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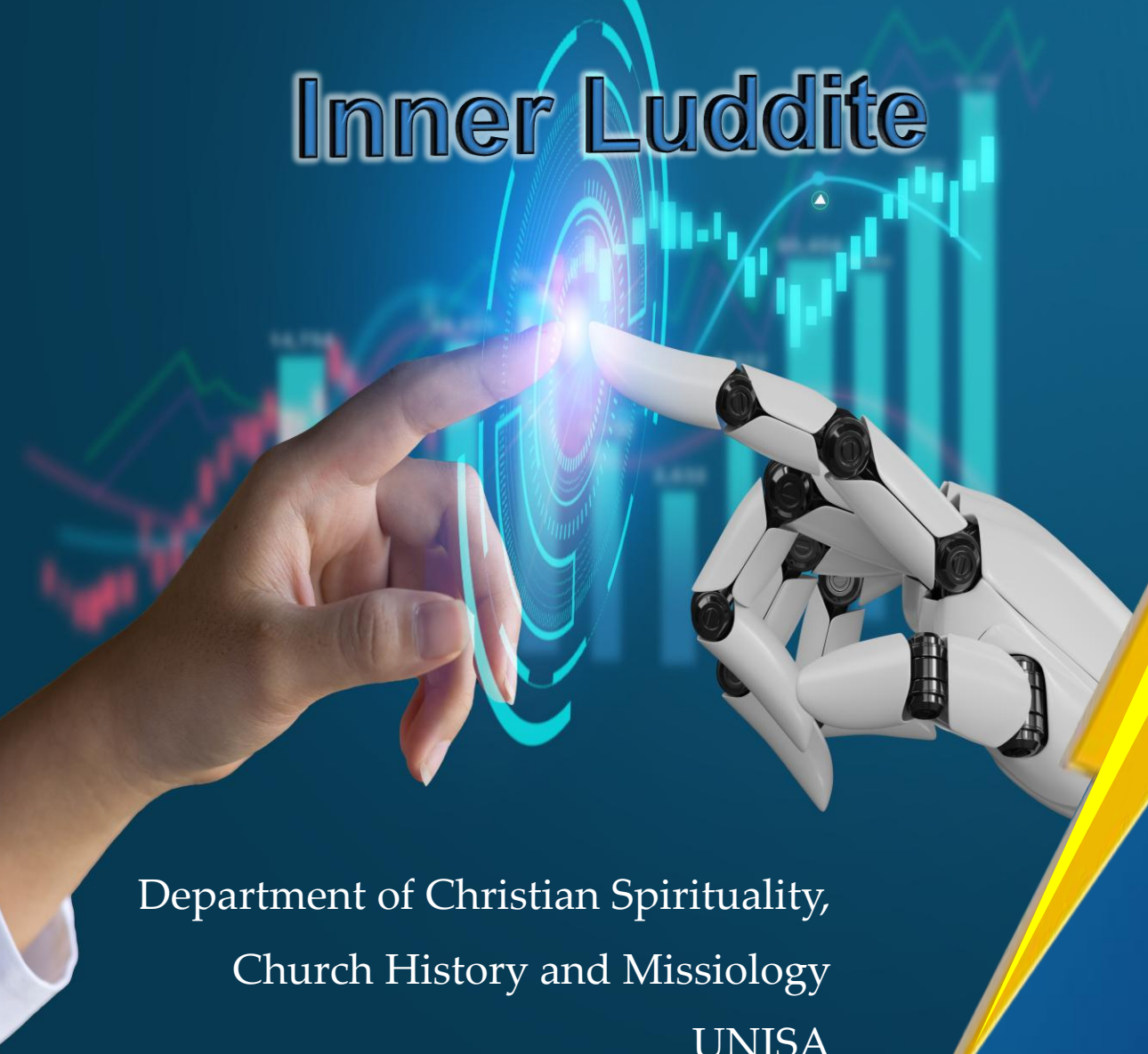
The Educator's Inner Luddite



and

a New Direction for Higher Education

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Abstract

Currently, humankind is finding themselves in more than one era simultaneously. Some scholars focus on the Fourth Industrial Revolution, while educators discuss Education 4.0 and Learning 3.0 with each other. These are complemented by artificial intelligence and serious (educational) games. However, we are living in many more eras, not being discussed here.[1] Although many educators are talking about all these eras, they are reluctant or ignorant so as to apply them in their teaching and learning. This article aims to open up the eras in which educators find themselves and introduce these eras to calm the educator's *inner luddite* towards all these 'disruptive novelties and technologies.' With this article, the authors wish to motivate educators to become *HEROEs* (highly empowered resourceful online educators), *recently-minded people* (they could be old or young) – people who are living in the 21st century and think like 21st-century people, or *pioneers* on the new educational path that should be taken by institutions of higher education in South Africa.

Keywords: 4IR; Education 4.0; Learning 3.0; AI; Serious Games; Rhizomatic learning.

1. Introduction

This article is focused on South Africa and the higher education (HE) challenges we face in this country,[2] specifically within the conflation of eras[3] of the 4IR (Schwab, 2016; cf. Mhlanga, 2022; Pascoe, 2022), Education 4.0 (cf. Chaka, 2022), Learning 3 (cf. Wheeler, 2012a; 2012b), and AI (cf. Rouse, 2020; Chalmers, MacKenzie and Carter 2021; Chen *et al*. 2021). Within all these eras, advanced, intelligent technologies take centre stage – technologies which we could only have dreamt of at the beginning of this century. However, with all these wonderful technologies available to us at this stage, HE and the presentation thereof are seemingly stuck in eras that have already passed, with institutions and educators *unable* or *unwilling* to make the transition to face the current challenges. Many institutions of higher education (IHEs) and educators could argue that the new technologies are the reason for that. However, it looks more and more as if the real reason for this stalemate position in which many educators find themselves (knowingly or unknowingly) lies on quite another level: The educators' *inner luddite* – their inner resistance to new intelligent technologies and new (21st-century) ways of educating students. Therefore, IHEs are currently in dire need of HEROEs (highly empowered resourceful online educators) who can take education and learning to a 21st-century level (cf. Mortensen, 2014).

