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Conceptual Teaching in Primary Social Studies: Teaching the Primary Three Reader, “Making the Little Red Dot Blue and Brown” in a Conceptual Way

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Abstract

This paper looks at what conceptual teaching is about, the differences between conceptual and traditional teaching and the advantages of conceptual teaching. Different deductive and inductive approaches for teaching the big ideas of subject matter, that is, the concepts and generalisations, are described. The paper also focuses on the teaching of the primary three social studies reader entitled, “Making the Little Red Dot Blue and Brown” using some of the conceptual teaching approaches mentioned. The paper concludes with the importance of teacher subject matter knowledge in conceptual teaching.

A paradigm shift: Conceptual teaching for primary Social Studies

One longstanding issue which primary social studies teachers in Singapore schools face is the challenge of content coverage, especially in the upper primary, within a tight curriculum time. As it is, the time allocation for lower primary social studies teaching is a single period of 30 minutes per week; and for upper primary, it can range from a weekly of two periods of 60 minutes (Primary 4) to three periods of 90 minutes (Primary 5 and 6) per week

(CPDD, 2013). Moreover, the upper primary periods are not necessarily arranged back to back for uninterrupted teaching and the periods at all levels can be scheduled just after the morning school assembly, recess or physical education or music lessons. When such periods do not end on time, the amount of time for actual social studies teaching can be reduced as time is needed for pupil movement and settling down. Some teachers worry that if they do not teach the social studies textbooks produced by the Ministry of Education (MOE) from cover to cover, they are not doing their job as teachers properly. For these teachers, the “tyranny of content coverage” is a pressing concern.

To overcome the above-mentioned challenge, one needs to rethink the way primary social studies can be taught. The paradigm shift requires one to teach conceptually but what is conceptual teaching? According to Erickson (2002, 2007, 2008), conceptual teaching or concept-based instruction as she called it goes beyond fact acquisition. It is about teaching the big ideas of a subject matter using relevant content, information or facts to support that teaching. Teachers do not have to teach all the factual content in conceptual teaching. Instead they need to select and reorganise only the relevant

ones to teach these big ideas. Conceptual teaching is best achieved through inductive teaching as pupils are guided to understand the big ideas rather than through direct instruction of what these ideas are. The insights they gain from such teaching can help them retain and better transfer their learning to other contexts.

The big ideas of a subject matter can take the form of concepts and generalisations. Unlike facts which are specific examples of people, places, situations or things (Erikson, 2002, 2007, 2008), concepts are cognitive constructs devised by people to help them manage and make sense of the massive quantity of information, people, places, things, events, etc. in their environment. They do so by organising them into meaningful categories of examples that share the same essential or critical characteristics and setting them apart from the non-examples (Lee & Tan, 2001). Such categorisation is necessary and efficient for ease of human learning, retrieval and application (Martorella, 1998; Maxim, 1999). They function as “hooks” for people to hang their new information; and if the information does not seem to be a good fit for an existing conceptual hook, they can either expand their ideas of the hook or reconstruct a brand new one (Lee & Tan, 2001). The main elements of a concept consist of the concept label (name), the critical attributes and the examples which must contain these attributes (Joyce & Weil, 1986). For instance, cars, ships and aeroplanes are examples of the concept of transportation because of the critical attribute of moving people over distance; and all these examples are different from the non-examples of cupcakes, apple pies and waffles as the latter are examples of the concept of confectionery.

Generalisations are conceptual understandings which pupils can develop

when they learn about concepts. They are statements about the relationships between two or more concepts to express a general rule or principle (Lee & Tan, 2001). Some examples of generalisations are:

- A common identity and shared experiences and values can unite the citizens of a country together (the main concepts are identity, shared experiences, values and unity).
- We change our environment to meet our needs (the main concepts are change, environment and needs).
- Conflicts between nations can arise whenever national security is threatened (the main concepts are conflicts, national security and threats).

