

AUTHOR:

Dr Edwin Darrell de Klerk¹ 

Prof June Monica Palmer² 

AFFILIATION:

¹Sol Plaatje University, South Africa

²Central University of Technology, South Africa

DOI: <http://dx.doi.org/10.18820/2519593X/pie.v40.i1.5>

e-ISSN 2519-593X

Perspectives in Education

2022 40(1): 80-95

PUBLISHED:

04 March 2022

RECEIVED:

10 August 2021

ACCEPTED:

23 October 2021

Technology inclusion for students living with disabilities through collaborative online learning during and beyond COVID-19

Abstract

Technology-based platforms in higher education institutions (HEIs), including online learning, require innovative approaches to ensure inclusive and transformative educational spaces for students living with disabilities. Achieving social equality, technology access and inclusion may contribute to ensuring a seamless instructional design for students living with disabilities in HEIs amid and beyond COVID-19. COVID-19 has obliged HEIs to adopt alternatives to learning and teaching, making the use of open distance learning (ODL) amid the pandemic more relevant. This theoretical paper considers the significance of ODL by demonstrating how to achieve technology inclusion for students living with disabilities through collaborative online international learning (COIL). Situated within the collaborative learning theory, this paper offers a disability perspective to learning in HEIs, through an analysis of stipulations in the Strategic Policy Framework on Disability for the Post-School Education and Training System (2018). The findings indicate that the application of COIL for students living with disabilities may transform their learning experiences and unlock new pathways for their development. The paper recommends that COIL may be used as a response to ensuring access and inclusive education provision for students living with disabilities in HEIs.

Keywords: Collaborative online international learning; COVID-19 pandemic; inclusive technologies; open distance learning; strategic policy framework on disability; students living with disabilities.

1. Introduction

The COVID-19 pandemic necessitated that HEIs migrate from conventional face-to-face approaches to exclusively online methods of learning and teaching. Thus, emphasis shifted to the execution of distance learning through several technical tools and Internet-based learning systems (Zhou *et al.*, 2020). However, the adjustment from direct to virtual education, is likely to affect students in HEIs undesirably, especially those living with disabilities and who might find it challenging to adapt to a different mode of learning. In contrast, not only did the COVID-19 pandemic exacerbate existing educational inequalities, but it has also demanded

innovative ways for students to collaborate with peers at any time and in any part of the world through learning methods such as COIL (Dhawan, 2020; Liguori & Winkler, 2020).

COIL is considered a learning system that promotes virtual collaboration on a mutually beneficial project between students (and lecturers) from two geographically and culturally distinct areas (Appiah-Kubi & Nichwitz, 2020). This virtual mobility creates a socially varied computer-generated setting for online collaboration where students can enhance and explore their personal abilities as well as develop their intercultural proficiency skills (Rubin, 2015).

Appiah-Kubi and Annan (2020) investigated the participation of engineering technology students from Ghana and the University of Deyton, respectively in an 8-week COIL programme, who differed in terms of language, culture and geographical regions. In this comparative study the students from the respective universities recounted that the teamwork was either effective or remarkably effective. Similarly, King de Ramirez (2021) explored a COIL project among campus students, registered in HEIs, situated in the Arizona-Sonora Megaregion. The results indicated that students revealed international citizenship abilities such as the capacity to analyse intercontinental associations as well as global interconnectedness.

Notwithstanding the fact that the above studies made contributions to university students' ability to participate in COIL activities, the current study focuses on advancing COIL and technology inclusion for students living with disabilities, during and beyond the pandemic. In this regard, UNESCO proposes that, "[n]etworking among universities and institutions of higher learning in developed and developing countries should be promoted" (1994:28). When HEIs would develop the skills of students living with disabilities, they may be in a position to offer a desirable environment for participation and achievement at an international level. The central question that this paper addresses is: *How may HEIs achieve technology inclusion for students living with disabilities through collaborative online international learning (COIL) during and beyond COVID-19?*

In an attempt to provide answers to the aforementioned question to offer a disability perspective to learning in HEIs, we analysed stipulations in the Strategic Policy Framework on Disability for the Post-School Education and Training System (Republic of South Africa [RSA], 2018). An analysis of the indicated policy may be deemed relevant because it provides direction in terms of the enhancement of admission to and accomplishment in post-school education and training for individuals living with disabilities. Furthermore, through an implementation of this strategic policy framework, redress and transformation with respect to inclusion of individuals living with disabilities may be enhanced (RSA, 2018).