1. Introduction

However, it is not only the unwillingness of the educators that forms a barrier. Modimowabarwa Kanyane (2023) addresses the issue of unable (not incompetent!) IHEs in his article, 'Digital work – transforming the higher education landscape in South Africa.' The first reason why some IHEs are lagging behind id because some institutions are still suffering from the fact of being historically disadvantaged (Kanyane, 2023, pp. 149-150). Second, there are some institutions that adhere to the eras in which they live, while others are conservative and therefore not up to date with the most recent technologies (Kanyane, 2023, p. 150). Third, 'limited funding' is also a big barrier and poses a big challenge (Kanyane, 2023, p. 153; cf. Kayembe and Nel 2019). Lastly, the switch from in-person to online is also an existential barrier for many IHEs (Kanyane, 2023, pp. 154-156).

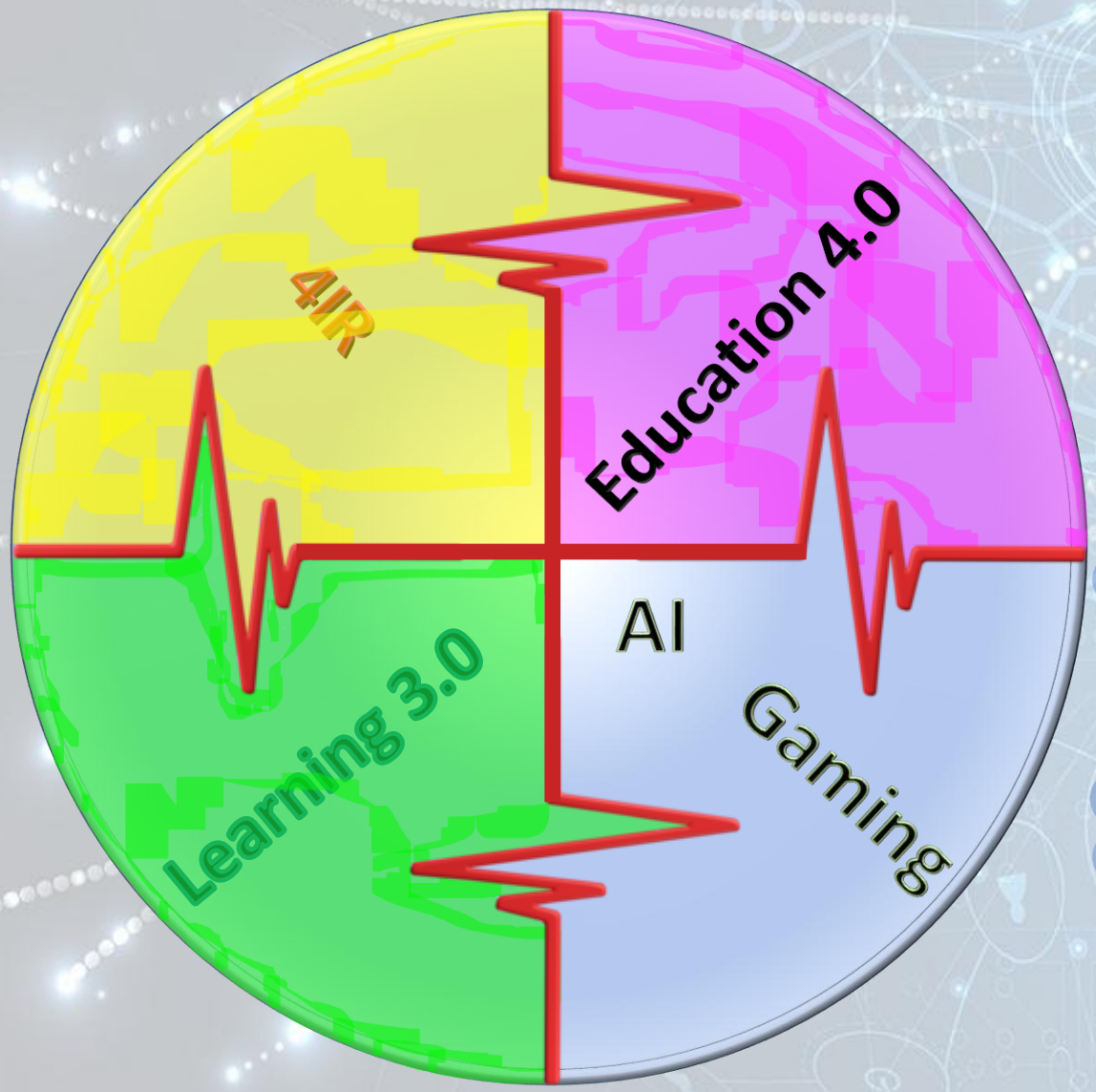
This article discusses the different eras in which HE operates (should operate) currently in South Africa and then suggests an alternative way in which IHEs can execute their teaching and learning, with student-centredness as the focus point.

2. Constructivist Teaching Method

From the three main directions of constructivism, i.e., cognitive constructivism and social constructivism (cf. Brau, 2018), as well as radical constructivism (Von Glasersfeld, 2002; cf. McLeod, 2019), cognitive constructivism (cf. Piaget, 1953) is chosen for this article, as it is student-centred and aligns with the principles of Education 4.0, which emphasises personalisation and student agency (cf. Popenici and Kerr, 2017). The focus is on students that co-create their studies and study material with their educators in a personalised way, therefore being actively involved in the personal direction that their studies take them (McLeod, 2019). This implies that students should have the privilege (right?) to form part of the planning of their personal curriculum at the beginning of a term. This will be elaborated on in this article.

