Making learning a ‘personalized’ experience through concept-based curriculum practices: A pathway for school improvement?

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Scope of Presentation

• Aim
• Context/ Definitions/Literature
• Conceptual Framework for The Study
• Methodology
• The Findings
• Discussion & Implications
• References
Aim of Study

To investigate the role of concept-based curriculum as a tool for change that brings about school improvement by qualitatively improving the learner’s learning experience through ‘personalized’ experiences.

Key question:
How does conceptual thinking assist with meaning-making for the teacher and learner?
# Knowledge types and cognitive processes

<table>
<thead>
<tr>
<th>Knowledge Types</th>
<th>Cognitive Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factual</td>
<td>Remember</td>
</tr>
<tr>
<td>Conceptual</td>
<td>Understand</td>
</tr>
<tr>
<td>Procedural</td>
<td>Apply</td>
</tr>
<tr>
<td>Metacognitive</td>
<td>Analyse</td>
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<tr>
<td></td>
<td>Evaluate</td>
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<tr>
<td></td>
<td>Create</td>
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</tbody>
</table>

Revised Bloom’s Taxonomy (Anderson & Krathwohl, 2001)
Factual vs Conceptual knowledge

**Factual knowledge:** The *basic elements* students must *know to be acquainted with a discipline* or solve problems in it

**Conceptual knowledge:** The *interrelationships among the basic elements* within a larger structure that enable them to *function together*

(Anderson & Krathwohl, 2001)
Issues with current practices

• When advocating for changes in classroom pedagogy, the fundamental aspect of the role of meaning making is often overlooked. (Cross, 1999; Scott, 2015)

• In current orientations to teaching and learning, the tendency is to focus on “what “and “how” questions in the lessons, rather than on helping teachers and learners contemplate and negotiate “why” questions about the content that is being taught (Bereiter & Scardamalia, 2005)
Importance of the Study

Getting teachers to re-design curriculum and instruction so that is conceptually anchored and require learners to:

• utilizing their natural tendency to create patterns,
• connecting old with new knowledge and
• transferring learning to new situations.
• making connections and comparisons in and across the disciplines

→ meaning making of learning

(Erickson & Lanning, 2014; Schill & Howell, 2011)
Methodology

Two-year study that utilised the multiple case study methodology:

- Teacher developers (2-5 teachers per team) from 2 typical primary schools
- Supported by discipline specific collaborators
- Five units from English, Maths and Science subjects

<table>
<thead>
<tr>
<th>Dahlia School</th>
<th>Oak School</th>
</tr>
</thead>
<tbody>
<tr>
<td>• P3 Maths unit on ‘Equivalent fractions’</td>
<td>• P3 Science unit on ‘Plant systems’</td>
</tr>
<tr>
<td>• P3 English unit on ‘Narrative writing’</td>
<td>• P5 Science unit on ‘Heat’</td>
</tr>
<tr>
<td></td>
<td>• P5 Science unit on ‘Water cycle’</td>
</tr>
</tbody>
</table>
# Profile of Dahlia teachers

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Subject</th>
<th>No. of years of teaching experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lennon</td>
<td>Mathematics</td>
<td>16</td>
</tr>
<tr>
<td>Wendy</td>
<td>Mathematics</td>
<td>10</td>
</tr>
<tr>
<td>Siti</td>
<td>English Language</td>
<td>27</td>
</tr>
<tr>
<td>Pamela</td>
<td>English Language</td>
<td>17</td>
</tr>
<tr>
<td>Kristen</td>
<td>English Language</td>
<td>25</td>
</tr>
</tbody>
</table>
Redesigning the Unit: Use of A Cyclical Process

Conceptual Inquiry Cycle (CIC) 1 carried out in Year 1

CIC- 2 carried out in Year 2
<table>
<thead>
<tr>
<th>Redesign Process</th>
<th>Data collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional development (12 hrs)</td>
<td>-</td>
</tr>
<tr>
<td>Co-designing sessions (2-5 hours) with the collaborators and researchers</td>
<td>Audio recording</td>
</tr>
<tr>
<td>Implementing redesigned units (Video recorded)</td>
<td>Video recording of lessons &amp; student artefacts</td>
</tr>
<tr>
<td>Feedback to teachers</td>
<td>Utilized a modified classroom observation scale (45 items focusing on content, process, product and environment)</td>
</tr>
<tr>
<td>Assessment of learners (FGDs)</td>
<td>Concept maps; real world problem that students responded</td>
</tr>
<tr>
<td>Teacher reflection, discussion &amp; sharing (within and between schools)</td>
<td>-</td>
</tr>
</tbody>
</table>
## Types of Data & Analysis

<table>
<thead>
<tr>
<th>Types of Data</th>
<th>Analysis/Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field notes, teacher interviews</td>
<td>Pattern matching approach (Yin, 2009)</td>
</tr>
<tr>
<td>Student artifacts</td>
<td><em>Thinking Skills Assessment Using the Universal Intellectual Standards</em> (Paul, 1993)</td>
</tr>
<tr>
<td>Teacher questions during the lessons</td>
<td>Bloom’s taxonomy</td>
</tr>
</tbody>
</table>

