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THE RELATIONSHIP BETWEEN LEARNERS' BEHAVIOUR AND ACADEMIC PERFORMANCE TO CLIMATE CHANGE

(Research article)

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Abstract

The aim of this paper is to explain the relationship between Foundation Phase learners' behaviour and academic performance at school to climate change. The research followed a qualitative case study and used convenience sample which identified three schools in Graaff-Reinet and collected the needed data from one Grade 3 teacher from each school. In addition to have conducted a literature review and read through various articles, data was collected by means of face to face interviews, non-participant observations and data analysis. A codebook thematic analysis was used to analysis the data that was collected. The study found that when there was extreme heat, learners struggled to stay focused and were talkative and restless. Furthermore, it found that when it was extremely cold, learners were restless and struggled to keep their concentration levels up. Therefore, we can conclude that the effects of climate change had a negative impact on the learners' behaviour and academic performance. The study recommended that teachers need to increase their knowledge about the different patterns that learners portray when there is extreme weather conditions and adjust their teaching strategies accordingly.

Keywords: Climate change, weather, behaviour, foundation phase learner, academic performance

1. Introduction

Climate change is a topic that is greatly spoken about today and the effects that it has on people in the world. Learners go to school 5 days a week and spend the majority of their day with their teachers. Teachers have observed and discussed that the learners' behaviour and academic performance changes when the weather suddenly changes or it is an extremely hot or extremely cold day. This study investigated the effect that climate change variations have on Foundation Phase learners' behaviour and academic performance at school which took place in an Eastern Cape town, Graaff-Reinet.

Climate change is the largest health threat that faces humanity (World Health Organisation, 2021). There are many different factors that contribute to different health risks in humans namely injury from extreme climate change events, heat related illness, respiratory illness, various water borne diseases, vector borne diseases, malnutrition, noncommunicable diseases, mental and psychosocial health. As the weather patterns change over a long period of time, the climate patterns also changes which results in droughts, floods or any extreme weather condition which creates massive challenges for the communities.

Climate change and weather are linked to one another. When the weather changes over a long period of time, the climate pattern changes as well. The warmer the weather was over a specific period of time, it resulted in a drought in that specific area which created challenges in that community (Clarke, Otto, Stuart-Smith & Harrington, 2022).

Education is such a crucial step in a learner's life and in a country's economic growth so the more teachers understand the relationship between climate change and the learners' performance, the better it will be for the learner, the economy and employment growth. Phillips (2022) reported in the Mail&Guardian about the huge amount of rain that fell in 2022 in South Africa but more specifically in KwaZulu Natal. He reported that 630 schools had been affected by the floods furthermore 124 were harshly damaged, added to this 101 were not accessible to be able to report on the degree of damages. Ngcoya (2022) reported on IOL that schools were not able to open when the holidays were over because of this damage which means that learners missed out on getting educated and these learners would fall even more behind. Adding to the schools that were damaged, roads and bridges were washed away which means that even if the schools were open, learners would not have access to get to the schools (Ngcoya, 2022). Learners' school attendance decreases due to the effects of climate change and learners fall more behind academically.

Climate change is something we cannot control but it affects our lives. Teachers have mentioned that there seems to be a connection between the weather (too hot, rainy, too cold, snowy, windy, warm) and learner's behaviour at school (restless, loud, calm, energetic). In addition, teachers spoke about how the learners struggle to stay focused on their work on some days more than on other days where the learners seem to be more focused. Teachers shared these thoughts with each other in different settings at school which resulted that the teachers try to come up with a conclusion about the relationship between climate change, the learners' behaviour and the academic performance (Javid, 2019).

This study was guided by a main research question and a few sub questions. The main research question was: How does climate change affect the Foundation Phase learners' behaviour and academic performance? The three sub-questions were: What patterns in behaviour and academic performance is shown by learners as a result of climate change?, What are the main challenges faced by teachers in the classroom as a result of climate change?, Which teaching strategies are used by teachers during adverse weather conditions. This study used three Grade three teachers observations and face to face interviews to gather the information needed that all lived in Graaff-Reinet. These teachers found that there was a negative relationship between climate change and the learners' behaviour and academic performance and that learners struggled the most when there was a sudden change in the weather pattern in a day due to the result of climate change.

