

A Planet in Distress: Cross-Curricular Integrations of Visual Texts in the Mainstream Learning Context

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Abstract

This article aims to explore the affordances of employing the visual mode—specifically the medium of drawing—as a multimodal pedagogy to raise awareness of deforestation and climate change in the South African mainstream school context. Conducted at several public and private schools in the Gauteng and the North West provinces, the research follows nine learners between the ages of 10 and 18, who have volunteered to participate in a three-week enrichment programme involving the multimodal reimagining of a non-curricular narrative into a series of drawings, paintings and collages. The narrative, which also serves as the primary source text during each participant’s artefactual redesign journey, is a wordless picture book that explores the concept of exponential environmental change. With this visually engaging text merely acting as a springboard for the making of new meanings in the Grade 5 to 11 Social Sciences/Geography classroom, participants are granted complete autonomy in their visual representations of how the exhaustion of our natural resources and moreover the threat of global warming may be impacting upon our daily lives on a spiritual, emotional and corporeal level. Finally, each artefact is presented as primary data to offer a tripartite focus on the latter learner experiences, the expressional properties of art, as well as the viability of the proposed pedagogy in future practice.

Keywords: multimodal redesign; text-remaking; visual mode; drawing; climate change

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Introduction

Children across cultural, socio-economic and geographical borders are now having to deal with the effects of climate change on their mental, psychological and physical health, on an everyday basis (World Health Organisation, 2021). According to a recent census conducted in middle schools across the United Kingdom (UNICEF 2022), nine out of 10 British youths believe that climate change is a real, palpable phenomenon that has negatively impacted upon their own lives, as well as the financial, emotional and spiritual welfare of their relatives. Three out of every ten participants in the study also noted that deforestation, pollution and other human incursions have rendered their living spaces nearly unliveable, with air pollution remaining the fastest-growing threat to human, plant and animal life. Finally, nearly all respondents stated that they would welcome a widescale awareness campaign in their schools, to reiterate the importance of recycling and reducing carbon emissions among their peers, parents and the governing bodies of neighbouring schools. While such a movement would, of course, take time to gain momentum—especially in developing countries—the consensus among authorities in educational, religious and political realms worldwide is that the time for intervention is now and that it starts with giving a voice to the children, that is, the future custodians of this planet and its wide spectrum of ecosystems (World Health Organisation 2021).

“Children are the living messages we send to a time we will not see.”

John F. Kennedy

It follows that education specialists, in particular, need to hear what concerns and possible solutions the current *Generation Z* might bring to the breadth of the climate change discourse, to take those solutions seriously, and integrate them meaningfully into existing consumer laws, government policies and legislation. That is where this qualitative study comes in—to give a voice to South African learners through the multimodal vehicles of drawing, painting and collage-making. A total of 9 learners across grade and subject spectra (from several primary and high schools in the Gauteng and North West provinces) volunteered to embody their innermost fears, thoughts and feelings in and through the visual mode. Each participant would select a relevant learning section from their Social Science syllabus, a section which in their view would benefit most from an artistic approach to creative problem-solving and self-expression. Before embarking on their redesign journeys and putting pencil to paper, they would each view Jeannie Baker’s wordless picture book, *Window* (1991), as a possible visual reference, or just to gain some insight into the realities of deforestation, urbanisation and the continued misappropriation of our natural resources.

Research Aims and Questions

Our aim is to explore the affordances of employing the visual mode—specifically the medium of drawing—as a springboard to raise awareness about deforestation, pollution and climate change in the South African mainstream school context. Conducted at several public and private schools in both suburban and rural areas of Gauteng, the discussion follows nine learners between the ages of 10 and 18, who have volunteered to participate in a three-week enrichment programme involving the multimodal reimagining of Baker’s *Window* (1991) into a plethora of drawings, paintings and collages. Each artefact is then presented as primary data to offer a tripartite focus on the latter learner experiences, the expressional properties of art, as well as the viability of this approach in future classrooms.

The following 3 questions have guided the data collection and analysis process, and will also serve as key enquiries for the remainder of this article:

- How can the visual mode facilitate active learning about deforestation, pollution and climate change, or enrich learners' engagement with these topics in the current Social Sciences curriculum?
- What specific meanings/messages are embedded in participants’ artefacts, i.e. what do the elements in their compositions represent within the wider rhetoric of climate change?
- Is the multimodal redesign of prescribed curricular content—in particular, content centred on climate change—a viable pedagogy, i.e. to what extent should it be integrated into school curricula, in future?

Rationale

The motivation behind a study of this kind is two-fold. First, it needs to be emphasised that South African learners—particularly in the Senior and FET Phases, or Grades 7 through 12—have long yearned for a meaningful outlet for their thoughts and critiques surrounding the current handling of the climate crisis, both locally and abroad. The Social Sciences curriculum across these grades does make some effort to sensitise learners to the importance of recycling and conservation, but the very nature of each prescribed learning unit does not seem reciprocal in terms of what the learners themselves can bring to the overall process. This raises another question: How can learners adopt a more agentive role in the reading process, create new forms of texts from their readings, and extend these to new platforms, genres or audiences? Multimodal scholar Diane Mavers (2011) noted that the reading, viewing and decoding of texts should never be a passive process, but one which is informed by readers’ contexts, interests, literacy identities, and perhaps most importantly, their capacity to remake such texts in the interests of enriched learning, and ensuring the continued legacy of said texts. As far as possible, learners should then be granted opportunities to not only read their prescribed materials for information but to actively engage with these

materials with a view to re-make them, re-shape them, re-semiotise and ideally represent them to school-removed spaces. In this way, both literary and non-literary texts can become theirs, since they take ownership of these texts the moment they begin repurposing them into different genres or modes of communication.