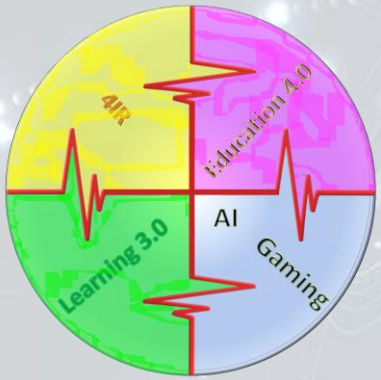
Data collection took place by using reflective journals and also books and websites to reach the aims and conclusions for this article – therefore a qualitative method (cf. Carmichael and Cunningham, 2017).

3. The Eras in which we Live



People say that we are already living in the 4IR, Education 4.0, and Learning 3.0, complemented by AI and educational gaming, with their intersections working almost like heartbeats, affecting each other on a daily basis, and where advanced, intelligent technologies take centre stage together with the students – and not the educator anymore.

3.1 The 4IR Era



The first industrial era (1IR) dates back to the late 18th and the early 19th centuries, with the invention of machines and the creation of organised industrial labour (Narvaez Rojas, Alomia Peñafiel and Loaiza Buitrago, 2021, p. 4 of 16). The time between the late 19th century and the early 20th century can be identified as the second industrial era (2IR), with the production of cheap steel (Britannica 2019) and the (official) invention of electricity (Narvaez Rojas *et al*., 2021, p. 4 of 16), as well as media like the radio and the telegraph.

The last part of the 20th century saw the commencement of the third industrial era (3IR), portraying the world as an 'information society' (Narvaez Rojas *et al*., 2021, p. 4 of 16), due to the extended use of the internet and the availability of computers to everyone. The 4IR is actually just an extension of the 3IR (cf. Lee and Lee, 2021, p. 137), focusing on and represented by phenomena like the smart industry and big data (Narvaez Rojas *et al*., 2021, p. 4 of 16), AI, robotics, and the IoT (internet of things) (Ivaldi. 2022, p. 2).

3.2 The Education 4.0 Era

Education 4.0 was preceded by three education eras. During the Education 1.0 era, education was educator-centred or pedagogical (cf. Mukhamedov, Khodjamkulov, Shofkorov and Makhmudov, 2020) where students just acted as passive recipients of the information distributed by their educators. Non-interactive media were used to disseminate the information (Oliver, 2022, p. 6). Both educators and students used chalk boards to write on, while rote memorisation was in fact the only way of learning. Education 2.0 started with an interaction between educators and students, including other experts, focusing on communication, contribution, and collaboration (cf. Huk, 2021, p. 38). Already during this era students started to work in groups while the classrooms began to be more interactive. With Education 3.0 came student-centred education and the usage of the internet. During this phase, many educators became guides and facilitators, instead of being the leaders, the manipulators, the managers, or educator-centred educators. This was the time that online discussion forums got off to a good start, together with learning management systems (LMSs). Education 4.0 is even more student-centred, consisting of assisting facilities like AI-powered adaptive learning platforms as well as gamified assessments, opening a plethora of possibilities for the students when it comes to assessment. This era also focuses on flexible learning and flexible pedagogies (Ryan and Tilbury, 2013, p. 8).

3.2 The Education 4.0 Era

Students are not bound by time, space, limited activities or even media anymore, as they are free to study whenever and wherever they want to (flexible learning), using the information and media of their personal preference (flexible pedagogies). With all this freedom, the students have more responsibilities, using more of their cognitive skills and partaking in transformative learning (Huk, 2021, pp. 40-41). Students are now choosing their own study material (usually within set limits), determining the biggest part of their personal study field as well as the way in which they want to be assessed.

3.3 The Learning 3.0 Era

During the 1980s, Learning 1.0 students were issued with all their learning materials, sitting in front of a computer and answering multiple choice questions (MCQs). It was a top-down model. The students' reactions to the material were measured and assessed in an 'objective way' (Wheeler, 2012a). If a student failed, they had to 'relearn' the work till they succeeded. This was before social media hit the world.

Learning 2.0 constituted more engagement from and between the students, being more participatory in the learning process (Wheeler, 2012a). Interactive bottom-up content replaced the top-down mode of education, being created by both educators and students, constituting a heterarchy, where the different elements of the learning material and learning process were without any rank or could be ranked in diverse ways (Wheeler, 2012a). During this era, online learning spaces were created for the sharing and discussion of information, thereby creating new communities and networks on the internet. Students and specifically educators have not yet discovered the full consequences or workspace of all these tools the internet of this era has available for them.

3.3 The Learning 3.0 Era

Whereas Learning 1.0 and 2.0 can be associated with Web 1 and Web 2, Learning 3.0 is associated with Web 3 which is more futuristically based, specifically in South Africa.[4] Learning 3.0 happens within a 'meta-web' – 'a semantic based architecture of webs' (Wheeler, 2012b). Based on all the information uploaded by users, the web becomes more intelligent, more and more assisting the users in their searches. Web 3 will even start to think on behalf of the user, therefore what the web thinks the user needs to know. Wheeler (2012b) elaborates: 'Learning 3.0 will see [students] using sophisticated new web tools that are intricately connected to each other, are context aware, and are accessed through intuitive and natural interfaces.'

Within this environment the students construct their own personalised study field or 'curriculum,' joining other students, where each student forms 'a nexus of knowledge, and a node of content production' (Wheeler, 2012b). Here the student and the internet form a 'limitless symbiotic relationship' (Wheeler, 2012b), producing quality knowledge to the network of other students.

3.4 The AI Era

AI is the hype term nowadays. According to IBM (2023), AI is a problem-solving productivity tool on the internet that 'combines computer science and robust datasets,' transcending machine learning and deep learning. It can be divided into (artificial) narrow AI (also called weak AI) and strong AI. Narrow AI is AI performing specific tasks. Examples are Siri (by Apple), Alexa (by Amazon), and Watson (by IBM) (IBM 2023). Strong AI is currently still (mostly) theoretical, consisting of general AI and super AI. With general AI the machine will have the intelligence of a human brain, with the 'ability to solve problems, learn, and plan for the future' (IBM 2023). Super AI will surpass human intelligence.