This research attempted to increase teachers' knowledge of what different situations and occurrences affect their learners' behaviour and academic performance and then help teachers work out how they can help and deal with their learners when this type of climate change occurs.

2. Theoretical Background

This research study followed two theoretical framework namely The Theory of Planned Behaviour (TPB) and the Social Change Theory (SCT). TPB helps people understand how individuals can change their behaviour in specific situations (Alhamad & Donyai, 2021). There are three main components namely, attitudes, subjective norms and perceived behavioural control. Figure 1 visually portrays TPB. By examining both the learners' conduct and academic achievements alongside climate change through the Theory of Planned Behavior (TPB), the researcher aimed to predict how learners would react to alterations in weather patterns. This research fell under TPB theory but there were also some aspects that did not align with the research topic, so this theory was combined with the SCT. In the Social Cognitive Theory (SCT), various theories exist, such as functionalist theory. Functionalist

sociology posits that society shapes individuals and comprises structures such as family and education, which impart values (Parsons, 2018). Functionalism provides a framework for understanding how different parts of society work together to maintain stability and order, focusing on the interrelationship between social institutions and their functions in the larger social system (Parsons, 2018). Examining schools, teachers have direct interaction with students, spending a substantial portion of the day in their company. The researcher examined the learners' reactions (behavioural and academic) to climate change over the four seasons for a month and investigated if there were any relationships between the two. This theory was used as an interpretative tool when the data was analysed.

3. Literature Review

The literature review provided the researcher with appropriate information about how climate change affects learners' behaviour and academic performance and the relationship that arises between them. It explained the South African education system and the psychological effects of climate change in education. Climate change and the greenhouse effect are defined with various images showing the effect of climate change over the world followed by an analysis of Graaff-Reinet's weather patterns. This was the location where the research took place. Next, the relationship between weather and human behaviour is reviewed and then the effects of climate change on education and how different floods in South Africa have affected the teaching and learning for the learners. The ideal temperature for learning and biometeorology were touched on. Lastly, the theoretical framework is discussed namely the TPB and the SCT. As mentioned in the previous chapter, weather and climate in this chapter will be used interchangeably.

3.1.South African Education System

The primary emphasis of the DBE is on sustaining and bolstering the education system to foster lifelong learning, enhance quality of life and contribute to the development of a non-violent, prosperous and self-reliant South Africa. The DBE is responsible for primary and secondary education (South African Government, n.d.). This study focused on the Foundation Phase learner, more specifically, Grade 3 learners which are between the ages of 8 and 9 years old.

3.2.Psychological effects of climate change in education

Vergunst and Berry (2021) wrote that half of the world's children are at a tremendously high risk of mental and physical health problems from the effects of climate change which have been mentioned in more than 230 health care journals. Children react differently to climate change as how adults react which makes them extremely vulnerable to the impact of climate change (Burke et al., 2018). Burk et al. (2018) explained in their research about the psychological effects of climate change on children that climate change can lead to PTSD, depression, anxiety, sleep disorders and substance abuse. The consequences impact emotion regulation, learning, behaviour, language development and academic performance.

3.3.Climate change

United Nations (2022) defined climate change as a situation when there has been a long-term change in temperatures and weather patterns. Climate change is a global phenomenon that can be described by the changes in the planet's climate that has been caused by human activity which has been predominantly caused by the burning of fossil fuels which results in a rise of sea levels, ice melting and extreme weather events (Turrentine, 2021). Climate change happens when there is a gradual shift in the temperature which is affected by the greenhouse effect which can be described when heat is radiated and gets absorbed by different gases in the atmosphere (Yonkers, 2021). These greenhouse gases are known as carbon dioxide,

methane, nitrogen oxide and fluorinated gases which all get released back into the atmosphere. If these gases were not present, we would not be able to live on earth as it would be below freezing making it impossible for life to take place (Yonkers, 2021). However, an over-absorption of these gases leads to increased heating of the earth's atmosphere which results in a phenomenon known as global warming. This heightened atmospheric temperature contributes to a range of environmental changes, including the melting of polar ice caps, rising sea levels, disruptions in weather patterns and the exacerbation of extreme events such as heatwaves, hurricanes and droughts. Additionally, the impacts of global warming extend to ecosystems, biodiversity and human societies, posing significant challenges for sustainable development and necessitating global efforts to mitigate and adapt to the consequences of climate change. Figure 2 displays the above mentioned explanation visually.