In this study, specifically, participants had mobilised the learning units in their Social Sciences syllabi (those that dealt with mankind's impact on the environment) so that these units could be embodied, concretised or given a form that existed beyond the pages of any prescribed textbook. This brings us to what had perhaps been the second impetus behind this project: the opportunity for participants to think critically about a serious issue, and through the relatively simple media of pencil drawings, paintings and collages, to communicate these thoughts within the wider spheres of academia. Within the confines of this research paper, for example, each participant's work could be displayed, discussed and, to some degree, celebrated for its artistic merits and sheer semiotic impact. In this instance, the academic article has essentially become our participants' gallery—one which not only demonstrates the potential of importing more drawing activities into the curriculum but also spreads the message to take care of our planet, from an unbiased and non-political perspective.

Research Method

This study may best be described as qualitative research that is situated within the ethnographic paradigm. With 9 primary and high school learners comprising its sample, the study tracks the multimodal design decisions and orchestrations of real individuals within the authentic and lived context of the Social Sciences curriculum. Conducted as a non-invasive, extracurricular intervention program—outside of school hours and the actual physical confines of the classroom—the research seems to find its methodological home at the intersection of multimodal text analysis (Jewitt, 2003; 2014) and critical artefactual literacy (Kress and Van Leeuwen 2001), bringing together the visible literacy acts of reading, drawing and storytelling. Following an initial visit to a selection of public, privately managed, affluent as well as under-resourced schools in both rural and suburban areas of Gauteng and North West Province, the participating learners were visited by both researchers before data generation could begin. This was to give impetus to the creative process through readings and discussions of the source text, *Window* by Jeannie Baker (1991), and to learn of any concerns or uncertainties the participants may have had before they embarked on their redesign journeys.

As for the role adopted by the researchers, it is clearly a participant-observer approach (Banister et al 2011) which affords a more active or hands-on role during the redesign process—to engage with learners, teachers and parents on a more proximal level—whilst collecting data through a range of ethnographic approaches, namely artefact collection, field notes, questionnaires and interviews. From the onset of the data collection stage, though, participants had been encouraged to adopt an autonomous approach to their illustrations of the natural environment, or more specifically,

humankind's neglect thereof. The source text served only as a visual-verbal stimulus to rekindle the learners' imagination, and virtually any topic or learning unit from the prescribed Social Sciences syllabus could be selected as subject matter for a multimodal redesign. To summarise, the study has championed an open and largely exploratory approach to text production and analysis, and while the said approach is not entirely unprecedented in the multimodal oeuvre, it did afford our participants the freedom and autonomy they needed to express themselves through graphological media—and of course, the two-dimensional paper materiality—before the three-week data collection period reached its conclusion.

Here follows a brief overview of each data collection method employed:

- **Artefact collection**

The multimodal artefacts produced by learners may be seen as the primary data for analysis in this qualitative study. These have materialised as a series of two-dimensional drawings and paintings in response to the source text (Baker 1991) and any ideas and/or philosophies surrounding climate change that this may have evoked in each individual.

- **Field notes**

As participant observers in the data collection and analysis process, the researchers tracked the progress of participants while they were working on their artefacts, as well as during any other contact sessions (briefings, open discussions, interviews, etc.) where there had been a face-to-face engagement with the sample.

- **Questionnaires**

Participants were required to complete both a preliminary questionnaire (prior to any generation of data) and a follow-up questionnaire (once all participants had finished creating their artefacts).

- **Interviews**

A final reflective interview, based largely on the questionnaires, was conducted at the end of the data collection process. This essentially transpired as an informal discussion, where participants were allowed to reflect and elaborate on their responses in the questionnaires and provide feedback on the viability of the multimodal approach.

Conceptual Framework

As noted earlier, this study finds its conceptual home in the field of multimodality—or more accurately the multimodal approach—and the various theoretical branches that have spawned from this field over the past two decades. As such, it draws firstly from academic discourses focused on the potential of non-linguistic modes in communicating

meaning, i.e. modes that go beyond the mere written or spoken word (Lähdesmäki et al 2022). Second, the study takes impetus from a growing body of works exploring art (Burn and Parker 2001; 2003; Liu 2013; Batič and Kac 2020) and textual redesign (Kress 2000; Newfield and Maungedzo 2006; Jewitt 2014) as avenues into more meaningful instances of reading, writing and the making of texts in general. A common theme within this oeuvre is that more traditional ideas of the text, as an isolated unit of type or handwritten words, must be challenged and that school learners across grade and subject spectra should be sensitised to the affordances of drawing, painting, and the performative disciplines (dance and drama) for making their prescribed texts more interesting and engaging. This research article, for example, triangulates the (a) Social Sciences textbooks used by participants in their respective grades; (b) scaffolding text namely Baker's *Window*; and (c) their own visualisations of what (a) and (b) are communicating to curb the decline of our natural environment.