During 2023, large language models (LLMs) like ChatGPT made their appearance, much to the annoyance of many educators.[5] Fionna Agomuoh and Luke Larsen (2023) summarise it bluntly: 'ChatGPT has continued to dazzle the internet with AI-generated content, morphing from a novel chatbot into a piece of technology that is driving the next era of innovation. No tech product in recent memory has sparked as much interest, controversy, fear, and excitement.' Many students and educators are currently using chatbots for many services, like the summary of academic articles or a prescribed study guide, also to do/assist in assignments, writing an assignment or article in better English, and many more services.

3.4 The AI Era

LLMs have far-reaching opportunities and also consequences for higher education, which need to be discussed in a separate article or book.

Six of the best LLMs globally

LLama 3

BERT

GPT-4

co:here

ANTHROPIC

a BigScience initiative
BLOOM
1768 params · 59 languages · Open-access

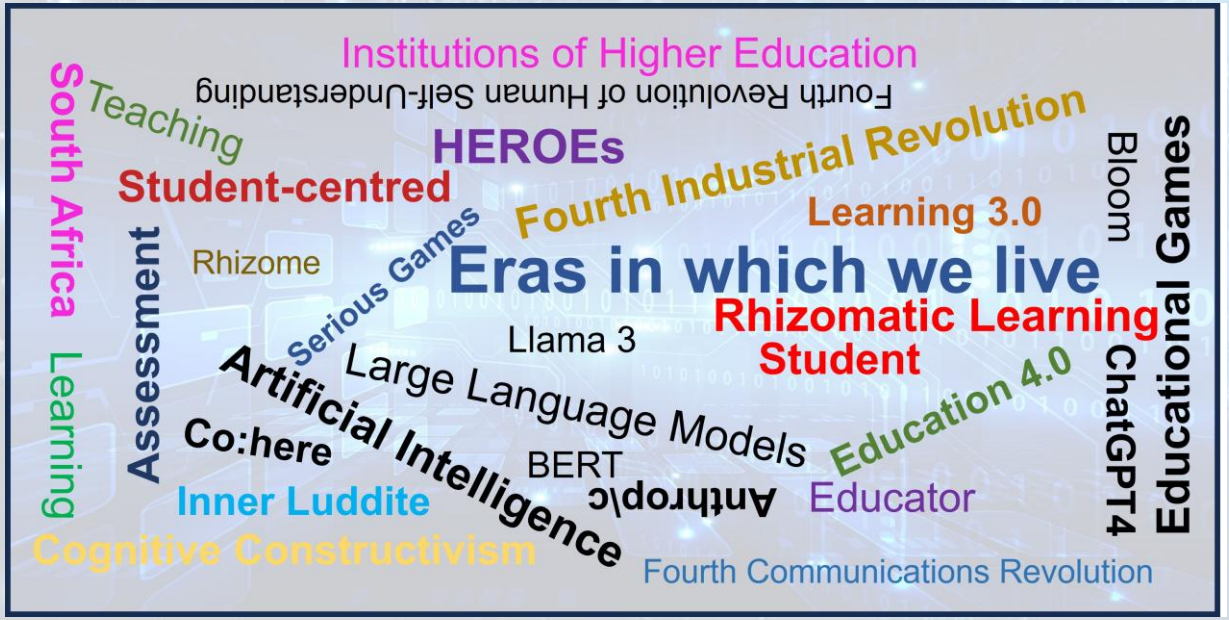
3.4.1 Educational/Serious Games

Whereas serious games (SGs) might better be categorised under Education 4.0, it is classified here under the AI era, as it is filled with out-of-the-box challenges – just like AI or LLMs – specifically to the educators, as may of them are still thinking that ‘games are for children’ (Timetoast n.d.).

SGs, also known as educational games, are games played by students on electronic devices (smartphones and tabs) which relate directly to their learning material, to assist them with a better understanding of the learning material, also using game elements like awards, challenges, levels, and XP points to make it more interesting and entertain the user while becoming familiar with the necessary facts (Laning, 2019). Almeida and Simoes (2019, pp. 121, 124) add to this: ‘[S]erious games in an educational context promote the development of skills and abilities through immersive experiences, [while offering] a significant number of benefits, such as making players feel responsible for success according to their actions, combining high-quality content, showing great involvements, and turning errors into learning elements.’

3.4.1 Educational/Serious Games

SGs are filled with continuous training (Mokhtar, Ismail and Muda, 2019, p. 331) and assessment, called ‘stealth assessment’ by Shute (2011, p. 503) because a student is enjoying the game so much that they do not realise that they are assessed as well. The student is also given the freedom to fail and try again without having the stigma of failure attached to them (De Klerk and Kato, 2017, p. 34). The educator does not partake in the SG, but only acts as a guide assisting their students when required to do so (Anastasiadis, Lampropoulos and Siakas 2018, p. 141; Mokhtar *et al*., 2019, p. 331).



4. A Combination/Conflation of these Eras (?)

The eras mentioned above do not present themselves to us as isolated phenomena, but rather in a wholistic manner. The industrial revolution, the education era, the learning era, and AI therefore form part of our world of work on a daily basis. The key question, specifically in South Africa, is, *How do we as educators allow and use these phenomena in our world of work?* First of all, it is very important to note that the educators in South Africa have seemingly not become part of the 4IR, while both Education 4.0 and Learning 3.0 are currently pipe dreams, and LLMs and SGs are more of an annoyance than an assistance or something with which they (want to) engage (cf. Gous, 2022, p. 215).

The 4IR: Many parts of Africa and the third world are still stuck in the 1IR (having just the *basic* basics to their disposal, living in rural conditions with no toilets and no water in their houses/shacks); some have advanced to the 2IR (still without electricity, having donkeys as their main form of transportation); while most of the continent is partly in the 3IR (having internet, Wi-Fi, and smartphones) but do not have the competence to utilise it fully.

4. A Combination/Conflation of these Eras (?)

This is why many scholars argue that ‘the world’ is now actually living in and experiencing the first effects of the 3IR (cf. Ivaldi, 2022, pp. 2-3; Venturini, 2022, p. 220; Rifkin, 2016; Blinerd, 2006). Moll (2022, p. 45) adds that there is ‘sparse evidence of any such revolution [4IR] across the totality of social, political, cultural and economic institutions, locally and globally.’

