Addressing Sustainable Development Goal (SDG) 4 on quality higher education, Transforming Zimbabwe, the 2030 Agenda for sustainable development

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***Abstract*: Quality, sustainability and development is at the heart of higher education systems the world over. What takes place in the teaching and learning environments is fundamentally important to the well-being of the learners. Quality higher education seeks to provide for sustainable development and thus satisfies learning needs and enriches the lives of learners and their overall experience of living. Education for sustainable development just like quality in education, empowers learners to take informed decisions and responsible action for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. The aim of this article is to explore the complexity of raising higher education quality in Zimbabwe and suggesting strategies of strengthening quality, sustainability and development in higher education. Specific focus on the article is on sustainable development goal 4 which proposes that education quality is the key to achieving sustainable development and encouraging the integration of Education for sustainable development in teaching and learning.**

***Key words*: Agenda 2030, Education for sustainable development, Higher education, Quality education, Transformation, Zimbabwe**

I. INTRODUCTION

Since the achievement of independence in Zimbabwe, there has been enormous progress in ensuring inclusive and equitable quality higher education and promoting lifelong learning opportunities for all. While Zimbabwe has managed to widen and deepen access to higher education, disparities exist in providing equal access to quality higher education. Achieving inclusive and quality higher education for all re-affirms the belief (Boereen, 2019) that higher education is one of the most powerful weapon and proper vehicle for achieving sustainable development. Quality education is one of 17 Global Goals that make up the 2030 Agenda for Sustainable Development (WEF, 2011; Gabay, 2015; Boereen, 2019). Education for Sustainable Development (ESD) was a United Nations program that is defined as education that encourages changes in knowledge, skills, values and attitudes to enable a more sustainable and just society for all. In this article, we argue that ESD is an interdisciplinary learning methodology covering the integrated social, economic and environmental aspects of formal and informal curriculum which identifies education as an essential tool for achieving sustainable development. The United Nations Sustainable Development Goal 4.7 proposes that Education for Sustainable Development should be included at all levels of education.

In September 2015, the UN formally adopted the 17 sustainable development goals SDG as an outcome of a major global consultative process. UN advocates for providing the opportunity to progress towards implementing education for sustainable development that fosters knowledge, skills, perspectives and values that lead towards more sustainable future. The Sustainable Development Goal 4 (SGD4) recommends for in education which has deep roots in many international declarations such as:

- Universal Declaration on Education for all
- Universal Declaration of Human Rights
- Millennium Development Goals
- Convention on Right of the Child
- World Declaration on Education for all
- Jomtien Declaration 1990
- Dakar Framework for Action 2000
- Incheon Declaration 2030, transforming the world the 2030 Agenda.

All these declarations considering education as the key and crucial for the wellbeing of individuals, nations and the world (UNESCO, 2005; WEF, 2016; UNESCO, 2013; Ozga, 2013; UNESCO, 2018). All the declarations considered education as a weapon and key driver for Sustainable Development and many International Conferences were organised with the aim of bringing together global experience and expertise to highlight and strengthen the role of education towards realising the SDGs, creating an opportunity to build upon the learning from UNESCO and recognising education as a key enabler (Mohanty & Dash, 2018; Agbedehin and Lotz-Sisitka, 2019.

This article therefore explores the specific targets within the fourth United Nations Sustainable Development Goal 4 (SDG4) on quality education (WEF, 2016). The aim of the study is to explore the complexity of raising higher education

quality in Zimbabwe. The article opens with a brief overview strongly oriented and structured towards Education for Sustainable Development (ESD) and specifically on SDG4 Agenda 2030.Global Goals for transforming the world. A separate section on structure and agency underlining their contribution to achieving ESD and building further to break down the ten specific SDG4 targets on quality education are broken down mapping insights from the critical realist theory of structure and agency (Bhasker, 2010; 2011; Bourdieu, 1984; Giddens, 1984) The literature review and theoretical framework is followed by a brief methodology which is also followed by my research findings. The article concludes with some critical discussions, conclusions and recommendations both for policy makers and for enhancing quality higher education the world over.

II. LITERATURE REVIEW: CONTEXTUALISING ESD

The concepts of ESD have been promoted to address global social, economic and environmental challenges which includes persistent patterns of absolute poverty, poor quality of education and various forms of social and economic inequality. UNESCO, (2014) tells us that ESD is education that allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future. UNESCO (2009) has attempted to develop a definition of sustainable development which has become commonplace; development that meets the needs of the present without compromising the ability of future generations to meet their own needs. ESD requires participatory teaching and learning methods that motivate and empower learners to change their behaviour and take action for sustainable development. Education for Sustainable Development consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way (UNESCO 2014). Since ESD requires far reaching changes in the way it is delivered, UNESCO sponsored the UN Decade for Sustainable Development (DESD) from 2005-2014 to create greater momentum worldwide to bring the collective weight of educational resources to bear on the delivery of education and learning that leads to a more sustainable life in future. The United Nations (UN) decade of Education for Sustainable Development (UNDESD) (2005-2014) significantly highlighted the crucial role of education which it plays in the universal journey towards sustainable development across the globe. In September 2015, at the Incheon Declaration 2030, the UN formally adopted the 17 Sustainable Development Goals (SDGs) as an outcome of a major global consultative process.

