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TRANSVERSE DISSEMINATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ECONOMICS: EFFECTIVENESS OF CURRICULUM CHANGES

Case Study

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Abstract

Since 1994, there have been numerous curricular changes in South Africa's education system, which have had an impact on the topics covered, taught, and examined in the country's further education and training (FET) phase. The aim of this paper is to assess how changing the curriculum has affected how much environmental content is covered in the subject Economics. The documents used by South African Economics teachers were analysed utilizing a qualitative research methodology and an interpretive paradigm. Realist Social Theory by Margaret Archer served as the theoretical basis for the study data analysis and interpretation. The only technique employed to evaluate the effectiveness of policy texts and test questions was document analysis. The findings show that the variable coverage of environmental impact topics in the examinations may have a negative effect on the way teachers address the topics in Economics. The study also finds that the shifts of the curriculum from RNCS to CAPS improved coverage of environmental content in Economics. This resulted in an emergence of structural and cultural morphogenesis in the teaching of environmental content in Economics from teachers. The study also reveals that environmental content in Economics was better covered after the curriculum changed from RNCS to CAPS. This led to the formation of structural and cultural morphogenesis in the teaching of environmental content in Economics.

Keywords: Economics, Environmental Education, Education for Sustainable Development, Geography, Realist Social Theory, CAPS Curriculum.

1. Introduction

The purpose of this paper was to analyse the coverage on policy and examination of environmental content in Economics in the Further Education and Training (FET) phase (Grades 10-12) of the South African education system. The study investigated whether there was alignment between policy documents and the Grade 12 past examination question papers' coverage of environmental content, which were written in the years 2005 to 2015 during the United Nations Decade of Education for Sustainable Development (UNDESD). This period was chosen because it covered the time of the shifts in the school curriculum in South Africa up to the new Curriculum Assessment Policy Statement (CAPS) that was implemented in Grade 12 in 2012. This was also a period of international focus on sustainable development, and this should have had an influence on the school curricula. Undoubtedly, Gregersen-Hermans (2021) contends that key purpose of education for sustainable development (ESD) is to raise sustainable awareness and promote livelihoods of individuals, local and global communities.

In the school system, assessment is an important part in a curriculum which determines whether learners have acquired the expertise and skills necessary to practice what they have

been taught. In the system of education in South Africa, assessment is used to determine whether learners can be advanced to a higher grade. Teachers find themselves compelled to teach what is likely to be examinable in the end of the year which is examination that is part of the curriculum design postulated by Su (2012). It is against this background those summative assessments for the Grade 12 exit level examinations have been analysed to determine the integration of environmental impact topics. The study predicts that teachers are affected by the way summative assessment is integrated yearly. This leads to changes in teaching methods to ensure that more emphasis is put on content that will more likely be in examinations at the end of the year. For example, if coverage of environmental impact topics in the examinations is less than what the policy stipulates, educators will most likely give less teaching time to those topics, thus environmental literacy and knowledge accumulation about the environment will be compromised. Within the context of this study, the researcher investigated the extent to which environmental impact topics have been covered in the South African school curriculum using documents such as policies, textbooks, and past examinations. The gap found is that ESD content is not specifically included in the policy manuals used by instructors in schools, which has an adverse effect on how ESD content knowledge is theoretically taught to students in the classroom. In order to ensure that the coverage of ESD material is consistent from documents to practice in the classroom, this article will be able to pinpoint where the gap in practice is and what could be done to close it. Without a doubt, research on environmental management systems has generally plateaued in recent years Kumar, Sureka, Lim, Kumar M, and Goyal (2021) stressed this point, which may be related to the difficulty of translating such research from theory to practice given the complexity of implementation, the size of the investment, and the peculiarities.

In this study, the analysis of educational documents regarding environmental impact topics formed the basic unit of analysis. Environmental impacts have become an increasingly growing concern over the decades. However, the problems associated with negative environmental impacts remain unresolved despite increased media attention, public awareness programmes and pressures from international agreements. Harris (2012) contends that we are living in a volatile global environment that has evolving dynamism in response to impetus. Harris (2012) further states that in the last century it has become apparent that humanity has taken control of the planet's ecosystems and biochemical cycles in such a way that human activities are now causing environmental change. "Globally, nature is viewed as a provider of natural resources, aspects of the natural environment that are critical to satisfying living and non-living things" (Hill, Alan & Woodland, 2006:93). This study attempts to close a research gap as few studies have investigated the extent of coverage of environmental content in Economics in the South African curriculum. This is seen where issues such as climate change are well covered in the policy documents, yet not much has been seen in translating this into the actual practice in the form of examination (Togo, Zhou & Khan, 2015). Most studies have focused on the effects of policies in teaching and adaptation of teachers to new policies (Maluleke, 2015).

2. Literature Review

The South African education system has frequently changed since gaining independence 1994 resulting in the curriculum change that was problematic in its implementation. These challenges were caused by the complexity of the implementation programme and the capacity of teachers to adopt new teaching strategies in the classroom. The curriculum has undergone multiple variations, from Curriculum 2005 (C2005) to the Revised National Curriculum Statement (RNCS), to the National Curriculum Statement (NCS) Grade R–12, and then, in 2011 to the Curriculum and Assessment Policy Statements, commonly known as CAPS.

2.1 Curriculum Changes

Changes in the South African education system post 1994 have changed the curriculum landscape (Ramatlapana & Makonye, 2013), which have led to challenges in the implementation of the curricula in schools. Curriculum changes aim to improve the quality of teaching and learning, with the aim of enhancing the socio-economic development of citizens. In support of the several curriculum revisions, Du Plessis and Marais (2015) argue that it is the responsibility of the government to provide teachers with quality training to face the challenges that are faced in the classroom.

Due to ongoing implementation, challenges where teachers were expected to select appropriate learning content and develop a curriculum without having relevant skills, time and resources to develop learning content. In 2012, the CAPS became the curriculum for all school subjects (DBE, 2018). CAPS is content-based rather than outcomes-based and the transformation concentrated mainly on the content, teaching methods and assessment thereof, and gives a clear outline of what should be covered in each school term as well as the assessments that are needed with regard to the National Protocol for Assessment Grades R-12 (DBE, 2017).

2.2 Approaches of environmental impact topics coverage in the curriculum.

The approaches used in South Africa to include ESD in the curriculum are an issues-based approach and a fragmented approach (UNESCO, 2017). The extent and depth of coverage of ESD content in the curriculum is dependent on the subject. Some subjects have greater coverage of environmental content than others do (UNESCO, 2017). However, the Curriculum Assessment Policy Statement (CAPS) requires teachers to integrate aspects of environment and sustainable development into almost all subjects as seen in Table 1 for example.