For the sake of brevity, only the multimodal concepts that pertain most closely to our research aims, methodology and data analyses as seen below will be discussed, with a view to demonstrate what had inspired and informed this multimodal approach to text exploration—whether these texts were formally prescribed or removed from the school domain entirely. These concepts are, of course, aligned with our three research enquiries listed above, and served as a loose theoretical reference for participants throughout the process.

Mode. Jewitt (2003, 83) defines a mode as “a means of communication or representation, which is realised in different materials and transmitted via different media such as speech, writing or music.” A news bulletin on television, for example, will make use of different modes to clearly communicate a message to the viewing public. These may include the headlines at the bottom of the screen, the still images in the background, or music clips serving as cues for weather, finance or traffic reports.

Colour. In the context of this study, colour is viewed as a complex symbolic system, applied with purpose and agency within a variety of cultural practices. Besides the powerful communicative functions that it performs in advertising, home décor, and fashion (Kress and Van Leeuwen 2002), colour has also played a vital role in our participants' artworks on climate change, as presented below. In multimodal theory, colour can be used to denote ideational, interpersonal and textual meaning; it is metafunctional (MODE 2023). The question of whether colour exists as a mode on its own is still debated within multimodality, but our participants would apply it as a mode nonetheless—strategically employing hue, saturation, differentiation and modulation in their works to communicate specific ideas and feelings.

Line. The drawing or inscription of a line is where virtually all our participants' artefacts began. In multimodal texts, a line is often a key determiner of how the audience or viewer will respond emotionally, cognitively or spiritually to the image (Burn and Parker 2003). Lines may be bold, broken, dark, light, organic, geometric or even drawn

in such a way as to suggest movement on an otherwise static surface (Kleiner and Mamiya 2005). Overall, lines may be used to help an image do what it intends to do, such as inform, warn, entertain, explain, or persuade the viewer.

Composition, also known as layout. Composition refers to the arrangement of entities in two and three-dimensional spaces. In a painting, for example, elements of images (and even words, as in the case of linguistic anchorage) are given a specific place in an arrangement of entities; they are purposely positioned (Kress and Van Leeuwen 2006; Kress 2010). In the data generated from this study, the composition is approached as a mode in itself (much like colour and line) as it can communicate meanings about social relations and a world of states, actions and events. The event under scrutiny in this case, is the titular Planet in Distress.

Text re-design, also known as text re-making. Text re-design essentially involves the re-making of the modal or material resources at one's disposal, with the intention of altering a given text or artefact's semiotic properties, particularly the meanings it communicates to the viewers (Newfield 2009). Resemiotisation, on the other hand, pertains more to the latter, and homes in on the phenomena of semiotics or meanings. Jewitt (2014, 467) summarises Iedema's (2003) use of the term *resemiotisation* as the phenomenon "in which a particular set of meanings is transformed from one semiotic system (and configuration of media and modes) to another as social processes unfold."

Data

1. In 50 Years... by Jenna¹

The first artefact in our collection (Figure 1) serves mainly as a metaphor for the harmful effects of carbon emissions on Earth's atmosphere, with the damage being so extensive that "our planet goes up in flames and we can only stand by and watch it happen", in Jenna's words. With much attention to detail and a keen eye for striking colour combinations, Jenna presents us with an everyman in a spacesuit (complete with an old-fashioned bubble helmet) as he witnesses the dire consequences of air pollution. His face is shown from the side, in strict profile, so that the tears running down his cheek are clearly visible to viewers. Juxtaposed against the bright blue of his helmet is an amorphous body of black, red and orange flames, perhaps signifying the immense heat that would accompany global temperatures should the greenhouse effect remain unchecked. Directly above these elements is a rather peculiar image of a tube of glue, which according to the artist is "squirting" heat directly into Earth's atmosphere.

1 Pseudonyms used.



Figure 1: In 50 years... by Jenna. Pencil, acrylic paint and strands of wool on paper, approx. 30 cm x 41 cm. Jenna noted that she could find no information on climate change/pollution/deforestation in her Social Sciences textbook, neither did her Life Orientation address any of these topics. She therefore had to draw mainly from personal experience to complete the work.

Jenna has made optimal use of the paper materiality (Newfield 2014) to communicate a clear and coherent message to her audience, albeit in a subtle and nuanced way. As in the artefact to follow, the affordances of pasting three-dimensional objects (or at the very least, tactile textures or materials) onto the picture surface is not lost on Jenna, as she made use of some red wool to build up the “beanie” on the astronaut’s head. Some would discredit this as a trivial or unnecessary detail, but design decisions like these may help to elevate the visual mode to new heights in terms of its meaning potential (Halliday 1978) or mere aesthetic appeal. In her written testimony after completing the work, Jenna further explained the potential of art to initiate change and assist in preserving the planet, stating that “literally anything can be put into words through art ... art speaks every language and can let everybody hear your message.” The affordances and constraints of different modes (particularly those of the visual and linguistic variety) were not a topic that we discussed at length with our participants, yet Jenna speaks here of drawing, painting and illustration as the ideal segue into creative problem-solving

and self-expression. It is not clear whether this sentiment was inspired by her initial viewings of Baker's *Window* (1991). Instead, it may have been the very act of drawing—i.e. being caught up in its richly expressive, representational and generative properties—that may have moved Jenna to create a work that is personal yet relatable to so many viewers.