Agenda 2030 seeks to transform the world focussing on orienting higher education towards sustainable development with a strong suggestion to review curriculum to ensure multidisciplinary approach. The Agenda 2030 Global Goals brought education and sustainability together with world stage nominating targets and objectives which were designed to empower education systems as agents of change in the campaign against poor quality education. Wals, Mochizuki and Leitch (2017) are of the view that with the adoption of the United Nations Sustainable Development Goals (SDGs) in 2015, sustainable development is now undoubtedly at the very top of the global agenda. Wals and Benavot 2017 argue that, in light of the far reaching demands, sustainable development places on individuals and societies, it is widely acknowledged that education has a key role to play in the pursuit of sustainable development, even though its meaning is not always agreed upon and even contested. ESD is understood as an education which empowers learners to take informed decisions and responsible action for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning and is an integral part of quality education. ESD is holistic and transformal education which addresses learning, content, outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society (UNESCO, 2014). ESD is generally regarded as a particularly promising approach towards ensuring education that provides for environmental integrity and economic viability.

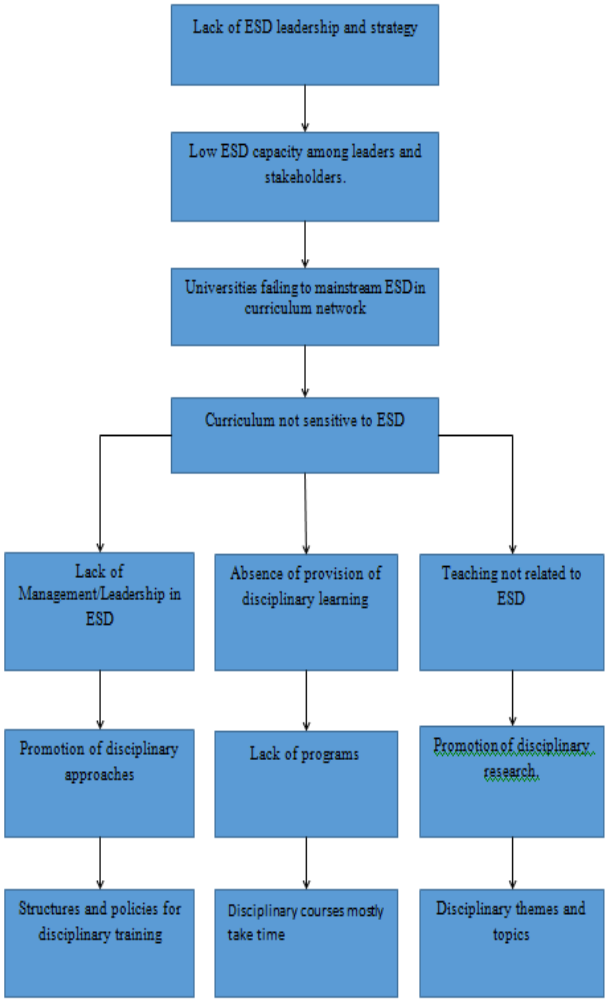
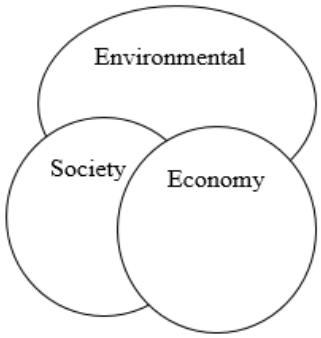


Figure 1: ESD implementation challenges

ESD has been formally included in the SDGs as part of Target 4.7 of SDG4 on education and states that: By 2030, ensure that all learners acquire the knowledge and skill needed to promote sustainable development, including, among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (UNDESA, 2015).

ESD is a very ambitious agenda for education, and given the increased complexity and urgency of current sustainability challenges, education and learning based responses to these challenges will inevitably need to be part of a comprehensive systematic response which calls for adjustments of policies and rethinking of current lifestyles and economic models (UNESCO, 2016). Under these circumstances, education is regarded as a crucial element that enables individuals to be aware of unsustainability and gives necessary knowledge and values for building a more sustainable society. United Nations (UN) decade of Education for Sustainable Development (UNDESA, 2015) advocates for providing the opportunity to progress towards implementing universal quality education that fosters the knowledge, skills, perspectives, values and actions that lead towards more sustainable future.

Integrating ESD in HE teaching and learning.



ACADEMIC
- Teacher education.
- Sustainability education resources.
- Community empowerment.
- Resistance to change.

ADMINISTRATIVE
- No commitment
- No policies
- Action plan
- No network
- No funding

- In this article we argue that the Sustainable Development Goal 4 (SDG4) recommends for quality education for all which has deep roots in most international declarations especial the Dakar Framework for Action which considers quality education as crucial for the wellbeing of individuals and society. SGD4 advocates to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. The need to embed ESD in higher education curriculum is well documented and recognised in international sustainable development dialogues. Learning to change for a better world is the catchphrase often associated with ESD. Underpinning this education movement is a commitment to rethink the purpose of education and to reorient curriculum frameworks and pedagogical practices. ESD seeks to shift education paradigms and extend learning opportunities so that people can contribute to more sustainable futures (UNESCO, 2009; 2010; Tilbury, 2010). The role of higher education and its outreach programs such as training and capacity building, communication, creating public awareness, research and knowledge generation, scientific and applied research, sharing and access to information, networking partnership become the key strategies for achieving the SDGs. The SDG4 promotes equal and inclusive education for all that is closely linked to the effective implementation of all 17 SDGs. SDG4 advocates to ensure inclusive and equitable quality education and promotes lifelong learning opportunities for all, this keeps the target that by 2030 all boys and girls to complete free, equitable and quality education (UNESCO,2013). New challenges to learning are emerging and 21 centuries higher education must address these and contribute to greater humanity in a rapidly changing world. UNESCO (2014) identified six key challenges facing the implementation of ESD as;
- Multicultural integration, immigration and refugee problems.
- Early school dropout and unemployment
- Fostering smart economy and innovation.
- Removing the barriers between world of work and education.
- Preparing the skilled manpower for the labour market.
- Permanent re-skilling and updating the competences of all citizens.