3.4.Effects of climate change on mental health

Climate change also affects human health. Young children, families that have a low income, woman that are pregnant, people with co-morbidities and older people are particularly vulnerable. When the temperature increases, a perfect environment is created for different diseases, fungi and mould to multiply which results in and increase in illnesses, more specifically respiratory diseases and asthma (Goshua et al., 2020). Clayton (2020) stated that when we hear the words "climate change", we think of ice caps melting and the polar bears dying, but the concept is much bigger than the natural impacts as these impacts have a snowball effect on humans and their way of life. Clayton (2020) backed up the research by explaining how human health is threatened by heat, the spread of waterborne and vector-borne diseases, malnutrition and forcing people out of their homes and communities.

3.5.Climate change in Graaff-Reinet

World Weather Online (2022) reported that weather in Graaff-Reinet, which is in the southern hemisphere, is known for its extreme heat or extreme cold. The warmest month is February where the highest temperature averages around 34° Celsius and the lowest temperature is around 15° Celsius. Adding to this information, December, January and February have a daily average of 11 hours of sunshine. The rainfall has been different the last few years but generally it rains for 63 days of the year and collects up to 338mm. The wettest month is March. January, February, November and December have the highest UV index which is a maximum of 12. The coldest month is June where the temperature averages around 18° Celsius and the lowest is 5° Celsius and the months that are the driest are June and September (World Weather Online, 2022).

3.6.Climate change adaptions and mitigation

Climate change adaptations and mitigation cannot be seen as separate; rather, one cannot function without the other (Morecroft et al., 2019). Climate adaptation is the way our behaviour, systems, routines and lives change so that we can protect ourselves, our families, the economy and the environment (Morecroft et al., 2019). Adaptation means changing one's lifestyle because of the change that is happening to manage the impact it has on one's life. Mitigation is the actions that we take to reduce greenhouse gases into the atmosphere which should result in the earth not getting warmer and the temperatures not rising (Morecroft et al., 2019). Figure 3 explains perfectly what mitigation and adaptation is and the different aspects that fall under these headings and how they overlap.

3.7.Weather and human behaviour studies

Weather is defined as the state of the atmosphere at a specific time (Gutierrez et al., 2017). Weather is what we physically feel and experience outside namely hot, cloudy, sunny, rainy,

windy or snowy (NOAA, 2021). Weather influences peoples' moods and has an impact on people's work ethic and how they deal with specific conditions. Therefore we can say the same for learners and their motivation and attitude towards their schoolwork (NOAA, 2021). There has been numerous studies done where the researchers found a relationship between weather, barometric pressure, behaviour and students' performance. However, the amount of research that focuses on children's behaviour in the school environment is limited. Therefore, it is difficult to draw direct conclusions because we are not looking at exactly the same concepts. This is the main reason why I have chosen to investigate the effects of changes in weather patterns on the behaviour of learners in the South African context.

3.8.The effects of climate change on education

Randell (2019) reported that climate change influences education directly or indirectly in many ways. When the weather shows patterns of tropical cyclones, hurricanes, floods, disastrous winds, tornados and heat waves, school buildings or the children's homes could be destroyed or severely damaged resulting in them not being able to come to school. Droughts and heat waves influence children's parents' livelihoods and some of them lose their jobs and cannot pay for school fees or the children get taken out of school to earn more money for the household. Indirectly the children can be affected in the early childhood development phase when the brain develops more rapidly which means that acceptable nutrition is critical. Randell (2019) found that in countries where there were extreme heat waves, fewer children finished schooling or stayed at school for long periods of time. Thus, it is important to investigate the effects of climate change in education. In support of the above, Phillips (2022) reported that excessive amounts of rain had fallen in 2022 which resulted in flooding all over South Africa, especially in Ladysmith, KwaZulu-Natal. More specifically, schools had to close. Roads were closed, infrastructure collapsed and buildings were under water which resulted in learners not being able to go to school. The effects that climate change has on learners' education is detrimental and the learners' can not change the way it affects their life.