2. Inclusive and transformed spaces in higher education

In what ways do HEIs attempt to render inclusive and transformed spaces to include all students in academic activities? Ashwin and Case (2018) note that such a question enjoys urgent attention internationally, because of its purpose to invite thoughts regarding inclusivity and transformation as tools to develop more understanding about students living with disabilities.

Although the meaning of inclusive has been entrenched in the thoughts of many to refer to individuals with learning, physical and/or sensory challenges, it should, however, not exclude individuals who experience obstacles due to a low socio-economic standing or poverty, among others (Maghuve, 2015). This is regarded as the social model of inclusivity, which stands in contrast to the medical model (Art Beyond Sight, 2014). First, the social model supports

the view that while sensory, physical, psychological and intellectual dissimilarities may cause personal practical constraint or deficiencies, the latter aspects do not necessarily lead to disability except if society fails to take reason for and embrace individuals notwithstanding their discrete differences. Secondly, the medical model describes a disability as the consequence of a physical circumstance, which is inherent to the individual and which may decrease the individual's value of life and cause strong difficulties to the individual. Considering the aforementioned explication of the social and medical models, the White Paper on Disabilities confirms that inclusivity involves, "a paradigm shift away from the specialness of people to...a wide range of individual differences and needs" (Department of Social Development [DSD], 2016: 22). Interpreting the latter views from an Arendtian perspective, a focus on inclusivity calls for action to put education first. This implies that education does not exist to remedy what is wrong with the world, however unjust or exclusive, but that individuals should be provided with opportunities to practise thinking about the art of being, whilst judging their relationship with others (Korsgaard, 2016). In HEIs, the role of education should thus be to provide equal opportunities and fostering a sense of belonging so that students (also students living with disabilities) experience, "a level of supportive energy and commitment from others so that you can best fully participate in society with no restrictions or limitations" (DSD, 2016: 8). In so doing, students living with disabilities may be able to pursue activities independently with necessary support to enable them to make decisions that may positively affect their lives. When HEIs focus on establishing such spaces, inclusivity may be recognised as a moral and transformable act. Whilst inclusivity as a moral act suggests that, "all children are worth educating, that all children can learn" (Rouse & Florian, 2012: 10), transformability implies that, "human beings are capable of extending and widening their meaning horizons in significant ways" (Murdoch *et al.*, 2020: 668).

Moreover, to widen meaning horizons, the classroom, curriculum knowledge production and information sharing should be geared towards transformed spaces in HEIs (Osman, Ojo & Hornsby, 2018) where equal opportunities and transformative learning are promoted. Howlett, Ferreira and Blomfield (2016) posit that transformative learning may stimulate students to seriously interrogate and reflect on their principles and assumptions, because "learning happens all the time and everywhere; heavily supported by technology and the ease of access to resources that it provides...to create flexible, and multipurpose spaces" (Goria & Guetta, 2020: 7). To illustrate (in terms of students living with disabilities), Murdock *et al.* (2020) refer to Jean-Jacques Rousseau's *Emile*, specifically to a consciousness of learning in the territory of intelligence awareness that unavoidably embraces *Emile's* personal physical effort to reach new objects, such as a ball (as opposed to the ball being brought to *Emile* by the teacher), to gain an understanding of his world.

In the aforementioned example, the use of "physical effort" may, for instance, be associated with the struggles students living with disabilities might experience, especially when they are, "denied access to full participation" (DSD, 2016: 4). Therefore, it is imperative that HEIs transform existing spaces through Assistive Technology (AT) and inclusive learning technologies with a universal design for learning features into flexible and inspiring areas where students living with disabilities may learn to appreciate new experiences, consider such experiences, whilst taking action to rethink knowledge, ability and beliefs (English, 2016). Being cognisant about new experiences, HEIs would be positioned to enable students living with disabilities to negotiate their skills in different places of interaction with other individuals or whilst engaging with technology.