Concepts and generalisations are abstract and complex in nature, and as such, they need to be “unpacked” for pupil learning. This means that instructional guidance during lessons has to be provided for pupils to understand them. Concepts and generalisations have generally universal applications in different places and cultures, and are generally timeless in nature. And generalisations in particular must be tested against and supported by facts (Erickson, 2002, 2007, 2008).

Differences between conceptual teaching and traditional teaching

There are differences between conceptual teaching and traditional teaching according to Erickson (2002, 2007, 2008). In a traditional classroom where direct instruction is the norm, teaching is often topic-based and it is about covering the textbook content in a rigid, sequential manner. There is no proper focus as everything about the content is important and has to be covered. The end lesson goal for pupils is knowledge acquisition linked to a body of facts and information. Content is taught in

silos without teachers making connections to the curriculum and pupils' prior knowledge and experiences. Hence, pupil learning is piecemeal and there is limited transfer of learning. It is an intellectually less sophisticated model of teaching and learning.

In conceptual teaching, teaching is just the opposite. Conceptual teaching centres on the concepts and generalisations. Teachers need to select and reorganise specific and relevant content to support the teaching of the identified big ideas. They do not usually tell their pupils what the concepts and generalisations are; rather they guide them through appropriate inductive activities to help them arrive at an understanding of the big ideas. Teachers assist their pupils to see patterns and connections between the concepts and generalisations and linkages to the other parts of the curriculum and pupils' lives. Pupil learning is therefore more connected and meaningful. It is also more powerful learning as there is wider applicability. It is an intellectually more sophisticated teaching and learning model compared to traditional teaching.

Advantages of conceptual teaching

Conceptual teaching has several advantages over traditional teaching in terms of teaching and learning. Where teaching is concerned, conceptual teaching helps to reduce content overload, raise academic standards and put teachers in the driver's seat whereby they control rather than to be controlled by the subject matter (Twyman & Tindal, 2005).

As for pupil learning, conceptual teaching enhances pupils' ability to categorise information in an organised manner. It enables them to make connections across the curriculum, for example, they will be able to recognise

concepts when they see them and to differentiate the examples from the non-examples. Conceptual teaching also helps pupils to gain comprehension and insights and develops their critical thinking and problem-solving skills. Conceptual teaching provides the flexibility to allow pupils to search for and construct their own knowledge and to be active and self-directed learners (Twyman & Tindal, 2005). Pupils with conceptual understanding are capable of performing a variety of actions that displays their learning, and at the same time advances it. Some of these actions include explanation, prediction, synthesis, evaluation and representation of learning in novel ways.

Conceptual teaching approaches

Deductive and inductive strategies can be used for conceptual teaching. For deductive strategies, the definition of the concept or generalisation in focus is provided first, followed by its examples. For inductive strategies, it is just the opposite; the examples are first given before the concept definition or generalisation is stated (Van Cleaf, 1991). The specific examples for each type of strategy will be described in the subsequent sections.

Deductive strategies

The Merrill-Tennyson Strategy and Gagne Strategy are two examples of deductive strategies for teaching concepts. The Merrill-Tennyson Strategy (Merrill & Tennyson, 1977 in Van Cleaf, 1991, p. 221) comprises four steps. Firstly, the teacher will commence by first defining the concept in focus which will include stating the critical attributes of the concept. Secondly, the teacher will give an expository presentation of a series of appropriate examples and non-examples. Examples and non-examples will be paired

and presented, beginning with the straight forward ones that clearly reflect the critical attributes, followed by the less obvious examples and non-examples. During the presentation, the teacher should explicitly identify the critical attributes in the examples that are related to the concept when teaching pupils. Thirdly, the teacher provides pupils with a practice whereby additional examples and non-examples are given; and pupils are asked to classify them as either examples or non-examples. From the practice, the teacher will be able to receive feedback on pupil learning; and pupil learning will be strengthened with the additional practice. The strategy concludes with the final step in the form of a test. Pupils are required to categorise an additional set of examples and non-examples appropriately.

