

THE SCRIPTED SCIENTIST

A CURRERE ANALYSIS OF SCIENCE EDUCATION AND THE CRISIS OF APPLICATION IN MALAWI

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This paper explores how a legacy of scripted learning has shaped science education in Malawi, creating a persistent divide between knowledge performance and meaningful application. Using the method of *currere* as defined by Pinar (1975), the study examines how historical, cultural, and systemic factors have produced a form of education that values memorization, control, and measurable outcomes over curiosity, creativity, and community connection.

To ground this analysis in lived and imagined experience, the paper begins with a series of curriculum fragments. These fragments drawn from my own past, an imagined future, and a moment of present reflection are provided first so that the reader can encounter the scenes directly. Following these fragments, the paper moves through different themes. The fragments are interpreted analytically and synthetically, demonstrating how Malawian science education has evolved from colonial mnemonic practices to imagined technological precision and how we might disrupt this trajectory. Ultimately, this paper argues that the future of science education in Malawi depends on moving beyond performance toward purposeful understanding.

CURRICULUM FRAGMENT: THE RHYME OF THE FIRST TWENTY ELEMENTS OF THE PERIODIC TABLE

The year was 2008, and I was far from the familiar streets of my hometown, Blantyre. I was a student at a boarding school in a district called Nkhatabay, which was located about 298 miles away from home. At that time, being that far away felt like being in a different country. The school was a place of strict rules and heavy expectations. I remember the chemistry laboratory specifically. It was a large, cold room that always smelled of sulfur and old wooden desks. On one hot afternoon, the sun was streaming through the high windows, and I sat on a stool, staring at a large, faded chart that Mr. Mwale had unrolled over the chalkboard. It was the Periodic Table of Elements. Mr. Mwale stood at the front of the room. He held a long wooden pointer and tapped it against the first few boxes. He explained what the elements were then he started to chant. He had a mnemonic, a rhyme designed to help us memorize the first twenty elements in order.

My first impression was an urge to laugh. The way the words sounded when they were mashed together into a rhyme was funny. “Hiii-He-Li-Ber-B-C-N-O-Flu-Ne,” he chanted in a flat, mechanical voice. I felt a giggle starting in my chest. However, as he moved his pointer further down the chart, the laughter died away. I looked at the long rows of boxes and the strange letters, and I felt a sudden, heavy wave of fear. It was completely overwhelming. My heart started to beat fast, and my hands felt cold against the desk. For a moment, I truly felt like I could not do it. I felt like a wall had been built in front of me that I would never be able to climb. I also asked myself

why they kept making things this hard. I looked at the table and thought to myself, *Maybe I will do it eventually.*

That evening, I went back to the hostel. There were some senior girls chatting near the common area. I walked over to them because I knew they had already finished this part of the curriculum. I was holding my notebook tightly, feeling desperate.

“Have you already learned the mnemonic for the periodic table?” I asked one of them.

She nodded and smiled. “Yes, we learned it last term.”

“How did you do it?” I asked. “It just sounds like noise to me.”

“It’s not noise,” she said simply. “It’s a rhythm. You just have to say it over and over until you don’t have to think anymore. Just follow the beat.”

She spent a few minutes reciting it with me, keeping a simple beat by tapping on a wooden chair. Hearing it from someone else made it feel a little more doable. The sharp fear I felt in the classroom began to turn into dull pressure. I went to bed that night and whispered the sounds to myself until I fell asleep. I wasn’t thinking about atoms or science; I was just trying to master the script. The next morning, the air in the classroom felt thick. Mr. Mwale stood at the front with his list of names. The room was perfectly silent. He started calling students to stand up and recite the first twenty elements. “Chirwa!” he called out. A girl stood up and started the chant. I sat at my desk, my fingers tangled together under the wood. *Please, not me*, I prayed silently. *Please do not call my name today*. My heart hammered against my ribs every time he looked down at his list. I watched my classmates stand up one by one. Some stumbled and were told to sit down and study harder. Others finished the rhyme perfectly. I kept my eyes on my desk, praying that I would remain invisible.

Then, he called my name. I stood up slowly. I took a deep breath and closed my eyes. I started the chant. The sounds I had practiced in the hostel came out of my mouth in a steady stream. I didn’t stop to think about what the letters meant. I just moved through the rhyme exactly as I had been taught. When I reached the twentieth element, I stopped. Mr. Mwale nodded, marked his book, and moved to the next name. I sat down, feeling a rush of relief. I felt proud that I had succeeded, but it was a strange kind of pride. I had repeated the script, but the table was still just a mystery to me.

