, TEDI conducted research to ascertain what teacher education exists to equip teachers to teach such learners (Kelly and McKenzie, 2018). The study considered the provision of formal, accredited initial teacher education programs and continued professional academic development at universities, and informal short courses run by NGOs and DPOs (see Table 1). A review of universities' initial teacher education program literature, surveys and interviews with deans and key role-players at universities and professional development providers, enabled data to be collected on the availability of special needs education and impairment-specific education learning opportunities for teachers.

It was found that 70% of higher education institutions facilitating teacher education include inclusive education or impairment-specific components in their offerings. These components lie within the continued professional academic development of these higher education institutions and not within their formal initial teacher education programs (Bachelor of Education or Postgraduate Certificate in Education). This means that the majority of pre-service teachers completing a formal initial teacher education qualification will not be properly equipped with the skills to teach learners with disabilities. Teachers' empowerment with the necessary skills therefore relies fully on the individual teacher's pursuit of continued professional academic development while teaching.

Additionally, 87% of the modules offered have an inclusive education focus (covering broad topics such as learner diversity,

inclusive classrooms, learner support, etc.) rather than an impairment-specific focus. The latter is concentrated at the continued professional academic development level and not in formal, full qualifications, with only one higher education institution developing a full qualification in visual impairment studies and one in D/deaf education, and none in severe to profound intellectual disabilities.

The overall finding was that there is a severe lack of teacher education at universities that equips teachers for inclusive education. Where modules or courses were offered on inclusive education, the focus tended to be on inclusive education policy and on learner diversity, with minimal coverage of educational implications of different impairment types. Training in the provision of specialized support within the domains of vision, hearing, learning and cognition was hardly available at all. Some participants in this study suggested that this dearth of specialized training was a direct result of the move toward an inclusive education system. The assumption reflected by this move is that issues of disability can be addressed through a generic approach to learner diversity.

To address this gap, some NGOs and DPOs have offered impairment-specific training courses. But this is largely unsustainable due to the financial precarity of these organizations, which is not addressed by the DBE. However, there was an agreement across participants that the contribution of these organizations, both in terms of facilitating impairment-specific teaching skills and the valuable participation of parents and people with disabilities, cannot be overlooked.

This study concluded with several recommendations regarding teacher education to address disability inclusion in education. Firstly, there needs to be partnership between training entities and the DBE and the DHET. This would involve making use of the various training mechanisms in the country, including university qualifications, short courses and training offered by NGOs and DPOs, which are currently not coordinated to best serve teacher and learner needs.

Secondly, since teachers in South Africa may be employed in special, full service or ordinary schools based on their initial teacher education, all teachers should have basic knowledge of how to support learners with disabilities in regular school classrooms. This becomes even more necessary as support



for learners with disabilities becomes stronger in ordinary schools, as per the long-term plan of inclusive education policy (Department of Basic Education, 2011). This will likely lead to an increase in the number of children in ordinary schools who are entitled to have their impairment-related learning needs met in this setting by appropriately trained teachers.

Thirdly, teachers in special schools should be specifically trained in both inclusive education and impairment-specific teaching strategies. If they are not trained with these specific skills, then the argument for placing children in special schools in the first place becomes fallacious, as they are not getting “special” teaching. While most special schools in South Africa offer some sort of induction or in-service training on inclusive education, this is frequently haphazard and not mandated by the education departments (McKenzie et al., 2018). While the “centers of excellence” at selected South Africa universities are developing specialized courses that might work for these teachers, we are a long way off from ensuring that every teacher entering a special school has a solid background in the learning needs associated with the specific impairment that the school aims to address. Therefore, additional in-service and short courses need to be set up and mandated for teachers in special schools to complete.

Ultimately, study 1 concludes that an overall landscape of teacher education should be developed such that children with disabilities can expect to have their impairment-related learning needs met in a range of learning sites. This will require considering what initial teacher education in inclusive education is required to ensure that inclusivity is practiced by all teachers in all schools. The complexity of working in different settings means that teachers will not be fully served by standard teacher education programs, but rather that they will need to navigate this landscape, highlighting the importance of teacher empowerment and the development of professional learning to help them on this journey.

## Teacher empowerment for disability inclusion study 2: Situation analysis on learner needs

In order to understand what is needed to empower teachers to provide quality education to learners with disabilities in South Africa, the TEDI project undertook a situation analysis of circumstances faced by teachers, learners and education officials in poorly resourced schools. In particular, the study focused on both special and inclusive school settings accommodating learners with severe to profound sensory and intellectual disabilities, aiming to describe the difficulties faced by teachers and learners in these settings. Learner needs remain poorly understood by teachers and other role players,

presenting obstacles to inclusion. To address this, qualitative data were collected from learners, teachers, and others at eight South African schools accommodating learners with disabilities, of which two were special schools and six so-called full-service schools. Some of the issues raised by learners are discussed below.