Table 1: *Mapping some of the key ESD knowledge areas/themes in the South African school curriculum*

Phase and Subject	Biodiversity and ecosystems	Sustainable development	Water system and security
FET Agricultural Sciences	Plant studies;– Components of ecosystem; The biomes of Southern Africa; Ecology and agro-ecology; Interactions in ecosystems and ecological farming	Sustainable utilisation of natural resources; Farming systems that use agro-ecological principles	Water quality and management; Sustainable use of water in agriculture; Water use/irrigation
FET Geography		The concept of development; Effect of development on the environment; Using resources; Effects of using more non-conventional energy sources on the South	Water in the world; The world's oceans; Water management in South Africa; Floods; Drainage systems in South Africa; Fluvial processes; Catchment and river management

		African economy and the environment; Energy management	
FET Life Sciences	Biosphere to ecosystems; Biodiversity ; The role of invertebrates in agriculture and ecosystems; Population ecology ; Human impact on the environment:; Current crises for human survival; Loss of biodiversity		Water (availability and quality)

Source: (UNESCO, 2017)

According to the UNESCO Global Action Programme on Education for Sustainable Development, ten SADC countries experienced challenges in integrating and implementing ESD in teacher education. These challenges were:

- ESD is not obvious in curricula and assessment.
- The school syllabus is too long and hence educators rush over ESD issues.
- Lack of clear policy on ESD integration.
- Lack of teaching and learning support materials.
- Lack of a whole system approach during the implementation and
- Inadequate support from management and financial support.

2.3 Teaching ESD topics in selected countries

This section shows overview of ESD in selected countries. These countries were selected to show how other countries apart from South Africa ESD is integrated into the curriculum.

Table 2: Teaching ESD in some countries

Selected Countries	Strategies used in teaching ESD content
1. United States of America	• Outdoor activities • Nature study • Conservation education
2. New Zealand	• Themes in learning areas • Inside and outside the curriculum
3. Taiwan	• Various school subjects as themes • Websites on ESD • Separate course and activities
4. Zimbabwe	• Integrated in all learning institutions • Carrier subjects such as Natural Sciences
5. Botswana	• Cross-syllabi content • Integrated in all school subjects

6. Zambia	• Themes in some subjects

Source: Author

2.4 Integration of ESD in the South African Curriculum

According to the White Paper on Education and Training of 1995, ESD in the curriculum must involve an inter-disciplinary, integrated and active approach to learning (DoE; 1995). ESD is a vital element of all levels and programmes of the education and training systems to create environmentally literate and active citizens and ensure that all South Africans enjoy a decent quality of life through the sustainable use of resources (DoE; 1995). From the above statement, it is important to note that ESD in South Africa is implemented in all sectors of education and in the CAPS curriculum; it is embedded across all subjects.

However, the Department of Basic Education is not the only role player in ESD in the country; the Department of Environmental Affairs (DEA) also plays an important role in EE and ESD. For instance, in 1997 the (DEA) developed the White Paper on Environmental Management Policy, which consisted of seven strategic goals. Goal 5 is Environmental Education and Empowerment, the strategy being to promote the education and empowerment of South Africa's people to increase their awareness of and concern for environmental issues, and to assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development (DEA, 2017). Goal 5 is supported by the following objectives based on education and training:

- To integrate ESD in all programmes, levels, curricula and disciplines of formal and non-formal education and in the National Qualification Framework.
- To integrate ESD into all training and unemployment relief programmes.
- To enhance environmental literacy using forms of media.
- To ensure that ESD programmes and projects foster a clear understanding of the inter-relationship between economy, social, cultural, environmental and political issues in local, national and global spheres.

In support DEA's Goal 5, CAPS principles also emphasise the importance of the inclusion of EE into the curriculum, where one of the principles highlights human rights, inclusivity and environmental and social justice as defined in the Constitution of the Republic of South Africa (DBE, 2017). CAPS advocates infusing these principles and practices into the curriculum. Therefore, the National Curriculum Statements Grades R-12 is sensitive to issues of diversity such as poverty, inequality, race, gender, language, age, disability and other factors (DBE, 2017). The section below discusses some guiding principles in EE implementation. In the South African curriculum, integration of environmental impact topics is across all subjects as mentioned in this section. According to UNESCO (2017) the following selected FET subjects shows which environmental impact topics are covered:

- FET (Agricultural Sciences): The biomes of Southern Africa, ecology and agro-ecology, interactions in ecosystems, ecological farming Sustainable utilization of natural resources, farming systems that use agro-ecological principles, water quality and management, sustainable use of water in agriculture and water use/irrigation.
- FET (Geography): The concept of development, effect of development on the environment, using resources, effects of using more non-conventional energy on the South African

economy and the environment and energy management, water in the world. Furthermore, environmental topics included the world's oceans, water management in South Africa, floods, drainage systems in South Africa, fluvial processes and catchment and river management.

- FET (Life Sciences): Biosphere to ecosystems, biodiversity, the role of invertebrates in agriculture and ecosystems, population ecology, human impact on the environment: Current crises for human survival and Loss of biodiversity

According to UNESCO (2017) study, an analysis of the curriculum shows that in some subjects such as Life Sciences for the FET phase, more than 50% of the content is related to ESD while in languages, there is less content and ESD is expected to be covered more through the teaching and learning methods. Although the educational policy is not specific that some subjects should have less coverage than others should in the curriculum.

2.5 The Importance of Curriculum Change in the Teaching of ESD

It is inevitable that curriculum changes will occur from time to time. These changes will affect the delivery of content in schools. Lotz-Sisitka, Fien and Ketlhoilwe (2013) state that the early curriculum and learning practices were transmission-oriented and structural-functionalist in nature.

2.5.1 Australia

Australia like most of the nations of the world is characterised by changes in technology, politics, economy, biophysical state of the environment. Changes in the curriculum have an effect in the covering of environmental impact topics. In 1980 a curriculum reform policy course coordinating committee was established that worked with schools to establish appropriate curricula and liaison programs within communities to improve employability of students (Dilkes, 2014). In 1983 the curriculum was changed to effect the recommendations of the Beazley Inquiry, which recommended that advanced, intermediate and basic levels in the achievement certificate subjects be dismantled. A Curriculum Framework was established in 1999 and in 2014 it was discontinued as it was hard to follow as it allowed too many variations in implementation and it increased teacher workload (Andrich, 2009). In 2013 the Australian Curriculum was established to meet the Melbourne Declaration (ACARA, 2010). According to Dilkes (2014), The Australian Curriculum incorporated new subject areas such as Education for Sustainability as necessary knowledge area. This shows that changes in the Australian curriculum positively influenced improvement in the coverage of environmental impact topics.

2.5.2 China

Hua (2014) indicated that since 1978, Chinese society has become more and more open to being liberal, which was not the case before 1978. In 1986, China made Compulsory Education Law that required nine years of compulsory education thus leading to the formation of curriculum framework for personal development. This framework was then translated into a compulsory curriculum, an elective curriculum and an activity curriculum for K-12 education. According to Hua (2014), the Ministry of Education adopted the elective and activity curriculum that was cascaded to the entire country in 1992. In 2001 the State Council of China issued The Guidelines of Curriculum Reform of K-12 Education which led to the implementation of 2001 Curriculum Reform with the focus of transforming teacher centred pedagogy to student's active learning (Hua, 2014). This inferred the beginning of an era where students began to interact with the environment through school projects. Hua (2014) contended that then success of the New Curriculum Reform entered a stage of reflections where criticisms

were constructive and that led to revised standards of compulsory education (Grade 1-9) were issued. In 2011, China reformed the existing curriculum, which echoes the 1922 Curriculum Reform in ensuring liberalism, radicalism and conservatism. The conservatism aspect in the curriculum focussed on the biophysical and human aspects of the environment in the modern era.

