

THE ROLE OF LANGUAGE IN THE 4TH INDUSTRIAL REVOLUTION

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ABSTRACT

Central to the 4th Industrial Revolution is language. The 4th IR is coined, envisaged, and expressed through the medium of language. Without language it is not possible to talk about the 4IR. This presentation highlights the purpose of the revolutions, looks at the meaning of language and explains its importance in the mastery of other learning areas. The presentation further highlights the literacy crises in South Africa and turns to neuroscience for possible solutions. The presentation ends by suggesting that we must acknowledge the centrality of language to the 4th IR, we must be mindful of the many challenges faced by the education system in South Africa which hinder us from transitioning smoothly into the 4th IR. Finally, we need to decentralize English as a language of power by promoting the indigenous languages to academic languages.

Presentation

The industrial revolutions were innovations created or designed by humans to make life easier. These innovations improved the quality of life and compromised it in some ways.

REVOLUTION	TIME PERIOD	INNOVATION
1 st revolution	1760- 1830	Steam power (factories)
2 nd revolution	1870- 1914	Inventions of technology (telegraph, telephone, railroad, electrical power)
3 rd revolution	1950- 2007	Digital revolution (computer, internet)
4 th revolution	2010-	

The focus of our discussion this morning is the role of language in the 4IR. Let me position myself in this discussion by stating that all these innovations were coined and expressed through the medium of language. Language has already been defined by the host. Another meaning is “the system of words or signs that people use to express thoughts and feelings to each other”. Yet another definition of language is “a systematic means of communicating ideas or feelings by the use of conventionalized signs, sounds, gestures, or marks having understood meanings”.

Language is a communication tool through which concepts are conceived, meaning negotiated and knowledge conveyed from one individual to another (Chikiwa, 2016).

The importance of language in the mastery of other areas of study.

Durkin (1991, pg.3) states, “Mathematics education begins in language, it advances and stumbles because of language and its outcomes are often assessed in language.”

This statement by Durkin is true of other learning areas as well. Educators who teach content subjects find themselves teaching the concepts of that subject as well as the language. In most cases the language is English, spoken by approximately 9% of the population in South Africa. So, you find that both the educator and the learners are not native speakers of English and the struggle to find each other in the foreign space.

Research indicates that one of the causes for low pass rate when it comes to Mathematics, Life Sciences, Physical Sciences and other learning areas is poor language skills.

The literacy Crisis in South Africa

The 4IR lands at a time when the education system South Africa is bogged down by a plethora of challenges. For Higher education it comes at a time when the issues of access into Universities is on the table. There is progress when it comes to epistemological access to institutions of higher learning, because there is financial assistance such as NSFAS, etc. However, there is still a struggle when it comes to ontological access to institutions of higher learning. This is because of inflexible structures that were put in place during the colonial era. To breakdown those structures and come up with new and user-friendly ones is a mammoth task. As a result, large numbers of students enroll for their first year of study and very few of them graduate.

For Basic Education, the 4IR finds us still struggling to read and write. It is not a secret that the Department of Education (DBE) has embarked on several diagnostic tests that have continuously placed the learners in South African schools at the bottom of the literacy rank. The Southern and Eastern African Consortium for Monitoring Education Quality (SAQMEQ 111), Progress in International Reading Literacy Study (PIRLS) in 2006, 2011 and 2016. The Annual National Assessments (ANA) from 2011 to 2014.

These diagnostic tests revealed that the 75% of learners in South African schools who struggle to read and write are those who come from working class homes. Those whose home environments are not conducive to their literacy development (Spaul, 2013; Howie & Van Staden, 2012).

What does Neuroscience say about learning how to read?

Dehaene (2010) is a cognitive neuroscientist. He explains the brain activity when a child learns to read. The children's brains have well developed networks for vision and speech (the blue section). However, the brain must be explicitly taught to attend to the individual phonemes of speech and must attribute them to different letters. This happens in the left hemisphere in the Visual Word Formation Area, or the brain letterbox (red section). This letterbox is only activated in literate people.

The lexicon meaning system (the green section), and the pronunciation, articulation (orange section) system is already used for spoken language. But there needs to be a connection created between these networks and the networks for speech, sound and meaning. Dehaene says from the brain point of view, that when one learns to read one must first recognize the letters, then how the letters come together to form words (red section). The second step is to connect those words to the system of speech sound (orange section) and meaning (green section). So, learning to speak any language that one is immersed in comes naturally, but learning to read does not come naturally. One must be explicitly taught how to read.

NOTE: The brain mechanisms for learning to read are the same in all cultures.

The main challenge with the traditional western oriented pedagogies is that they are structured with the assumption that the learner has been exposed to early childhood literacy development. Research shows that the children from middle class homes are exposed to 1000 hours of literacy before they enter school. This is where the parents read stories to them and they are immersed in print-rich environments at home. On the other hand, the children from working class homes are exposed to few hours of literacy exposure or none. When they begin formal schooling, they are taught to read during the first three years of school, the Foundation Phase. This three-year period may be enough for the children who had 1000 hours of exposure prior to Foundation

Phase, but it is not enough time for the children who never got exposure before Foundation Phase (Hart, 2011).

In addition, these pedagogies do not take into consideration the knowledge that the learner from an oral non-literate background comes with, neither do they consider their experiences as well as their sociocultural contexts. So, the reading and writing lessons become activities detached from the learners' real-life situations.

As if all this is not bad enough, then COVID 19 happened. It worsened everything. It highlighted the social divide in the country, and we shall reap the consequences of this pandemic over the next few years, because of the learning losses.

So, what is the role of language in the 4th IR?

My response to this question is language is central to the 4IR. Language holds the revolution together because the revolution is imagined, envisaged, and expressed through language. Allow me to pose points for us to ponder upon as we embark on this series of conversations.

First, it is important for us to acknowledge the centrality of language in the 4th Industrial Revolution.

Second, we need to be mindful of the plethora of challenges faced by the South African Education system. These challenges hinder us from transitioning smoothly into the 4th IR

Third, we need to be willing to embrace the decolonization of language agenda and decentralize English as the language of 4IR by broadening Science and Technology into the indigenous languages. We can promote indigenous languages into academic languages by including spell check in other languages (eg. My name is Rethabile the computer keeps telling me to spell it correctly). Also, by creating terms in indigenous languages for example, twitter, zoom, Facebook, Instagram, etc.

CONCLUSION

- Central to the 4th Industrial Revolution is language
- The 4th IR is coined, envisaged, and expressed through the medium of language. Without language it is not possible to talk about the 4IR
- This presentation suggests that we must acknowledge the centrality of language to the 4th IR,
- we must be mindful of the many challenges faced by the education system in South Africa which hinder us from transitioning smoothly into the 4th IR.
- Finally, we need to decentralize English as a language of power by promoting the indigenous languages to academic languages.

Reference

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