There are, however, people who postulate that they are already part of the 4IR with all the novelties and technologies presented by it. These novelties and technologies impact ‘the physical area (e.g. autonomous vehicles, three-dimensional printers and advanced robotics), the digital area (e.g. IoT, platforms and IoS) and the biological area (e.g. artificial intelligence for genetics, biology and related applications)’ of their lives (Ivaldi, 2022, p. 3).

Education 4.0 is seemingly also only a pipe dream in most of South Africa’s IHEs – due to the educators’ *inner luddite*. Ignatius Gous, a retired educator at UNISA in South Africa, claims the following:

4. A Combination/Conflation of these Eras (?)

> [R]esistance to change has...always been part of our world. The 'better the devil you know than the one you don't'-syndrome often kept people, societies, and industries in their comfort zones. Education in general and HE...in particular are prime examples...The classroom of 2022 and the classroom of 1922 and 1822 look disconcertingly similar, with the guiding pedagogies inside the classroom also fairly comparable. The availability and even use of new technologies did not fundamentally change classrooms or teaching and learning (Gous, 2022, p. 215).

Added to these, educators tend to forget that education is not only about being efficient in assessing students, but to make the learning process for the students as effective as possible (cf. MacGregor, 2023). This is where SGs and AI have a huge roll to play.

Learning 3.0: It is already mentioned that this is a futuristic model for learning – specifically in South Africa – being based to Web 3. It is also connected to AI, which is somehow a novelty to educators in South Africa. Education in our country therefore mostly finds itself in the Learning 2.0 space.

4. A Combination/Conflation of these Eras (?)

The AI era (including SGs): Both AI and SGs are met with much excitement, specifically in the corporate environment in South Africa, as many big corporations are already using it. However, when it comes to higher education, LLMs like ChatGPT are mostly met with resistance and controversy, as educators have discovered that students are utilising chatbots to assist them with their assignments and assessments.[7] SGs are also met with much resistance as educators do not know how to design an SG or use an existing one, and are still arguing that 'games are just for children' (cf. above).

Barriers: As discussed above, the inner luddite of educators form a 'natural barrier' to the acceptance of all these 'novelties.' What contributes to this resistance of the educators are the position or attitude of their institutions. Many institutions do not have the funding to support such an endeavour (cf. De Klerk and Kato, 2017, p. 33), while others are not keen to invest. Funding is therefore also a big barrier, complimented by the changing of policies to accommodate all the new additions to the curriculum as mentioned above (Oliver, 2024, p. 4 of 8). Something that is also a great concern is training (Mokhtar *et al*., 2019, p. 331).

4. A Combination/Conflation of these Eras (?)

Both educators and students need to be trained about the different eras in which they find themselves (Rasmussen, 2022), as well as in the utilisation of AI, LLMs, and SGs. These barriers could easily stop an educator who had the intention to break away from the old ways of presenting curricula.

Dr. Roze Phillips[7] gives this advice to educators who are reluctant to engage themselves with novelties, specifically AI: 'Calm your inner luddite,' and then she adds these wise words, '…hold on to your inner sceptic' (MacGregor, 2023). Concerning both AI and SGs, these two elements ('calm' and 'sceptic') are forming the two sides of the coin for our current educational environment. Instead of trying to wish the two phenomena (AI and SGs) away or fighting it with everything they have, educators should rather apply it within the learning process, although with caution. The reason is that educators are preparing their students for the world of work, in which AI and even SGs will (most probably) play a significant roll or are already utilised extensively (MacGregor, 2023). Denying the students the opportunity to interact with AI and SGs would therefore give them a disadvantage in the corporate sector. Karim Lakhani (2023), a professor at Harvard Business School, frankly observes, 'AI is not going to replace humans, but humans with AI are going to replace humans without AI.'

4. A Combination/Conflation of these Eras (?)

Having referred to all the negatives with reference to the four eras, let us face the positive reality. The reality is that we currently find ourselves in South Africa within IR3, Education 3.0, and Learning 2.0. Let us therefore at least start to live accordingly and fit our teaching and learning into these moulds. The second reality in which we find ourselves, is the reality of AI and SGs. It will not help to wish these novelties away, but to maximally implement it and utilise it in our teaching and learning, to the advantage of both the students and the educators. By doing that, the 4IR, Education 4.0, and Learning 3.0 will then gradually be phased in.

We are now living in 2025, being surrounded by all these progressing and developing ‘eras’ mentioned above. In this era of fluidity and constant innovation, we have entered the environment of flexibility – flexible learning and flexible pedagogies (cf. Mortensen, 2014). The focus should now be on student empowerment where students should be the main actants in their personal learning processes. According to Ryan and Tilbury (2013, pp. 4-5), there are at least five pathways for student empowerment:

Student Empowerment

Five Pathways

- Future-oriented learning.
- Decolonised, inter-cultural outlook.
- Agency and competence.
- MIT (multi-, inter-, and transdisciplinary research).
- New technologies to enhance learning processes.

