PROMISING MULTILINGUAL TEACHING STRATEGIES: TRANSLANGUAGING IN SCIENCE AND MATH

- Background information
- Literacy issues in low- to middle income countries
- What are teachers doing?
  - A research study in a rural Kenyan classroom
- Potential of translanguaging strategies
- Conclusions & Implications
BACKGROUND INFORMATION

PROMISING MULTILINGUAL TEACHING STRATEGIES: TRANSLANGUAGING IN SCIENCE AND MATH
SPONTANEOUS VS SCIENTIFIC KNOWLEDGE

Oral narratives

Reading comprehension strategies

What do they have in common?
### Table 1: Distribution of languages by the world region

<table>
<thead>
<tr>
<th>Region</th>
<th>Living languages</th>
<th>Percentage of world totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>2,139</td>
<td>30.1</td>
</tr>
<tr>
<td>America</td>
<td>1,062</td>
<td>15</td>
</tr>
<tr>
<td>Asia</td>
<td>2,296</td>
<td>32.4</td>
</tr>
<tr>
<td>Europe</td>
<td>287</td>
<td>4</td>
</tr>
<tr>
<td>Pacific</td>
<td>1,313</td>
<td>18.5</td>
</tr>
<tr>
<td>Totals</td>
<td>7,095</td>
<td>100</td>
</tr>
</tbody>
</table>

http://www.ethnologue.com/statistics accessed 2/26/2018
LITERACY ISSUES IN LOW- & MIDDLE INCOME COUNTRIES

- Language (s) of Instruction is rarely accessible to children in rural areas
- The language in education policy does not reflect the multilingual reality in school and community contexts, and aims at high competence and excellence school language (s)
- Ambiguities in language policy implementation
- An inability to communicate fluently in language of instruction commonly constructed as a deficit, illiteracy or disadvantage
- Indigenous languages are primarily viewed from a problem perspective.
- Low literacy levels and reversion to illiteracy
Teacher centered instruction (cf. Kiramba, 2018; Opoku-Amankwa, 2009; Vaish, 2008; Weber, 2008), and foster a “traditional” view of teachers as experts who transmit knowledge to passive learners (Bunyi, 2008; Pontefract and Hardman, 2005).

Knowledge transmission modes of instruction (Merrit et al., 1992; Shoba & Chimbutane, 2015).

Literacy access

- decoding vs comprehension in languages of instruction (Hudson, 2007; Kiramba, 2016; Piper, Schroeder, and Trudell (2015))
MONOLINGUAL HABITUS

Spontaneous concepts
(Home languages, dialects, cultures and literacies)

Scientific concepts
(School concepts)

Mediators
Language of instruction, course text, teacher

Interrupted systematization

Silence, monologue, exclusion, IRF, formulaic phrases, unofficial literacies
THREE IDEOLOGICAL APPROACHES TO LANGUAGE EDUCATION

Monolingual
- Language as problem (Horner et al. 2011; Smith & Murillo, 2015; Ruiz, 1984)

Multilingual
- Language as a right (Bamgbose, 2010; Horner, et al. 2011; Skutnabb-Kangas, 2000; Ruiz, 1984)

Translingual
- Language as a resource (Canagarajah, 2011; Creese & Blackledge, 2014; Garcia, 2009; Garcia & Wei, 2014; Heath, 1983; Makalela, 2015; Ruiz 1984)
LANGUAGES, LITERACIES, AND TENSIONS

Variety of Codes

Political & Institutional Forces

Unitary Language & Language Policies

Translanguaging
Translanguaging was originally conceived as a classroom strategy for bilingual alternation between English and Welsh (Baker, 2011; Williams, 1994).

In its original form, translanguaging referred to a language communicative function of receiving input in one language and giving an output in another language so that bilingual students could use their home language and develop positive experiences in the classroom in any subject area.
limit, reach, and value of flexible language use in multilingual classrooms, conflicting views about heteroglossic practices prevail (Ferguson 2003; Martin 2005; Setati et al., 2002).

others advocate for a balance between translanguaging and monolingualism (Blackledge and Creese (2010; Canagarajah 2013)

tensions between monolingual, multilingual, and translingual ideologies are live
WHAT ARE TEACHERS IN MULTILINGUAL SETTINGS DOING?