Boereen (2019) has argued that sustainable education has been considered as renewable resources to be geared towards the acquisition of key competences of 21st century including sustainable lifestyle. In the African context, to achieve ESD we need to have robust and sustainable higher education system based on sustainable development policies, practices, curriculum, pedagogy and continuing education for all stakeholders. We need to structure and implement quality education for sustainable development which is a key challenge for most of our countries. Quality education and more specifically ESD reduce poverty, boosts job opportunities and fosters economic prosperity. It also increases people's chances of leading a healthy life, deepens the foundation of democracy, and changes attitudes to protect the environment and empower women (UNESCO, 2014). Thus mobilising education to transform the lives of children, youth and adults represents the crux of an ESD vision. ESD

and the universal completion of quality higher education are considered to be critical and directly support policies that seek to reduce poverty, improve livelihood and secure sustainable societies both now and in future

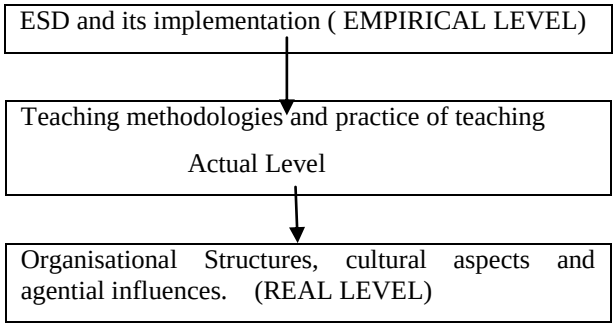
This therefore means higher education should update its curriculum, pedagogy and educational resources to address the 21 century challenges. Recognising that the role of universities everywhere is changing rapidly in a world that faces several sustainability challenges, universities in Africa have embraced ESD as a major guiding principle for achieving SDG4 goal (Tilbury, 2011; Bonavant,2014). Higher education institutions have been generally considered significant contributors to the promotion of quality and sustainability. This recognition has been recorded in numerous declarations and higher education institutions are expected to closely engage with potential stakeholders and communities in networking and productive partnerships for mutual beneficial outcomes. The study literature review discloses ways in which higher education has made efforts to enhance the achievement. Global society is undergoing unprecedented social and technological change and the educational environment we live in is facing inexorable transformation as well as a result of burgeoning quality challenges. Faced with these challenges, there is need to adapt conventional ways of learning to create knowledge skills that can be applied to developing individuals and society in ways that are social, economic and educational sustainable. In response, the importance of learning for sustainable development or ESD is widely accepted as it is the need for lifelong learning emphasising the UN 2030 Agenda.

Theoretical frameworks

The study employs Margret Archer's (1995) social realist theoretical framework to explain the challenges of addressing ESD goal 4 on quality higher education in Zimbabwe Archer's social realist theory is underpinned by Bhasker 1978's critical realist philosophy. Critical realists believe that there is a reality independent of our thinking of it that science can study it (Basker, 2010). Wright, (2008) tells us that critical theorists analyse social practices with the aim of promoting positive social change and transformation. Critical and social realists focus on identifying hidden causal mechanisms, how they work, whether they are active or not, and the conditions under which they become active (Sayar, 2000). In critical realism, a causal explanation for a given phenomenon is inferred by explicitly identifying the means by which structural entities and contextual conditions interact to generate a given set of events (Wynn & Clay, 2012). Critical realism observes that there is a reality which exists independent of human conception (Bhasker, 2010). The realism aspect of the study focuses on the existence of real mechanisms which shape events while the critical aspect requires a deep understanding of any social situation, going beyond the observable and instigating the mechanism behind any event (Bhasker, 1978).

Basker (1978) observes that there are cultural, structural and agential systems and personal powers that combine to enable or constrain the implementation of ESD in higher education. Critical realist research therefore aims at arriving at knowledge of the content of the causal process (Ekstrom, 1992) to understand what generates particular events and experiences (Basker, 1978).

The conceptualisation of reality is indicated in figure 2.



Adapted from Basker (1978)

Archer (2003) also separates structures and culture. She comes up with structure, culture and agency as the three social reality elements that can be studied separately, since they are different in form and possesses unique properties and powers. According to Archer (1995, 1996) each one of them enable or constrain the achievement of a process and there is an interplay among the three elements. The dualism aspect can be explained as shown on Figure 3

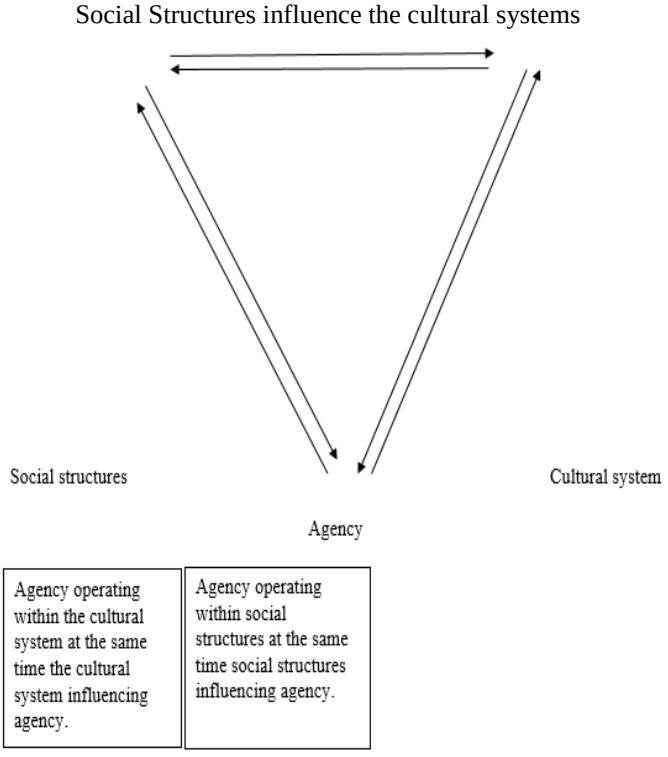


Figure 3: Archer 1995's concept of analytical dualism.

