Redefining the Role of Teachers in CLIL (Content and Language Integrated Learning): An Experimental Study

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Abstract

Content and Language Integrated Learning is mostly seen as content based ELT without ascribing any role to the content teachers though in CLIL "a foreign language is used as a tool in the learning of a non-language subject in which both language and the subject have a joint role" (Marsh, 2002). On an experimental basis, the researcher incorporated vocabulary learning with content learning and transferred it to the domain of content teachers by embedding language learning material in the instructional material designed by the content teachers. The Integrated Instructional Material Design (IIMD) thus created was found useful to both the language and content teachers in developing the content vocabulary of the students. The study was conducted on Class VIII students of a CBSE school and History and Science were taken for content learning. First, the content words were harvested from the books on a linguistic parameter and compared with Academic Word List (AWL). Of 264 words in science and 81 words in History only 12 and 7 words were found in the AWL respectively. Strategies were improvised by the language teacher and embedded in the IIMD and this combined effort was a huge success as revealed by the posttest scores.

KEYWORDS : CLIL, content vocabulary, keywords, word list, material designing

Introduction

A simple question informally asked in a class and a casual remark by a Social Science teacher gave birth to the idea of Integrated Instructional Material Design (IIMD) that was found useful to both the language and content teachers in preparing the learners to reach the programme goals set up by the institution.

The following question appeared in the SA 2, Social Science paper of class X. (2011)

- Question 27. Mention any two shortcomings of WTO

The social science teacher remarked that though she had used the words 'demerits', 'disadvantages' and 'limitations' in the class, she had not used the word 'shortcomings' and hence the students looked baffled in the exam hall. Another day, in her language class, the researcher who was a language teacher, asked the following question: -

- A book and a booklet are of same size.   True or False

In the class of forty students, sixteen gave the answer 'True'. She had just observed the students in the previous science class holding a glass full of chilled water and the physics teacher explaining the reason for the formation of water droplets on the outer surface of the glass. The two incidents brought to focus that language and content teachers need to play complementary roles in imparting education to ESL learners.

Background of the study

The ELT practitioners, not being theoreticians, normally rely on the research done by linguists, psycho-linguists and socio-linguists. Their theoretical perspective is supported by empirical data collected from pockets of participant population. The various theories propounded by these theoreticians have given rise to different approaches in SLA. Where no single method is effective, ESL teachers usually follow the eclectic approach combining the best in every method to suit the classroom demands. In Indian schools, where the classes are heterogeneous, English teachers use Communicative approach whereas Content teachers use Immersion technique where they use content language to teach and talk about content. Often they switch over to L1 while explaining. Consequently, students lack proficiency in both content and language. In the 'Student Learning Study' by EI (2012) in India, the following are highlighted:

- Learning levels are extremely low.
- The learning that happens is not 'Learning with understanding' and a number of misconceptions exist among students on the concepts learnt.
- Students find it difficult to express their thoughts in their own words in writing.
- In all the states tested, fewer students were found to comprehend what they read.
- The levels of learning of Indian students in government schools in class 4 and class 8 tested is much lower than the international average as represented by studies like Trends in International Maths and Science Study (TIMSS) and Progress in International Reading and Literacy Study (PIRLS).

One of the reasons for lack of cognitive learning and poor comprehension is poor lexical knowledge as vocabulary is the main factor promoting comprehension. It also implies that there is no interplay between language and content. The register of content teachers is different and for domain specific words, only domain specific meaning is acquired by the students. In the absence of a language rich environment the ESL learners' exposure to academic or domain specific words is limited to classrooms. Their inadequate/incomplete vocabulary knowledge exposes a gap in vocabulary learning process and/or strategies adopted in schools. The onus of remedial measures fall equally on the shoulders of the language and the content teachers.

Literature Review

CLIL is an approach to teaching and learning in which school subjects are taught and studied in a second or foreign language. In CLIL "A foreign language is used as a tool in the learning of a non-language subject in which both language and the subject have a joint role" (Marsh 2002). Here the role of the two teachers is complementary, the two factors are interwoven and the emphasis may vary from one to another as per the needs of the learners or the occasions of learning.

Figure 1 depicts the roles of the teachers in integrated learning.