3. Technology inclusion for students living with disabilities

Dikusar (2018) asserts that technology increases the independence of students living with disabilities, freeing them from the continuous need for uninterrupted teacher involvement. Consequently, students have a choice regarding the rapidity of learning that is suitable for them that may lead to more tailored learning. Arguably, an implementation of technologies may allow simplifying communication and increase educational abilities of students living with disabilities. It is worth mentioning that technology inclusion for students living with disabilities aligns with the 2030 Sustainable Development Goal 4 of the United Nations (UN), which pursues to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, 2015: 19–20). The realisation of this goal may help decrease educational inequity for students living with disabilities, specifically during a time such as the COVID-19 pandemic. Thus, to guarantee that logical, continuing solutions are available, policy and legal strategies must be explored (UNESCO, 2020). Emphasising the importance of technology inclusion, Peters contends that,

We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive (2017: 28).

The all-inclusive nature of the technology inclusion requires that HEIs internationally need to appraise their syllabi so that it would align with competencies and abilities that are necessary for students living with disabilities. The implication that individuals need to learn new skills quickly (Atiku & Boateng, 2019; Whalley *et al.*, 2021) necessitates that HEIs position themselves in such a fashion that students living with disabilities are enabled to increase their capacity to function in these spaces (Cloudebate, 2019). The COVID-19 pandemic has accelerated technology inclusion in HEIs, intensifying the digitalisation of human collaboration and virtual education, among others. As such, HEIs should find mechanisms to mitigate challenges pertaining to technology inclusion by increasing the use of digital technology, whilst sharpening the skills and capabilities of students living with disabilities (Daskal & Sherman, 2020; World Economic Forum, 2021)

We contend that technology has proven to be a useful and necessary tool to ensure that HEIs continue to provide essential academic services to students living with disabilities during the COVID-19 crisis. Within this context, technology inclusion may profoundly influence the lives of students living with disabilities and ensure that they have access to information and communication with their international counterparts.

4. Advancing open distance learning through collaborative online international learning

UNESCO (2016) mentions that it is imperative to guarantee that inclusive education for students living with disabilities is possible through access to education. Although UNESCO (2016) argues for an all-encompassing education for students living with disabilities, the situation regarding open distance learning (ODL) differs in many countries around the world. For instance, China, with a robust scientific organisation, is prosperous in providing ODL, but countries, such as Mongolia and Vietnam are not so successful, due to weak Internet systems (World Bank, 2020). Globally, the quick transition to ODL during COVID-19 provided

stability to learning processes, but also intensified education inequalities among students, especially those with a poor economic status, as well as those living with disabilities, among others (Aristovnik *et al.*, 2020). Considering that the pandemic might continue for a lengthier period than anticipated, this situation will force HEIs to be prepared and equipped with the necessary tools to support students, especially those living with disabilities. Notably, even before COVID-19, it was acknowledged that students internationally did not have equal opportunities relating to access to equipment such as the Internet, tablets and computers (Yazcayir & Gurgur, 2021).

The challenge with ODL has always been an absence of clear information and the intricacy of the work as well as the study environment of students (Zhang *et al.*, 2020). On a more positive note, Charles Wedemeyer, who is regarded as the father of American distance education, posits that the fundamental features of ODL comprise, better student answerability, accessible teaching, effective combination of broadcasting and approaches, adaptation to differences including the disabled individuals and a comprehensive variety of start, stop and learn times (Wedemeyer, 1977). Wedemeyer's (1977) view suggests that education should be a collaborative and inclusive practice and, therefore, ODL may be considered a viable option as it accommodates millions of students who can study remotely. Significantly, ODL emphasises the removal of challenges relevant to learning and flexibility of learning provision as well as broadening openness to education for the majority of individuals and people living with disabilities so that the learning process can continue (Angba, 2020).

