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Mobilising the indigenous practice of making *umqombothi* as a vehicle to mediate learning during science lessons: A practical African Vygotskian perspective

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Historical Background

- Educational history: From school to University
- Nature of Curriculum
 - Emphasis on textbook knowledge
 - Characterized by rote learning & regurgitation of facts
 - Science <u>not</u> linked to learners' everyday lives decontextualized
- Limited career pathways

"*Nazi iinyawo, natsi indlela*; here are the feet, here is the road" (5 year old)

Transformation in curriculum in South Africa

Education is the great engine of personal development. It is through education that the daughter of a peasant can become a doctor, that the son of a mineworker can become the head of the mine, that a child of farm workers can become the president of a great nation. **It is what we make out of what we have, not what we are given, that separates one person from another** (my emphasis). (Mandela, 1994:15)

- Outcomes Based Education (OBE)
- National Curriculum Statement (NCS)
- Curriculum Assessment Policy Statement (CAPS)

Rationale, context & participants

Rationale & context:

This paper seeks to explore the possibilities for the inclusion of indigenous ways of knowing/practices around the making/doing of *umqombothi* with a view to contextualize the science curriculum.

Umqombothi is a traditional alcoholic beverage made from maize meal, grounded maize malt (*umthombo wombona*), grounded sorghum malt (*umthombo wamazimba*) and water. It is usually made for cultural purposes by many families in South Africa, in both rural and urban contexts alike.

The process of making/doing *umqombothi* within communities entails an integration of environmental, social and economic development aspects. Thus, preservation of such cultural practice or heritage could contribute to education for sustainable development (ESD) in South Africa.

Research Participants:

Community member; translator; lecturer; BEd (Hons)/MEd students & critical friends. Lost opportunity – ethical clearance for videos!

Research goal & questions

Research goal:

The main goal of this study is to explore whether mobilising the practical demonstration of *umqombothi* enables or constrains the mediation of meaningful learning during science lessons.

Main Research Question:

To what extent does mobilising the practical demonstration on *umqombothi* enable or constrain mediation of meaningful learning during science lessons?

- How does the everyday knowledge on the practical demonstration of making umqombothi enable or constrain students from making sense of scientific concepts associated with the process?
- In what ways does the use of *isiXhosa* and English (bilingualism) enable or constrain interactions, discussions and hence sense making of scientific concepts associated with this process?

Some cultural beliefs & rules on making/doing *umqombothi*?

- Normally families have their conflicts. But before they do/make *umqombothi*, there needs to be some consultation and harmony established within them– harmony is one of the attributes of Ubuntu.
- Furthermore, women who do/make *umqombothi* need to show respect by:
 - wearing a cloth around their heads;
 - wearing a scarf around their waists; and
 - not sleeping with their husbands (*ukuzila*).
- A certain type of fire wood called *ulathile* should not be used as it is believed that when people are drinking *umqombothi* there would be conflicts (As result this fire wood is referred to as *isidungamzi – disrupting the family*)
- People do/make *umqombothi* for various cultural practices such as *ukukhapha*, *ukuhlwayelela*, when bees get inside a house, *imigidi* etc.



The science of making/doing umqombothi

The invited mama started by explaining how *imithombo yombona* were made in the olden days.

When umqombothi is made/done, the ratio of maize meal, maize malt and sorghum malt should be 2:1:1. For instance, if 5kg of maize meal has been used, then 2.5kg of maize malt and 2.5kg of sorghum malt should be used. In the olden days people used to make maize/sorghum malt.

Maize meal, maize malt and sorghum malt are first thoroughly mixed in a container and cold water is added to the mixture and mixed to form a thick paste.

Thereafter, hot water is added into the mixture to make it luke warm, and then covered with blankets or any warm material and left overnight to ferment (*ibile*). In the olden days people would put the container on top of dry cow dung.



The metamorphosis of umqombothi

When the mixture starts fermenting , bubbles are formed. A sour smell can be detected too.

In the morning a small portion of the filtrate (*umngcwengo*) is removed and a handful of sorghum malt is added to it.

This is kept as a natural yeast or starter (*igwele*).

Note: Unlike in the making of bread, dried yeast is not added instead it is produced from the malt.