3.9.Ideal temperature for learning

A temperature of 23° Celsius is the temperature that is the most favourable for students to succeed in their academic achievement success, as stated by Braswell (2018). As the temperature rises, there is a corresponding decline in learners' concentration, and conversely, when the temperature drops, concentration levels also decrease (Braswell, 2018).

3.10.Biometeorology

Biometeorology is a multidisciplinary field that deals with how life on earth (plants, animals, humans) are impacted by weather (Lowry, 2013). Biometeorology assesses how atmospheric conditions can impact living organisms, how weather influences people and preventive approaches that can be implemented (Lowry, 2013). Royal Meteorological Society (2017) reported that one also needs to look at the relationship that exists between weather and health, namely:

- Cold and flu
- Asthma and allergies
- Blood pressure
- Joint pain
- Headaches
- Blood-sugar changes and diabetes

- Heart attacks
- Lung diseases
- Heat stress

Van Nieuwenhuizen et al. (2021) conducted a global research project examining the influence of different seasons on adult physical activities and behaviours. The findings indicated that during the warmer months of summer, there was an increase in temperature, leading to adults being more active and more motivated to engage in physical activity compared to the colder winter months. When extremely hot temperatures were experienced, people also moved away from areas where this occurred.

4. Methodology

This study followed the qualitative research approach to gain the necessary information to find the relationship between learners' behaviour and academic performance to climate change. Creswell (2022) described qualitative research as an approach to explore and understand the meaning individuals or groups ascribe to a social or human problem. The research design used was a case study. Yin (2013) explained that a case study is involves an in-depth examination and analysis of a specific subject, situation, or individual within its real-life context to gain comprehensive insights and understanding.

4.1.Setting

This research was conducted at three primary schools each situated in Graaff-Reinet. This study took place in Graaff-Reinet which is situated in the Eastern Cape in South Africa. Graaff-Reinet, which is also the fourth oldest town in the country, is situated in the area of the Great Karoo and is surrounded by the Camdeboo National Park (Atkinson & Ingle, 2009). The census done in 2011 calculated the population of Graaff-Reinet at 35 672 (Stats SA, 2011) which includes 8 393 households consisting of 62.2% coloured, 28.2% Black African and 8.7% white (Stats SA, 2011). The dominant language is Afrikaans (76%) followed by Xhosa (18.9%) and then English (3.6%) (Stats SA, 2011). The primary economic activities in Graaff-Reinet encompass agricultural produce, the mohair industry, sheep farming and tourism (Atkinson & Ingle, 2009). Figure 4 shows where Graaff-Reinet is situated in South Africa. Graaff-Reinet has 15 schools (primary schools and high schools combined) from which I chose three. Graaff-Reinet's weather is also diverse, as in summer, it is extremely hot; in autumn the weather starts cooling down; in winter, it is extremely cold and spring is relatively warm (Graaff-Reinet Tourism, 2023). The study of weather patterns gives the research falls into the research topic.

4.2.Research methods

The research methods that were used to acquire information needed for the research included observations, face-to-face interviews and document analysis.

4.2.1. Observation

Observation is used when the researcher wants to understand what is happening in the natural setting of the phenomenon and observation gets done in a way that there is the least disruption to the normal way of life (Kumar, 2022). Three teachers were part of this study, i.e., one teacher per school. The proximity of the schools was about 5km. This resulted in the climate change conditions being almost similar. This study was conducted for a month in each season namely summer, autumn, winter and spring. In Grade 3, the teacher teaches all subjects, these subjects are Mathematics, Home Language (English or Afrikaans), First Additional Language (English or Afrikaans) and Life Skills. The teachers observed the

learners' behaviour and academic performance in all these subjects. Non-participant observation is when the participants are observed but the researcher does not actively take part. The researcher regularly visits the place where the research is taking place but takes on a more distant role (Hofmeister, 2021). The researcher took on the role of a non-participant observer as she observed at the three different schools five days per month per school.