2.5.3 Turkey

The history of Turkish school curriculum has been premised in the policy that enshrines in ESD values, as it aimed "to bring up good citizens who can adapt into their surroundings", and in 1926 it changes to "to bring up students who are sophisticated, who are giving importance to their national history and adapt to Turkish reforms" (Akinoglu, 2008). The Ministry of Education was reorganised with Law no 2287 issued in 1933. According to Akinoglu (2008) Turkish curriculum before 1950 mainly concentrated to preparation of course and course topic lists. Changes in the 1968 curriculum prepared teachers about the application of the overall teaching approach until it was changed in 1998 and compulsory education was introduced for eight years (Dulger, 2004). Another new legislation was introduced in March 2012 that prolonged compulsory education to 12 years (Dulger, 2004). Changes in the Turkish curriculum were also experienced in 2004 that involved radical reforms in relation to their political background, social basis, pace to change and vision (Akinoglu 2008).

3. Theoretical framework

Realist Social Theory (RST) is the framework that underpinned this case study research (Figure 1). As Young (2008) and Creswell (2009) explain, knowledge is socially produced and it warrants exploration of social interests and the related dynamics of power as individuals seek understanding of the world in which they live and work. The global environmental crisis is a real social problem as evident in its impacts such as depletion of the ozone layer, rising levels of carbon dioxide in the atmosphere, global warming, deforestation, climate change, pollution and improper toxic waste disposal. Hartas (2010) suggests that individuals create their own realist meanings of their experiences through interactions with each other and with their surrounding environment. In this study, the interactions studied occurred within school environment and were supported by different structures and agents such as documents, teachers, learners and external support such as training programmes. The theoretical framework of this study comprised the interactions and roles played by structure, culture, agency in the integration of environmental impact topics in the curriculum (see Figure 1).

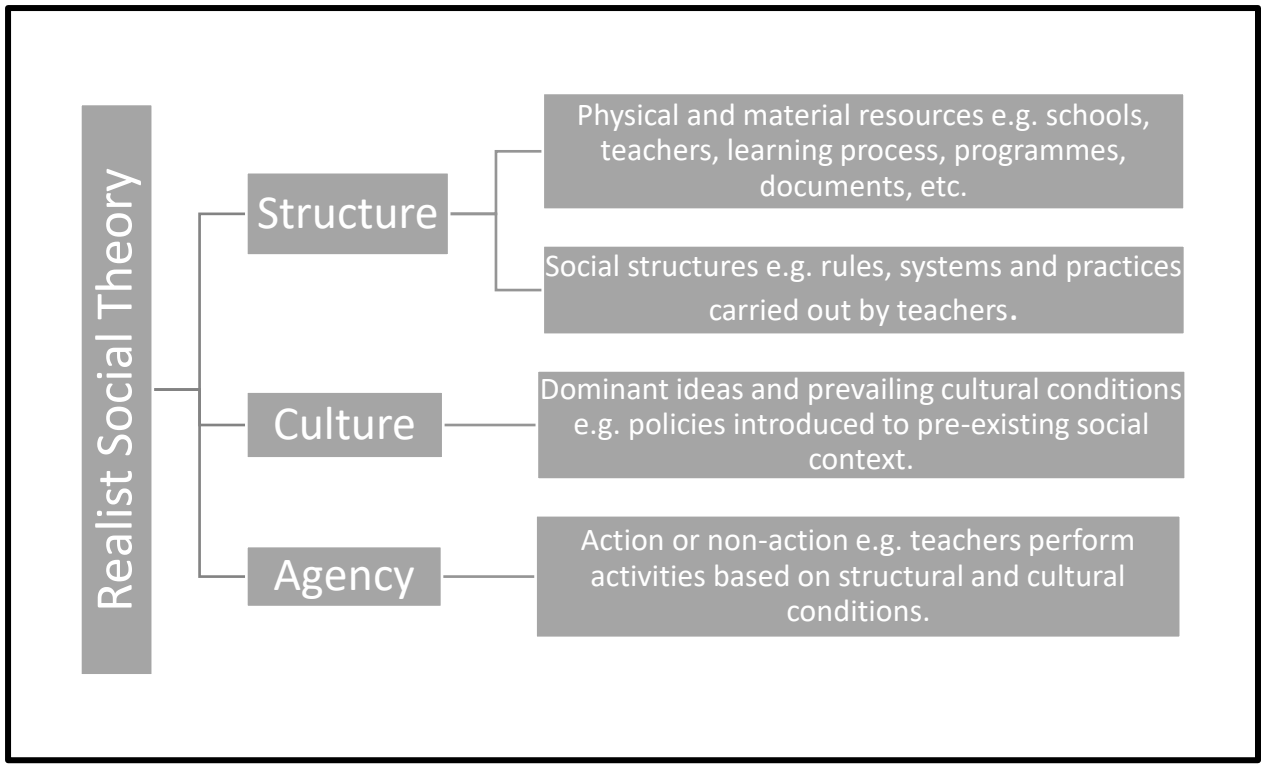

Figure 1: Realist social theoretical framework

4. Problem statement

Environmental degradation significantly affects our lives. According to Stearns (1992), children and students are exposed to environmental vocabulary, such as ozone and acid rain, but do not have the scientific background to understand them. She further argues that the curriculum exposing students to these terms must prepare them to be environmentally aware citizens in terms of relevant topics and appropriate teaching context. Therefore, the study of environmental impact topics in the South African curriculum should not only illuminate their coverage but also critically evaluate the ways in which the field of EE is addressed in examinations in South Africa. It is evident from empirical studies that not enough studies have been done where the two aspects of teaching of environmental impact topics in the curriculum and examination coverage are intertwined. In addition, Stevenson, Brody, Dillon and Wals (2013) state that ESD as a field of inquiry is conceptualised from theoretical, ethical, policy, curriculum, learning and assessment discourses that are all examined from an environmental perspective. They further posit that research in this field raises key issues concerning the framing, doing, and assessment of ESD research. This study will contribute to knowledge on the effect that curriculum transformation has on coverage and examination of environmental impact topics in the South African FET phase.

Research question

To what extent are ESD topics being covered in teaching and learning documents used by teachers and learners in Economics Grade 12 curriculum?

5. Research Methodology

Creswell (2011) and McMillan and Schumacher (2010) state that research methods comprise types of sampling, data collection, analysis and interpretations for a study.

5.1 Sampling of documents

Documents such as the Curriculum Assessment Policy Statement (CAPS), and past examination question papers were used in the analysis. Documents consisted of the following:

- Past examination question papers from (2006-2015): These past examination question papers fall within the decade of education for sustainable development. The question papers were purposefully sampled and only those subjects that were taught in the schools where participating teaches for this research taught were analysed. Economics was chosen due to it being selected by the DBE (2016) as one of the eleven key subjects in the South African education system.
- CAPS policy documents for the subject Economics.