2. Surfing Through Modern Pollution by Anonymous

This artefact digresses slightly from the others in our collection, in that it capitalises on the affordances of the acrylic on canvas medium to communicate a message that is both striking and deeply evocative of the climate crisis experienced by people across geographical, socio-economic and cultural borders (Figure 2). It essentially depicts a man in a yellow hazmat suit, using only a fishing net to collect all manner of paper and plastic items that have been discarded in an undisclosed river, or lake. His efforts seem rather futile, though, as the water below his raft is still littered with bio-hazardous material, suggested here by bits of plastic bags and tissue which have been stuck directly onto the two-dimensional support (see detail). Adding to this sombre image are four large chimneys in the background which continue to spew large puffs of smoke, perhaps reinforcing the message that pollution not only affects the water we drink but the very air we breathe. Hence, the man dons a military-grade gasmask, which until recently would have been reserved for trench warfare or, at the very worst, a nuclear fallout.



Figure 2: *Surfing Through Modern Pollution* by Anonymous (top) and detail (bottom). Acrylic paint and pieces of paper/plastic on canvas, approx. 50 cm x 39 cm. Again, Anonymous had to draw from personal experience to complete this work, but Baker's *Window* (1991) had clearly served as a visual reference in terms of colour and the use of linear perspective.

Of the exact meaning(s) represented by each element in the composition, the artist has this to say: “[The] figure with [the] pollution suit and mask ... indicate the state of the pollution problem; the net he holds indicates the struggle to minimise water pollution.”

We bear witness here, then, to a Grade 11 pupil who has become sensitised to the relatively small impact of our current conservation efforts, or the so-called clean-up operations conducted by the UN and other organisations. The artist's mere diction in her written and spoken responses, from words such as "problem," "struggle," "minimise" and "distress," to phrases such as "messing with our health" further point to a rather cynical view of what the future might hold—a view which is arguably justified. Although the colour palette in this painting is decidedly bright, with the light blues and greens in the background contrasting with the black and yellow of the man's suit, there is little to indicate that this man is winning the war against pollution, or that his corrective measures are making any difference at all. It is this futility of our efforts to save Mother Earth—or perhaps the fact that we are doing *too little, too late*—which seems to have resonated most with the artist whilst completing the work. Still, there is a glimmer of optimism elsewhere in the student's reflective feedback; she agrees that projects like these would do much to raise awareness of climate change and pollution among her peers and that we could still improve "our home and living space... if we just took care of our planet."

3. Be the Solution, not the Problem by Anja

What is perhaps most striking about Anja's work is the combined use of geometric shapes, organic forms and both figurative and non-figurative elements to create an image that truly gets to the heart of climate change—its causes, as well as its most palpable effects (Figure 3). Upon closer inspection, the simple pencil-on-paper medium and straightforward composition of this work might elicit a more complex if not emotional response from viewers, with the artist referencing the surrealist works of Salvador Dali (1904-1989) and Max Ernst (1891-1976) to portray Earth as a real, living entity, pleading for some respite from the ensuing heat. With this work, then, Earth is no longer objectified or made to be distant; the tears trickling down her face remind us that her love needs to be reciprocated, now more than ever. These "tears", the artist explains, are the result of the polar glaciers melting, which form the top part of the "hourglass". Superimposed above a picture of the globe, this hourglass also includes Earth's eyes and mouth—all of which are drawn askew to reinforce the melting effect first popularised by Dali in *The Persistence of Memory* (1931). At the bottom, we can see three smokestacks, and not unlike Jenna's drawing, these continue to churn out large puffs of smoke.



Figure 3: *Be the Solution, not the Problem* by Anja. Pencil on paper, approx. 30 cm x 41 cm. For this work, Anja responded to a learning section entitled Sustainable Development in her Grade 9 Social Sciences textbook (Earle et al 2013, 51–53).

Next to the smokestacks we can see what is arguably Anja’s most evocative, if not disturbing image. Earth is being roasted on a spit, as in a traditional South African *spitbraai* (spit barbecue). With the flames licking at its carcass from below, the planet has finally caught fire, and one would imagine that the spit is not going to stop turning anytime soon. Rather unfortunately, Anja did not elaborate any further on this specific image in our follow-up discussion, but noted that the artwork as a whole was meant to portray “a planet in distress ... with the use of an hourglass to indicate that we are running out of time.” She emphasised that after “researching different artworks to get ideas,” she wanted to create something unique and inspired—a work which would “attract people’s attention to try and save the planet.” Once again, we witness the sheer urgency with which our participants had selected and orchestrated their semiotic resources, in a concerted effort to communicate an important message to audiences outside of their usual classroom space.

4. Disruption in Evolution by Lilly

Although Lilly’s talent for drawing may not quite be on the level of her peers in this collection, it is the message behind her illustration which is most indicative of both a deep understanding of climate change and a drawing of parallels to other natural

phenomena which would normally not be associated with our “planet in distress” topic (Figure 4). For one, the title of *Disruption in Evolution* hints at humankind as the main culprit in the decline of Earth’s fragile ecosystems, with the artist asserting that “there was no harm [done] to the planet ... before humans [inhabited] it.” What sets Lilly’s work apart then, is the depiction of the stark contrasts between then and now; on the left of a bold black line cutting the composition in two, we see a primitive and pre-anthropomorphic Earth, replete with a bright rainbow and wild animals living in harmony. The dense foliage is coloured a brilliant green, and the outermost layers of the atmosphere are still blue, untainted by the impurities and toxins of an industrialised world. To the right is a candid portrayal of “a city on fire” with tall skyscrapers enveloped by flames and smog. Lilly also incorporates the linguistic mode in this part, by repeatedly writing the chemical symbol for carbon dioxide (CO₂) around the buildings, reinforcing the sheer extent of the pollution.