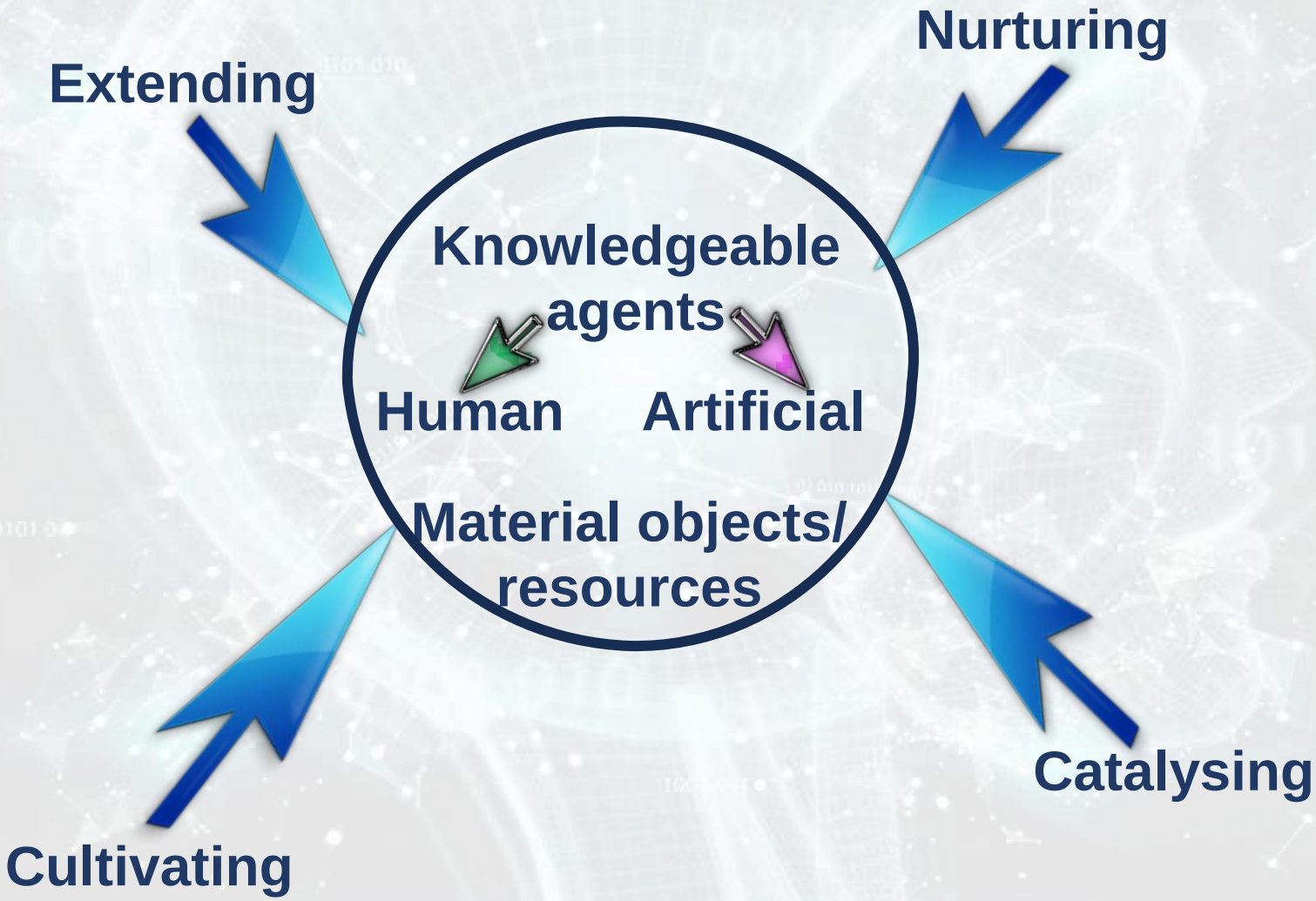
4. A Combination/Conflation of these Eras (?)

First, students should engage in future-oriented learning, taking with them what is important from the past, but looking forward at what should be; second, a decolonised,[8] inter-cultural outlook on learning would be a better way to understand the world as it would open students' eyes for the traditions and cultures of the people around them; third, knowledge and understanding are not enough anymore, but should be complemented by agency and competence, thereby entering the space of transformative learning; fourth, multi-, inter-, and transdisciplinary research (MIT) would maximise collaboration between different disciplines and perspectives; and lastly, space should be created for communities to use new technologies to enhance their learning processes.

4. A Combination/Conflation of these Eras (?)

As stated in the Introduction, it is indeed time for the HEROEs to step forward. The consumerist approach to education has passed and is replaced by a strength-focused and meaning-oriented approach to resilience and transformation (SMART) approach (cf. Chan, Chan and Ng, 2006). In this process, students are to become co-creators of their personal learning processes and curricula, networking and having dialogue with fellow students, while their assessment is based on the successful completion of specific projects, tasks, or portfolios of evidence (POEs), be it individually done or in groups (collaborative learning). These could culminate in what is known as rhizomatic teaching and learning.

5. Rhizomatic Teaching and Learning[9]



5. Rhizomatic Teaching and Learning

A rhizome is an online interactive platform started by the educator, where the educator and their students are in constant communication with each other(Britannica, 2023).[10] At the beginning of the term, the educator invites all their students to the platform and then relates to them how the teaching and learning will be executed on the platform – by means of a *rhizome*. This should be purely student-centred teaching and learning, thereby giving the student much more autonomy and belonging in their learning. The educator then announces the title of the curriculum and requests their students to do research on the title and present some section titles to the group. Having received all the information from every student, the educator then supplies the students with headings and sub-headings. The students then have to do extensive research on these headings and sub-headings and post and discuss their findings on the platform, also called an *assemblage* by Nickerson (2024). These findings are then debated, argued about, and supplemented by the other students. Cronjé (2023) refers to this as *collectionism*, as the 'unit' (rhizome) does the collecting of the information in a self-regulating environment. Cronjé (2023, n.p.) elaborates: 'For rhizomatic learning the multiple becomes the unit. There are multiple ways of knowing. There are multiple knowledges. There are multiple perspectives. There are multiple pedagogies...It is therefore necessary to design for the multiple as if it is a unit.'