5.2 Analytical study profile

This section shows tables of document analysis profile. These documents analysed involved CAPS policies and Grade 12 exit level past examination papers. The study employed an analytical research design. According to McMillan and Schumacher (2010), analytical research design involves analysis of documents. McMillan and Schumacher (2010) state that in an analytical study, the researcher investigates concepts and events through an analysis of documents. When conducting document analysis in this study, the researcher coded, labelled and made sense of perceptions from the raw data that were collected from documents. Ely, Vinz, Downing and Anzul (2005) emphasise that when we analyse, we often stop the flow of linear and sequential presentation of data and concentrate on lifting an element out from the whole to inspect it more closely. Qualitative research analysis involves discerning the smallest elements into which something can be reduced and still retain meaning if lifted out of their immediate context and then discovering the relationships between those elements (Ely et al., 2005). On the same note, Given (2008) mentions that coding categories can range conceptually from concrete to abstract and reflect themes and patterns found within and across domains. Continuous comparisons as analytical codes emerge should produce a final set of codes that can be applied to the entire data set. In this study, the smallest elements were data that was collected through documents.

5.3 CAPS policy documents

The content analyses of the study focused on the Economics content in the Grade 12 curriculum. As shown in Table 2 and Table 3 shows the source where data was retrieved and the actual data that was required to answer the main research question of this study.

Table 2 *CAPS subject policy analyses*

Subject policy documents Analysed	**Source**	**Data required**

Economics	Department of Basic education: http://www.education.gov.za/: Accessed August 2016	Total number of topics, Total number of environmental impact topics. Tuition time allocation for all the topics in the exams (weeks). Time allocation for environmental impact topics (weeks). Percentage time allocation of environmental impact topics (%). Mark allocation of environmental impact topics. Percentage coverage in the examination of environmental impact topics.

5.4 Grade 12 past examination papers

Table 3 below also shows T1, which is the time during the old curriculum (RNCS) and T2, which is the new curriculum (CAPS).

Table 3 *Comparison between RNCS and CAPS coverage of environmental impact topics*

Subjects Analysed	Source	Time	Date	Data required
Economics	Department of Basic education: http://www.education.gov.za/: Accessed August 2016	T1 (RNCS) T2 (CAPS)	2006 to 2015 (Decade of Education for Sustainable Development)	Exam year. Marks allocated for environmental impact topics out of 300 (Paper 1 and Paper 2) Percentage coverage of environmental impact topics. Average (RNCS vs. CAPS)

Document analysis involves skimming, reading and the interpretation of the documents (Bowen, 2009). Content analysis in this study involved the identification of meaningful and relevant information of environmental impact topics. The researcher identified important information and separated it from that which was not pertinent. In this study, the researcher drew upon Loubser (2016) and the SADC (2012) Environmental Outlook report for the identification of specific environmental impact topics that formed the basis for content analysis. The coverage of environmental impact topics included the following: ozone depletion, global warming, energy consumption, acid rain, air pollution, marine pollution,

mineral resource depletion, soil destruction, soil erosion, desertification, biodiversity loss, extinction of plants and animals, nuclear reactors and waste disposal, human health and diseases, world hunger, land use, solid waste disposal, hazardous chemicals, habitat destruction, invasive species, water quality and wildlife management. When evaluating documents, it is necessary to establish the meaning of the document and its contribution to the issues being explored (Bowen, 2009). In addition, the researcher determines the relevance of documents to the research problem and purpose. The documents selected for analysis in this research were authentic, credible and contained accurate data. The documents provided coverage of the research topic broadly. Bowen (2009) explains that document analysis is a process of evaluating documents in such a way that empirical knowledge is produced, and understanding is developed. Moreover, the researcher should strive for objectivity and responsiveness.

The document analysis was guided by the constant comparative method of Glaser & Strauss (1967), which is described in four stages, namely: comparing incidents applicable to each category; integrating categories and their properties; delimiting theory; and writing theory. This method involves a back-and-forth interplay with data to cluster ideas and concepts for authentic understanding and analysis of the documents.

6. Trustworthiness, Transferability and Dependability

The researcher used a multi-method strategy in collecting data to ensure that the study was rigorous one of the methods was document analysis. According to McMillan and Schumacher (2010), multi-method strategies allow for the triangulation of data and may yield different insights into a topic of interest, thus increasing the credibility of results. Document analysis schedules were pre-tested in a pilot study before they were used to verify whether they were appropriate.

7. Results and discussion

The results and discussions will start with EE/ESD contents found in the old policy document which is called National Curriculum Statement (NCS). Then follow an analysis of the changes brought by the CAPS curriculum in the dissemination of ESD. The effects of the shift of the curriculum from old NCS (Grade 10-12) to CAPS curriculum is discussed. Lastly, extent of coverage in the Policies and Examinations of ESD between RNCS and CAPS analysis is deliberated.

7.1 ESD content found in the Grade 12 Economics old NCS curriculum

Table 4: Environmental content found in the Grade 12 Economics old NCS (Grade 10-12)

SUBJECT	LEARNING OUTCOME (LO)	KEY EE/ESD THEMES/CONCEPTS
ECONOMICS	LO1: Macro-economics: The learner can demonstrate knowledge, critical understanding and application of the principles, processes and practices of the economy	• Learners are exposed to the fundamental concepts and understanding that choice and sacrifice impact on the destiny of resources in the production process. This should not conflict with the priorities of the Constitution, nor should it impair the **sustainability of the environment**.
	LO 4: Contemporary Economic Issues: The learner can demonstrate knowledge, understanding and critical awareness, and apply a range	• By the end of Grade 12, learners who have achieved the minimum competences for this Learning Outcome are able to demonstrate

	of skills in dealing with contemporary economic issues.	analysis and evaluation of the contemporary issues of inflation, tourism and **environmental sustainability**. • Analyse **environmental sustainability** and investigate recent international agreements in this regard (e.g. Rio de Janeiro and Johannesburg Summits). • Evaluating the composition and necessity of the public sector, problems of public sector provisioning, objectives of the public sector and its budgets, fiscal policy, including the Laffer curve, and reasons for public sector failure (infuse where appropriate: national macro- economic policy and service delivery regarding socio-economic rights, education, health, **the environment**, social security; convention of the rights of the child, taxation, and compensation for human rights abuses)

In the RNCS (Grade 10-12), Economics was defined as the study of how individuals, businesses, governments and other organisations within our society choose to use scarce resources to satisfy their numerous needs and wants in a manner that is efficient and equitable (DBE, 2012). These scarce resources can be attributed to natural resources which ESD is trying to ensure are not depleted and saved for future generations. The scope of this subject as shown in Table 4 was to prioritise the significant contemporary economic issues of poverty, redistribution of income and wealth, growth and development, globalisation, respect for the environment and human rights. The Economics scope as shown in Table 4 embraced features such as principles, processes and practices of the economy. This feature dealt with the concept of the efficient use of resources to satisfy the competing needs and wants of individuals and society. It included monetary and real flows in an open economy within the confines of production, consumption, and exchange. In addition, the goals of the Constitution and the sustainability of the environment were acknowledged in this feature. In Economics, the learner competence descriptions as seen in Table 4 were to interpret and summarise information relative to prescribed content from a range of sources (e.g., when dealing with the problem of environmental sustainability).