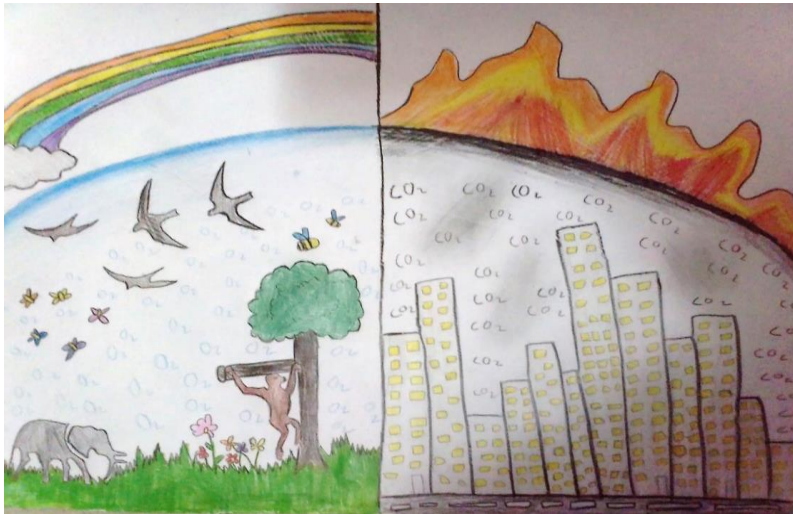


Figure 4: *Disruption in Evolution* by Lilly. Pencil on paper, approx. 30 cm x 41 cm. For this work, Lilly responded to a learning section entitled The Impact of Humankind on Soil Erosion in her Grade 9 Social Sciences textbook (Earle et al 2013, 80–82).

The evolution, or rather devolution, of modern society is thus introduced to viewers in a most subtle and tasteful way—a way which does not deplore us for our actions, but rather serves as an omen for what might be left behind for future generations. The layout of Lilly’s composition, it must be noted, calls to mind the Trash Bag Bunch toy line produced by Galoob in 1991, which did much to raise awareness among children of the dangers of pollution, long before the term “climate change” even gained currency in research and media (Figure 5).



Figure 5: The *Trash Bag Bunch*. This toy line consisted of individual figurines wrapped in water-soluble bags. Only after dissolving the bag packaging in water would the figurine inside be revealed, so the figurine was initially not visible to the buyer. Each figure/character belonged to one of two rival factions: a group of humanoids called Disposers, who defended the environment, and a race of alien monsters called Trashors, who created pollution and garbage.

Galoob's then-popular toy line is featured in this discussion not because of its immediate links to Lilly's work (these toys were, after all, released way before Lilly's time) but to demonstrate yet more possibilities for a multimodal redesign in the mainstream school context. Whether it be in the language, arts or science classroom, learners may create a similar toy line or board game based on the pollution theme—including individual characters, narratives, drawings and other multimodal springboards for active play and storytelling. In this way, their work may then be published (considered by many to be the final stage in the redesign process) and imported to literacy domains far beyond the school walls.

5. It's Burning by Mandy

At first glance, Mandy's composition (Figure 6) evokes an almost overwhelming feeling of sadness and desperation. This may be due to the main subject of her portrait: a face that is deathly pale, with features that seem to be melting or seeping away, as in Anja's work above. Surrounding this face is a deluge of fire, beautifully illustrated with a blend

of yellows, reds and dark browns. Only one corner on the picture plane remains clear of the licking flames: the top-right, where a skeletal hand can be seen holding a rose, also drawn with much attention to detail.