In an attempt to ensure that students living with disabilities use ODL optimally, this paper suggests that a collaborative approach is key. Stoytcheva (2017) regards a collaborative approach as an active process aimed at encouraging and supporting students to work collaboratively to generate understanding, that is to discover, to search for strategies to transform, and, by so doing, to pursue the theoretical understanding required to solve problems. Considering Stoytcheva's (2017) view and drawing on Esche (2018), this paper argues that COIL may be considered as an effective pedagogy that may support the design of a learning atmosphere for students living with disabilities in distinct geographical locations. Appiah-Kubi and Annan (2020) state that COIL typically comprises an organised collaboration between two or more lecturers from HEIs who teach related courses. During collaboration, lecturers are positioned to design a common programme, study material or specific outcomes with a joint experimental knowledge instrument. The experimental learning instrument, as an example of project work, functions as the catalyst for student partnerships (Appiah-Kubi & Annan, 2020). The lecturers then accept mutual obligation in mentoring the students on forming partnerships.

During a COIL study, conducted in two faculties within HEIs in the United States and Mexico City, Marcillo-Gómez and Desilus (2016) explored the comparisons and variances between the two faculties in terms of the challenges of teaching students in two different countries, the effect of students' culture on perceptions and participation and how COIL may provide students with unique academic opportunities. The results revealed that students' perspectives broadened, whilst they learnt how to understand and appreciate the differences and the realities of each student. Mudiamu (2020) asserts that such an example of COIL may be understood as a faculty-driven intervention for internationalisation where all students are afforded opportunities for global learning.

HEIs' commitment to support students living with disabilities to participate in COIL as part of ODL, should focus on fostering technology inclusion so that collaboration can be effective. Ahmed concedes that,

the need to pay attention to the processes of inclusion rather than on the promise of inclusion, which is capable of concealing and extending the exclusionary practices of an institution by giving the impression that those practices are overcome or undone (2012: 183).

Pertinently, HEIs should commit to technology inclusion, and move beyond conservatism and intolerance about inclusivity, so that students living with disabilities and their embodied experiences feature as agents for positive collaborative learning (Fernandez, 2021).

Ndlovu (2021) considers AT as ideal for technology inclusion for students living with disabilities. Students living with disabilities frequently experience difficulties with functionality, resultant from their deficiencies, as well as inaccessibility with respect to the social and physical environments they may find themselves in, thereby limiting their functionality. Recognised as a human right, governments around the globe, in Africa and in South Africa, made a commitment to facilitate education by empowering every individual to gain admission to learning (Ndlovu, 2021). Governments and HEIs should ensure that AT is available to disabled individuals, because there seems to be a significant disparity across countries in collaboration, in terms of the availability of funds to make online collaboration possible (Hersh & Mouroutsou, 2015). In this regard, HEIs should use existing technologies together with available AT to guarantee that students living with disabilities will be able to participate in COIL. By providing appropriate AT and digital devices, students living with disabilities may have increased access to online learning (Tony, 2019).

5. Theoretical framework: Collaborative learning theory

Collaborative Learning (CL) stems from the theory of Vygotsky's (1978) perception of the zone of proximal development, which is grounded on people's capacity to learn how to use socially applicable apparatuses (such as computers) and culturally grounded symbols (such as language and writing). Notably, the zone of proximal development not only addresses cognitive development, but it also makes room for human learning (Vygotsky, 1978). In transitioning this zone to a collaborative learning experience, individuals are afforded opportunities to work with others in broadening their learning experience whilst sharing knowledge, exchanging ideas and solving problems (Omrod, 2012). As such, individuals are afforded a myriad of enriching experiences to explore perspectives that may differ from their own.

The afore-mentioned indication, "to work with others" (Omrod, 2012), resonates with the aim of this paper, which is to outline HEIs response to achieving technology inclusion for students living with disabilities through collaborative online international learning during and beyond the pandemic. Fundamentally, CL is part of a social consciousness of information, implying that it is, "a process of negotiation or joint construction of meanings which applies to the whole process of teaching" (Roselli, 2016: 256). Roselli further mentions that such a process, "is not about circumstantial application of group techniques, but the promotion of exchange and participation of each member in order to build a shared cognition" (2016: 256). As such, students are motivated to collaboratively find answers to challenges, through dialogue, instead of remembering accurate answers (Harasim, 2012).