7.2 Analysis of the changes brought by the CAPS curriculum which affect ESD Dissemination

The CAPS curriculum brought the following changes from the old NCS curriculum. These changes have not only affected the structure but also influenced the coverage, teaching and examination of the environmental impact topics in the curriculum

Table 5: Environmental impact topics and content found in the Grade 12 Subjects

SUBJECT	EE/ESD CONTENT	CONTENT/CONCEPT
ECONOMICS	• Tourism &Economic Redress: (Environmental sustainability)	• Promotion or violation of human rights and the environment (human rights and the environment) • Analysis of environmental sustainability, investigating recent

	• Basic economic problem: Environmental sustainability	international agreements in this regard, for example, the Rio de Janeiro and Johannesburg summits. ✓ The state of the environment ✓ Measures to ensure sustainability • Major international agreements (Rio de Janeiro and Johannesburg summits)

In Economics, topics such as environmental sustainability and basic environmental economic problems in tourism and economic redress were found. In this subject the content was based on the promotion or violation of human rights and the environment, the state of the environment and measures to ensure sustainability and adherence to major international agreements.

7.3 The effects of the shift of the curriculum from old NCS (Grade 10-12) to CAPS curriculum

This section discusses the effects of the changes of the coverage of ESD topics from the old NCS (Grade 10-12) to CAPS. It answers the research sub-questions, which is, "*To what extent are ESD topics being covered in teaching and learning documents used by teachers and learners in Economics Grade 12 curriculum?".*

This section discusses general and specific results based on the breadth and depth of EE/ESD coverage in both curricula as seen in Table 5 and Table 6.

When comparing the content breadth structural differences between old NCS (Grade 10-12) and CAPS were evident. As seen in Table 4 and Table 5 CAPS documents were easier to analyse, where the work schedule showed the topics to be covered and it was easier for the ESD topics to be identified compared to the old NCS (Grade 10-12).

In sum, the overall structural presentation of the content in CAPS was clearer than in old NCS (Grade 10-12). The researcher also realised that in some of the CAPS documents, the description and clearer specification of content to be covered in a particular time makes it easier for teachers to follow a specific time frame for the topics to be taught and teachers are exposed to clear ESD topics to be covered during the year. From the analyses it was revealed that CAPS is pitched at micro-level, where the teacher is the implementer of a developed programme. This is in contrast with the old NCS (Grade 10-12) where the policy was developed at the macro-level and focused on meeting the LOs and Ass on ESD. This implies that CAPS provides more structural Environmental content support to both novice and experienced teachers because of its prescriptive nature. From analysis of the two curricula, it appears that CAPS is the ideal policy as it was easier for stakeholders to implement compared to the old NCS (Grade 10-12) in the teaching and learning of ESD topics in Economics.

One other observation was that in CAPS there was greater emphasis on summative assessment (controlled tests and examinations) compared to the RNCS which placed more emphasis on formative assessment. CAPS is therefore more exams driven. I addition, in Economics there was a notable increase in the depth of environmental impact coverage in CAPS when compared to old NCS. This increase was noted where old NCS had environmental issues embedded in LO1: Macroeconomics, where learners are exposed to the fundamental

concepts and understanding that choice and sacrifice impact on the destiny of resources in the production process. This should not conflict with the priorities of the Constitution, nor should it impair the sustainability of the environment. In addition, old NCS policy in Economics embeds environmental values and principles in LO 4: Contemporary Economic Issues, where the learner can demonstrate knowledge, understanding and critical awareness, and apply a range of skills in dealing with contemporary economic issues. Conversely, in the CAPS subject policy, more content is based on topics in Tourism and Economic Redress: (Environmental sustainability) and Basic economic problems: (Environmental sustainability). CAPS broadly covers content on the promotion or violation of human rights and the environment (human rights and the environment), analysis of environmental sustainability and investigating recent international agreements in this regard, for example, the Rio de Janeiro and Johannesburg summits. Furthermore, Economics in CAPS covers the state of the environment, measures to ensure sustainability and major international agreements such as the Rio de Janeiro and Johannesburg summits. It is evident that the shift of the curriculum from old NCS to CAPS enhanced the coverage of ESD topics in the new CAPS curricula for Economics as shown in Table 5.

7.3 Effects of the curriculum changes in Examinations

To ascertain the depth of environmental impact topics in past examinations papers from 2006 to 2015, percentages were compared against all other aspects covered in the examination paper using the marks allocated for each aspect.

Table 6: *Showing coverage of EE/ESD topics in Economics examinations*

ECONOMICS										
	Year 2006 to 2015									
	RNCS						CAPS			
YEAR	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Marks allocated out of 300	0	0	16	36	2	28	54	32	16	26
Percentage coverage	0%	0%	5%	12%	1%	9%	18%	11%	5%	9%
Average (RNCS vs. CAPS)			**4.5%**					**10.8%**		

In Economics, the following environmental impact topics were identified: climate change, carbon emissions, water pollution, the effects of fracking on the environment, environmental sustainability measures, conservation, non-renewable energy, dumping, acid water and other forms of pollution. These environmental topics were sourced from the DBE website http://www.education.gov.za/ in 2016. The coverage of environmental impact topics in Economics has an average of 7%. The year 2012 had the highest coverage of 18%, followed by years 2009, 2013, 2011, 2015, 2008, 2014 and 2010 with 12%, 11%, and 9%, 9%, 5%, 5% and 1% respectively. As seen in Table 6, the year 2010 recorded the least percentage coverage of environmental impact topics. Table 6 also shows the average percentage between RNCS and CAPS; that is, 4.5% and 10.8% respectively which showed that changes in the curriculum benefited environmental impact topics as coverage was increased in the CAPS.

7.4 Coverage in the Policies and Examinations of ESD between old NCS and CAPS

When analysing Table 6 on Economics, the old NCS policy on the themes that are associated with environmental impact topics that must be taught in the classroom revealed that there was alignment of LO 1 and LO 2 with the environmental impact topics that were examined. When analysing the two policies, old NCS and CAPS, it was observed that CAPS had only two basic knowledge areas that could be covered in the examinations. It was observed

that there was alignment between the Economics old NCS and CAPS policies. However, on the environmental impact topics that were covered in the examinations there was an increase in breadth in CAPS when compared to the old NCS as seen in Table 4 and Table 5. The following topics were found in both policies: sustainability of natural resources, conservation, greenhouse effects, water, land and other natural resource management, climate change, environmental stress, carbon footprint, waste management, green taxes, non-renewable resources, water pollution, industrial pollution and poisoned groundwater. These topics were more broadly covered in CAPS than in old NCS. Another main difference between old NCS and CAPS in Economics was that in the years of 2012 and 2013 there was consistency between policy and actual coverage of the topics in the examinations. Not only did the CAPS examination papers record more coverage in terms of topics but there was also a higher percentage of environmental impact topics seen in the examinations. Therefore, in Economics there was an increase in the coverage of environmental impact topics in the CAPS examination papers analysed.