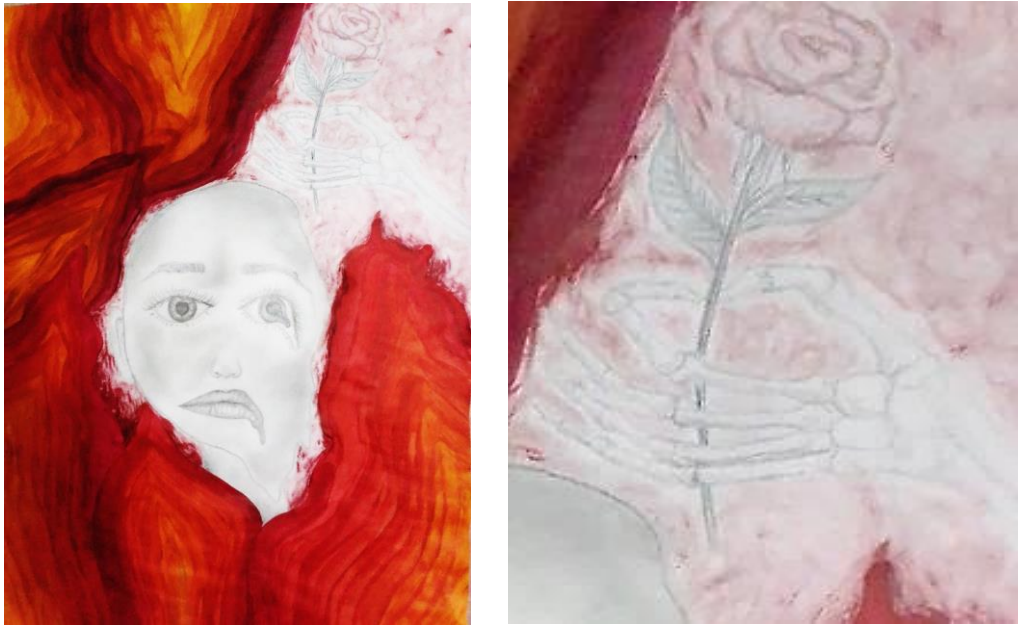


Figure 6: *It's Burning* by Mandy (left) and detail (right). Pencil and watercolour on paper, approx. 30 cm x 41 cm. For this work, Mandy responded to a learning section entitled Sustainability and the Use of Resources in her Grade 9 Social Sciences textbook (Earle et al 2013, 87–104).

Here Mandy notes that “a skeleton hand is holding the flower waiting for it to burn, for nature to get ruined.” It becomes clear that Mandy, in unison with her peers in this study, utilises the power of metaphor to reinforce her message of “polluting less, recycling, and lowering carbon dioxide emissions.” No further explanations or linguistic anchorage is needed here. Instead, each element in the composition speaks for itself, and on varying levels represents either the earth, nature, or ongoing transgressions of the human race. The rose clearly represents nature (or more specifically, plant life) whereas the bony hand alludes to the inevitable death of our planet’s ecosystems. Then there is the rather androgynous face as the focal point, which in Mandy’s words “melts due to our contribution to climate change.” Some slippages may have occurred in Mandy’s interpretation of her own work, however, as it remains unclear whether this face represents us as a species, Mother Earth herself, or both. Interpretations such as these were mostly made in participants’ responses to the questionnaires and follow-up interviews, but if there were any ambiguity or lack of specificity in their answers, it in no way detracted from the sheer semiotic impact and gravitas of their work.

It follows that an artwork does not need to shout its central theme or intended message to viewers as much as whisper it, since the power of a work often lies in its subtlety, or its potential to be interpreted in different ways. True to Roland Barthes' hypothesis in his acclaimed essay, *The Death of the Author* (1967), Mandy's intention to communicate ideas around climate change in this work is not nearly as relevant as the meanings that a diverse viewership might take from it, or how such a work might elicit the design of further visual-verbal texts. In any case, when asked if it would be a good idea to import drawing into other subjects besides Social Sciences, Mandy confirmed that "it would help to keep students motivated" and that it would bring a "fun aspect" to reading and writing activities in the classroom.

6. Plastic Devours Earth by Mia Muis



Figure 7: *Plastic Devours Earth* by Mia Muis. Pastels and pieces of paper/plastic on paper, approx. 30 cm x 41 cm. For this work, Mia Muis responded to a learning section entitled Water and Air Pollution in her Grade 5 Social Sciences textbook (Ranby et al 2012a, 79).

This artifact by Mia Muis (Figure 7) invites the viewer to reflect on the impact of soil pollution on the environment and human life. In her subsequent interview, Mia Muis explained that the bright blue sky reflects her understanding that "air pollution is not the biggest problem we face as humans."

The composition shows a striking contrast between the bright blue sky and the trash-strewn tarred road that dominates the foreground. Mia clarified in her questionnaire that littering is a major problem in her immediate area, with fishermen and motorists

scattering paper and plastic when fishing in the dam or driving by. According to Mia, the littered dam is a stark reminder that "people can no longer consume the dam's water." It also reflects on the impact of human activities on the natural environment.

The viewer's eye is drawn to a high wall that has no visible entrance or exit. This detail adds a certain tension to the work, as the viewer cannot see what is behind the wall. The tension is further enhanced by the fact that no human activities are depicted in the work. Mia explained that "people do not want to live in a polluted area." It also creates a sense of isolation from the destruction, which is not a solution to the problem. Despite the sense of isolation, a telephone line can be seen, perhaps indicating a connection to the outside world. This artwork raises the question of whether it is worth doing something about the devastation, which means coming out from behind the wall, or whether we should just accept the decay and destruction.

7. The World Needs our Help by Nytjie



Figure 8: *The World Needs our Help* by Nytjie. Pencil on paper, approx. 30 cm x 41 cm. For this work, Nytjie responded to a learning section entitled Mining and the Environment in her Grade 5 Social Sciences textbook (Ranby et al 2012a, 78).

The artwork (Figure 8) is set in the rural area where Nytjie lives. A river is visible on the cover page and children are playing outside. The water tank, windmill, vegetable garden, and chickens add to the rural charm of the setting. However, when we turn the page, the idyllic scene is replaced by a stark contrast. On the inside cover, instead of a river, we see a tarred road. In her subsequent interview, Nytjie explained that "the people now have to buy water at a local shop." Outside, children play, but they have no faces—a powerful message about the effects of neglect on our lifestyles and mental

health. The trees have been chopped down, making way for a road that is now filled with potholes. This is a sign of social decay. Even the once-fertile vegetable garden has been replaced by a graveyard, indicating the grim reality of deforestation and deterioration.