**Bloom’s Taxonomy**

- **Remember**
  - Recall facts and basic concepts
    - Define, duplicate, list, memorize, repeat, state

- **Understand**
  - Explain ideas or concepts
    - Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

- **Apply**
  - Use information in new situations
    - Execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

- **Analyze**
  - Draw connections among ideas
    - Differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

- **Evaluate**
  - Justify a stand or decision
    - Appraise, argue, defend, judge, select, support, value, critique, weigh

- **Create**
  - Produce new or original work
    - Design, assemble, construct, conjecture, develop, formulate, author, investigate
Finding 1: Effect of concept-based curriculum on teaching methods

The study found that teaching conceptually enabled teachers to break away from their typical teaching resources to explore other types of teaching approaches and materials.

However, in the process of change, we found that there was a process of meaning making for the teacher...
Meaning making experience for the teacher via conceptual thinking

Teacher’s personal understandings of the discipline, assessment practices

Consider wider epistemological considerations in the discipline & expert feedback

Knowing what the students already knew

Identifying & addressing student’s misconceptions (both common and specific ones).

Internal and external negotiations

Conceptual thinking
English Unit on Narrative Writing

Key Content: Characterization for P3 students (4-6 lessons)

1. Development of character using STAL framework (Speech, Thoughts, Actions, Looks)
2. Use fairytales to invoke interest in students & deconstruct the idea of “character” eg. Shrek, Frozen, Cinderella, Rumpelstiltskin
3. Getting children to see explore the characters in fairy tales and use the elements to craft characters in the stories that they write in the classroom
Role of Conceptual Teaching

**Siti** (English teacher):

“Oh yes, this (conceptual teaching) is the missing link. All this while maybe we didn’t do it explicitly, but now that they have seen the importance of it, that’s where we can maybe improve upon now.. You asked is it too early (to teach characterisation), I think we have to start because writing is progressive.”

*(Post-lesson interview, July 2016)*

**Layers of meaning-making:**

- Teachers understanding of the need to have an explicit focus on unpacking concepts
- Develop writing skills progressively
On the use of fairy tales

Pamela (English teacher):

“We are most likely sure that all of them would've watched (fairy tales). Maybe more than once. So therefore I thought that they would understand the character and what the characters feel…”

(Post-lesson interview, July 2017)

Layer of meaning-making:

• Making use of resources that are relatable and made personal for students
Finding 2: Opportunities for meaning making among students

Example of student work

<table>
<thead>
<tr>
<th>Looks</th>
<th>Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>John has a side partition as a hairstyle. His hair is blonde. His eyes are light brown. His face is round shaped. He is tall.</td>
<td>“Sarah, congratulations, I did not know that you would be so fast.” “Thanks John, I am sorry that I won instead of you.” “Bye Sarah.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thoughts</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I should have practised more to beat Sarah. I did not know Sarah would be first.</td>
<td>John creid solemnly, he ignored everyone who tried to comfort him.</td>
</tr>
</tbody>
</table>

Title of lesson: Losing in a competition

Emotions conveyed by the student: Apology, congratulations, inconsolable (sadness)
## Title of lesson:
**Winning in a race**

### Emotions conveyed by the student:
Happiness, determination, empathy

### Example of student work

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>She has blonde hair that is usually tied into a ponytail. She has thin arms and long legs. She is a runner and has golden ear ring.</td>
<td>She told her best friend after the race that her best friend could win the race next time.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Thoughts</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>She thought to herself. “Yes I won the race but I certainly can do better next time.” She promise to herself that she will train harder for the next race that she will participate in.</td>
<td>During the race Sarah ran as fast as she could and over took almost all of the participants. She jump as high as she could over the..</td>
</tr>
</tbody>
</table>
Layers of meaning making for the teacher and learner

Teacher and learner: What is a narrative?

Teacher: Epistemological considerations of characterization, setting and plot

Learner: Identify the narrative elements in fairytales

Learner: Given a structure (STAL) to invent a new character
Discussion: Conceptual understanding and meaning-making

Theoretical aspect of knowledge (as prescribed in the discipline) – Factual

Practical aspect of knowledge (as seen in everyday use) – Conceptual

Production of new knowledge and deepened meaning

Scaffolding ideas & generating new meaning for the learner - Brings the two types of knowledge together

(Dewey, 1904/1964)
Dewey argued that there is a fundamental tension in teacher preparation: that of “proper relationship” between theory and practice.

Good teachers are those who create ‘genuine intellectual activity’ in students (Dewey, 1904/1964). Redesigning lessons for conceptual understanding could be a pathway for improving teacher and student learning?
Encourage teachers to investigate what conceptual understanding means to the learner & use concept-development strategies (e.g. Bruner’s Concept Attainment) and assessment practices.

Study the impact of CBC instruction and assessment practices on both teachers’ professional learning and on student learning.

Need to cultivate teachers as curriculum designers in the national and the school levels - empower teachers to continue to learn.
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