- Research has documented that teachers in multilingual classrooms in Africa draw from different languages and cultures represented in the classroom, through codeswitching, codemixing, and translation (Banda 2010; Chimbutane, 2013; Makalela, 2016; Merritt et al. 1992; Setati et al. 2002; etc.)
- These strategies have recently been referred to as translanguaging.
- These practices have not been taken up in teacher training colleges, they remain illegitimate while widely practiced in student’s and teachers’ communicative practices.
- Below I illustrate how teachers in a rural school in Kenya utilized translanguaging strategies in a multilingual classroom.
ON THE CASE: LANGUAGE IN EDUCATION POLICIES IN KENYA

- 42 indigenous languages
- English and Kiswahili are the official languages
- Kiswahili is the national and second official language and lingua franca
- English is the language of instruction from fourth grade onwards (rural and urban schools)
- Unwritten policies, English only from kindergarten
SETTING

Rural primary school in, Umoja (pseudonym) region, Amani (Pseudonym) county Eastern Province, Kenya

Tumaini (pseudonym) Primary school
  Rural multilingual setting (ELLs)
  4th grade-transitioning year

Population of 262 students (boys and girls) K-8

Fourth grade classroom with 28 students
RESEARCH QUESTION

(a) How are children’s communicative repertoires deployed during science and math lessons to make meaning in a foreign-language instruction?
METHODS

- Qualitative case study approach (Bogdan & Biklen, 2009; Dyson & Genishi, 2005; Stake 1995)
- Case study - “Case study is the study of the particularity and complexity of a single case” (Stake, 1995, p. xi);
  - No control behavior of participants
  - Intensive holistic description and analysis of a single entity
PARTICIPANTS AND DATA SOURCES

Field notes
- Shadowing
- Interviews
  - Focal students (ages 9-12)
  - English teacher (Mr. Jabari)
  - Science teacher (Mrs. Tabasamu)
  - School principal (Mr. Kibwe)
  - Parents/guardians of focal students

Artifacts
- Focal students’ writing samples
- Curricular documents & guides
- Ministry of education communiques
- Administrative communiques
DATA ANALYSIS PROCEDURES: THEMATIC ANALYSIS

Framework analysis (Huberman & Miles, 2002)

Framework analysis “involves a systematic process of sifting, charting and sorting material according to key issues and themes” (p. 310).

Five stages

- familiarization
- identifying a thematic framework
- indexing and sorting
- charting; data summary and display
- abstraction and interpretation
RELIABILITY AND VALIDITY

- Thick description (Geertz, 1973)
- Member checking
- Progressive focusing (Stake, 1995, 2010).
RESEARCHER’S ROLE

**Insider**
- Kenyan and Kimeru/Kiswahili native speaker
- Grew up in rural setting (simultaneous/sequential bilingual)
- English as FL or L3
- Learned to read and write in three languages
- Teacher trainer and assessor
- Shared cultural identity/ member of the community

** Outsider**
- Time period and more languages represented
- Change in academic and theoretical knowledge
- Knowledge of participants and school routines
FINDINGS
MAJOR FINDING

Translanguaging reality of students’ communicative lives in science lessons
TRANSLANGUAGING REALITY OF STUDENTS’ COMMUNICATIVE LIVES

How do you meet your science lesson goals in English-only classrooms?
Translanguaging and disruption of initiation, response, feedback (IRF)
Translanguaging and bridging discourses
Translanguaging and message abundancy
1. T: Now, if we do not have a toothbrush and toothpaste, are you going to leave your teeth dirty? What can you use?

2. S1: *Chumvi* (salt)

3. S2: Salt and *chewing stick*.

4. T: Even if you don’t have toothbrush and tooth paste, you can use a *homemade brushing twig*... One can use *homemade brushing twig* to clean between the teeth. [The teacher shows the students the homemade brushing twig. Student who sat next to me discuss about the different types of trees that they use for cleaning their teeth; Fumo says he uses bamboo stick after each meal.]
TRANSLANGUAGING: BRIDGING DISCOURSE

- Connecting everyday vocabulary to academic language
- The two terms, *chewing stick* and *homemade brushing twig* have equivalent meanings and differing *register*, everyday vs school/scientific register
- Teacher referred students to the *scientific term*
1. T: I have said we don’t call that chewing stick. It is a homemade brushing twig. How can you make a homemade brushing twig? Issa [calling on a student], you made one. How did you make this one? [showing students] Sasa hii ndio tunaita (now this is what we call) homemade brushing twig. Hii inatengenezwaje? (How is this made?)

2. S1: Unavunja, unatafuna, unaanzia… (You break, you chew, you begin...)

3. S2: Unavunja, unatafuna, mpaka inakuwa soft, nyororo kabisa. Si ndiyo? (You break; you chew, until it is completely soft. Isn’t it?)

4. T: You take a piece of stick from a tree, you chew that one until it is soft, and from there you can use it to clean your teeth.
TRANSLANGUAGING: DISRUPTION OF IRF PATTERN

- Students explain in complete sentences the process of making a home-made brushing twig.
- Enthusiasm as students relate this knowledge to their daily realities (lines 3&4).
- Teacher uptake and translation into school language; the outcome of this flexible language use was a lively discussion where students felt that their daily knowledge and values were useful at school.
- The learners feel freedom to access the local knowledge, expertise, values, and language of their community.
- Gives voice to students experiences and social and cultural particularities.
TRANSLANGUAGE: MESSAGE ABUNDANCY

Factors affecting sinking and floating

1. T: Now when we talk of a shape, that what we are talking about. [Explaining in Kiswahili] Muundo wa kile kitu (shape of that object). How that object looks like. That is the shape. The other factor is size. Size, nani hajui (who doesn’t know) size? Kuna mtu hajui tunazungumzia nini (is there anybody who doesn’t know what we mean) when we talk of size?

