EXPLORING THE SCOPE OF 'LEARNER GENERATED DRAWINGS' IN EVS TEACHING-LEARNING

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ABSTRACT

This Paper is based on an action research undertaken to examine the role of 'learner generated drawings' in EVS teaching learning in the conceptual understanding of EVS concepts. The study was conducted in a Government school of Delhi. The sample size of the study is 30 female students of grade II (age 6-8 years). To use children's drawings as a pedagogical tool, an intervention was carried out for 12 weeks in which 5 integrated themes of EVS were used for transaction in the class in an interdisciplinary manner. The objectives of the study are to explore the scope of learner generated drawings as a pedagogical strategy in class in developing visualisation and representation of EVS concepts, to assess learners understanding of the concept and to identify misconceptions. The methodology is grounded in action research using participant observations and interventions in the classroom and the major tools for data collection were 'learner generator drawings', participant observations and rubrics. Learner generated drawings were analysed using a rubric containing 5 parameters which are' required components', 'content accuracy', 'detailing',' assistance required' and 'originality of expression'. Each theme has 2 or 3 drawing tasks and approximately 200 drawings were analysed using rubrics. Findings of the study showed that the level learner achieved in these parameters is dependent on the complexity of the theme, nature of the task, and learners' previous knowledge about the concept. The analysis of children's drawings also helped in knowing some of the misconceptions held. Also this intervention showed that use of ' learner generated drawing' as a pedagogical tool helped in attracting students' attention, improving motivation and engagement in classroom activities, encouraged peer learning and helped students to express their ideas about concepts.

KEYWORDS: Learner Generated Drawings

INTRODUCTION

Drawing is an enjoyable activity for children and a natural part of their cognitive development. Young children, whose language skills are still developing, find drawings, an easy way to communicate their ideas and mental constructions. Childrens' drawings give us a peep into their inner world and how they perceive and construct the ideas of physical world."Children's drawings are often influenced by the society's dominant culture and schooling, reflecting their social world, self and culture" [Cherney et al., 2006]. For young children, drawing is a starting point for their visual literacy, since it creates meaning to them and visual elements are used to share their own understanding and ideas [Kress, 2003).Research in the area of science education and science communication has revealed that children's drawings, are one of the effective tools to explore perceptions and cognitive development [Barraza, 1999; Cherney et al., 2006; Cox, 2005; Kendrick and Mckay, 2004; Wright, 2007].

Drawings are also effective means in young children to know their alternative conceptions as compared to other tools like questionnaires or tests [Barraza, 1999]. In comparison with other probing methods like interviews, questionnaires or focus group discussions, drawings are also more elicitive as children do them naturally, and also not influenced by adult interventions especially in the research [Mitchell, 2006].].Children's drawings play an important role in acquisition of science concepts as drawing can "display children's levels of conceptual understandings, help facilitate language and literacy competencies, inform instruction, promote children's construction of knowledge and promote their motivation to learn, which is critical to their subsequent schooling and lifetime knowledge pursuit"(Chang 2012).Use of drawings also cater to individual differences in the learners as what they draw about an idea or concept is shaped by their current or emerging ideas of a concept. Hence, children's drawings can be a very useful means to assess their representations of various phenomena especially in science and environmental studies.

This paper examines the role and scope of children's drawings in EVS teaching learning and in the conceptual understanding of EVS concepts. This paper explores the use of' learner generated drawing' as a strategy to express their understanding about concepts and to identify learners' misconceptions.