5. Rhizomatic Teaching and Learning

According to Brailas (2020, p. 8 of 14), the rhizome acts as a 'free information flow between knowledgeable agents...for new knowledge to emerge.' Brailas (2023, pp. 2-3 of 21) explains:

> By shifting the focus from the parts to their interrelation and interdependence, rhizomatic learning can be defined as the process of catalyzing the development of a dynamic network of knowledgeable agents, human or even artificial or technobiological actors in the present day, along with their learning resources... Learning rhizomes are dynamic networks of transformative possibilities, patterns that [are] always moving, always rearranging, ever expanding, always in the becoming. Nevertheless, they maintain every moment an autopoietic structure.[11]

Ginger Rhizome

5. Rhizomatic Teaching and Learning

Pan and Chen (2023) refer to rhizomatic learning as ‘open networked learning, [creating] networked learning communities’ – these are called ‘multiplicities’ by Deleuze and Guattari ([1987] 2005, p. 8). In the rhizome, students are autonomous and interdependent. This means that they have the freedom to create personal learning networks for themselves and to link these networks to the group (community) of students on the platform. This ‘interdependent and collective nature of collaboration’ encourages the participants’ agency (Newell and Bain, 2018, p. 62), as well as their assigned accountability and sense of responsibility that they have in the rhizome (Joubin, 2023, p. 225). Because all this happens on the platform, the communication could be asynchronous (communicating *via* the platform), or synchronous (direct conversation) (Mortensen, 2014).

However, what role does the educator play further in the rhizome? Brailas (2020, p. 3 of 14) gives a good answer to this:

> The role of the educator in such rhizomatic ecology is to empower participants to create alternative connections, new networks of thinking, and new patterns of relating with each other, and with other available human nodes or non-human learning resources.

5. Rhizomatic Teaching and Learning

> But it is not the educator that actually educates the students. The rhizome as a whole becomes the teaching apparatus, a multiplier of perspectives, and an amplifier of synergies. In such epistemology of learning, the primary role of the educator is not to teach in a straightforward manner, but rather to catalyze and facilitate the development of the rhizome that will indirectly drive learning toward the desired direction.[12]

Instead of being the main figure – the 'sage on the stage' – the educator becomes a guide and advisor – the 'guide on the side' (King, 1993). However, this guide should act as an interactive guide who learns together with their students. In this process the educator will, together with the students, have more knowledge and insight in the subject compared to the beginning of the course. The educator must therefore approach the course from a 'student-centred, didactic, pedagogical, and organisational perspective' (Mortensen, 2014).

This sounds like a good place for a lazy student to hide and then just reap the fruit of all the research the other students are doing. Here is another responsibility for the educator:

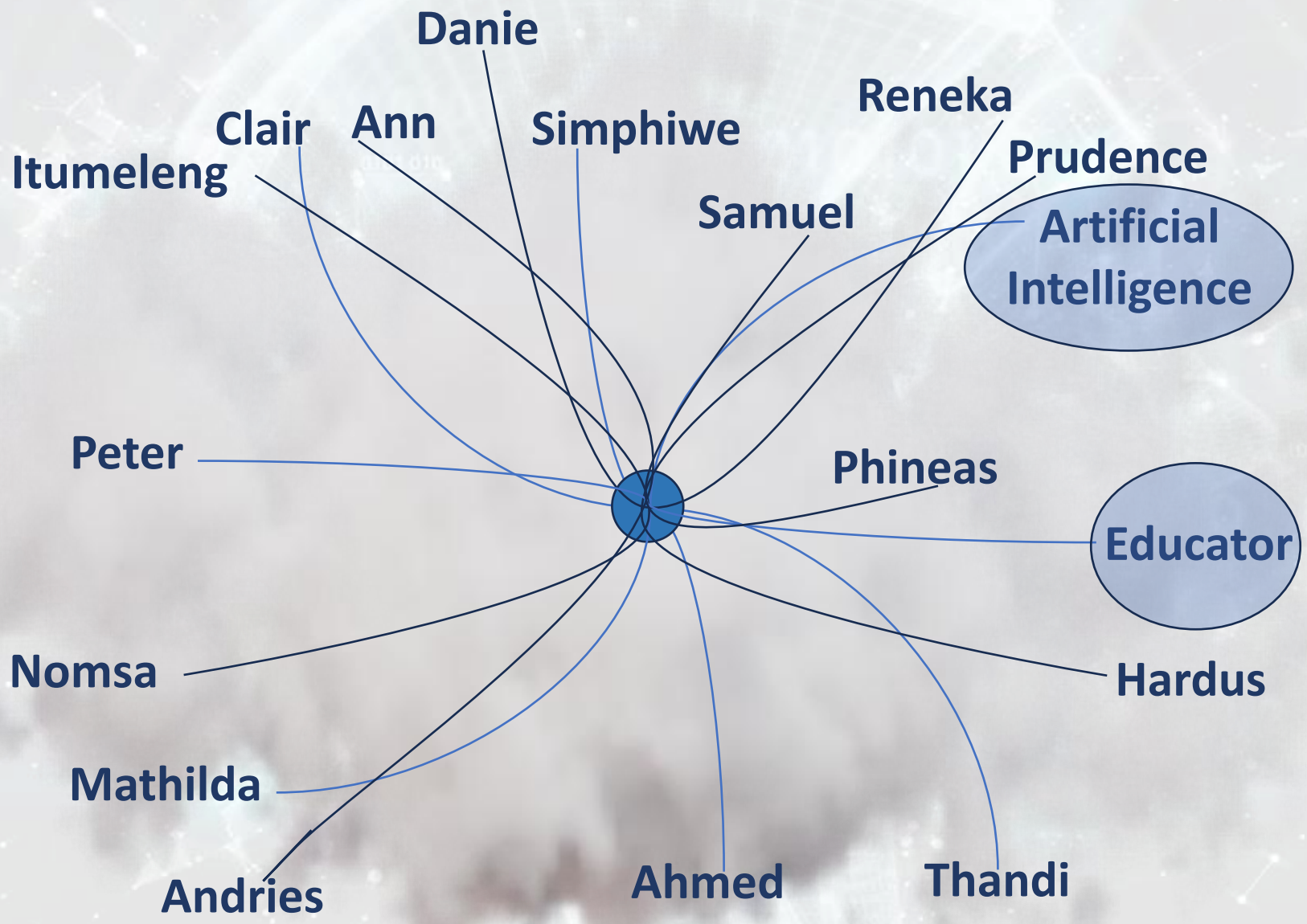
5. Rhizomatic Teaching and Learning

They must take care (on a daily/weekly basis?) that every student pulls their weight inside the rhizome – therefore no dissolving in the group. It is therefore expected from each student to constantly disseminate their research and arguments to the platform, thereby contributing to the 'collective intelligence mindset' (Brailas, 2020, p. 8 of 14) and therefore retaining their personal agency and creativity (cf. Brailas, 2020, p. 10 of 14).