Archer

Archer, (1995, 1996) views structures as a form of social organisation as well as the social relations that comprises it. This includes social institutions, social practices, roles, position, substructures and policies. Structures are seen as relations among social positions and are ontologically independent from the people operating within them. Giddens (1984) sees structures as what gives form and shape to social life. They also relate to material resources and the recurring patterns of social behaviour. Archer, (2003) observes that people are born into either a pre-structured context which is a product of the doings or activities of the long dead. For Archer, structures are real, and require the activity of agents to be reproduced or changed. People are born into structures and their prior existence frequently constrain the meanings which can be imposed. Structure exert causal influence on people's actions.

Culture

Archer, (1996) sees structure as an extremely wide ranging concept including all things capable of being grasped, deciphered, understood or known by someone or for someone to be identified within a particular society. As such the cultural context is made up of theories, ideologies, ideas, values, beliefs, attitudes, practices that exist through discourses used by particular people at a particular time (Quinn,2012). Archer, (2003) argue that there are causal relationships between groups and individuals at the structural-cultural level.

Agents

Agents within a particular context have differential understanding and knowledge of prevailing ideas. Culture is continuously transformed through people's actions, Agency according to Archer, (1995;1996) are reflective, creative, innovative and purposeful actions of people. It refers to the choices people make in their daily lives which either reinforce existing structures and cultures or transform them. It is what people do as individuals or groups with what they have collectively produced (culture)

Giddens, (1984) argues that agents continuously monitor their own thoughts and activities as well as their physical and social contexts. People are not passive beings whose actions are automatically triggered by forces of structure and culture. Archer (2003) argues that even though structural and cultural systems impose constrain on the actions of people, it is important to understand that people are reflective actors, they share their deliberations with others before deciding on a course of action. In the case of ESD people choose what they like or dislike what they agree with or disagree with what they prefer or do not prefer. Agency, therefore is a necessary concept to interrogate in trying to understand the implementation of ESD in higher education context.

III. RESEARCH METHODS

In this study, we took a qualitative approach with an interpretivist epistemological and constructivist ontological perspective. By taking such a standpoint, we assumed that social phenomena and the meaning making of it are subject to the influence of social actors, which are produced and constantly changed by social interaction. As a research methodology, a qualitative research method infuses an added advantage to the exploratory capability that researchers need to explore and investigate their interpersonal subjectivity skills to their research exploratory processes. We adopted the case study method which focussed on multiple cases. Shauming and Huish, (2014) state that the case study approach provides a strong grounding in reality, meanwhile it develops detailed intensive knowledge about topics. Qualitative researchers who adopt a case study approach are capable of advancing and applying their inter-personal and subjective skills to their research exploratory process. In a study with an interpretive phenomenological analysis approach the advantageous elements of the study quadruple because of the bounding relationship that the approach allows for the researchers to develop with their research participants. Furthermore, a qualitative research approach allows for the researchers the best opportunity to understand the innermost deliberation of the lived experiences of research participants. As an approach that is participant –oriented, interpretive phenomenological analysis approach allows the interviewees (research participants) to express themselves and their lived experiences, stories the way they see fit without any distortions and or prosecution. Rubin, (2012) asserted that the aim of an interview technique of data collection is largely to facilitate an interaction which permits participants to tell their own stories and experiences in their own words, it is a participant oriented research and there is smooth information gathering and easier analysis. Using a qualitative study reiterates the fact that its main objective and essence are to explore the lived experiences of the research participants and allow them to narrate the research findings through their lived experiences. A qualitative research interview (Creswell, 2013) is often described as a conversation with a purpose and the purpose in informed implicit at least by a research question.

Data Collection

In this study, the researchers aim to examine how three universities are implementing ESD in their teaching and learning, more specifically to seek to understand the challenges of addressing issues of ESD and mostly the challenges of achieving SDG4in the three universities. Semi-structured interview was employed as the main method for data collection in this study. regarded interview as an important method to learn what participants' feelings and experiences were in regards the implementation of ESD in higher education teaching and learning. According to Creswell, (2013), in a phenomenological study, the process of collecting information involved in primary in-depth interviews with as many as ten individuals in each case. The

important point is to describe the meaning of the phenomenon for a small number of individuals who have experienced it. It was important that the lived experiences of the study participants be allowed to tell the narrations of the research study. Alase, (2017) advised that the following steps should constitute data collection procedures for qualitative studies:

- Researcher should conduct semi- structured and unstructured interviews with as many as twenty-five (25) participants, and as few as two (2).
- Interview duration should be approximately sixty to ninety minutes per interview session
- A study should keep the interview invitation to one interview per person.
- The site (including the date, time and place) the interview should be left for the participant to decide (should always be at the participants' place of comfort for convenience).
- Should utilize different technological devices to collect the necessary data i.e. electronic voice recording device and the traditional note book and pen should be used for jotting down important observations as the interview progresses.

Semi-structural interview with six common questions was employed as the main method for collecting data for the study. We considered the interview as an important method to learn and understand what participants' feelings and experiences were regarding the implementation of ESD in their institutions. Despite the six common interview questions, the questions did not follow the exact order and outline; several additional questions were asked in response to what was seen as significant responses. Semi-structured interviews gave the researcher a possibility to adjust the interview depending on the responses and experiences of each interview and thereby derive each interviewee's unique insight and knowledge. The six questions were broad and open ended to capture the breath of ESD. The following six common questions were used in the study;

Researchers asked the following eight questions, and the high-ranking researcher from Finland ensured the questions' relevance and usefulness.