4.2.2. Face-to-face interviews

Face-to-face interviews were completed with the teachers involved by the researcher found out what the teachers' point of view was on the negative effects of climate change and the learners' behaviour and academic performance.

4.2.3. Document analysis

Bowen (2019) defined document analysis as the interpretation of public records, personal documents and physical evidence relevant to the subject. O'Leary (2014) highlighted its significance, enabling researchers to comprehend pertinent resources for their study. The researcher thoroughly examined all journal and newspaper articles, alongside documents, ensuring their relevance and meaningful contribution to the research topic.

4.3.Population and Sampling

Convenience sampling is used when the subjects that are taking part in the research are available and easily accessible by the researcher for data collection purposes (Stratton, 2021). In this study, the observed subjects were selected based on the close proximity of schools and teachers to the researcher, facilitating smooth data collection (Stratton, 2021). From the 15 schools in Graaff-Reinet, three were specifically selected, targeting Grade 3, with one teacher chosen per grade for the study.

4.4.Data analysis and interpretation

Data analysis is when a researcher attempts to make summaries of the data that has been collected in an acceptable and accurate manner. The data analysis was inductive where the study began by collecting data about climate change, learners' behaviour and academic performance. Upon gathering the data, the researcher proceeded to analyze emerging patterns and correlate them with relevant theories. This analytical shift involved transitioning from the accumulated data to its alignment with an appropriate theory (Bingham & Witkowsky, 2022). Initially, data collection focused on gathering information from Grade 3 teachers about their students. Following this, the researcher meticulously scrutinised the collected data, identifying developed patterns, making deductions and exploring the reasons underlying these observed patterns. Analysing data in qualitative research requires the researcher to be patient and constantly reflecting on the findings, making many field notes and transcripts from the interviews and observations that have taken place (Girod, 2008). The data analysis process that was followed was adapted from McMillan and Schumacher (2009) and followed the following steps:

1. Data was collected every school day for one month during every season resulting in four months of data that was collected throughout the year. The researcher gave the month's checklist to the schools that took part and the checklist was collected when the month was over. The researcher analysed the data from each school.
2. Notes were taken when the researcher did the interviews and the interviews were audio-recorded. Furthermore, after the interviews, the notes were transcribed which allowed the researcher to find common topics that arose.

3. Observation notes were taken when the researcher went to the classrooms and the time, date and behaviour was recorded.
4. The data was collected by the researcher, grouped into different categories namely different behaviours, weather, academic achievements and the teachers' notes.
5. Patterns in the data were organised into themes.
6. An Excel spreadsheet was used to record the data from the teachers. After this data had been recorded, the different types of climate change and learners' behaviour and academic performance were evaluated and reported on.

5. Results

Each teacher found in their observations that there was a relationship between climate change and behaviour and academic performance in their classrooms. This relationship that was discovered has a negative impact on the learner's behaviour and their academic performance. The weather patterns changed drastically due to the impact of climate change over the seasons and with each season, the learners had different characteristics for each one. Graaff-Reinet experienced a severe drought and the underlying cause of the drought was identified as climate change. The teachers explained how the water shortage had impacted their learners and their academic progress negatively. During winter, the teachers noticed the most significant decline learners' attendance. This was attributed to factors such as extreme cold, which sometimes made it too dark for learners to walk to school, illnesses, and delays in drying their school clothes for the next day. They highlighted that learners increasingly missed school, resulting in setbacks to their academic progressThe teachers all mentioned that the girls adapted to the weather changes and extreme weather events better than the boys and the boys struggled throughout the weather patterns.