Oliver (2024, p. 5 of 8) concludes:

> With all the above in mind, it becomes obvious that in rhizomatic education the 'in-person' classroom is (almost) fully replaced by online education – a sort of 'flipped classroom' without the in-person classroom – where the students and educator/s have a constant flow of knowledge and conversation, creating space for higher-order thinking activities (Ibnus 2022:111). Top-down is replaced by bottom-up, traditional is replaced by 'disruptive' (student-centred), and the transferral of information is replaced by the sharing and discussion thereof. Added to these, the confines of the classroom are replaced by 'the world,' as any element of society, culture, tradition, creativity, AI, entertainment, or gaming can form part of the rhizome to contribute to the overall sharing of knowledge.

Portrayal of a Rhizome



(Personal archive.)

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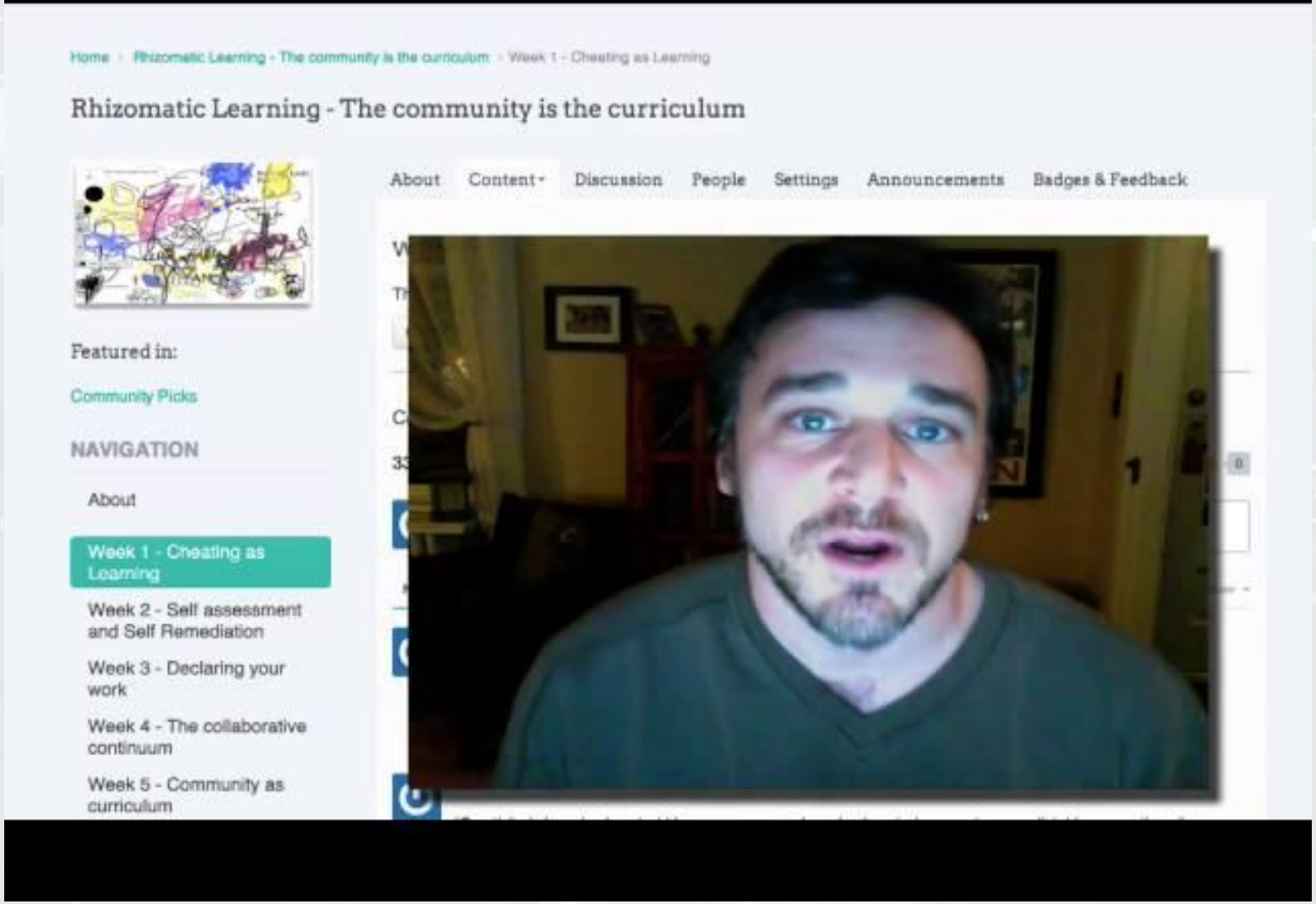
Microsoft Word Document

Portrayal of a Rhizome

Link to this video.[13]



6. Conclusion

Highly
Empowered
Resourceful
Online
Educator**S**

👨‍🎓

Recently-minded people

6. Conclusion

Education in South Africa, maybe worldwide, needs HEROEs, also called *recently-minded people*. These pioneering educators must take the lead in a new way of education and learning in this country. Educators, covering all the levels of education, need to stand up and acknowledge the fact that this is the end of the first quarter of the 21st century, and they need to respond to that in the appropriate innovative and disruptive way by teaching (the learners in schools and) students at IHEs accordingly. This will not happen overnight. Maybe educators need to first found a rhizome to motivate and inform each other about available technologies and information, specifically AI and SGs, and how to collaborate with students in a rhizome.

The moment that educators start with these actions, will be the introduction for educators in South Africa to the 4IR, to education 4.0, learning 3.0, and a balanced use of AI and SGs in education and learning, in this way divorcing themselves from their inner luddite. This will free them from the reckless chains of self-justification that they ‘are doing enough’ for their students and will hopefully cause them to become the educators that they dreamt to be.

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