Learners described a need for emotional and psychological support, rather than just accommodation with access to the curriculum. They felt that teachers often had unhelpful or inadequate understandings of disability, leading to mis-attuned responses to learners. Some learners attributed this to inadequate teacher education. A lack of accessible learning and teaching support materials was a common barrier to accessing the curriculum, at times causing learners with sensory impairments to have to rely on non-disabled classmates for assistance. Teachers, according to many learners, lacked the patience and commitment necessary to facilitate meaningful inclusion in the classroom. A lack of educational support, poor resources and neglect were in evidence in special school residential hostels.

On being consulted regarding their experience of accommodating learners with disabilities, teachers raised a number of issues. Many pointed to a lack of resources and poor infrastructure, which presented obstacles to inclusion. With regard to teaching, teachers felt limited in the challenge of accommodating learners with disabilities due to time constraints, where large classes and a very full curriculum meant that there was little time to spare for dealing with problems of access. Almost all teachers had experienced no tuition in the essential skills of curriculum adaptation, which is pivotal to educating learners with sensory and intellectual disabilities. Related to this was a shortage in assistive technology, as well as the training and technical support needed to ensure its usefulness. Collaborative relationships between parents and teachers are regarded as essential for promoting learner success, however, many teachers regarded parents as not sufficiently committed or involved in their child's education to provide support.

Parents, for their part, described difficulties in gaining admission to a school for their child, as well as problems with resources such as transportation and assistive technology. Many parents were forced to relocate, leaving homes and jobs, in order to secure a place for their child at a willing school. Parents described a sense of disappointment at what they saw as teachers' negative attitudes and low expectations regarding the educational outlook for their child with disability. Parents felt a lack of both guidance and support from school staff. As will be clear, problems with full and equitable access to the curriculum for learners with disabilities remain multiple and pervasive. A key question emerging from this data, therefore, is what is needed in terms of teacher education to address these difficulties.

## Teacher empowerment for disability inclusion study 3: Teachers' responses to needs in teacher empowerment for disability inclusion courses

The TEDI project set out to address the gaps in the training of teachers for disability inclusion by developing four face-to-face short courses: Disability Studies in Education; Education and Care of Learners with Severe to Profound Intellectual Disability; Teaching Learners with Visual Impairment; and Navigating D/deaf and Hard-of-Hearing. The purpose of the courses was to provide educators with skills and insights to increase their confidence and empower them to include learners with disabilities in education. In total, 109 teachers participated in these courses. An evaluation was conducted to ascertain the effectiveness of the courses. The outcome of the evaluation primarily indicates that the course participants have a more comprehensive understanding of disability after successfully completing the courses. This is further discussed below.

Participants experienced the courses as transformative, and their confidence was increased when teaching students with disabilities. In terms of being transformative, participants were enabled to revisit issues around the education of learners with disabilities, recognizing the importance of understanding disability in specific as well as broad terms, the significance of collaborations, the relevance of advocacy, and how all of this promotes empowerment both professionally and personally. This in turn created better collaboration and more effective advocacy work which ultimately results in educator empowerment. This potentially makes educators more active participants as opposed to passive recipients in the transformation of the South African education landscape. The evaluation highlighted that teacher empowerment is crucial for more effective disability inclusion in the classroom setting.

When it comes to previous training on disability issues, there were many participants who did not have training, and those who did receive some form of training only did short courses, with little consistency. This gap in training is where this study can offer some pertinent recommendations. The evaluation revealed that teachers have received very little training in the area of specialized support which they should be offering to their learners. Despite the fact that 75% of the course participants (57.5% in special schools or care centers and 17.5% in the district) were working with children with severe to profound disabilities directly or indirectly, only 43% had any prior training. This training was neither uniform, nor a requirement for teaching children with disabilities. Teachers' lack of confidence in their abilities was evident at the start of the courses, despite the skills they had acquired through in-service courses and school orientation (McKenzie et al., 2018).