Even though each season has different weather patterns, we can conclude that these weather patterns are more disruptive and less predictable which means that the learners behaviour and academic performance is impacted extremely negatively. This can be detrimental if teachers do not change their teaching strategies in order to help learners be successful in their school journey which impacts the rest of their life. Overall, we can conclude that in extreme weather conditions, learners academic performance is hindered as their concentration levels are low and the boys are aggressive and the girls are talkative.

CAPTIONS OF FIGURES

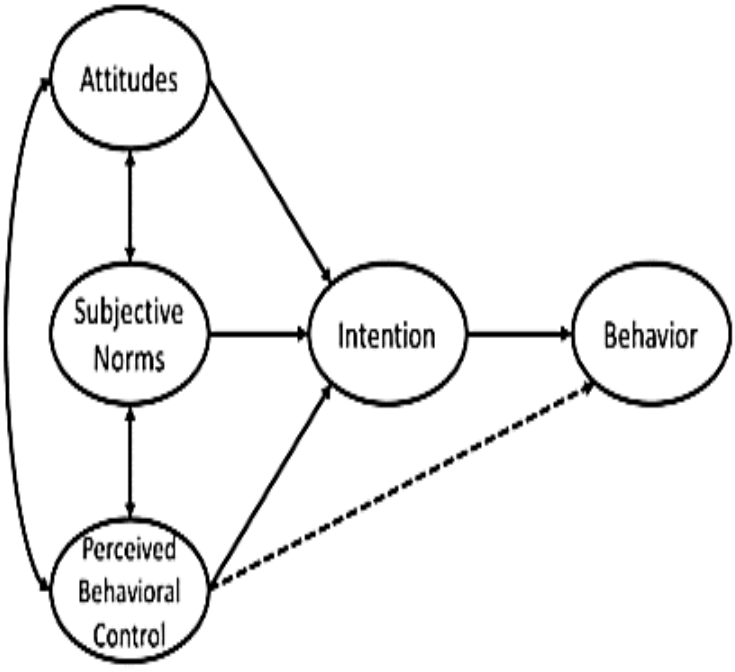

Figure 1: The Theory of Planned Behaviour (Ajzen,2005).

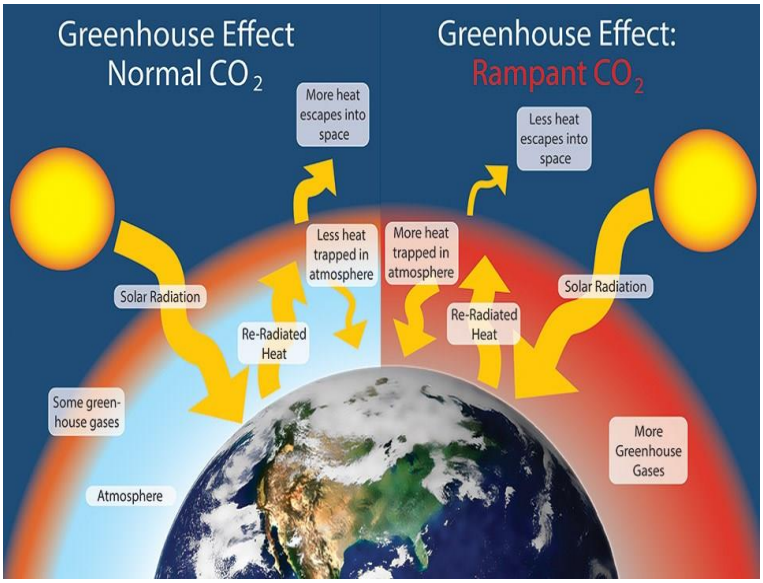

Figure 2: This image shows the greenhouse effect visually (Yonkers,2021).