Context and Research Focus

This study is based on action research carried out in a government school with grade 2 students(age 6-7 years). As per the recommendations of NCF 2005, there is no prescribed curriculum and text books for class 1 and 2 for EVS(Environmental studies) and it ought to be integrated with other subject areas of Languages, Mathematics, Art etc. However, the major problem faced in the class was that the linguistic skills of children were not well developed and many of them were not able to express their ideas and thoughts in writing. As the aim of Environmental studies at primary level is to help children learn about their immediate environment, "from environment " and ' through the environment", it was decided that use 'drawings" as a medium of expression and as a pedagogical approach. Other than using as a tool in teaching learning process, children's drawings can also be helpful to enhance engagement, to learn to represent, reason, visualise and make external images of a concept in EVS. Through drawing learners can make their thinking more explicit and specific. Using Drawing as a strategy for concept building in EVS is also in accordance with cognitive approach to learning as several underlying cognitive processes which occur during a drawing task and a pictorial representation, influences learning (Burton, Horowitz, and Abeles 2000). Research also indicates that drawing help students in learning new concepts. Representing science concepts visually is an elaborative process that brings about multiple representations of information, which, in turn, influences the depth of their understanding of concepts (Sternberg, 1999). Keeping all these advantages of young children's' drawings coupled flexibility given to the teacher to select and contextualise EVS concepts, it was decided to explore the role and scope of ' learner generated drawings' i.e children's drawings in the primary classroom. The following research questions formed the premise for the study.

- How can learner-generated drawings be used as an effective pedagogical strategy in the classroom?

- Can learner generated drawings helpful in improving learners visualisation, representation and reasoning in EVS?

- How can we use children's drawings as a tool to assess learners understanding of EVS concepts and identify mis conceptions?

The objectives of the study are -1)To explore the scope of learner generated drawings as a pedagogical strategy in class.; 2)to explore the role of learner generated drawings in developing visualisation and representation of EVS concepts;3)to use learner generated drawings as a way to assess learners understanding of the concept and to identify misconceptions (if any).

METHODOLOGY

The sample of this study consists of 30 students of second class (Grade 2) studying in government school,. All students are female as the study is conducted in a girls school and are in the age group of 6-8 years. Entire class was selected as the sample as it is an action research and required classroom interventions and observation.. Two types of drawings were used majorly in this study- teacher made drawings and 'Learner generated drawings'. The 'learner-generated drawings' discussed in this article are defined as pictorial representations that are constructed by the learners as per the learning objectives and depict their understanding of a concept or idea. Teacher made drawings were used in-between the module to transact the content of a particular theme whereas Learner generated drawings were used to assess learners' understanding and visualisation of a particular concept in all the themes. In the 12 weeks long intervention. 5 themes were selected to integrate drawings as a pedagogical tool.

The drawing tasks were analysed using rubrics different for each task. Each rubric has 5 common parameters which are 'Required components', 'content accuracy', 'Detailing', 'Assistance required' and 'Originality of expression'. Analysis of the data was done using these rubrics (Table 1). In this study class room observations during the transaction of modules and drawing tasks played important role in data analysis.. Teacher assisted and interacted with learners actively while recording their responses and observation descriptively.

Table 1: Template of Rubric

	Level 4	Level 3	Level 2	Level 1
Required components				
Concept accuracy				
Detailing				
Assistance Required				
Originality of expression				

DISCUSSIONS

Analysis of Drawings

Five themes were transacted. This section presents analysis of one Example theme-'Weather and Seasons".Under this theme various modules were used, based on the concepts like Rainstorm, flood & drought seasons air etc. The method of transaction included discussions, sharing of experiences related to concepts. etc. For example, discussion about rain storm centered on questions likes what is the difference between rain and rainstorm? Can rain harm us? Followed by reading of text "A Storm in the Garden" using pictures. As a follow up task learners were asked to make a scene of a Rainstorm showing its impact on humans, trees and property. To check learners' understanding of the concept "Rainstorm" a predefined rubric was rated on the basis of the drawings made by the learners and the explanations that learners gave about their drawings in the informal talk.

Some of the exemplar drawings are represented in Figure 1, 2 and 3 along with their scores in each component of the rubric.

(Figure 1, 2 & 3 shows 3 different examplar drawings on the topic of rainstrom which depict learners at different levels. Figure 1 shows the drawing of learner (L11) which has elements of creativity, originality and problem solving. In Figure 1 learner was able to connect the human emotions related to the rainstrom and also showed the precautions one can take during a rainstrom. While on the other hand, Figure 2 is missing the basic componets and lack in detailing. Learner was not able to show the impact of rainstrom on humans, animals or any other living or non living object. Figure 3, however has most of the required components, fails to show the impact of the rainstrom and the chaos associated with it).