A month later, school closed for the holidays, and I made the long journey back to Blantyre. The first thing I told my older sister, Sarah, and my brother, John, was about the periodic table. They too had learnt it the same way. For the rest of the holidays, they helped me master it. We would sit together and recite the first twenty elements as fast as we could, turning it into a game. Because of them, the mnemonic became a permanent part of my mind. It was no longer a scary wall; it was just a static piece of information that lived in my brain. It was just *there*, like a piece of furniture I had stopped noticing. Since 2008, I have used that same memorized version of the table in every exam I ever took. I would walk into the hall and immediately write the first twenty elements on the back of the question paper so I wouldn’t forget them. Later, when I became a chemistry teacher myself, I found myself standing in front of my own students. I held a pointer. I looked at the same chart. And I used the same technique.

I have always used the mnemonic as something static and unchangeable. I never had the time to look at the table any other way. Now, I find myself asking a difficult question. Did this kind of learning suppress my curiosity? By focusing so much on the script and the proper place of the elements, did I lose the chance to think critically about science itself? I have carried this rhyme for years, and only now am I wondering if there was another way to learn.

PROGRESSIVE FRAGMENT: THE SILENT CLASSROOM

The year is 2058. I am standing in a classroom in Blantyre. The room is bright, quiet, and very modern. There are no desks, no chalkboards, and no posters on the walls. Everything is white and smooth. Thirty girls sit in comfortable chairs arranged in a half circle. Each student is wearing digital learning glasses that show information directly in front of their eyes. I am not called a teacher anymore. My title is “Learning Supervisor.” My job is to make sure the system runs smoothly. A soft sound fills the room. It is a steady rhythm. Then a recorded voice begins: Hydrogen. Helium. Lithium. Beryllium. The girls repeat the words together. The system controls speed and timing. The elements appear in front of their eyes as they speak. Carbon. Nitrogen. Oxygen. No one hesitates. No one asks questions. No one laughs. After seven minutes, the lesson is complete. A screen on the wall shows the results: Memory Rate: 100%. The system has worked perfectly.

I should feel proud. Instead, I feel uncomfortable. I remember being a student in 2008, sitting in a cold chemistry classroom, repeating a rhyme to memorize the first twenty elements. I did not understand what they meant. I just wanted to pass. This new classroom is more advanced. It is faster and more efficient. But something feels missing. The girls in front of me are from rural areas. Their families farm near rivers and lakes. In recent years, large mining companies have started extracting minerals from their regions. These minerals are used for energy and technology in other parts of the world. These girls are being trained to work in those industries. They know the elements perfectly. But do they understand what those elements mean for their own land?

The lesson ends and the girls remove their glasses. I look at the control panel beside me. There is a button that allows me to pause the program and teach freely. We are told not to use it unless the system breaks. The system has not broken. But I feel that something else has. I press the button. The room becomes very quiet. The girls look at me with surprise.

“Please take off your glasses,” I say gently. They do. I walk to the center of the room and take out a small jar of soil from the Shire River. “Carbon,” I say, holding up the soil. “Where is it?”

“In the periodic table,” one girl answers quickly.

“Yes,” I say. “But it is also here. In this soil. In your crops. In the food your families grow.” They are listening closely now.

“Oxygen,” I continue. “Where is it?”

“In the air.”

“And in your lungs,” I say.

“Iron?”

“In the ground.”

“And in the tools your parents use. In your blood.” The room feels different now. The girls are not just repeating. They are thinking.

I ask them, “Who benefits when minerals are taken from your land? Who decides how they are used? What responsibility do we have when we study science?” The screen behind me begins to flash a warning. It shows that we are no longer following the official lesson plan. For a moment, I am afraid. I could turn the system back on. I could return to the script. Instead, I turn the screen off.

As I stand there, I realize that the system is not only around me; it is also inside me. For years, I believed efficiency meant success. I believed that, if students could perform perfectly, then I had done my job well. In many ways, I helped build this kind of classroom by valuing smooth

lessons and measurable results over questioning and connection. I am not outside this system. I have benefited from it. Pausing the program is not just an act of teaching differently; it is an act of confronting my own comfort with control. There may be consequences for this deviation, but there are also consequences if I remain silent.

I tell them about my own experience memorizing the elements without understanding them. I explain how I later became a teacher and repeated the same method without questioning it. “I do not want you to only memorize,” I say. “I want you to understand. I want you to ask questions. I want science to connect to your life.”

One girl raises her hand. “So, what should we do differently?” she asks.