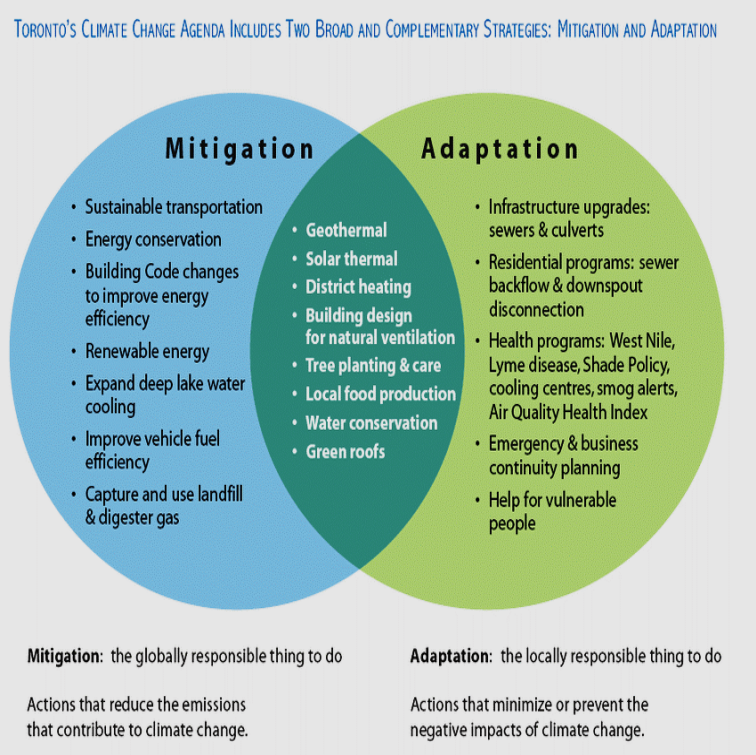

Figure 3: The overlap between mitigation and adaptation (Kazmierczak and Carter ,2010).

Figure 4: Graaff-Reinet Map (BardoczPeter,2019).

6. Discussion

The discussion of results focusses on the relationship between learners' behaviour and academic performance and climate change. Each season comes with its own weather patterns which is constantly changing and the learners reacted to each season differently. The learners behaviour and academic performance traits are discussed in relation to the different weather patterns in each season.

6.1. Learners behaviour and academic performance traits in relation to the different weather patterns in each season.

Every season came with their own challenges as the learners reacted differently as the weather changed. In summer, learners were lethargic and struggled to stay focused. The boys were aggressive and they constantly fought with each other. There were more humid days due to climate change and then the girls would not stop speaking to each other and focused less on their work. The boys were restless and they were disinterested in completing their work. Extreme heat has a negative impact on the learner's behaviour, and it makes them hot and bothered which results in the learners being more irritable and less focused. Graaff-Reinet experienced a severe drought and the underlying cause of the drought was identified as climate change. The teachers explained how the water shortage had impacted their learners and their academic progress. Due to the community not having water, learners were absent from school because the water was off for a week so the learners' clothes could not be washed, and the learners could not clean themselves either. The learners struggled as they were dehydrated and could not stay focused. In addition, there were also many learners who were absent from school which meant that these learners missed work and start falling behind. The boys were also more aggressive, and they were constantly fighting when there was extreme heat.

In Autumn, the weather started cooling down, which suited learners better than summer. Especially the girl's behaviour and concentration levels were high, but when hot days occurred randomly, the girls were restless and not focused. Overcast days led to a struggle from the beginning of the day where the learners, more specifically the boys, were restless and unfocused. The weather would be changing constantly and did not follow a normal pattern which is a result of climate change which disrupted the learners ability to reach their full potential on these days.

In winter the teachers all thought that the learners would be more calm and focused, however, their observation proved this statement incorrect. When it was extremely cold, the girls were more talkative and wrote exceptionally slowly resulting in them not finishing their work, but as it got warmer, they adjusted and were more focused. The boys were restless and struggled to stay focused on their work. There were more rainy days in winter than before and when it rained, the learners seemed to be more focused on the weather outside and less on what was happening in the classroom.

In winter, the teachers thought the learners would be calm and focused, but it was the opposite. The girls struggled when it was very cold, and they were restless and wrote slowly. The study found that the absenteeism rate was very high in winter. This was not only because learners were sick, but because it was still dark in the mornings for learners to walk to school, school uniforms could not dry because of the weather and learners do not have enough warm clothes for these cold days. The learners who missed these school days did not get the full

teaching experience as the teacher did not have time to go back over work she had already taught. Thus, these learners fell behind.

