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**“Accessible, affordable, appealing and appropriate”:
Pre-service science teachers’ views on teaching of socially relevant
science using digital technology & social media**

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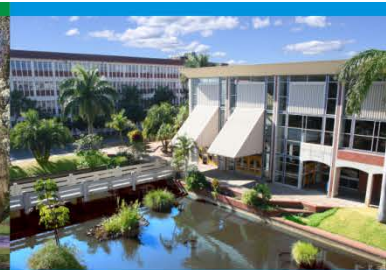
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Background

South African Council on higher education
*Framework for Institutional Quality
Enhancement* (CHE, 2014: 9)

- social justice as an “imperative for change”
- 21st century requires critical and creative engagement with social media and digital technologies

Research team

- Five teacher educators from different disciplines
- Identify ourselves as “not born into the digital world” (Prensky, 2001: 2)
- Some South African students from schools with limited/non-existent digital resources
- Curricular activities to assist critical and creative interaction with new technologies

Research

Research question: What are pre-service science teachers' perspectives on the use of digital technologies and social media to integrate social issues in science teaching and learning?

Socially relevant science - global environmental challenges (climate change) and diseases

Pre-service teachers – “agents of socialization” (Mutemeri, 2010: 5) to respond to global and national challenges

Rhizomatic thinking - possibilities for multiple connections (Deleuze & Guattari, 1987)



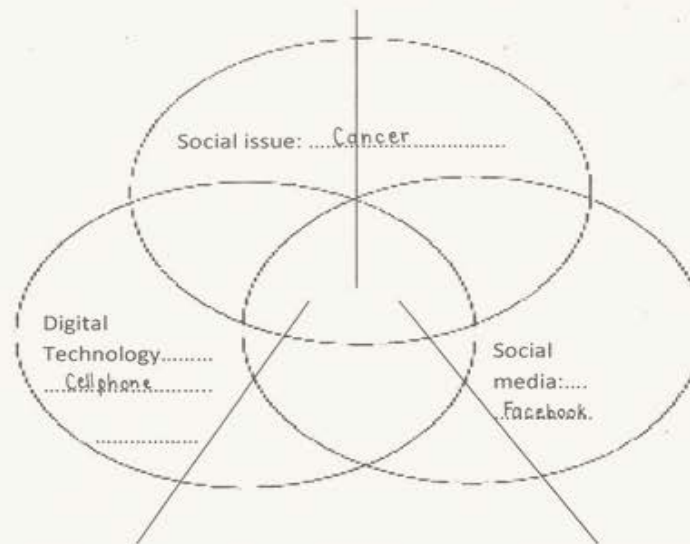
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Research

- 79 pre-service teachers registered for a Natural Science Method module
- Students worked in groups of four or five
- Discussed digital technologies and social media for socially relevant science
- Recorded ideas on structured concept map
- Selected medium, digital technology and socially relevant scientific issue

Concept Map

Advantages of using digital technologies and social media to teach socially relevant science
It is easily accessible for most students. (eg: If the students want to know about Cancer they can go on to internet.)
Student's daily lives revolve around social media & therefore it is an advantage in gaining knowledge about social issues (Cancer), for eg: there are videos and information relevant to most social issues.
Good active learning technique for student's with a diverse learning ability (styles) methods.



Difficulties using digital technologies and social media to teach socially relevant science	How difficulties related to using digital technologies and social media to teach socially relevant science can be addressed
It is expensive for some students as you need airtime/data to access it.	In order to approach the affordability issue we should ask the government for funds or have fund raising programmes.
Teachers may not always be technologically knowledgeable because they are used to traditional methods.	Teachers can be sent for workshops, training to enhance their technological abilities.
It is distractive.	To prevent distraction parents & teachers need to facilitate.
Some areas are less likely to have access to the internet due to their surroundings; in order to access facebook internet is needed.	To get access to internet in area's we could appeal for sponsorships or to data carriers or to the government for internet or signal towers.

Pre-service teachers' responses

Data generated from responses of 17 groups of students

(a) Socially relevant scientific issues:

- *Health* (TB; HIV&AIDS; cancer, obesity, weight; malnutrition)
- *Social* (abuse and rape of women & children; substance abuse, poverty)
- *Environmental* (pollution, global warming, climate change)

Pre-service teachers' responses

(b) Technologies for change

- *Digital technologies* (Cellular phones, digital video cameras/recorders & laptops/computers)
- *Social media spaces* (Facebook, YouTube & WhatsApp)

(c) Pedagogical implications

Accessible; affordable; appealing; appropriate
(4As)

Themes 4As

Accessible:

- *It is a more convenient, relevant and accessible method of obtaining information.*
- *It is accessible and can be watched at our convenience which makes the process less tedious.*
- *Not time consuming*
- *Students' daily lives revolve around social media & therefore it is an advantage in gaining knowledge about social issues.*

Themes 4As

Affordable:

- *It's cheaper and accessible to purchase internet services to enable you to access social media such as Facebook etc.*
- *Advice cheaper*
- *It is easier to access, cheaper and it can also be accessed worldwide therefore it can reach a lot of people (social media)*
- *WhatsApp is cheap, affordable and convenient*

Themes 4As

Appealing:

- *It reinforces active participation of learners in class and also makes the lessons alive and enjoyable.*
- *It is more visually appealing to the viewer.*
- *It makes it easier for the learners to understand what you talking about since they can listen and visualize at the same time.*
- *Visual resources capture the interest of students.*

Themes 4As

Appropriate:

- *It also allows for educators to connect and interact with learners.*
- *...you can create group chats and post pictures informing people about proper diet, facts about obesity and how to live a healthy lifestyle.*
- *Knowledge is constructed collaboratively and freely.*
- *Connect and collaborate with people from other countries to share ideas, experiences and knowledge.*

Implications

- Ubiquity of cellular phones and potential for pedagogical shift in knowledge production
- Moving away from hypothetico-deductive model of science to become embedded in social issues
- Rhizomatic networks (rhizomes have no hierarchical order) take us to new directions with multiple, decentred connections

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Thank you

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