Table 7 *Results of ESD topics found in the Economics curriculum from 2008 to 2011 (old NCS)*

Policy Document (1)	Themes found in Grade 12 (Policy document)	Grade 12 Examination Papers	Environmental Impact Topics found
National Curriculum Statement Grade 10-12 (General) Economics (http://www.education.gov.za) Accessed: August 2016	• LO1:Macro-economics: The learner is able to demonstrate knowledge, critical understanding and application of the principles, processes and practices of the economy • LO 4: Contemporary Economic Issues: The learner is able to demonstrate knowledge, understanding and critical awareness, and apply a range of skills in dealing with contemporary economic issues.	2008 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2008: Environmental sustainability, pollution, green taxes.
		2009 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2009: Environmental sustainability, global warming, recycling, illegal fishing, water pollution, land pollution.
		2010 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2010: Greenhouse effects, environmental pollution, illegal fishing, imbalance ecosystem, loss of biodiversity.
		2011 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2011: Sustainability of natural resources, conservation, greenhouse effects, water, land and other natural resource management, climate change, environmental stress, carbon footprint, waste management, green taxes, non-renewable resources, water pollution, industrial pollution, poisoned groundwater

Table 8 *Results of ESD topics found in the Economics curriculum from 2012 to 2015 (CAPS)*

Policy Document (1)	Environmental Impact Topics found in Grade 12 (Policy document)	Grade 12 Examination Papers	Environmental Impact Topics found
National Curriculum Statement: Curriculum and Assessment Policy Statement (CAPS) Further Education and Training Phase Grades 10-12: Economics (http://www.education.gov.za) Accessed: August 2016	• Tourism & Economic Redress: Environmental sustainability (Page 12 & 37) • Basic Economic problem: Environmental sustainability (Page 37)	2012 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2012: Gas emissions and climate change (Global warming), Biodiversity loss, conservation of natural resources, pollution, and environmental sustainability.
		2013 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2013: Mineral resources depletion, depletion of ozone layer, recycling, green tax, acid water, water pollution, environmental sustainability, climate change, air pollution,
		2014 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2014: Environmental sustainability, conservation, depletion of natural resources (coal, oil, gas), non-renewable resources, land and water pollution.
		2015 (DBE Economics Grade 12 final paper: http://www.education.gov.za/: Accessed August 2016)	2015: Climate change, depletion of natural resources, green tax, carbon emission, water pollution, sustainability, land degradation,

7.5 Thematic Document Analysis of old NCS Versus CAPS

The data collected from the documents is based on grounded analysis where concepts in the form of structure, culture and agency were grouped into codes. Selective concepts resulted in categories that were grouped into an emerging theme. The analyses are presented in a schematic diagram as shown in the Figure 3 below.

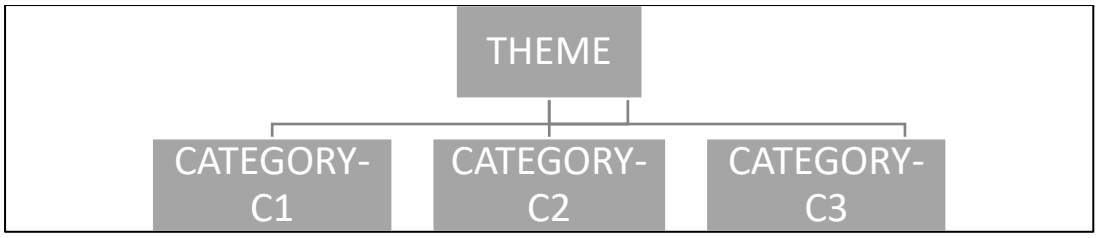

Figure 3: Diagrammatic presentation of the document analysis.

7.5.1 Theme: Coverage of ESD Topics in the Curriculum

This research is based on the conceptualisation of the data presented and analysed using Realist Social Theory (RST) framework developed by Archer (1993) and configured by Pawson and Tilley (1997). The theme that emerged from document analysis is the coverage of ESD topics in the curriculum based on the RST theoretical framework context that comprises structure, culture, agency and relations. Coverage of environmental impact topics emerged from the categories discussed below. The categories as shown in Figure 3 above are:

C1- Exploration of environmental impact topics in the CAPS and old NCS policy documents and selected textbooks used by agents in the classroom

C2- Exploration of environmental impact topics in the past examination question papers

C3- Alignment between CAPS policy projections with past examination question papers

7.5.1.1 C1-Exploration of environmental impact topics in the CAPS and old NCS policy documents

The CAPS policy documents conform to the RST theoretical framework based on Context, Mechanisms and Outcomes configuration (CMOc) in the form of structure, culture, agency and relations. The CAPS policy is structured according to the previous curriculum RNCS but also updates it and aims to provide clearer specifications of what is to be taught and learnt on a term-by-term basis. CAPS policy documents stipulate what is to be learnt in different subjects of the curriculum. I believe that teachers and learners' ideas, theories, beliefs, values and arguments about subjects taught represent the culture of teaching and learning. This study's findings showed that there was a significant change environmental impact topics coverage from old NCS to CAPS. Another notable change was that old NCS defined each subject and provided a clear understanding to teaching and learning aspects each subject focus area entails. For example, old NCS defines Economics as the study of how individuals, businesses, governments and other organisations within our society choose to use scarce resources to satisfy their numerous needs and wants in a manner that is efficient and equitable. These scarce resources can be attributed to natural resources that ESD are trying to ensure are not depleted and that they are saved for future generations. It can be noted that learning outcomes and assessment standards have been removed in CAPS and are called content, topic and skills. In CAPS, learning areas are called subjects and unlike in old NCS the teaching of environmental impact topics requires weekly lesson plans as opposed to daily lesson plans in old NCS.

The analysis of the old NCS principles shows that the government focus was mainly on learners as opposed to CAPS which is content driven in terms of environmental impact topics coverage. This study found that the old NCS, in terms of educational principles, was fully focused on learner-centeredness and activity-based education while CAPS encourages critical thinking and an active approach to learning. It was also noted that the RNCS focused on addressing the inequalities of the past and that this was evident in the CAPS policy documents which has a focus on environmental and social justice. The study found that CAPS placed more emphasis on content and the learning approach that that can be associated with a content-driven approach, while RNCS puts more emphasis on OBE, with discovery-based learning as the norm.

7.5.1.2 C2- Exploration of environmental impact topics in the past examination question papers

The second category of document analysis in the study is the exploration of environmental impact topics in the past examination papers. The analysis of past examination papers was based on the breadth and depth of environmental issues embedded in the question papers. The breadth was characterised by environmental impact topics, which included but were not limited to ozone depletion, global warming, energy consumption, acid rain, air pollution, marine pollution, mineral resource depletion, soil destruction, soil erosion and desertification. Furthermore, some topics were biodiversity reduction, extinction of plants and animals, nuclear reactors and waste disposal, human health and diseases, world hunger, land use, solid waste disposal, hazardous chemicals, habitat destruction, invasive species, water quality and wildlife management. The period of analysis was from the year 2006 to the year 2015. These years fell within the UNDESD, which is also characterised by the shifts of the curriculum from the old NCS to the CAPS curriculum. All the October/November papers for each subject from 2008 to 2015 were analysed for evidence of breadth of environmental impact topics as the curriculum policy stipulated.