- What if at all is the interplay of structure culture and agency in constraining the achievement of (SDG) 4 in the university?
- Why are universities in the Southern African region failing to propel the systematic transformation leading to the achievement of quality teaching and learning?
- What should be the role of stakeholders in strengthening the achievement of (SDG) 4 in higher education?
- What if at all are the specific challenges that are faced by universities in achieving ESD?
- How does higher education management in your institution constrain the implementation of ESD?
- What institutional barriers exist in the implementation of (SDG) 4 in higher education institutions?
- What opportunities exist in higher education institutions to affectively implement ESD?
- What strategies could be suggested to enhance the achievement of (SDG) 4 in higher education institutions?

The eight questions correspond to the theoretical framework described in our literature review.

Table 1 shows the institutions that participated in the study

Country/University	No of participants		
	Deans	Lecturers	Administration
Zimbabwe National University of Science and Technology	3	3	1
Lupane State University	2	3	1
Namibia University of Namibia	2	3	1
Botswana University of Botswana	2	3	1

As much as possible we tried to involve participants who were involved in ESD implementation who had an idea of the implementation of ESD in their university. We tried to identify participants who had an idea about the implementation of ESD concepts into core university functions and practices of teaching and researching.

Our main objective was to understand aspects of the institution that constrained the agency of the university educators in their attempt to achieve education for sustainability and particularly quality in their context of higher education.

Presentation of study findings

According to the United Nations Educational, Scientific Development (2014) ESD is education that allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future. As Agenda 2030 has gone almost a third towards implementing its goals, our study sought to establish the challenges of achieving SDG4 on quality higher education focussing on three countries in the SADC region. Our argument is structured according to the culture, structure and agency theoretical view point to offer a deeper understanding and insight into the achievement of SDG4 on quality higher education. The presentation of our findings is based on the interview questions with participants who had significantly embedded ESD in their universities and who had participated in ESD change projects initiated by UNESCO.

The interplay of structure, culture and agency in achieving SDG4 in higher education

The interview question on the interplay of culture, structure and agency in achieving SDG4 pertains to the roles that individuals play in higher education and cultural issues

together with structures constrain the achievement of specific higher education targets on quality education. Our objective on this question was to identify aspects of higher education systems that constrained the university in their attempts to achieve quality teaching. The bottom line of structure, culture and agency is that the individual and society are interdependent, and thus both perspectives should ideally be crucial in establishing how they constrain the achievement of organisational goals.

Participants in this study provided evidence showing that (Shava and Heystek, 2018) structural, cultural and agential conditions in higher education constrain the achievement of quality teaching and learning. Collective evidence from participants highlighted the structural, cultural and agential factors as significantly constraining the achieving of SDG4. Several responses indicated that higher learning institutions in the SADC region have faced multiple challenges associated with the transition to achieve SDG4. One of the greatest challenge being the growing numbers of students and deep systematic policy changes relating to deepening and widening access to higher education (Namibia). In this study, we established that the marriage between expansion in higher education and achieving SDG4 and its ten targets has not been an easy undertaking. Most participants stated that higher education expansion was necessary as it opened opportunities for many who by not their choice were deprived, but the expansion could not address socio economic objectives because of the quality of graduates.

Analysis of interview data revealed that SDG4 was difficult to achieve due to the lack of attention paid to participatory and democratic decision- making processes outside academia, which results in an inadequate framework for involving societal processes. For many participants, barriers for achieving SDG4 were summarised as:

- Lack of institutional ESD policy or strategy on ESD.
- Lack of institutionally coordinated effort that incorporated all faculties in the bid to ensure sustainability.
- Lack of awareness about ESD across disciplines.
- Lack of adequate value for the essence of ESD.
- The lack of financial and material support from top management.
- Lack of contributions from the government towards supporting ESD initiatives.
- The absence of ESD related courses in higher learning institutions.
- Lack of commitment to implement policies and strategies to enhance ESD in all universities.
- No common understanding of the concept of quality in education and ESD
- Lack of capacity to implement ESD
- Challenges brought by the COVID-19 pandemic
- Lack of coordinated institutional activities to address sustainability issues.
- ESD specifically considered being for faculty of education since education appears in the concept of education for sustainable development.
- ESD left for school of education and not to be a concern for other faculties such as the natural sciences.
- Misunderstandings or misconceptions of what ESD means among senior academics.
- ESD constrained by institutional hierarchical approaches to curriculum and course development.
- Lack of professional training within an institutional structure and culture constituted a source of constraint for the agency of others interested in ESD implementation.

One of the academics commented that: *In our university if those proposing changes in our teaching and courses are not professors or senior lecturers, they are largely unsupported by other academics and administrators. At this university very few academics have been trained and they have no capacity to approve new ESD courses. Resistance comes especial on the approval of programmes and in some cases it may take years before a program is approved.*

Participants from the University of Namibia remarked that: *The challenges brought by the COVID-19 have greatly affected our teaching and learning programmes. Teaching on line has not at all been effective as the majority of our students have no internet connectivity in their rural areas or even in the locations. We failed to invite all students to google class. Some students did not have Wi-Fi or even laptops.*

Evidence from the interviews with academics showed that, the implementation of ESD was faced with resistance from academics. Findings showed that there was lack of consistency in terms of how ESD was implemented in different universities and in different faculties. There are no strategies to provide concrete and measurable goals that are linked towards ESD.

