The STORY of the FOOD CHAIN with Nepali L2 Learners

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Introduction

Oftentimes, refugee adolescents are Students with Interrupted Formal Education (SIFE); frequently functioning at least (if not more than) two years below expected grade level, especially in science. This is supported by Cummin's (1981) proposal of Cognitive Academic Language Proficiency (CALP), where L2 learners are linguistically several years behind in comprehending and expressing content based materials as opposed to their (BICS) Basic Interpersonal Communication Skills.

This project test for narrative patterns in relation to the Nepali L2 population in Buffalo, in order to develop a pedagogical model, for science education.

The experiment was drawn upon the ideas of Slobin(1994), Brough's The Fairy Tales of Science : A Book For Youth (date unconfirmed).

According to Fensham(2001), "For some strange reasons… until very recently have forgotten that story could be a powerful form of education in… science" (pg. 4).

Considering the relationship of BICS and CALP for L2 learners, would it be beneficial to connect science and storytelling for ESL students?

Method:

The following diagram of the food chain was presented to two female ninth graders and two male twelfth grade Nepali ESL students:

Fig. 1.1: Temperate Deciduous Forest Food Chain adapted from the Heights Technology Blog

The students were asked to narrate the "story " of the above image starting with "Once upon a time" and concluding with "The End."

Their narration was video-taped.

Thereafter, the student was given a vocabulary sheet with highlighted vocabulary with the following definitions included:

PRODUCERS: Plants are called producers. This is because they produce their own food! They do this by using light energy from the Sun, carbon dioxide from the air and water from the soil to produce food - in the form of glucose /sugar. The process is called photosynthesis.
PRIMARY CONSUMER: An animal that eats grass and other green plants in a food chain
SECONDARY CONSUMER: An animal that feeds on smaller plant-eating animals in a food chain.
TERTIARY CONSUMER: carnivore at the topmost level in a food chain that feeds on other carnivores; an animal that feeds only on secondary consumers.
DECOMPOSER: Bacteria and fungi are decomposers. They eat decaying matter - dead plants and animals and in the process they break them down and decompose them When that happens, they release nutrients and mineral salts back into the soil, which then will be used by plants!
HERBIVORES: Animals that eat only plants
OMNIVORE: Animals that eat bot animals and plants
CARNIVORE: Animals that eat only animals

Fig. 1.2: Definitions adapted from SheppardSoftware.com

Once again, the student was asked to narrate the story of the above diagram, except this time, they were asked to integrate the vocabulary from the handout into their story.

Results:

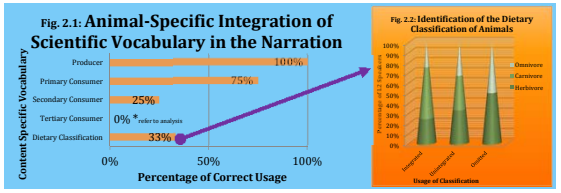
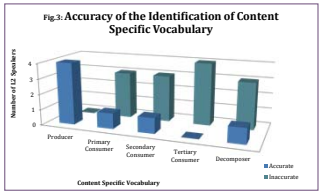


Fig. 2.1 and Fig. 2.2: Provides an overview of the percentage of usage of classification vocabulary in terms of the specific animal within the food chain. This demonstrates an imbalance within the CALP vocabulary range. It should be noted that usage of vocabulary does not necessitate conceptual accuracy, as Fig. 3 and 4 will demonstrate.



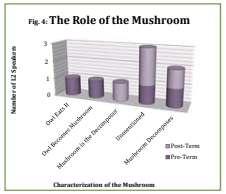


Fig.3 and Fig. 4: Both detail that although the content specific vocabulary has been integrated within the narrative, the L2 speaker still demonstrate conceptual inaccuracy and/or vagueness due to either incomplete or incorrect connections.

Fig.5: Contrast of Selected Vocabulary

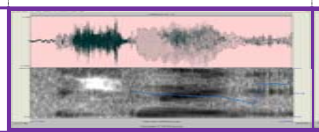
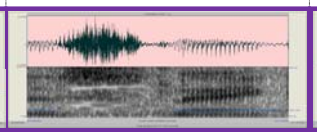
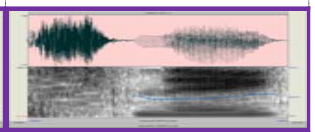
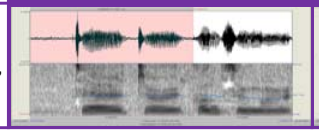
	Nepali L2 Female: 4 Years	Nepali L2 Male: 4 ½ Years	Native English Speaker
Example of BICS: "Snake"			
Example of CALP: "Tertiary Consumer"			

Fig.5: Note that both L2 speakers refer to the "tertiary consumer" as some form of "territory consumer." The Native American speaker is a female from Dutchess County, NY. The contrast between the BICS vocabulary is not as drastic as in between the CALP vocabulary.

Discussion:

- **Discourse Elicitation:** Methological albeit the retelling is in parts and not the whole thing.
- **Performance:** According to the Gricean Principle
- **Semantics:** Simple referring terms which is a property of indexing at the structure of discourse.
  - The usage of relational terms is the extent to which it captures the structural terms.
  - Relational meaning is referring to abstract structure to the extent that they are getting representation.
- **Arbitrary Sequence:** Due to lack of mental representation

Limitations:

- Insufficient quantity of total L2 subjects if projected onto a larger demographic population. For the scale and purposes of this project, L2 quantity is sufficient.
- This project is the initial pilot project to future research

Web References:
http://www.sheppardsoftware.com/content/animals/kidscorner/foodchain/producersconsumers.htm
http://heightstechnology.edublogs.org/tag/foodchain/
https://www.ied.edu.hk/apfslt/download/v2_issue1_files/foreword.pdf
http://ihd.berkeley.edu/linguistictypologyofmotionevents.pdf
R.A. Berman and D.I. Slobin (eds). *Relating events in narrative*. Lawrence Erlbaum, Hillsdale, NJ, 1994.
T. Trabasso & N.L. Stein. Using goal-plan knowledge to merge the past with the present and the future in narrating events on line. In M.H. Heith, J.B. Benson, R.J. Roberts, and B. Pennington (eds), *The development of future-oriented processes*, pages 323-352. University of Chicago press, Chicago, IL, 1994.
https://archive.org/details/fairytalesofscie00brouiala

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