In the Gagne Strategy (Gagne, 1965 in Van Cleaf, 1991, p. 220), the teacher will present three examples of a concept and three non-examples in alternate fashion and state explicitly that they are the examples and non-examples of a particular concept. Additional examples and non-examples are then provided for pupil classification. Correct classification will be indicative of pupil understanding. It is unnecessary for the teacher to provide a formal definition of the concept in focus according to Gagne (1965) as he believed that pupils would have learnt the concept through observation and listening to the teacher during lesson.

Inductive strategies

The Taba Strategy and Concept-Attainment Strategy are two examples of inductive strategies for teaching concepts. In the Taba Strategy for concept formation (Taba, 1967 in Van Cleaf, 1991, p. 222), teacher begins by asking pupils to brainstorm a list of things linked to a topic, and then, they will have to categorise these

things into sub-groups. They will have to identify the critical attributes for the sub-groups and think of a name for their sub-groups. They will then need to justify their groupings and state a definition and description for each sub-group.

In the Concept-Attainment Strategy by Reinhartz and Van Cleaf (1986 in Van Cleaf, 1991, p. 223), the teacher will present pupils with a minimum of five sets of examples and non-examples in alternate fashion. They will be paired with the best ones being presented first followed by the more difficult ones. The teacher will need to tell the class that the examples have something in common for pupils to infer the critical attributes that exist in the examples and to guess what the concept would be. After showing the sets, pupils will be asked next to provide their own examples and non-examples. From their responses, the teacher will be able to tell whether pupils have discovered the concept or not. Pupils will then be asked to name the concept and provide their own definitions. A class discussion will ensue whereby the teacher will ask pupils to explain how the examples and non-examples relate to the identified concept.

Generalisations are best taught using inductive teaching approaches although deductive teaching can be applied. Some inductive approaches for teaching generalisations are the Taba Generalisation Strategy (Taba, 1967 in Van Cleaf, 1991, p. 228) and generalisation pattern approach by Marzano and Arredondo (1986 in Van Cleaf, 1991, p. 229).

For the Taba Generalisation Strategy, pupils are first led to examine the data during an inquiry. They will have to determine which data is relevant to the inquiry questions. The question to ask at this stage would be: What did you find? Next, they will have to relate the data to

one another and explain why something happened or why does the relationship exist. Hence, the question to ask would be: Why did such a thing happen or why is there a relationship? Finally, pupils will have to consider the implications of the findings and make inferences. This would encourage them to generalise beyond the information and concept. Questions asked at this final stage could be: What does this mean? What would you conclude?

According to Marzano and Arredondo (1986 in Van Cleaf, 1991, p. 229), a generalisation pattern comprises the generalisation (which is a statement about the relationships between two or more concepts) and its supporting statements. Their approach can be applied in lessons where pupils need to read a passage or obtain information from other sources. As they examine their sources, they will need to identify the generalisation and the supporting statements.

An illustration of conceptual teaching in primary Social Studies

In this section, the lesson plans based on the primary three reader, *“Making the Little Red Dot Blue and Brown”* are presented to illustrate conceptual teaching in primary social studies. The reader is about a little boy called Ranjit who wrote a letter to Mother Earth to share how people in Singapore play their part in environmental protection through conservation of electricity and water and waste reduction.

Target Level: Primary 3

Concepts: Impacts, environment, resources, conservation and responsibility

Generalisations:

- Human actions can have negative impacts on people and the environment.
- Everyone has a responsibility to protect the environment through conservation of resources.

Prior Knowledge and/or Skills

- Pupils have learnt about the concept of environment in previous readers such as *“Finding Pip a Home”* and *“Who Cares about One Old Tree?”*.
- Pupils have worked in groups before.

Lesson rationalisation, duration and key questions

Based on the reader in focus, five lessons of six periods with a duration of 180 minutes are designed using some of conceptual teaching approaches mentioned earlier. The first four lessons are designed to teach the concept of resource with specific focus on water and energy sources, and waste production in Singapore as these are highlighted in the reader, and the need for environmental protection through the conservation of resources and waste reduction. These lessons are necessary as they will provide pupils the essential background knowledge before they study the reader which centres on ways of environmental protection in Lesson 5. The key questions for all the lessons are as follow:

Lesson 1 (1 period of 30 minutes)

- What is a resource?
- Why are resources precious?