Propelling the systematic transformation towards quality teaching and learning

To understand challenges facing universities in the SADC region to propel the systematic transformation towards quality teaching and learning, the historical tradition and culture of higher education needs to be understood and reviewed. Findings from the study pointed to the growing numbers of students in universities and the lack of financial resources necessary to increase system capacity to transform towards quality teaching and learning. One of the participants from the University of Namibia remarked that: *Because of their intellectual capacity and their role in knowledge generation, our universities are considered to be key actors in achieving all the seventeen Sustainable Development Goals and specifically goal4, but they need radical innovation for them to propel the systematic transformation towards achieving quality teaching and learning and not only faculty of education.*

She went on to say:

To develop a holistic and consistent sustainable- oriented higher education the greening of higher education is needed. There is need for more direct influence and participation by all involved in higher education teaching and learning and ESD should be undertaken over a relatively wide area of university teaching.

Participants also identified the following as key strategies for systematic transformation in higher education:

- Professional development among academics in all academic disciplines.
- Organising workshops for lecturers on ESD re-orienting higher education curriculum and pedagogy to address quality and sustainability.
- Building partnerships and networks with regional and international organisations like SIDA, SANORD and SWEDESD.
- Provide high quality teacher education training institutions to fulfil the transformation and transition to ESD.
- Outreach and forming partnerships both locally and globally to enhance sustainability.
- Universities to include sustainability visions and strategies in mission statements.
- In teacher education, research into commonly adopted ESD pedagogies is a high priority.
- Universities should play a role and contribute significantly to ESD in the development of appropriate knowledge and competencies.
- SADC and UNESCO should strengthen ESD in institution of higher learning.
- Change projects should be adopted which should enhance inter-departmental engagement and communication

Throughout the interviews participants highlighted that the lack of funding was hindering the propelling towards the transformation to achieve SDG4. Senior management personnel in one of the universities remarked that:

The lack of funding, poor awareness of the concept of ESD concepts among us and potential partners and also institutional inflexibility and political administrative indifference makes it difficult for our institution to transform towards achieving SDG4. More so there is total lack of commitment to provide funds necessary to achieve quality in higher education teaching and learning.

It emerged from our interviews with academics that, the road to greater acceptance and integration of ESD in the SADC region higher education has seen a rocky and circuitous one, and often strewn within the lack of support from government. In Botswana and Zimbabwe, it emerged that despite the range of well-intentioned efforts towards implementing SDG4 and its targets through several initiatives, little success has been achieved. In Zimbabwe there is a handful of highly motivated and patient individuals who are prepared to face the task of breaking down various barriers. Zimbabwe has members of academic staff from universities and teacher training colleges who are involved in the Sustainability Starts with Teachers Project which is an action learning programme centred around a contextually defined ESD Change Project. Each participating institution is working on a particular ESD change Project, relevant to their context.

In all interviews it emerged that the achievement of SDG4 on quality higher education was constrained by methodological barriers, financial and institutional barriers among others. Effective implementation of ESD in the SADC region depends to a large extent on the prevailing political situation and political will, which for the mean time remains comparatively turbulent especial when the policy focus is on increasing the number of students in higher education, where the majority are enrolled for the humanities and arts degree programs at the expense of Science, Maths and Technology. In terms of teaching and training, ESD in all the three countries does not greatly figure out well, where they are offering it, it is offered on an optional basis at some pedagogical faculties and especially by academics who are attending UNESCO's Capacity Building Programme for Teacher Education for Sustainable Development. The Sustainability starts with the Teachers programme is implemented as a partnership between the UNESCO Regional Office for Southern Africa, the Southern Regional Universities Association (SARUA) and the Swedish International Centre of Education of Education for Sustainable Development (SWEDESD). This project is supported by the Swedish International Development Agency and countries in the SADC region through their universities and Teacher education colleges are partners towards achieving the SDGs or ESD for 2030 Global Agenda.

Mechanisms, strategies and opportunities to enhance the achievement of SDG4

The interview question on mechanisms, strategies and opportunities to enhance the achievement of SDG4 pertains to different support mechanisms, strategies and opportunities available in universities to achieve SDG4. The question also sought to understand what stakeholders are doing to support the achievement of SDG4 and its ten targets. Study participants provided strategies which are summarised as:

- Expanding higher education coverage in a sustainable and equitable way.
- Capacity building programs intensified by UNESCO, SARUA, SIDA, SWEDED and SADC Education sector for university and college lecturers.
- Increasing enrolments in higher education in areas such as Science, Mathematics and Technology (STEM) courses.
- Ensuring that all learners acquire knowledge and skills to promote sustainable development through the use of ICTs.

- Integrating ESD in all degree programs and in Teacher training.
- Policy dialogues to advance ESD in higher education.
- Support capacity building for academics and where possible provide exchange programs for both academics and students.
- Establish holistic and transformational learning which addresses learning content and outcomes, pedagogy and learning environment.
- Re-skilling and updating the curriculum, pedagogy and education resources to address 21st century challenges.
- Designing teaching and learning in an interactive, learner-centred which enables critical thinking, problem solving, action oriented and transformational learning.
- Empowering learners to transform themselves to enable transitions to greener economies and societies.
- Reviewing higher education content, curriculum, teacher education and Technical Vocational Education and Training (TVET) policy in light of recent trends towards emphasis on 21st century demands.
- Demand for a new type of competencies and new knowledge as well as use of ICTs in teaching and learning.
- Learners creating initiatives for green campuses and initiating green university projects.
- Universities working on new curriculum framework that will bring in new ways of teaching and learning and in cooperating ESD

All these strategies were identified as crucial for achieving SDG4 in higher education.

Specific quotes from participants.