Table 6 shows the average coverage percentage of examination of the environmental impact topics in Economics. The results show that in the old NCS the average is 4.5% compared to CAPS with an average of 10.8%. Economics' breadth of content coverage in the examination shows a significant difference of 6.3%. As a result, the changes to the curriculum increased coverage of environmental impact topics in the examinations. Certainly, the content coverage of environmental impact topics in the curriculum influences the way teachers prepare and use documents for lessons and examination practices. This research revealed that past examination question papers were used most of the time when preparing learners for the examinations in Grade 12. The study also showed that past examination papers assist teaching by showing the depth to which a topic must be taught in the classroom, how learners are supposed to respond to questions and provide learners with an idea of the examination itself before sitting for the final examinations. All these aspects confirm the existing views that the structural condition of the examination papers influences the actions of both teachers and learners who are agents in the school environment. This study's argument is that this emerging culture of using past examination papers for studying and revision is retarding learners from knowing about other topics in the curriculum that have inferior coverage in the examinations. In conclusion, it can be mentioned that in Economics the percentage of coverage of ESD topics in the examinations increased after the shift of the curriculum from old NCS to CAPS.

7.5.1.3 C3- Alignment between CAPS policy projections with past examination question papers

RST framework can be applied in the way past examination question papers are aligned with the CAPS policy projections. The structure of CAPS in terms of content coverage has influenced the structure of the content of environmental impact topics in the examinations. The general aim of Economics clearly mentions that it is based on the following principles: human rights, inclusivity and environmental and social justice. Infusing the principles and practices of social and environmental justice and human rights as defined in the Constitution of the Republic of South Africa was not evident. In Economics, CAPS policy requirements account for about 7.7% of environmental impact topics while past examinations show an average of about 10.8%, showing a greater coverage of environmental impact topics in the examinations than the policy required. In agreement with these findings, Khan and Law (2015) mention that the alignment in coverage between the curriculum published by the educational institutions and the curriculum actually taught by the teachers in their classrooms would enhance teaching of ESD topics in the classroom. The curriculum taught in the classroom is comprised of the content that is finally used as examinable content for learners.

8. Conclusion From The Structural, Cultural And Agential Perspectives

In this study, the RST comprised framework for analysing the educational structure in this study on the extent of coverage of ESD topics in Economics in the CAPS curriculum. In the investigation of documents, social structures comprise dimensions of structure, culture and agency, which interact to shape and re-shape the conditions people have for engaging in action.

8.1 Structural Perspective

In this study, the structural dimension of documents entailed investigating relevant documents to identify the extent of coverage of ESD topics in the curriculum. Furthermore, in this study, social structures are activity-dependent, requiring agents (teachers and policymakers) to engage in social activities to sustain or transform them. The structural dimension provides agents with contexts within which to pursue activities and interests (De Souza, 2017). The structural dimension of documents that were investigated in this study were

DBE documents, which comprised of the CAPS policy documents and past examination question papers. The study showed that social structures play an important role in ensuring that educational change takes place despite challenges in implementation of educational policies. Documents as structures play an important role in ensuring that the necessary information on ESD topics is disseminated as it is presented in the documents. It is then the duty of the stakeholders to implement policies in a progressive manner. The investigated policy documents indicated that there is provision for ESD in the curriculum. All the policy documents allow ESD to be taught in all subjects. However, the study realised that policy implementation was a challenge where further investigation was instituted in Economics. where there is greater coverage in the examination of environmental impact topics teachers will be encouraged to incorporate more environmental impact topics in their teaching.

8.2 Cultural Perspective

In this paper, cultural dimension of documents is affected by ideational influences, which have an influence on agential activities, and may be consistent with or contradictory to prevailing, dominant ideas held by other groups or individuals, thereby facilitating or hindering change. In this study, teachers' (who are agents) commitment to teaching learners depends on several structural aspects such as the usage of past examination papers as one of the main resources in teaching environmental impact topics. The extent of a particular topic being covered in the previous examination greatly influences or changes the way teachers, examiners and policy makers will emphasise that topic in the classroom and examination papers. For instance, when environmental impact topics are inconsistently covered in the examinations, teaching and learning will tend to either devote more time for the topics or less time for the topics, thus enhancing or hindering knowledge accumulation in the learning process. The education system is South Africa is examination-oriented and learners are progressed to the next level of education based on how they were able to memorise and pass the examination and not by how they are able to use the knowledge acquired in the classroom to effect change in their lives. Structures such as schools and teachers are evaluated according to the number of learners that pass examinations at the end of the year. This study's findings show that the culture of curriculum developers of not aligning policy and practice had a negative influence on the teaching and learning culture. Teachers and learners are greatly influenced by documents and what content is covered in the documents. This study finds that in Economics, there was alignment between policy and actual practice and that will influence positive integration of ESD topics in the classroom.

8.3 Agential Perspective

This study has discovered that documents have agential effects on teaching environmental impact topics. One of these effects can be that teachers who are agents in this study as mentioned above are affected by the extent of topic coverage in the documents such as policy and examinations. Teaching might be affected in that teachers act or no action depending on what has been developed and experienced in previous years in terms of content coverage in documents. The implication of teachers to be influenced by the agential effect of coverage can have a negative or positive influence in the way they teach in the classroom. Therefore, the extent of coverage can hinder or transform pedagogy in the classroom. In this study, it appears that the agential effect of the documents influences educational structures where they develop a culture of reliance on documents in shaping a lesson in the classroom. Consistent or greater coverage of ESD topics will result in teachers focusing more on teaching these environmental impact topics. Hence, I strongly argue that ESD should not be seen as a piece of content that

can be integrated across all subjects, but it should rather be a separate subject that is made compulsory in all phases of the curriculum.

9. Conclusion

The findings show that it is important that policy makers include all aspects or components of curricula to be implemented in the curriculum as well as the appropriate apportioning of the different themes such as ESD with a certain breath of coverage in all subjects. Further, the findings showed that the breath of coverage of ESD topics was not consistent in Economics. This inconsistency can be attributed to policy makers who do not adhere to the principle of inclusion ESD adequately in practice. It is also important to highlight that the CAPS curriculum has detailed presentations of what is to be taught in the classroom compared to RNCS. In support of this, Gough (2013) points out that the inclusion of ESD in the curriculum allows for the construction of transcultural spaces in which scholars from different localities collaborate in reframing and disseminating their own knowledge traditions, and states that much needs to be done in terms of research about it as ESD continues to evolve and transform. The researcher strongly believes that in practice examinations, which are summative assessment in nature, should carry the same weight as formative assessment. For example, a learner's final progression mark should comprise of 50% from formative assessment and 50% summative assessment.