## Summary of the findings of the teacher empowerment for disability inclusion studies

Four key conclusions were drawn from the three TEDI studies. First, there is very little teacher training that focuses on teaching learners with disabilities. The dearth of teacher education for children with disabilities needs to be addressed urgently if their right to quality education is to be realized. The findings of these studies point to the need for all educators (pre-service and in-service) to be educated on disability issues. Also, short courses are one way in which the training gap could be filled, particularly while full degree programs are being developed. The evaluation presented here addressed only one avenue for teacher education: short courses for in-service educators. However, our experience in this domain brings to light recommendations for the overall teacher landscape, of which these short courses are a small part. Urgent attention is needed for specialized training for teachers who will work in special schools. This should consist of full qualifications at a pre-service or in-service level that relate to the special educational needs of learners in special schools.

Furthermore, teacher training should focus not only on instrumental/technical skills, but also on empowerment. As much as teachers in special schools need training in specialist skills, they also need to be experts in supporting inclusive practice through collaboration with classroom teachers and a multidisciplinary team. For example, in [Table 1](#), at initial teacher education full qualification, there was no focus on inclusive education. Teachers need to empower themselves to access training and to develop their disability inclusion skills over time. While this must be the responsibility of teachers themselves, there should be increased support for teacher development from all relevant stakeholders. Finally, any training that is developed needs to be evaluated so that we know whether or not it is effective. Further research needs to explore the long-term impact of this type of training and compare it with other forms of training to understand better what type of training works best and for what purpose. Future research should be able to help ascertain what will facilitate the training of teachers to be more empowered in offering quality education to learners with disabilities.

## Recommendations

After consideration of South Africa's educational and related teacher education context, the influencing factors outlined in this article and TEDI's recent research findings, we make the following recommendations to enhance teacher education that meets the learning needs of learners with severe disabilities.

For initial teacher education, all programs need to equip teachers with the skills to identify learners with disabilities

and the associated support or referral needs of these learners. All teachers need to be able to adopt a flexible teaching approach that includes curriculum differentiation. The universal design for learning (UDL) framework offers great potential for addressing diversity and meeting a wide range of learning needs in all classrooms and should be considered for inclusion in the teacher education curriculum as a powerful tool to support learning (Scott et al., 2017). Initial teacher education programs should be required to not only include Information and Communications Technology (ICT) integration, but also instruction on how to use assistive devices to overcome specific learning barriers.

The DHET should specify formal qualifications differentiated according to impairment-specific training requirements and related learner needs for teachers wishing to enter special schools. These might be offered at an initial qualification, pre-service level or offered at an advanced in-service level. This should not be done in isolation from general teacher education, but rather general, inclusive, and special (impairment specific) teacher education should be aligned. In this way the recognition that the majority of barriers to learning can be addressed through quality inclusive teaching is necessary and that this is a prerequisite for teaching. “Special” interventions are needed less and less as teachers become more familiar with addressing diverse learning needs.

In time, such specialized qualifications might become mandatory for special school teachers, or itinerant support teachers who act as specialists in addressing different impairments across regular schools. Professional teaching standards for inclusive education specialists, who might fulfill the role of school or district-based support team leaders, should also be included in initial or postgraduate teacher education programs.

The needs of children with severe to profound intellectual or multiple disabilities are not considered in teacher education and this needs to be addressed through the specification and creation of a formal, accredited qualification for such teachers.

For these recommendations to take effect, it will be important to seek funding for incentives to encourage pre-service teachers to complete formal teacher qualifications in inclusive and impairment-specific specialized education.

## Conclusion

There needs to be greater provision of teacher education courses on disability inclusive practice for all teachers at pre-service and in-service levels. There needs to be a focus on ongoing professional development through the provision of multiple learning opportunities that are incentivized. All teacher education courses need to have a significant focus on disability

rights and family involvement in the education of children with disabilities.

Specialist full qualifications need to be supported and teachers need to be incentivized to do these courses. Attention should not only be given to specialist skills, but also to collaboration and teamwork. More engagement and collaboration among relevant stakeholders should be encouraged. Teachers should be supported to take responsibility for their own learning so that they become empowered to adopt an attitude of lifelong learning and ongoing professional development.

Disability inclusive teacher training has the potential to facilitate, transform and empower teachers to provide more confident teaching for children with disabilities. There is thus a tremendous need and opportunity for teacher training in South Africa to manage the dire situation in this disability inclusion context.

## Author contributions

KN formulated the research question, collated pieces of wrote-up by co-authors, and structured and analyzed the data of this article. RV conceptualized and reviewed TEDI study 3, analyzed the data, and supported the writing of the article. JM conceptualized and reviewed TEDI study 1, analyzed the data, and supported the writing of the article. JK supported collection and the analysis of the data that forms part of the article, and reviewed the drafts of the article. AK supported the analysis of the data and wrote and reviewed the drafts of the article. BW reviewed TEDI Study 2 and provided input to the first draft. All authors contributed to the article and approved the submitted version.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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