In our universities we realise that there is poor understanding even among academics about the difference between ESD and environmental education. There is institutional confusion about trans- disciplinary education and ESD competencies.

Our universities structures remain highly inflexible and resistant to change.

Financial support is lacking and ESD transition is not easy to take place.

In Botswana, ESD exists but there is little if any within institutional levels. In all interviews there was mention of a lack of political and financial support on the part of the government and this has made little progress in achieving SDG4 in higher education.

Higher education management commitment to achieving SDG4

To achieve a quick fix of the SADC higher education system, higher education management commitment is required. Management needs to make quality in higher education a core of the institutional strategic plan. There is need for integrating quality principles and ESD into higher education teaching and learning. Collectively participants of the study highlighted that the shortage of skilled manpower in the SADC regional institutions has its roots in higher education. The situation is more serious with respect to weak leadership, management and governance which are rampant and further exacerbate challenges to higher education transition towards achieving SDG4. One of the study participants from Zimbabwe commented that:

Management inefficiencies are common among universities and drain resources from key fundamental objectives of increasing quality, access and sustainability. Our management is not focussed and their priorities are not in line with the university goals, they are spreading human and material resources thin.

It emerged from the interviews that the inefficiencies and lack of commitment from top management lead to underutilised facilities, some duplication of positions resulting in some cases the deterioration of quality teaching and learning. Common among universities is uneconomic procurement procedures and the allocation of a large share of the funds or budget to non-educational expenditures. *Our university management is rarely trained in the management of higher education institutions, they are not skilled in strategic planning, research management, financial management, human resources management, performance management and the skill of partnership building and networking. Our senior management lack access to the global knowledge pool and the international academic environment and there is total lack of bench- marking. Our university needs funding and budgeting policies so that allocation of funds is linked to quality continuous improvement.*

Findings from the study showed that while universities did not have enough funds to provide for quality teaching and learning, the situation was worsened by lack of management skills to effectively manage institutional funds. While the lack of funds constrained research capacities, across all universities, top management did not prioritise teaching and learning which the core business of the university is. Most of the universities in the SADC region have dilapidated physical facilities and infrastructure is in a poor state but management does not make effort to maintain the infrastructure. In some cases, management may place ESD near the top of the institutional agenda, but may fall victim of the political jockeying that results in making changes to senior management positions and the institutional knowledge required to maintain momentum for ESD is lost through the cleansing of staff that accompanies the instalment of new members who come with a complete new vision and new strategy. In one of the universities ESD topics have been incorporated into relevant subjects and specific subjects

devoted to ESD and there was an initiative to adopt a holistic approach to the inclusion of social and economic dimensions, but the appointment of a new Deputy Vice Chancellor academic resulted in a different approach and the suspension of ESD efforts.

Role of stakeholders in strengthening the achievement of SDG4 in the SADC region.

The UN Sustainable Development Goal 4.7 proposes the integration of ESD into all levels of education with an emphasis on higher education through building capacities of educators and trainers to facilitate the implementation of ESD into education policy, curricula, theory and practice. Participants identified the following key activities by stake holders for strengthening the achievement of SDG4 in the SADC region:

- Capacity building for academics on ESD.
- Establishing research partnerships and collaborations with UNESCO.
- Providing high quality infrastructure in universities for ICT.
- Governments making quality higher education a core of the institutional plans.
- Government making adequate investment for infrastructure development.
- Providing adequate funding for ICT infrastructure development.
- Academic and student exchange programs with developed countries such as Sweden, Finland and Norway.
- UNESCO mobilising education resources to transform higher education.
- UN Member States launching various policy initiatives or frameworks in response to ESD.
- UNESCO developing tools and instructional materials related to ESD,
- Governments and UNESCO allocating specific budgets to ESD actions and activities.
- Coordinating mechanisms and higher education based networks by governments.
- Scaling up ESD pilot programs in universities.
- SANORD or UNESCO organising conferences in the SADC region on education for sustainable development.
- Mobilising strong national and international political commitment for the achievement of SDG4 on quality higher education.
- DESD viewed as part of the New Partnership for Africa's Development (NEPAD).
- Some governments establishing education hubs and ESD experimental centres at universities e.g. Zimbabwe.
- Support from international donors, NGOs and the private sector to enhance implementation of ESD policies.

There was considerable evidence from interviews that government, NGOs and UNESCO in particular, although constrained by budgets were playing a significant role that was more likely to strengthen the achievement of SDG4 in higher education. There is evidence from the interviews that governments play a role in improving quality higher education through ESD policy initiatives. A take away from our interview discussions was that stakeholders' especial governments' strong policies and initiatives in higher education strengthened the achievement of SDG4 along a more holistic pathway. In Zimbabwe and Botswana there is evidence of widespread introduction of systematic monitoring and assessment of the implementation of ESD.

IV. CONCLUSIONS AND RECOMMENDATIONS

Our study has used the critical realist theory of structure, culture and agency to structure an analysis of the challenges of achieving SDG4 in higher education in the SADC higher education context. The overarching aim of SDG4 is to create a world where all students regardless of background and location can benefit from quality education and learn the values, behaviours and lifestyles associated with creating a sustainable future and promoting societal transformation. SDG4 of the Sustainable Development Goals; "ensure inclusive and equitable quality education and promote lifelong learning for all". It addresses Target 4.7 of SDG4 directly, which requires all governments to;

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promoting a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development (WEF,2016).