The metamorphosis of umqombothi



The mixture is then cooked for about 4 hours. Thereafter, the porridge (*isidudu*) is left to cool down during the day and overnight. The following day the cold porridge is poured into a container, mixed thoroughly using cold water and the starter or natural yeast is added. A saucer is put inside the container for in case there is lightning. It is then covered with, for example, a blanket or any warm material the whole day and overnight and kept in a warm place.







The metamorphosis of *umqombothi*

To check if the fermentation process has adequately taken place the following day or so, a match stick is lit and brought closer to the container. If the lit match stick goes off then *umqombothi* is ready to be sieved (*ukuhluza*) and drank.

After being sieved *umqombothi* is usually tasted by an elder and this is called *intluzelo*. Also, it is usually not drank immediately after being sieved but people wait for a little while until *uphume izandla*. When people drink *umqombothi* they usually sing, dance, ululate and even tell stories.



Consolidation & Students' Reflections

When reflecting on the whole process of making *Umqombothi*, I can only say WOW, an experience of my life!

It gave me a sense of "belonging" to a special group of people! As part of the western culture, I am not really aware of such rich cultures and beliefs in other cultures.

The "story telling" that accompanied the process was really interesting and informative.



Consolidation & Students' Reflections

Interesting to this process for me was to try and identify all science concepts and skills (estimation, ratios, separating substances, fermentation, test for CO_2 , etc.) without Mama Joyce knowing how scientific she actually is.

Except for the scientific part I also got a bit of life skills during this process. Never judge before you have proof!

It is easy to say that one needs to apply IK in your classroom and link science in the classroom to everyday experiences. But it is something different to apply what you say!

With the detailed illustrations on how to make *umqombothi*, the link between science and everyday experiences became so clear.



Mama Nolingo's perspective!

N*daziva ndinimdla kakhulu kuba ndizakucacisa into endiyenza yonke iminyaka. Kananjalo, ndibona ukuba abantwana besikolo kufuneka bafundiswe izinto ezinxulumene nobube* bethu.

I felt interested because I was asked to explain something I've been doing for years. Also, I feel that school children should know about our cultural practices.

Nabanye abazali kufuneka bathathe inxaxheba babacacisele abantwana ngobume bethu. Loo nto ingabangela ukuba bazingce ngobuzwe babo.

Other parents should get involved and explain to our children about our culture – that is, what our roots are. Children will then have respect for our culture.

Iyona nto ndiyithande kakhulu kukuba abafundi besuka kwiindawo gendawo yaye beza nolwazi lwabo malunga nokwenziwa ngomqombothi. Ndiye ndaqwalasela nokuba abanye abafundi abathetha isiXhosa bebengakwazi ukwenza *umqombothi*.

What I liked was that the students were from different places and brought their different understanding about this practice. I also noticed that some *isiXhosa* speaking students did not understand how *umqombothi* is made.

Ndifunde nokuba abantu bayafana nokuba abathethi lwimi lunye yaye bangafunda bahloniphe izithethe namasiko abanye abantu.

I've also learnt that people are related - even though they do not speak the same language they can learn and respect each other's cultures. In the context of this study, can CHAT be used as an Analytical Tool or a Theoretical Framework? How and Why?

What is the difference between an Analytical Framework and a Theoretical Framework?



Some concluding remarks

- There is a need to tap into the 'funds of knowledge' (Moll & Greenberg, 1990) embedded in communities.
- Everyday knowledge (EK) and science knowledge (SK) are interwoven and complement one another rather than being mutually exclusive. But not all EK is SK.
- Recognition of the science embedded in IK can enhance learner engagement, discussions, co-construction and ownership of knowledge.
- There is a need for the development of LTSMs that are accessible and relevant to learners' everyday lives.
- In the context of this study, using both English and *isiXhosa* can enhance discussions and hence meaningful learning.
- However, for the integration process to be meaningful, teachers need to be knowledgeable both in the subject content knowledge (SCK) and pedagogical content knowledge (PCK).
- Finally, there is a need to recognise that not all IK is educational and so science teachers should not romanticize IK.

Maz'enethole! Thank You! Spasibo!

"The problems of this world cannot be solved the way we created them" Albert Einstein