This paper concludes that in practice examinations should not be allocated a higher proportion of percentage to progress learners. Thus, leading to ESD topics being recognised as one of the core components of the curricula. This study's 'closing argument about the use of past examinations is that the emerging culture of using past examination papers for studying and revision could be enhanced learners understanding of ESD topics when the coverage is more and if the coverage in the examination is less than that could retard learners from knowing other topics in the curriculum that have inferior coverage in the examinations. This study discovered that teaching and learning in CAPS is examination driven. The implication of an examination-orientated curriculum is that learners only strive to pass the examinations and progress to the next level without even practicing what they have been taught. The shift from old NCS to the CAPS curriculum was beneficial to teachers as they were able to engage in reflecting on and assessing their own efforts to promote inquiry, reasoning, problem-solving and communication in the classroom. An increase in the coverage of environmental impact topics was found in Economics. The researcher concurs with the findings of this study that integration of ESD topics in the curriculum documents as well as in practice should be encouraged and it is the responsibility of all structures involved in the education sector.

10. Recommendations

Education policy developers and subject advisors should evaluate the documents used by teachers for teaching purposes to ensure that the policy requirements are aligned in all the subject documents.

References

Andrich, D. (2009). Review of the Curriculum Framework for curriculum, assessment and reporting purposes in Western Australian schools, with particular reference to years Kindergarten to Year 10. Available from: http://www.curriculum.wa.edu.au/internet/Publications/Reports/General_Reports

ACARA. (2010). *Why have an Australian curriculum? Australian curriculum information sheet* [Online]. Available from: http://www.acara.edu.au/verve/_resources/Why_have_an_Australian_Curricul um.pdf [Accessed 13 September 2019].

Akinoglu, A. (2008). Primary education curriculum reforms in Turkey. *World Applied Sciences Journal* (3) 2: 195–199.

Archer, M.S. (1993). *Realist social theory: the morphogenetic approach*. New York: Cambridge University Press.

Bowen, G.A. 2009. Document analysis as a qualitative research method. Qualitative Research Journal, 9 (2), 27-40.

Creswell, J.W. 2009. Research design: Qualitative, quantitative and mixed method approaches. (3rd ed.). Thousand Oaks: Sage.

Creswell, J.W. (2011). *Qualitative inquiry & research design. Choosing among five approaches*. (3rd ed.) New Delhi: Sage.

Department of Education (DBE) (2012). *White paper on education and training 1995* [Online]. Available from: http://www.education.gov.za/Curriculum/CurriculumAssessmentPolicyStatements/tabid/419/Default.aspx. Accessed on the 17 September 2018.

Department of Basic Education (DBE). 2O17. CAPS curriculum. [Online]. Available from: http://www.education.gov.za/Portals/0/CD/National%20Curriculum%20Statements%20and%
20Vocational/CAPS%20FET%20_%20AGRICULTURAL%20SCIENCE%20_%

Department of Education (DBE) (2018a). National Curriculum Statement Grades R-12. Available at http://www.education.gov.za. Accessed 3 October 2019.

Dilkes, J. (2014). The new Australian curriculum, teachers and change fatigue. *Australian Journal of Teacher Education*, (39) 11.

Department of Environmental Affairs (DEA). (2017). *Climate change trends, risks, impacts and vulnerabilities, South Africa's 2nd annual climate change report* [Online]. Available from: https://www.environment.gov.za/sites/default/files/reports/southafrica_secondnational_climatechnage_report2017.pdf [Accessed 5 November 2019].

Department of Education. (1995). *White paper on education and training* [Online]. Available from: http://www.education.gov.za/Curriculum/CurriculumAssessmentPolicyStatements/tabid/419/Default.aspx. Accessed on the 17 September 2014.

Dulger, I. (2004). *Turkey – Rapid coverage for compulsory education – The 1997 basic education program*. [Online]. Available from: http://siteresources.worldbank.org/INTTURKEY/Resources/361616-1142415001082/Compulsory_Education_by_Dulger.pdf [Accessed 4 November 2012].

Ely, M., Vinz, R., Downing, M. & Anzul, M. (2005). *On writing qualitative research. Living by words*. Washington D.C.: The Falmer Press.

Given, L.M. (2008). Methodology. In *The Sage Encyclopedia of Qualitative Research Methods*. [Online]. Available from: http://methods.sagepub.com. DOI:http://dx.doi.org/10.4135/9781412963909.n267 [Accessed 17 November 2016].

Glaser, B. G. & Strauss, A. L. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. Chicago: Aldine.

Gregersen-Hermans, J. (2021). Toward a curriculum for the future: Synthesizing education for sustainable development and internationalization of the curriculum. *Journal of Studies in International Education*, *25*(4), 461-481.

Harris, F. (2012). Global environmental issues. (2nd ed.) London: John Wiley.

Hill, J., Alan, T. & Woodland, W. 2006. Sustainable development. Hampshire: Ashgate.

Hua, Z. (2014). Curriculum studies and curriculum reform in China 1922–2012. In Pinar, W.F. (Ed.) *Curriculum Studies in China. Intellectual Histories, Present Circumstances. International & Development Education*. New York: Palgrave Macmillan

Kumar, S., Sureka, R., Lim, W. M., Kumar Mangla, S., & Goyal, N. (2021). What do we know about business strategy and environmental research? Insights from Business Strategy and the Environment. *Business Strategy and the Environment*, *30*(8), 3454-3469.

Loubser, C.P. 2016. Environmental education: Some South African perspectives. Pretoria: Van Schaik

Maluleke, H.M. 2015. Curriculum policy implementation in the South African Context, with reference to environmental education within the natural sciences. Doctoral thesis. Pretoria: University of South Africa.

McMillan, H. & Schumacher, S. 2010. Research in education. (7th ed.) Boston: Pearson.

Pawson, R. & Tilley, N. (1997). *Realistic evaluation*. London: Sage

Ramatlapana, K., & Makonye, J. P. (2012). From too much freedom to too much restriction: The case of teacher autonomy from National Curriculum Statement (NCS) to Curriculum and Assessment Statement (CAPS). *Africa Education Review*, 9(sup1), 7- 25. https://doi.org/10.1080/18146627.2012.753185

Stearns, C. (1992). Integrating global environmental chemistry into secondary school curricula. In Dunnette, D.A. & O'Brien, R.J. (Eds). *The Science of Global Change.* Washington DC: American Chemical Library. 468–473

Stevenson, M., Brody, J., Dillon, J. & Wals, E.A.J. (Eds.) (2013). *International handbook of research on environmental education*. New York: American Educational Research Association. 178–188.

Togo, M., Zhou, L. & Khan, A. (2015). Climate change education in South Africa. In Nhamo G. & Shava, S. (Eds). Climate Change Education in the SADC School Curriculum. Pretoria. African Institute of South Africa.

UNESCO. (2017). ESD Goals. Learning objectives. [Online]. Available from: http://www.unesco.org/open-access/terms-use-ccbysa-en [Accessed 11 November 2019].

Young, M. 2008. Bringing knowledge back in from social constructivism to social realism in the sociology of education. New York: Taylor and Francis.

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