ESD empowers learners to take informed decision and responsible action through designing teaching and learning in an interactive, learner centred way that enables exploratory, critical thinking, action-oriented and transformative learning. Learning outcomes are stimulating, promoting competencies, such as critical and systematic thinking, collaborative decision making and taking responsibility for present and future generations. While the SADC region individual higher education institutions, there has been efforts to introduce ESD in teaching and learning, the growing numbers of students, lack of financial support to increase system capacity and the absence of ESD strategy in institutions and other systematic challenges which occur within higher education have hindered the achievement of SDG4 on quality in education. These challenges, especial the growth in the number of students contribute to the financial crisis and also the economic meltdown. Many of these structural, agential and cultural challenges in higher education were similar across the region, but differences only existed in the institutional frameworks which emerged due to

the diverse transformation process. The lack of trans-disciplinary study programs or other opportunities for quality teaching and learning and non-existence of networking, collaboration, exchange programs, academic visits and university outreach and dialogue with social actors or potential stakeholders and other related traditional prejudices have thus acted as major obstacles to pressing and transitional trends towards achieving SDG4 in the SADC region higher education. A rosier outlook could be seen only in those institutions where management and government budget and investments in higher education have been relatively high. Specific challenges that faced higher education institutions were related to:

- Lack of policy towards ESD.
- Lack of top management commitment and poor coordination mechanisms.
- Resistance to change among senior academics.
- Lack of academic knowledge about ESD and failure of structuring of learning experiences around ESD.
- Rigid approaches to integrating ESD contents in the curriculum and pedagogy.
- Lack of motivation, commitment and support of stakeholders and institutional management.

In reality institutional systems follow rigid approaches to intergrading ESD contents in curriculum and pedagogy.

Together with institutional administrative structures that are immune to innovation, also the political support that is rarely forthcoming and hence the finance required to setup new trans-disciplinary arrangements are lacking. ESD not only aims at empowering students to learn about the world, but to be actively involved in their communities and their teaching and learning activities. Our study conducted in Botswana, Namibia and Zimbabwe higher education institutions highlighted the major challenges of implementing SDG4 in selected universities.

V. RECOMMENDATIONS.

Having analysed the challenges of achieving SDG4 in higher education, it is recommended that:

- Funding, specifically the lack of funding has been an overriding issue, all the more so in this era of economic downswings and budgetary cut backs. A multi-pronged search for new funding sources is needed and more likely to work for the SADC higher education institutions.
- If higher education is to engender a more systematic up-take of ESD in institutions of higher learning, then policies should be put in place and contextualised and nuanced. Advocates must continue to find ways to encourage multiple stakeholder participation to advance different models of ESD implementation in higher education.
- If the SADC higher education is to achieve SDG4, there is need to improve the basic unit of the higher education institutions that encompass the human (agency) and material (structures) equipment which collectively improve student's learning and institutional culture.
- SADC higher education institutions should update their curriculum, pedagogy and more important their educational resources including ICT infrastructure to address the 21st century context of teaching and learning. There is need to address issues relating to how learning takes place, what knowledge and information students acquire, what skills are needed to succeed and how we expand gains for progressive and sustainable learning outcomes among learners.
- There is need to motivate and enrich existing forms of agency in ways that expand people's learning, participation and contribute to creating a good life through quality teaching considering investing in infrastructure development.
- There is need for policy framework and strategy on ESD that addresses ESD issues relating to educational content, learning processes and incorporating into higher education principles relating to quality teaching and learning.
- Initiatives in higher education should simultaneously acknowledge broad ESD themes and holistic conceptions, while keeping focused on particularities of each institutional context and communities.
- Globalization for resource related partnership for higher education is both an opportunity and a challenge but it should be sharpened and managed so as to ensure the achievement of SDG4 and sustainability in higher education.
- International agencies, private foundations and national governments should cooperate in the compilation and evaluation of ESD in education in Africa, they should develop appropriate quantitative and qualitative indicators, measures and data to assist in developing strategies for enhancing the achievement of SDG4.
- SDG4 achievement requires capacities among policy makers, curriculum developers, education institutional leadership, assessment expects and most specifically academics to take a leading role.
- Many countries not only in Africa but the entire world point to limited funding and resources as major barriers to achieve SDG4 and for capacity building, that being the case support from international donors, NGOs and the private sector is needed to successfully achieve SDG4.
- There is need to enhance and empower higher education institutions in the SADC region to contribute more effectively to the achievement of SDG4 and for the achievement of development and transformation.
- Higher education the world over is the major contributor to development and long term holistic

partnership with the developed countries will bring about positive results with quality and sustainability, this will have a reasonable impact on the transformation agenda of the 21st century.

Finally, given the many ESD models and approaches existing on the ground in higher education new mechanisms and networks need to be developed to establish knowledge banks that empower local academics in ESD facilitators and trainers. The scaling up of ESD in higher education given its particular diversity and lack of standardization requires sharing experiences on new dissemination platforms. Especially important in this regard are instances where ESD is not simply an add-on activity, but rather part of a whole institutional or whole system approach to ESD.

Results; ESD mainstreaming in Zimbabwe higher education institutions.

The road to greater acceptance and integration of ESD in Zimbabwean higher education institutions has been a rocky and circuitous one, and often strewn with multiple challenges. The history of ESD in Zimbabwe higher education shows that there is very little success in achieving SDG4 on quality and sustainability in higher education. Implementation of ESD depends to a large extent on the prevailing political and economic situation, which for the mean time in Zimbabwe remains a key barrier and comparatively turbulent to achieve, meaningful ESD. In terms of teaching, researching and community engagement, ESD in higher education institutions does not greatly figure out and even education for sustainability is only offered on an optional basis at some pedagogical faculties. Part of the problem is that the educational system in general and in particular the higher educational institutions have not yet mainstreamed sustainability into their curriculum and pedagogy There is a campus-workplace mismatch for ESD implementation that needs to be corrected and addressed with urgency.

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