When students living with disabilities are encouraged to participate in COIL, CL suggests that three aspects should be considered, namely the learning design, learning collaboration and learning environment. The learning setting encompasses apparatuses that can be utilised to simplify the collaborative setting. Razali *et al.* (2015) state that an available and flexible setting has the potential to positively enhance interaction and collaboration between students. Learning interaction is significant in connecting students with others, whilst being supportive of the relationship between students and lecturers (Razali *et al.*, 2015). For the learning design, lecturers could select applicable collaboration skills, whilst providing students with a variety of learning activities and resources (Kaur, Shiram & Ravichandran, 2011). We argue that CL is a catalyst for technology inclusion for students living with disabilities, through COIL, during and beyond a pandemic by analysing stipulations in education policy.

6. The rationale for education policy analysis

Hartshorne offers a comprehensive description of education policy as, “a course of action adopted by government, through legislation, ordinances, and regulations, and pursued through administration and control, finance and inspection, with a general assumption that it should be beneficial to the country and its citizens” (1999: 5). Interpreting Hartshorne (1999), a phrase such as “a course of action” may suggest that policy signifies a conversational approach and is indicative of practices and actions that refer to wider social improvements of teaching (Ball, 2015). Drawing on Ball (2015), we argue that education policy may consist of collaborating texts that may provide information regarding technology inclusion for students living with disabilities through collaborative online learning during and beyond a pandemic. Reading education policy, “is not just a matter of understanding its educational context or reading it as pronouncements of policy-makers, but rather to bear in mind that the discursive formations they contain... await decoding” (Olssen, Codd & O’Neill, 2004: 2).

When education policy analysis comes into the picture, reference needs to be made to two dissimilar aspects of policy analysis; that is analysis for policy and analysis of policy (Codd, 1988; Olssen *et al.*, 2004). Analysis for policy involves policy advocacy, aiming at providing policymakers with recommendations and information with reference to the modification or making of authentic policies. Analysis of policies may include an investigation into policy purposes, policy effects and policy content. With the afore-mentioned views (Codd, 1998; Olssen *et al.*, 2004) in mind, this paper relates to the classification of analysis of policy, more precisely to the analysis of stipulations in the Strategic Policy Framework on Disability for the Post-School Education and Training System (RSA, 2018). Initially, an analysis of stipulations in the afore-mentioned policy may provide guidance to HEIs to achieve technology inclusion for students living with disabilities through collaborative online international learning during and beyond the pandemic. Significantly, when, “we focus analytically on one policy or one text we forget that other policies and texts are in circulation and the enactment of one may inhibit or contradict or influence the possibility of the enactment of others” (Ball, 1993: 6). Therefore, our intention is to strengthen our analysis by also referring to stipulations in the Salamanca statements and framework for action on special needs education (UNESCO, 1994) and White paper on the rights of persons with disabilities (Department of Social Development [DSD], 2016).

7. Analysis of the strategic policy framework on disability for the post-school education and training system (2018)

The Strategic Policy Framework on Disability for the Post-School Education and Training System (RSA, 2018) is a policy document that gives direction in terms of the enhancement of access to and attainment in post-school education and training (including at private institutions) for people living with disabilities (RSA, 2018). Significantly,

through the implementation of this strategic policy framework, transformation and redress with regard to full inclusion, integration and equality for persons with disabilities in the post-school education and training system, will be accelerated (RSA, 2018: i).

Drawing on the promise of the aforementioned, stipulations in the Strategic Policy Framework on Disability for the Post-School Education and Training System (RSA, 2018) will henceforth be analysed to search for policy perspectives that may provide guidance to HEIs to achieve technology inclusion for students living with disabilities. Such policy perspectives relate to COIL in that it may provide opportunities to students living with disabilities to interact with counterparts at international HEIs, aiming at developing digital skills and competencies whilst working collectively on subject-specific learning assignments.