Lesson 2 (1 period of 30 minutes)

- Where does water in Singapore come from?
- Why is it important to conserve water in Singapore?

Lesson 3 (1 period of 30 minutes)

- How is electricity in Singapore generated?
- Why is it important to conserve electricity and energy sources in Singapore?

Lesson 4 (1 period of 30 minutes)

- What are the different types of waste produced in Singapore?
- How is waste disposed in Singapore?
- Why is it important to reduce waste production in Singapore?

Lesson 5 (2 periods of 60 minutes*)

- What can we do to protect our environment?

*(Note: *Lesson rescheduling is needed for a double period of social studies for primary three pupils because in normal situation, a single period per week is allocated for teaching the subject in lower primary.)*

Lesson objectives

At the end of the five lessons (of 6 periods), pupils will be able to:

- Define what are resources (Lesson 1).
- Provide relevant examples of resources (Lesson 1).
- Explain why resources are precious (Lesson 1).
- State the water sources of Singapore (Lesson 2).
- Explain why it is important to conserve water in Singapore (Lesson 2).
- Describe how electricity in Singapore is generated (Lesson 3).
- Explain why it is important to conserve electricity and energy sources in Singapore (Lesson 3).
- Name the different types of waste produced in Singapore (Lesson 4).
- Explain two ways of waste disposal in Singapore (Lesson 4).
- Explain why it is important to reduce waste production in Singapore (Lesson 4).
- Describe what everyone can do to protect the environment (Lesson 5).
- Develop a sense of responsibility by planning some actions to conserve resources and reduce waste at home and in school (Lesson 5).
- Develop their teamwork skills (All lessons).

Develop their inquiry skills of information gathering, data analysis and interpretation and drawing conclusions (All lessons).

Figure 1. Lesson plans.

Lesson Number/Time/ Key Question	Suggested Teaching Activity	Resource
<p>1 (30 min)</p> <p>What is a resource?</p> <p>Why are water and energy precious?</p>	<p><u>Introduction (10 min)</u></p> <ol style="list-style-type: none"> 1 Using the <i>concept attainment strategy</i>, show pictures of examples and non-examples of resources in alternate fashion. 2 Inform pupils that the examples have something in common (Note: An essential attribute of the concept of resource is usefulness to people). 3 Ask some pupils to provide their own examples and name and define the concept which they have identified. 4 Conduct a class discussion to get pupils to explain how the examples are linked to the identified concept. 5 Provide a formal definition of the concept of resource. <p><u>Development (15 min)</u></p> <ol style="list-style-type: none"> 1 Focus class attention on two examples of resources: water and energy (as these are in the reader in focus). 2 Explain what are energy sources (as these may be unfamiliar to pupils). 3 Using the <i>Taba Generalisation Strategy</i>, get the class to work in 8 groups: 4 groups will work on water and the other 4 groups will work on energy sources. Groups will use teacher-provided resources to find out why water and energy sources are precious to people. Pupils are to do their work on mahjong paper. 4 Call on some groups to present. 5 Provide feedback and add onto pupil responses when necessary. <p><u>Conclusion (5 min)</u></p> <ol style="list-style-type: none"> 1 Sum up by listing the reasons why water and energy sources are precious resources to people. 2 Reiterate the main teaching points of Lesson 1. 	<p>Slides with pictures on examples and non-examples</p> <p>Slides on concept and definition</p> <p>Slides with pictures on energy sources (eg: oil, natural gas, coal)</p> <p>Teacher-provided resources</p> <p>Mahjong paper</p> <p>Coloured markers</p> <p>Blue tac/Masking tape</p> <p>Slides for conclusion</p>