Although the contrast between the cover page and the inside cover is a reminder of how things can change for the worse if not protected, the intensity of the colours remains the same on both pages. It highlights the lack of responsibility people have. The drawings of a brand-new car and a double-storey house attest to this fact. Nytjie claims that “they work hard to buy new cars and build bigger houses, so they do not have to feel bad about the devastation that surrounds them.” She also draws attention to learning content covered in Social Sciences, especially efforts to protect the environment in tropical rainforests. This artwork should encourage individuals to take action to preserve the environment.

8. *The Last Breath* by Armi de Jagter



Figure 9: *The Last Breath* by Armi de Jagter. Pencil and charcoal with superimposed photograph on paper, approx. 30 cm x 41 cm. For this work, Armi de Jagter responded to a learning section entitled Deforestation in his Grade 6 Social Sciences textbook (Ranby et al 2012b, 59).

Armi de Jagter's artwork depicts a scene of deforestation and environmental destruction. With a limited tonal range, for which he uses charcoal and a graphite pencil, he creates a dark and threatening sky that evokes a sense of despair and sadness.

Emphasis is created by colour and texture. The viewer's attention is immediately drawn to the yellow bulldozer, the felled tree, and the printed hand. The bulldozer dominates the space, emphasising man's power and control. It draws attention to the absence of humans in the artwork. According to Armi, "the driver controls the movement of the bulldozer with the help of a computer. He is far from the scene because he cannot breathe due to the polluted air." Yellow was chosen for the bulldozer, because the artist likes yellow and wanted to emphasise the bulldozer which is one of two man-made elements in the artwork.

Armi uses texture to create a focal point on the left-hand side of the composition. The human hand symbolises the removal of "things that were once beautiful." It also highlights that humans can remove trees or destroy nature at will. The use of pencil for the felled tree could indicate vulnerability. Although the desolation of the scene creates a sense of hopelessness, the artwork may also evoke a feeling of hope. Armi indicated in his subsequent questionnaire that humankind can restore nature if we plant trees. In this context, the hand can also depict a human who is attempting to restore the tree to its original position. In this regard, the artwork serves as a reminder of the urgent need to address deforestation and restore nature.

9. Heart-Breaking Changes by Karlien Jacobs

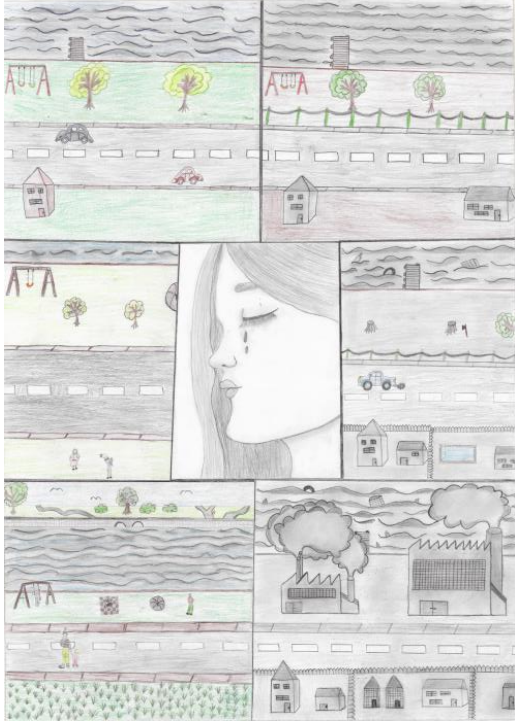


Figure 10: *Heart-Breaking Changes* by Karlien Jacobs. Pencil on paper, approx. 42 cm x 59 cm. For this work, Karlien Jacobs responded to a learning section entitled Deforestation in her Grade 6 Social Sciences textbook (Ranby et al 2012b, 59).

As with Mandy's composition (Figure 6), the image of a weeping girl in the middle of the artwork evokes a sense of despair. Karlien's work (Figure 10) has an autobiographical tone that relates to the society in which she is immersed. The use of pencils in this artefact creates a sense of vulnerability. The arrangement of the composition in a grid format helps to convey decay and destruction and gives us a sense of the relationship between the female and her environment. The lack of vivid colours also enhances the atmosphere of despair.

Starting in the bottom left-hand corner she captures a scene of her childhood. She is playing in the park. With each picture, her living conditions deteriorate. The artwork portrays a cycle of destruction and construction, with nature being destroyed to drive industrial development. As the cycle of destruction continues, the colours gradually fade. This symbolises the gradual loss of a healthy environment which has a direct impact on human life and well-being. Karlien stated in her interview that she is crying “because she could play and swim in the park when she was younger, but now the air is polluted.”

The final black and white image in the bottom right-hand corner underscores the loss felt by the weeping girl and further emphasises air pollution. The monochromatic tones convey a sense of hopelessness. Karlien confirms this feeling of hopelessness when she declares in the follow-up questionnaire that “at the end of the day everything is black and dark.” The artwork reminds us to address environmental issues such as air pollution before it is too late.

Findings and Implications

With regards to our first research question—how the visual mode could be employed to facilitate active learning about deforestation, pollution, and climate change—it becomes clear that our participants’ artistic outputs had helped to mobilise and manifest their readings of these same topics in the Social Sciences curriculum. Despite the drawing process being a relatively time-consuming addition to an already brim-full syllabus—taking most of our participants at least one week to complete—the result was certainly worth it, as it enabled them to delve more deeply into the contents of their textbooks and to consider how the realities of climate change affected them on a more personal level. They could then return to their networks with renewed interest and vigour, perhaps realising that *what we read in books matters*, and that the textbooks disseminated by government-funded publishing houses should not be an exception to the rule. As for the proposed pedagogy itself, it could easily be integrated into syllabi across learners’ subject sets at opportune times, particularly when the topic carries this much gravitas, or if it calls for introspection and a more invested engagement.