“We begin by asking why,” I say. “We learn the elements, yes. But we also ask how they affect our communities. We ask how to protect our land. We ask how knowledge can serve us, not just others.”

Now the classroom feels alive. It is no longer perfectly controlled, but it feels real. I understand what is at stake. If education becomes only about perfect memory and efficiency, we may create students who can repeat everything but question nothing. The alternative is not disorder. The alternative is connection. It is allowing space for questions. It is remembering that education is not only about getting the right answer but about understanding why it matters.

In this small moment, I am no longer just supervising a system. I am choosing to teach.

STANDING BETWEEN THE SCRIPT AND THE QUESTION

I am sitting at my desk late in the evening, the room quiet except for the soft hum of my laptop and the faint rustle of papers. My two fragments lie open before me: one a memory of the past, the other a possible future. Between them sits the present moment, the space where I begin to interpret my educational journey.

As I reread the imagined classroom of 2058, the scene sharpens. The walls are stark white. Students sit still, their eyes fixed forward through digital glasses that flicker with information. A large display at the front reads: *Memory Rate: 100%*. The room is silent, not the silence of reflection but of completion. Every response is immediate. Every answer is correct. The lesson flows without interruption.

And yet, within that perfection, something feels absent.

What becomes clear is that this future is not entirely imagined; it is an extension of a script I have already lived.

SCRIPTED LEARNING AS A CULTURE OF CONTROL

The script that governs the 2058 classroom has deep historical roots. Science education in Malawi has long been shaped by structures that prioritize order, predictability, and measurable outcomes over curiosity and interpretation. As Kafka (2019) notes, educational systems often function to reproduce inequality by maintaining control rather than fostering critical engagement. Within this context, the mnemonic script emerges as more than a teaching strategy, it becomes a cultural pattern that defines what counts as knowledge and how learning should occur.

In my own classroom experience—the rhythmic chant of the periodic table, the teacher’s pointer tapping in steady time, our voices rising together, hesitant at first, then synchronized—the rhythm

mattered more than the meaning. To fall out of sync was to risk being wrong, to be exposed, to disrupt the flow of the lesson. In that moment, learning was not an individual process of understanding but a collective act of coordination. The goal was alignment, not inquiry.

This is how the script operates, not only through content, but through structure. It organizes bodies, voices, time, and thought. Students learn when to speak, how to respond, and what counts as a correct contribution. Over time, this structure becomes internalized, shaping not only academic behavior but also one's sense of what it means to learn. Golann (2021) demonstrates how such highly regulated environments train students into compliance, rewarding those who follow the script and marginalizing those who deviate from it. Similarly, Fitz and Nikolaidis (2020) argue that tightly scripted curricula constrain democratic possibilities by limiting opportunities for dialogue, interpretation, and intellectual risk-taking. Within this framework, error is not treated as part of learning but as a failure to perform correctly. As a result, students may become increasingly cautious, prioritizing accuracy over exploration. The classroom becomes a space where knowledge is stabilized rather than questioned and where authority remains largely unchallenged. This aligns with broader critiques of scripted curricula that suggest that their emphasis on control and standardization can diminish both student agency and teacher autonomy (Powell et al., 2017).

Through *currere*, Pinar (1975) invites a return to these lived moments, not simply to recall them but to reinterpret their significance. In reflecting on my own experience, I begin to see how deeply these structures shaped my understanding of education. Learning became something to perform correctly, something to deliver on demand, rather than something to explore, question, or connect to my own life. The script did not just organize the lesson; it shaped my relationship to knowledge itself. In this sense, the culture of control extends beyond the classroom. It becomes a way of thinking, a way of engaging with authority, and a way of positioning oneself within systems of knowledge. The imagined classroom of 2058, with its seamless efficiency and perfect outcomes, is not a departure from this culture but its logical continuation.

EFFICIENCY WITHOUT MEANING

The rhythm of the chant evolves into the precision of the digital system. What begins as memorized sequence in the past becomes automated accuracy in the imagined future. In both cases, efficiency defines success. Learning is measured by speed, correctness, and completion, whether through the synchronized recitation of elements or the real-time display of perfect scores. Although the tools have changed, the underlying logic remains the same: knowledge is valued for how quickly and accurately it can be reproduced.

In the 2058 classroom, this logic reaches its most refined form. The system operates without friction. There are no pauses, no deviations, no visible uncertainty. Students respond instantly, their answers generated with seamless precision. The silence in the room is striking, not the silence of reflection or deep engagement but the silence that comes when struggle has been engineered out of the learning process. Everything works exactly as intended. But that is precisely the problem.