<p>2 (30 min)</p> <ul style="list-style-type: none"> • <i>Where does water in Singapore come from?</i> • <i>Why is it important to conserve water in Singapore?</i> 	<p><u>Introduction (5 min)</u></p> <ol style="list-style-type: none"> 1 Recapitulate the main teaching points in Lesson 1. 2 State lesson objectives and key questions. <p><u>Development (20 min)</u></p> <ol style="list-style-type: none"> 1 Using the <i>Taba Generalisation Strategy</i>, inform class that they have to answer the worksheet questions which are based on the PUB video on “<i>Singapore Water Story</i>” (4: 11, https://www.youtube.com/watch?v=5BGUT7BjPI0): <ul style="list-style-type: none"> • What are the four water taps for Singapore? • Why is it important to conserve water? 2 Elicit some pupil responses. 3 Provide feedback and add onto pupil responses when necessary. <p><u>Conclusion (5 min)</u></p> <ol style="list-style-type: none"> 1 Summarise the main teaching points of Lesson 2. 	<p>Slides for introduction</p> <p>Worksheets Video-clip</p> <p>Slides for conclusion</p>
<p>3 (30 min)</p> <ul style="list-style-type: none"> • <i>How is electricity in Singapore generated?</i> • <i>Why is it important to conserve electricity and energy sources in Singapore?</i> 	<p><u>Introduction (5 min)</u></p> <ol style="list-style-type: none"> 1 Recapitulate the main teaching points in Lesson 2. 2 State lesson objectives and key questions. <p><u>Development (20 min)</u></p> <ol style="list-style-type: none"> 1 Using the <i>Taba Generalisation Strategy</i>, inform pupils that they have to answer the worksheet questions which are based on the YouTube video on “<i>Where Does Electricity Come From?</i>” (1: 33, https://www.youtube.com/watch?v=duVhnEfbTP0): <ul style="list-style-type: none"> • How is electricity generated? • What are the energy sources for generating electricity? • Why is it important to conserve electricity and energy sources? 2 Elicit some pupil responses. 3 Provide feedback and add onto pupil responses when necessary. 4 Inform class that Singapore does not have energy sources of its own, hence, we have to purchase them from overseas. In the past, we depended on oil to generate our electricity but since 2008, we have switched to natural gas as it is a cleaner 	<p>Slides for introduction</p> <p>Worksheets Video-clip</p>

	<p>energy source than oil (MEWR, 2016).</p> <p><u>Conclusion (5 min)</u></p> <ol style="list-style-type: none"> 1 Summarise the main teaching points of Lesson 3. 	<p>Slides for conclusion</p>
<p>4 (30 min)</p> <ul style="list-style-type: none"> • <i>What are the different types of waste produced in Singapore?</i> • <i>How is waste disposed in Singapore?</i> • <i>Why is it important to reduce waste production in Singapore?</i> 	<p><u>Introduction (10 min)</u></p> <ol style="list-style-type: none"> 1 Using the <i>concept attainment strategy</i>, provide each group with pictures showing different types of waste without telling them that they are all examples of the concept of waste. 2 Ask class what do all the pictures have in common and provide a label for the concept. 3 Instruct groups to categorise the pictures into sub-groups (e.g: paper, glass, plastic, food, electronic products, metal products, clothes/cloth, etc) and name the sub-groups. 4 Ask class to justify the labels for the sub-groups. <p><u>Development (15 min)</u></p> <ol style="list-style-type: none"> 1 Inform class that our waste production has increased many folds from 1200 tonnes (1970) to 7600 tonnes (2010) (MEWR, 2016). (Note: 1 ton is 1000 kilogrammes) 2 Ask pupils how is waste disposed in Singapore. 3 Using the <i>Taba Generalisation Strategy</i>, get the class to work in 8 groups: 4 groups will work on incineration and the other 4 groups will work on landfill using teacher-provided resources (http://www.mewr.gov.sg/topic/incineration and http://www.mewr.gov.sg/topic/landfill). Pupils will do their work on mahjong paper. 4 Call on some groups to present. 5 Provide feedback and add onto pupil responses when necessary. 6 Ask the class what would happen if we do not reduce our waste production. <p><u>Conclusion (5 min)</u></p> <ol style="list-style-type: none"> 1 Summarise the main teaching points of Lesson 4. 	<p>Packs of picture cards</p> <p>Slide with infographic on waste production (by MEWR) Teacher-provided resources Mahjong paper Coloured markers Blue tac/Masking tape</p> <p>Slides for conclusion</p>