We thoroughly scrutinised the strategic policy framework and conducted a pre-analysis of many stipulations that might be relevant to students living with disabilities. We then chose those stipulations we were convinced could be considered strong representatives of technology inclusion for students living with disabilities through COIL. We reread the selected stipulations and extracted particular words and phrases for analysis. In so doing, through analysis, we were able to propose activities that HEIs could use to achieve technology inclusion for students living with disabilities through COIL during and beyond COVID-19.

Arguably, through COIL, ODL can be advanced because it, “has become indispensable during the COVID-19 pandemic, during which nearly all traditional academic and student mobility has halted worldwide; indeed, COIL may have found its moment to realize its long-imagined potential” (Harris, Se & McKeown, 2021: 1352).

7.1 Inclusive and transformed spaces as a basis for COIL

The Strategic Policy Framework on Disability for the Post-School Education and Training System stipulates that, “[w]e have to have a socially inclusive society that cuts across state boundaries” (RSA, 2018: v); and that, when considered from a disability lens, it is necessary to, “provide optimal opportunities for learning, the creation of knowledge and the development of intermediate to high level skills in keeping with international standards academic and technical quality” (RSA, 2018: 41).

An emphasis on “inclusive”, “cuts across state boundaries”, “optimal opportunities for learning” and “in keeping with international standards” may directly be aligned with COIL. The COVID-19 pandemic has advanced efforts to make learning, based on international collaboration, more accessible, inclusive and equitable for all students. Such collaboration serves as encouragement to students to move beyond their national identity, in an environmentally friendly and sustainable way (Streeter-Ferrari & Wanderi, 2021). In ensuring that students living with disabilities are provided equal learning opportunities on an international level, HEIs should regard COIL as a focal point of ODL in facilitating information exchange, which would enable interaction and knowledge sharing between students at any time (Zarzycka *et al.*,

2021). The task of HEIs would thus be to create inclusive and transformed learning spaces that provide for an, “aesthetically pleasing, stimulating and culturally inclusive atmosphere that helps promote engagement in learning activities” (Holeton, 2020: n.p.). The creation of such spaces may extend learning outside the walls of HEIs and remove some of the limitations enacted on learning, such as space and distance (Howcroft, 2017). This statement (Howcroft, 2017) is confirmed by the notions that, “inclusion and participation are essential to human dignity” (UNESCO, 1994) and for the creation of, “a free and just society inclusive [of] all persons with disabilities” (DSD, 2016: 8). We argue that inclusive and transformed spaces, as a basis for COIL, may ensure that students living with disabilities feel respected and valued for who they are, enabling them to fully participate with others with no restrictions or limitations.

7.2 Technology inclusion as a prerequisite for COIL

The incorporation of technology in the learning and teaching of students living with disabilities may result in creating an environment of collaboration, communication and support in and beyond their classes (Al-Kindi & Al-Suqri, 2017; Awidi *et al.*, 2019). In this regard, the Strategic Policy Framework on Disability for the Post-School Education and Training System accentuates the significance of, “instructing all students through developing flexible classroom materials, using various technology tools, and varying the delivery of information or instruction” (RSA, 2018:23); and it also emphasises, “the use of specialised technology, assistive devices and assistive services geared for people with disabilities” (RSA, 2018:55).

Interpreting notions such as “various technology tools” and “assistive services geared for people with disabilities”, it seems that it is required from HEIs to deliberately implement, “an integration of high quality, synchronous, in-person learning environments with online technologies to enable students to more rapidly build skills and knowledge asynchronously” (Penprase, 2018:212). HEIs should ensure that AT are readily available for students living with disabilities and that it matches with the standards for international collaboration. Notably, AT is made up of rehabilitative, assistive and adaptive technologies, as well as associated services, which are explicitly made or modified to serve as practical support for students living with disabilities (Chukwuemeka & Samaila, 2020). Similarly, Beelen and Jones (2015) contend that the availability of assistive technology like iPods, iPads and computers may be referred to as an internationalisation at-home activity that supports the unfolding of international perspectives in the curriculum for students living with disabilities. DSD states that AT will, “enable persons with disabilities and learning differences to attain independence” (2016:3). In essence, assistive technology helps students living with disabilities’ learning processes become easier, whilst making their collaborative experiences more enjoyable and transformative (Wallace, 2018).