Learner generated drawing of flood and drought showed a combination of conceptual detailing which was leading to originality of expression however not all the learners were able to differentiate between the two concepts.

Finding showed that in the themes weather and seasons learners performed well and were able to visualise the concept more correctly because of the of previous knowledge they have about these themes. And in the tasks which involved mapping skills, spatial understanding, directional sense, and ability to imagine abstract concepts like direction of the Wind, though learners were able to represent the concept, they were not able to reach higher levels of Concept accuracy and conceptual detailing.

Similar process of discussion followed up by drawing tasks was followed in other themes also. The detailed analysis of all the drawings done in all the tasks reveal the following observations

- In the first and second parameter of the rubric, that are "required components" and "content accuracy" it was observed that progress is quite random in all the topics/tasks however in theme water and Seasons learner showed greater level then the other themes. It is observed that the reason for this was learner's previous knowledge about these themes. Another observation was that the level of learners decreased in tasks that were complex in nature for example the comparative task of flood and drought, day and night and summer and winter all showed slightly low level then non-comparative task like drawing of a rainstorm, family, windy day etc.

- In third parameter of the rubric i.e. detailing it was found that previous experience /knowledge about the concept and complexity influenced directly. Also it was found that learners did a great deal of conceptual detailing in task where the concept is observable for example in the drawing of rain Storm as compared to concepts that are not observable like direction of wind or map of a town learners did less conceptual detailing.

- The fourth parameter of the rubric "assistance required" showed a great deal of progress from task 1 and task 8 for almost all the learners. Many learners moved from level 1 to level 4 that is from needing constant support and assistance to be able to do the task completely independently. However in task 9 and task 10 of concept ' air'it is observed that a decrease in the levels because learners needed support and assistance in understanding these two Tasks may be due to the abstract and complex nature of the theme and the task.

- The fifth parameter of the rubric "originality of expression" showed a great deal of random progress from task 1 and task 10 for almost all learners showing that it depends more on individual differences rather than the nature of task and theme.

Figure 7 shows the overall performance of learners in all drawing tasks across all the aspects of the rubric.

We can conclude from the first part of the analysis i.e. thematic analysis of' Learner generated drawings', that the progress and performance of the learners in the drawings was based on three major factors which were the complexity of the theme, the nature of the task and learners previous knowledge about the task and the theme.
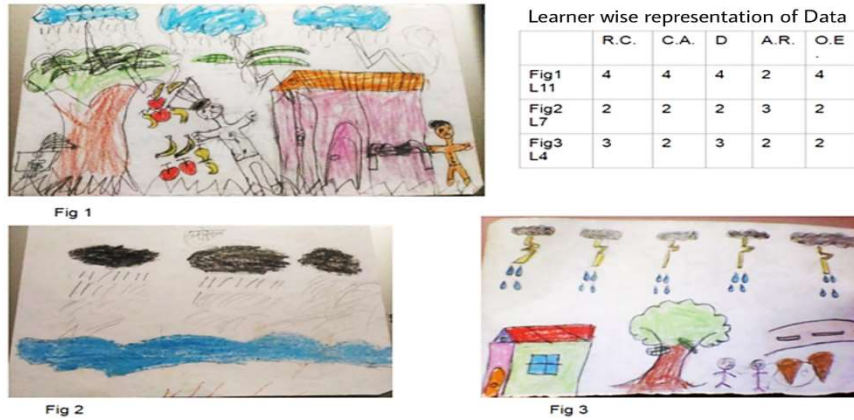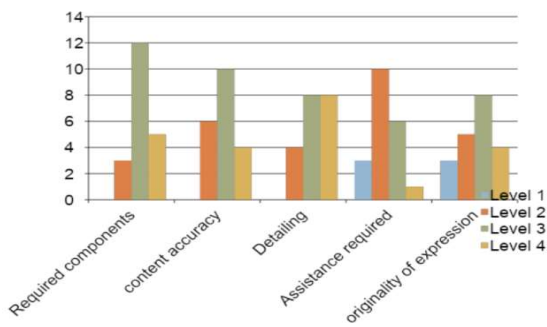