<p>5 (60 min)</p> <ul style="list-style-type: none"> • <i>What can we do to protect our environment?</i> 	<p><u>Introduction (10 min)</u></p> <ol style="list-style-type: none"> 1 Quiz pupils on their previous learning on human impacts on people and environment when resources are not conserved and waste is not reduced. 2 Ask pupils to make a statement (generalisation) showing the relationship between human actions and impacts. (Note: Prompt them with fill in the blanks and helping words: <i>Human actions can have negative <u>impacts</u> on people and the <u>environment</u>.)</i> <p><u>Development (10 min: Reading + 20 min: Activity + 15 min: Presentation)</u></p> <ol style="list-style-type: none"> 1 Refer to the reader, “<i>Making the Little Red Dot Blue and Brown</i>” and ask the class to guess what the red little dot, blue and brown mean before reading page 1. 2 Ask class to make some guesses of how Ranjit, his family and classmates have contributed towards environment protection in terms of conservation of water and electricity/energy sources and waste reduction. 3 Using the <i>Taba Generalisation Strategy</i> and the reader, get pupils to work in 6 groups to find out what Ranjit and company actually have done: 2 groups will focus on conservation of electricity/energy sources (pp 2 to 9), 2 groups will focus on water conservation (pp 2 to 3, 10 to 13) and 2 groups will focus on waste reduction (pp 14 to 17) and record their findings on mahjong paper. 4 Call on some groups to present. 5 Provide feedback and add onto pupil responses when necessary. <p><u>Conclusion (5 min)</u></p> <ol style="list-style-type: none"> 1 Conclude with emphasis of main teaching points: <ul style="list-style-type: none"> • Resources are precious. • Human actions can have negative impacts on people and the environment. • Everyone has a responsibility to protect the environment through conservation of resources and waste reduction. 2 Assign homework for pupils to write down three things they can do at home and in school to 	<p>Slides with quiz questions</p> <p>Reader Mahjong paper Coloured markers Blue tac/Masking tape</p> <p>Slides for conclusion</p>
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	conserve resources and reduce waste.	
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Conclusion

Teaching primary social studies need not be a daunting affair. Teachers should not be bogged down by the teaching content. Instead they should concentrate on the big ideas of the subject matter so that their teaching can be meaningful and impactful for their learners. To be able to identify the concepts and generalisations in big ideas, it is critical for teachers to have strong subject matter knowledge of social studies so that they will be able to zoom in on the big ideas and select relevant factual content and examples to support their teaching. Research on teacher knowledge by scholars such as Shulman (1986, 1987) has consistently shown that teachers with strong content knowledge are able to organise their knowledge flexibly and transform it into an accessible form for their learners. Such knowledge is known as pedagogical content knowledge or PCK in short. When compared to teachers who are not trained in the discipline, the stronger teachers are less rigid in their teaching and they tend not to stick to the textbook in terms of content organisation and sequencing. They tend to teach conceptually instead of factually. They are also more confident in their teaching when compared to teachers who are not trained in the discipline. They are more willing to take on learners' queries and respond to them. Given the research on teacher knowledge (Shulman, 1986, 1987) and the positive influence of conceptual teaching on pupil learning (Twyman & Tindal, 2005), it is therefore pertinent for primary social studies teachers who are trained as generalists to invest time and effort to develop deep and specialised knowledge for social studies teaching. Through continuous self-directed learning and professional development, teachers can

then be equipped to teach conceptually and be freed from the "tyranny of content coverage".

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