2. S-all: Hapana (No)!

3. T: Let’s take a stick [repeats]. A piece of stick [translating into Kiswahili] Kijiti ambacho kimekauka, kimoja kiwe kirefu hivi, kengine kawe kafupi; vyote ni vijiti vimekauka (a wooden stick that is dry, one long like this, and another one short; both are dry sticks). Am talking of gakoomu (a Kimeru word for dry). When you put all these sticks in water. The short stick and long stick, remember we said that sticks float. If we put them in water, will the longer one sink and the other one float?

4. S-all: No!

5. T: [Teacher continues codemixing English and Kiswahili] Even if it’s small or big, if the material is a sinker, it will sink. What matters, one, itadepend na kile kitu kimeunda (it will depend with what it’s made of). The material matters a lot. Tumeelewanwa hapo (have we understood each other there)?


7. T: [explaining in Kimeru] Kethira gintu ni kia gusink, kinya kiethirwa kiregi, kana gikuigi gikagita atia? (If something is a sinker, even if it’s long or short, it will?)

8. S-all: Kigasink (it will sink).

9. T: Na kiethirwa ni gia gufloat, kinya kethirwa kanyigi, kana karegi, gakagita atia? (And if it is a floater, even if it’s small or tall, it will?)

10. S-few: Gikafloat. (It will float.)
Gibbons (2015) used GPS analogy to describe message abundancy.

A GPS gives same information as a map, set of spoken instructions via a range of modalities, spoken and visual.

- Spoken information in small bits, turn left, right turn, etc.
- Accompanying the spoken is a map representing the same information on the screen and moves in synchrony with car symbols and numbers (arrows to the left, right, etc., miles or meters before the next turn)
- Significant landmarks are indicated in the map

The teacher above, tries using different languages to provide the same information

- The teacher drew on students’ languages (Kimeru, Kiswahili, Sheng/urban languages, etc.)
- She demonstrated the concept of shape and material and how they affect floating and sinking using three different languages spoken in the classroom
- Provided comprehensible teacher talk
TRANSLANGUAGING IN MATH

1. T: With this amount of money. That is Ksh 1002.60. *Halafu tunaambiwa hiyo ni pesa ile ambayo alitumia kununua shati tatu.* Kwa hivyo, kila shati *lilikiwa inatoka pesa ngapi?* So what are we going to do? We are not going to subtract. *Kwa sababu hiyo ni pesa ya shati tatu.*

2. T: Yes? Divide by? by *ngapi* (how many?) *Shati ni ngapi?* (how many shirts?)

3. SS: *Tatu* (three)

4. T: *Shati ni tatu* (there three shirts), *isn’t it?*

5. SS: Yes!

6. T: So here we are going to write the costs of these shirts. We have 1002.60 divide by three, *Ili tuone* (so that) the cost of each shirt. *Tuone shati moja inatoka pesa ngapi* (to find out the cost of one shirt).
TRANSLANGUAGING PRACTICES

Spontaneous concepts
(Home languages, dialects, cultures and literacies)

Mediators

Scientific concepts
(School concepts)

Systematization (Spontaneous & scientific concepts)

English, home languages, Course text, teacher

Knowledge production, dialogue, disruption of IRF, self authoring-voice in texts
Discussion & Implications
PROMISING TRANSLANGUAGING STRATEGIES

- Allow learners to use language(s) they understand to talk about the concepts presented (comprehensible output, Swain, 2005)

- Students need opportunities to build on the home language resources. Research has suggested that bi-multilingual learners use their linguistic repertoires to read or produce texts (Hornberger and Link, 2012).

- Allow students to time to work with others who speak similar languages in some problem solving situations, when being introduced to complex concepts, when listening to instructions, etc.

- Encourage reading and writing in languages that students are proficient in.

- Teacher recasting in different languages accessible to students (message abundance).
CHALLENGES TO RECOMMENDED STRATEGIES

- translanguaging and assessment (Taylor & Snoddon, 2013)
- acceptability of these strategies
- writing practices
IMPLICATIONS

- Teacher training for multilingual/multicultural reality
- Construct an education system that is based on full complexity of the students
- Accept translanguaging strategies as legitimate pedagogical strategy for teaching emerging multilingual learners
- Practitioners need to create interactional spaces where multilingual learners can use their multiple communicative repertoires
CONCLUSIONS

- Translanguaging practices hold promise as a means for mitigating the current challenges of teaching in unfamiliar languages & epistemic exclusion.
- Translanguaging has potential to transform classroom from a transmission based approach to a more collaborative social nature of learning development.
- Translanguaging provides space for learners to make connections between spontaneous knowledge and scientific knowledge acquired at school, through producing comprehensible output (Swain, 2005).
SELECTED REFERENCES


Canagarajah, A. Suresh. 2013. Writing as Translingual Practice in Academic Contexts. Hoboken: Taylor and Francis.