Learner wise representation of Data

	R.C.	C.A.	D	A.R.	O.E.
Fig1 L11	4	4	4	2	4
Fig2 L7	2	2	2	3	2
Fig3 L4	3	2	3	2	2
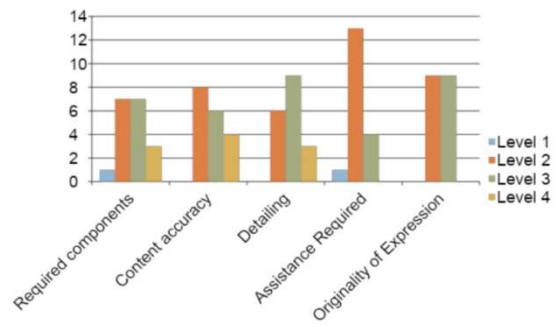
Figure 1

Figure 2: Results Showing Learners' Performance in Task 1 and Task 2 of Theme 'Weather and Seasons'.

Learner wise representation of Data

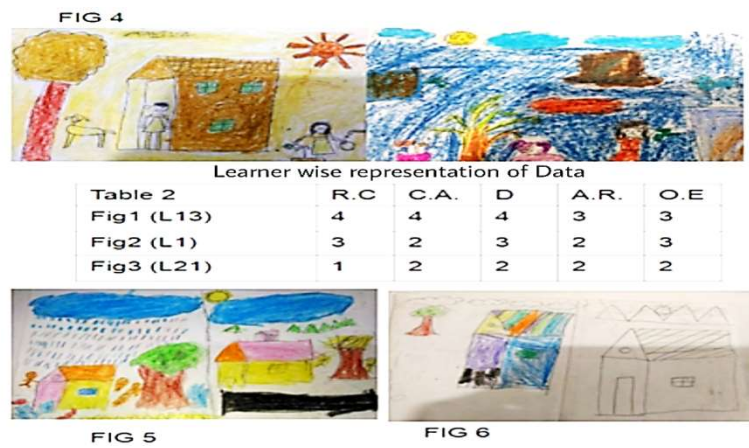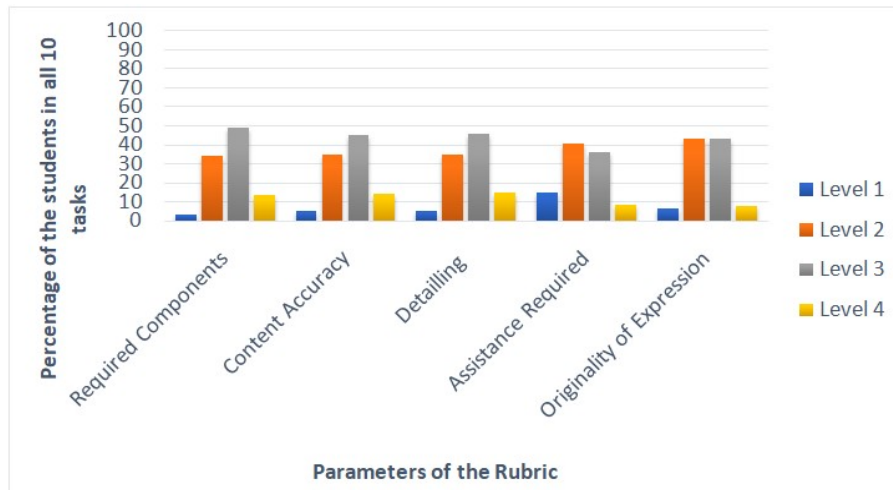| Table 2	R.C	C.A.	D	A.R.	O.E
Fig1 (L13)	4	4	4	3	3
Fig2 (L1)	3	2	3	2	3
Fig3 (L21)	1	2	2	2	2

Figure 3

Figure 4

Identification of Alternate Conceptions

The second part of the analysis focuses on the identification of the alternate conceptions that learners had in various concepts and topics. Alternate conceptions were identified during classroom observations and through learner generated drawings. The Table 2 presents major alternate conceptions identified.