Our second research question asks: “What specific meanings/messages are embedded in participants’ artefacts, i.e. what do the elements in their compositions represent within the wider rhetoric of climate change?” With reference to the conceptual framework above, our participants applied the elements of *mode, colour, line, composition* and *text re-making* to good effect in their works; works which allowed them to convey their own, individual perceptions of climate change, pollution and deforestation. What is perhaps most significant about this process of embodying one’s thoughts on paper or canvas, is that the above-mentioned elements become vehicles for meaning-making, to such an extent that a single line, shape or colour combination carries an equal amount of “semiotic weight” (De Jager 2017) than that of a line in a poem, for example. In her portrait of the spaceman, Jenna juxtaposes the cool greens and blues of our planet against the fiery reds and yellows of the fire (Figure 1), and in Mandy’s portrait, we see a delicate use of lines to delineate the bony hand of death – a clear reference to our mortality and dependence on Mother Earth (Figure 6). In Lilly’s landscape, however, a vertical black line down the middle performs a more practical function; it merely suggests a timelapse from then to now. These are only a few examples of how simple art elements can become powerful representatives of meaning within the growing discourse of climate change.

Finally, research question three has interrogated the viability or, if you will, do-ability of our proposed pedagogy in mainstream classrooms. The pedagogy, in this case, involved the multimodal redesign of prescribed curricular content (specifically, content centred on climate change) into various forms of visual art. As a central aim, this study has sought to explore the possibilities of enriching learners' readings of (and subsequent engagements with) their prescribed content in the South African Social Sciences curriculum, as expounded in their rather standardised set of textbooks and learning materials. If our participants' individual testimonies (as recorded in the interviews and questionnaires) are of any bearing, they demonstrate a keen interest in the application of a more artistic approach to learning from such prescribed materials. Each learner comprising our sample agreed that they would readily adopt such an approach in their day-to-day learning, even if this meant devoting extra time and effort in the creation of something that was unique, informed by personal experience, and removed from "the usual essay" or "boring written activity", to quote their words. Curriculum reform, then, is not the intention of this discussion. Instead, it calls for the integration of multimodal activities into extant curricula, with the many opportunities for self-expression, creativity and critical thinking this may hold, in future.

Study Limitations

Admittedly, there remain a few minor issues in our proposed pedagogy, or at least in our methodology and research output, which need some attention here.

Firstly, the small sample size of nine learners may not be sufficient, at least in number, to reach any consensus on the validity and viability of a cross-curricular integration of visual text-making in the mainstream learning context, be it local or abroad. Indeed, it would have been ideal to draft more participants at the onset of our data collection phase, but this paper has merely aimed to give a preview of what could be achieved with talented learners, albeit learners with little or no background in art. A second shortcoming may be the time-consuming nature of drawing, painting and art-making in general, which may impinge upon learners' curricular duties if not introduced and facilitated with discretion. Fortunately, the CAPS and IEB curricula are quite adaptable in terms of teachers' selection of semiotic resources, activities and assessment methods. The integration of the creative arts (namely visual art, music, drama, and dance) into mathematics and languages are also something that both these curricula have promoted since their inception (Department of Education 2002, 9).

Finally—and this is a surprisingly common issue faced by facilitators of multimodal pedagogies—there might be some resistance from learners who simply have no interest in the practical, theoretical or historical aspects of art, not even to speak of creating their own artworks. "But sir, I can't draw" is a complaint that many art teachers (or any teachers for that matter) must deal with daily, since drawing activities are already integrated across the subject spectrum, in some shape or another. In response to this, it must be emphasised that a multimodal approach to learning is not at all limited to

drawing, and that a plethora of alternative disciplines (video game design, filmmaking, song writing and performance, pantomime, puppetry etc.) may be imported into any classroom, depending on the learners' interests and needs.

Conclusion

To whatever extent in current academic discourse, this study has sought to lay bare the affordances of a multimodal pedagogy in sensitising learners to the encroaching threats of deforestation, pollution and climate change. To build upon this new knowledge, learners were given an opportunity to visualise each of these threats, ruminate on them in a critical and proactive way, and to embody their personal responses via the multimodal substrates of drawing, painting, collage-making and poetry writing. With the above selection of works, we could explore how participants' convictions on climate change could be realised—how they could be concretised, be given form or made real—in and through the visual mode. Earth had been personified in the majority of these works, so gone was the distancing or objectification otherwise tied to this planet, this celestial body that we call home, in literature and mass media. Baker's *Window* (1991) had served as the initial inspiration or visual reference for participants, but thereafter they were granted complete autonomy in their reifications of characters, settings and events surrounding the current crisis. In turn, learning units from the Social Sciences curriculum (and particularly those dealing with conservation and green living) could be opened up in ways that were previously thought exclusive to the Creative Arts or Visual Art class. Besides this integration of art across the curriculum, the most significant outcome of this redesign journey must have been the externalisation of learners' concerns through artistic media—concerns which could now be highlighted in the wider spheres of scholarly research and praxis.

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