When learning is stripped of hesitation, error, and questioning, it also loses the conditions that make understanding possible. Struggle, in many ways, is not a failure of learning but a necessary part of it. It is through uncertainty that learners make connections, test ideas, and develop deeper comprehension. In its absence, knowledge becomes surface-level accurate but remains unexamined. The appeal of scripted systems lies in their simplicity and reliability. As Timberlake

et al. (2017) note, such systems are often embraced because they offer consistency, clarity, and the promise of equitable outcomes. They reduce variability and provide clear benchmarks for success. However, this same emphasis on standardization can narrow the scope of learning, limiting opportunities for interpretation, creativity, and critical engagement.

Vaughn et al. (2022) argue that meaningful learning depends on adaptability, on the capacity of both teachers and students to respond to context, ask questions, and deviate from predetermined pathways when necessary. Efficiency, in this sense, can become a constraint rather than a strength. When the goal of education shifts toward flawless execution, there is little room left for exploration or meaning-making. This tension is evident in the contrast between performance and understanding. In the 2058 classroom, students achieve perfect outcomes, yet the teacher senses an absence that cannot be quantified. Knowledge is present. It is accurate, complete, and efficiently delivered, but it remains disconnected from interpretation and lived experience. The system produces results but not necessarily insight.

In this way, efficiency begins to overshadow purpose. The script is followed with precision, but it is not questioned. Learning becomes an end in itself rather than a means of engaging the world. What is lost is not knowledge, but depth, the ability to connect, to apply, and to understand why that knowledge matters. The result is a classroom where everything appears successful on the surface, yet something essential is missing. The students know the answers, but they are not invited to ask questions.

THE CRISIS OF RELEVANCE AND APPLICATION

The absence of meaning becomes most visible in the growing distance between knowledge and life. In both the past classroom and the imagined future, science is presented as something abstract detached from the environments students inhabit and the realities they navigate daily. Knowledge is encountered as content to be mastered rather than as a tool for understanding the world.

This is why the moment of interruption matters.

When the teacher pauses the lesson in the 2058 classroom and lifts the jar of soil, the shift is immediate. The rhythm of the lesson breaks. The controlled silence of the room changes in quality, no longer signaling completion but opening a space of attention. For the first time, something unscripted enters the classroom. Holding the jar, the teacher says, “Carbon ... it is also here. In this soil. In your crops.” The statement is simple, but its impact is profound.

In that moment, knowledge is no longer confined to the screen or the script. It becomes tangible. The abstract language of chemistry is reconnected to land, labor, and sustenance. What was previously memorized as part of a sequence is now situated within lived experience. The gesture does not add new content; rather, it transforms the meaning of what is already known. This brief interruption reveals the depth of what has been missing. The system has been designed for accuracy and efficiency, but not for relevance. It produces correct answers yet leaves little room for students to see how those answers matter beyond the classroom. The jar of soil exposes this gap; it brings into focus the difference between knowing *about* something and understanding it in relation to one’s world.

The need for this reconnection is not accidental. It reflects a longer historical trajectory in which science education was shaped by colonial priorities that emphasized classification, measurement, and control over relational and contextual understanding (Kafka, 2019). Within this

framework, knowledge was often presented as universal and detached, rather than situated and lived. As a result, local knowledge systems and everyday experiences were marginalized or excluded altogether. Even contemporary efforts to reform education can reproduce this disconnect when local realities are not meaningfully integrated into the curriculum. Sayed and Soudien (2005) argue that structural changes, such as decentralization, do not automatically lead to greater relevance if the underlying assumptions about knowledge remain unchanged. When curriculum continues to prioritize standardized content over contextual application, students are left navigating a divide between what they learn in school and what they experience in their communities.

This divide has practical consequences. Students may be able to recite scientific principles with precision yet struggle to apply them to issues such as agriculture, environmental sustainability, or resource management, areas that are directly connected to their lives. Knowledge, in this sense, becomes inert: it exists, but it does not act. The script, therefore, does more than limit understanding, it creates distance. It separates learners from their environment, from their communities, and from the potential of knowledge to serve as a tool for interpretation and transformation. The classroom becomes a space where knowledge is encountered but not fully lived. It is precisely this distance that the moment of pause begins to disrupt. By reintroducing the material world into the lesson, the teacher opens the possibility of reconnecting knowledge to life. And in doing so, the fragment reveals not only the limitations of the script but also the conditions under which meaningful learning can begin.