Table 2: Alternate Conceptions in the Learners

Concept / Topic	Alternate Conceptions
Flood ,Rain and Draught	• Flood is only caused by overflowing of rivers. • Rain is caused by god. • Heavy rain and rainstorm are same. • Lightning never strikes twice in the same place
Day and Night Season	• Sun doesn't work properly in winters. • Moon has its own lights. • Sun goes away at night. • All living things sleep at night.
Mapping	• Directions remain the same no matter the orientation of the map. • Symbols always looks like the object or place they denote
Air	• In the presence of air, objects only goes upwards irrespective of the direction of flow. • Air can only move light weight objects.

The Pedagogical Effectiveness

The intervention showed that use of learner generated drawings helps in attracting students attention, enhances motivation and involvement in classroom activities, encourages peer learning and help learners in expressing their thoughts.

- **Attracts Student's Attention:** In this project the whole experience of using children's' drawing as a pedagogical tool in teaching and learning of EVS proved that it helps student to pay attention to the concept more willingly and for longer duration. Use of teacher made drawing in classroom helped in introduction of the concept and also in eliciting responses from learners during the discussions. It was observed that learners responded more actively and more thoughtfully during the discussions when a drawing of the related concept is shown to them. In case of learner generated drawings students of class expressed great willingness to draw and colour. Hence incorporating learner generated drawing task made learning more joyful and natural for them.

- **Improves Motivation and Engagement in Classroom Activities:** It was observed during the classroom transaction of the modules that learners showed a great level of intrinsic motivation while engaging in discussions followed by the drawings and while engaging in the drawing tasks. While making drawings related to a concept learners Monologue and dialogue with other Peers showed that they were very interested and motivated to do the task.

- **Encourages Peer Learning:** Drawing is a powerful tool for thinking and communicating**,** regardless of the discipline It was observed during the classroom activities that some learners showed evidence of a inner speech a concept given by Lev Vygotsky. Inner speech is a form of internalized, self-directed dialogue Which learners showed while drawing. For example monologue of learners shows that they were involved in a meaning making process through drawings and tried to mediate their thinking by talking to themselves.

It was observed that this inner speech started meaningful and constructive discussions among learners about the task and the concept. For example a learner talking to herself said "Ye kapdeYahanudenge Aur hawa(air) yahan se Aayegi" Another learners who was sitting close to her said " dekhhawa(air) yahan se aa rahihaitohkapdeUparNahi Is Tarah udenge".

Above conversation between the two learners showed that they are engaging in a constructive discussion about the direction of wind and its effect on the clothes. This conversation helped learner one in seeing different perspectives of a similar problem.

- **Helps Students to Express Their Ideas:** Drawings can be a powerful mechanism for the expression of thoughts, ideas, knowledge and emotion for young learners. In this study it was found that drawings helped learners in their meaning-making process. For example, when discussions were supported by drawings, learners were able to participate more and constantly tried to link their thoughts and ideas with the given visual.

CONCLUSIONS

The study shows those children's' drawings ie 'learner generated drawings' can be used successfully as a pedagogical tool in the teaching learning of EVS. Not only as a strategy to transact the EVS content, can they be used to assess learners' understanding of the concept. It was also found that the progress and performance of the learners in their drawings was based on three major factors - the complexity of the theme, the nature of the task and learners' previous knowledge about the task and the theme. Findings of the study shows that 'Learner generated drawings' can be used as a strategy to promote visualisation of EVS concepts, in finding out learner's misconceptions and prior knowledge, and to promotes scientific thinking and skills like observation, reasoning and organisation

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