Arguably, COVID-19 has required that HEIs changed the way in which learning and teaching were offered and had to obtain innovative technology abilities within short spaces of time. Technology inclusion in HEIs amid the pandemic brought substance to a stronger focus on COIL in that, “ODL’s popularity has skyrocketed as it offers the optimum solution to the academic stress during this current situation” (Adnan & Anwar, 2020).

7.3 Transforming the experiences of students living with disabilities in HEIs

Transformative learning in education necessitates the commitment of HEIs in that, “[t]he empowerment of people with disabilities is critical in achieving an equitable and inclusive society” (RSA, 2018:12). HEIs should be cognisant that an active role in transforming the

lives of students living with disabilities may be attained through, “education programmes and practices conducive to critical discourse and creative thinking” (RSA, 2018:38).

Indications such as “empowerment” and “education programmes and practices” may be indicative of HEIs’ task to offer abilities to students living with disabilities regarding an integration of practice and theory, as well as development of synergic activities in groups, as well as the adoption of critical thinking (Howlett, Ferreira & Blomfield, 2016; Wooltorton *et al.*, 2015). Such empowerment practices may inspire students living with disabilities not only to gain necessary international learning experiences and intercultural communication abilities, but also help to transform preconceived notions of knowledge and abilities (Ortega-Sánchez *et al.*, 2018; Riauka, 2019). A transformative approach to COIL signifies a, “fundamental change in the way we see ourselves and the world in which we live” (Merriam & Caffarella, 1999:318). HEIs should further fully embrace and respect the experiences of students living with disabilities and afford opportunities to participate in COIL. This may enable them, “to arrive at a tentative best judgement upon which to act until new perspectives are encountered” (Marsick & Mezirow, 2002: n.p.), whilst they simultaneously learn how to, “reflectively and critically take action” (Marsick & Mezirow, 2002: n.p.) regarding their transformed frame of reference.

Participation in COIL by students living with disabilities can indeed be regarded as a way to advance ODL because it can generate opportunities to reconsider educational conduits by using international learning initiatives, assisting individuals to have a fresh attitude and innovative techniques of thinking about how they relate to the world.

8. Conclusion

This paper endeavoured to answer the question: How may HEIs achieve technology inclusion for students living with disabilities through collaborative online international learning (COIL) during and beyond COVID-19? The South African Government’s policy instructions are intended to empower individuals with disabilities through skills development, education, training and participation. One possible way to empower students living with disabilities may be through ODL in which HEIs make room for inclusive and transformed spaces, learning of students living with disabilities amid the 4IR and through advancing participation in COIL.

Through an analysis of the Strategic Policy Framework on Disability for the Post-School Education and Training System (RSA, 2018), this paper contributes to knowledge by recommending that HEIs should consider: the creation of inclusive and transformed spaces as a basis for COIL; regard technology as a prerequisite for COIL as significant and transform the experiences of students living with disabilities. Inclusive and transformed spaces should allow for optimal opportunities for learning through a collaboration and discussion of knowledge between students living with disabilities at any time. An inclusion of technology should be geared towards assisting students living with disabilities to experience international learning processes as accessible and transformative. By transforming their experiences, students living with disabilities may be positioned to transform their communication skills, as well as expand their knowledge and abilities.

This paper supports other findings in the academic literature on COIL. Lakkala *et al.*’s (2021) study explored and compared the collaborative ways in which students in four schools in Austria, Finland, Lithuania and Poland have been supported in their learning. The study concluded that collaborative action should be regarded as significant in creating inclusive

spaces to support students. In another study, Kolm *et al.* (2021) conducted a systematic review on international online collaboration competencies in higher education students. The study found that methods to teach and evaluate international online collaboration are underdeveloped and that professionals should be equipped with knowledge as to how to facilitate global virtual teamwork.

We suggest that future research should focus on the experiences of students living with disabilities regarding COIL, especially in terms of how HEIs support them in terms of the creation of inclusive and transformed learning spaces, as well as the inclusion of technology to enable them to participate in virtual teaching and learning opportunities.

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