When the wind blew, the boys were very aggressive and would fight with each other and in the class, they were talkative and kept on shouting out. When it was extremely cold, all the learners were talkative. The cold weather continued to very late where there was snow in November close to the town which resulted in learners being affected negatively for a longer period of time. Extreme cold weather is an after-effect of climate change and the girls were more talkative and the boys were more restless when it was cold. When there were a few cold and rainy days after each other, learners were more focused on what was going on outside and not in the classroom.

Spring was the month that the teachers felt the learners struggled the most. The weather kept on going from one extreme to the next and the learner's concentration levels were very low, they were disruptive and restless throughout the month. When weather fluctuates from very hot to very cold or vice versa learners are extremely restless and cannot finish their work. This weather fluctuation is a direct result of climate change. When the temperature was over 33° Celsius, the girls were constantly chatting and at the end of the day were lethargic, where the boys were restless, aggressive and were not focused at all in class.

There were teachers that taught in a rural, low-income communities and these learners were greatly impacted by the extreme weather changes happening to due to climate change. This relationship between their living circumstances, how they learn, their behaviour and their

Through the observations it came to light that the girls adapted to the weather changes and extreme weather events better than the boys. We also need to remember that teachers are also impacted by climate change which directly impacts the learners. Consequently, the teacher encountered difficulties in covering all the necessary content, leading to the need to rush through the material. Overall it appears that the boys were more vulnerable to climatic events, facing greater disadvantages as they missed out on educational content and the chance to fully participate in planned lessons. They also showed great aggression when there was extreme heat and struggled to stay focused which yet again, impacted their academic performance. The girls seemed to be more talkative in humid weather and when it was cold, they struggled to get going in the classroom. The teachers all found that when the temperature reached 22° Celsius, learners were very focused and calm.

Even though each season has different weather patterns, we can conclude that these weather patterns are more disruptive and less predictable which means that the learners behaviour and academic performance is impacted extremely negatively. This can be detrimental if teachers do not change their teaching strategies in order to help learners be successful in their school journey which impacts the rest of their life. Overall, we can conclude that in extreme weather conditions, learners academic performance is hindered as their concentration levels are low and the boys are aggressive and the girls are talkative.

7. Conclusions and Recommendations

After the data was collected and analysed from the teachers, one concluded that a relationship has been identified. However, the relationship that has been identified is generally not of a positive nature for the learners and the teacher needs to adapt their teaching styles to try and bridge this gap to make sure the learners' academic journey is successful.

The TPB was supported as the learners showed different behaviour traits that the teacher picked up on and the teacher used this information to change the classroom routine which helped change the learners' reaction to what was happening around them from a negative to a positive. learners' behavior and academic performance without the learners being conscious of these changes. Climate change alters weather patterns, impacting learners' behaviour and academic performance, and they require support as they may not be aware of these changes. Teachers, being in direct contact with the learners, can more easily discern these changes and modify the learning environment accordingly. Additionally, teachers can communicate these observations to parents, enabling them to respond appropriately at home, mirroring the strategies employed by teachers in the school setting. If the parents are aware of the changes that occur when there is adverse weather, they can support the learner when work has to be done at home in order to succeed.

Teachers should be aware of the different characteristics that the different extreme weather patterns have on the learners' behaviour and academic performance. They need to expand their knowledge on the different concepts and how the learners react to these specific weather extreme events. Furthermore, the teachers need adapt their teaching styles and lesson plans on these specific days and look up the weather patterns ahead of time and adapt their teaching strategies accordingly to make sure that the learners' learning process is successful.

8. Scope for further research

This study recommended the following for future research studies which still needs to be conducted to understand the impact of climate change has on Foundation Phase learners' behaviour and academic performance:

- Further research should include Grades 1 and 2 in the Foundation Phase.
- More teachers should be involved in gathering information and more schools in the area should be included.
- The timeframe for the research should be spread over each month of the school year.
- Further research can be done on what teachers can do to be prepared in the classroom for the change in children when the impact of climate change does occur.

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