THE TEACHER'S ROLE FROM EDUCATOR TO SUPERVISOR

In the 2058 classroom, the script becomes more dominant, and the role of the teacher begins to shift in subtle but significant ways. In the earlier classroom, the teacher is still visibly present, conducting the rhythm of recitation, setting the pace, and directing student responses. Authority is exercised through voice, gesture, and timing. The teacher controls the flow of the lesson and remains engaged in its delivery. In the imagined future, however, this role is reduced. The teacher is no longer the source or interpreter of knowledge but a monitor of its execution. The title of the teacher then changes to “learning supervisor,” signaling a shift. Their primary role is not to teach in the traditional sense but to ensure that the system functions efficiently. The rhythm is no longer conducted by the teacher but by the technology. The script runs itself.

This transformation reflects broader patterns identified in research on scripted curricula. Powell et al. (2017) notes that such systems can significantly reduce teacher autonomy, positioning educators as implementers of externally designed content rather than active decision-makers. Teaching becomes procedural, guided by predetermined steps, pacing guides, and expected outcomes. The space for improvisation, interpretation, and responsiveness is narrowed, if not removed entirely. As a result, the relational dimension of teaching begins to erode. The teacher is less attuned to the nuances of student understanding and more focused on maintaining alignment with the script. Questions that fall outside the planned sequence become disruptions rather than opportunities. In this way, the teacher's role shifts from engaging learners to managing performance.

This shift also has implications for how knowledge itself is understood. When teachers are positioned as deliverers of fixed content, the curriculum appears stable and unquestionable. The possibility of interpreting, adapting, or challenging knowledge is diminished. Over time, both

teachers and students may come to accept the script as authoritative rather than as something that can be examined or reimagined.

And yet again, the moment of pause complicates this role.

Love (2020) reminds us that educational systems often normalize control in ways that go unquestioned. The act of pausing disrupts that normalization and creates a moment where the inevitability of the script is called into question, even if only briefly. At the same time, this moment reflects a redefinition of leadership. Khalifa (2020) argues that leadership in education involves more than maintaining order; it requires the ability to recognize when dominant practices fail to serve students meaningfully. The pause demonstrates this kind of awareness. It is not about rejecting structure altogether but about exercising judgment within it, knowing when to step outside prescribed boundaries in order to restore purpose to the learning process.

What distinguishes this moment from earlier patterns in the classroom is that it is not driven by efficiency or control but by intentionality. The teacher is no longer acting as a function of the system but as an agent within it. This distinction is subtle yet crucial. It suggests that even within highly regulated environments there remains space, however limited, for professional and ethical decision-making. The pause, then, is not only a break in instruction; it is a reassertion of agency. It shifts the role of the teacher from one who delivers knowledge to one who interprets its significance in context. In doing so, it opens the possibility for a different kind of educational experience, one grounded not in perfect execution but in thoughtful engagement.

Rather than offering a complete solution, the pause reveals a direction. It suggests that transformation in education does not always begin with large-scale reform but with moments of critical awareness, moments where educators choose to see beyond the script and act accordingly.

STANDING BETWEEN TWO POSSIBILITIES

Standing between my past classroom and the imagined classroom of the future, I begin to see a pattern that stretches across time. The script, the rhythm, and the silence persist, even as the tools change. What appears as progress often reproduces the same underlying logic.

Yet within this continuity lies possibility.

As Pinar (2019) suggests, curriculum is not fixed but lived; it is shaped through experience, reflection, and interpretation. My fragments are not separate stories but connected moments that reveal both the limits of scripted learning and the openings within it. The pause becomes the central thread that ties these moments together. It is the point at which the script is interrupted, the silence is broken, and the rhythm is disrupted. It is where knowledge reconnects with life.

The question, then, is not whether education will have structure but what that structure allows. Will it demand repetition or invite understanding?

The moment a teacher chooses to pause, to step outside the script and reconnect learning to the world, is the moment education begins to change.

CONCLUSION

Reflecting on the history and future of Malawian science education reveals that the most critical challenge is not the delivery of content but the silencing of curiosity. Whether through a mnemonic rhyme in 2008 or a digital headset in 2058, the reliance on a script creates a wall

between the student and the world. To move forward, the Malawian system must embrace adaptive teaching and leadership that values meaningful understanding over perfect repetition (Vaughn et al., 2022). By embracing the symbolic pause, we can ensure that science education is no longer just a mystery to be memorized but is a powerful tool for students to use to understand, protect, and shape the future of their own land. The moment a teacher chooses to pause is the moment curiosity is reclaimed and real education begins.

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