Though CLIL involves both the teachers, in practice it implies only content based ELT in the form of EAP, ESP etc. CLIL assumes that subject teachers are capable of creating and exploiting language learning opportunities that arise while teaching, though the opportunities are not uniform across subjects. For example History provides a lot of reading in the traditional sense while Science throws opportunities to learn technical and semi technical vocabulary. Across subjects, reading skill is closely associated with vocabulary. According to Woodward-Kron (2008 p.246), students' knowledge of a discipline is closely tied to the specialized language of that discipline.But discipline-

specific vocabulary that helps in content learning is different from general vocabulary and it requires explicit learning which is not practised in Immersion or Communicative method adopted by CBSE. A study in Hong Kong reveals that though the immersion method has improved the subject proficiency of the learners, it has not improved their language proficiency (Li and Man 2009) indicating that they remain mutually exclusive. Transfer of knowledge from content classroom to language classroom or vice versa doesn't happen automatically. It is evident from the students' understanding of the word 'droplet' in science class and their inability to decipher the meaning of 'booklet' in language class as observed by the researcher. CLIL offers a solution. Catalán and Zarobe(2009) investigated the relation of the type of language instruction (CLIL versus non-CLIL) to receptive vocabulary in English as a foreign language and showed that the vocabulary level and language level of CLIL students were better than those of the non CLIL students. However, no concrete, subject specific language teaching methodology has evolved in CLIL, as most of the programmes are experimental andvery few research based empirical studies are available especially in Indian context.

In normal Indian classrooms cognitive learning of word meanings is only occasionally done in random exercises involving affixes. Cognitive and Meta cognitive strategies are seldom introduced as vocabulary building strategies and the present study aims to fill this gap in the learning of content words. Cognitive learning is a kind of elaborate learning effected by the knowledge of word-parts, word origin and morphology. Thematic grouping of words, derivatives of words and semantic mapping are some other strategies to enhance the vocabulary knowledge of students. Consequently their reading skill will be enhanced as the reciprocal relationship between vocabulary and reading has been well established in ELT research.

Cognitive strategies can easily be incorporated in the instructional materials designed by the content teachers. Such a kind of Integrated Instructional material design (IIMD)improvised by the teachers of class VIII in a CBSE schoolis discussed in this paper. The study also offers empirical evidence to support the utility of

- word lists created from the prescribed text books
- cognitive strategies to improve the knowledge of content vocabulary
- Integrated Instructional Material Design

Present study: Tools and Methodology
Tools

The History and Science text books (NCERT) of class VIII were chosen for the study. The following three steps were involved in the creation of tools.

1. Creating wordlists of keywords for History and Science text books
2. Creating effective vocabulary building strategies
3. Creating IIMD by bringing the content teachers into the ambit of CLIL.

Content words are different from general words used in general communication. Since academic communication requires the knowledge of academic or content words, they need to be taught explicitly. Word lists are popular tools in EAP (English for Academic Purpose) especially for non-native speakers of English. The author has created an Engineering Science Word List (2018) earlier and the same criterion is used here to define 'keywords'. Word lists meant for content learning comprise 'keywords' and 'keywords' are words whose frequency is unusually high in comparison with some norm. Unusual frequency does not mean high frequency(Scott 2008) but unusually high in

comparison with a reference corpus. In this study, the software 'Keyword extractor v.2' was used to extract the keywords from the two books of History and Science. In this software, the reference corpus was 14 million words of BNC and COCA (British National Corpus and Corpus Of Contemporary American – written and spoken).In contrast to the General Service List (GSL) words, the academic keywords are found in mid-frequency or low frequency bands created on the basis of Laufer and Nation's lexical frequency profiler. The words with the 'keyness' factor of 25 and above were extracted for creating the word lists and compared with GSL and AWL (Academic Word List) to see the number of words found common in those lists (Table 1).

It revealed that the existing GSL and AWL had little relevance in Indian context and Indian educators need to develop their own word lists for academic purposes. Once, the lists were ready, they were shared with the content teachers and matched with the lessons in which they occur. The teachers decided together, the number and design of charts giving scope for 'embedded literacy' as the language teacher called it. Thus evolved the IIMD. The language teacher chose to employ the vocabulary building strategies of use of affixes, etymology and semantic grouping for the following reasons.

- Cognitive learning helps in long term memory
- The strategies throw the door open for learning new words associated with the 'base' or 'root' word thus expanding the ESL learners' vocabulary.

Methodology

The study was conducted in a CBSE school among 40 students of class VIII. There was a Pre-test of vocabulary followed by intervention and a post test. The test included thirty multiple choice questions testing the content and vocabulary of students. Fifteen questions were content based, directly taken from History and Science books involving the knowledge of target words. The other fifteen questions were aimed at testing the new words the learners were supposed to have learnt as a result of the innovative strategies used in the intervention. The intervention was part of regular teaching hours. The content teachers told the meaning of the words highlighted in the charts and drew the attention of the students to the picture or part of the chart designed by the language teacher. The language teacher in her turn, spent at least ten minutes in explaining the 'root' or 'base' or the 'affixes' of the words providing a cognitive framework to understand, analyze and decipher the meanings of words and encouraged the students to find a few more associated words. The students completed the charts by filling the blank boxes or balloons depending on the design, the next day. The post test was held after three months before SA II.

Result analysis.

The *content validity* was tested by showing the questionnaire to three other teachers who teach higher classes of the same school. The measure of reliability was tested using SPSS software. The *Cronbach's Alpha* was 0.708 which was good. (Table 2)

A paired samples t-test was done to find the *correlation, difference in means, t value and p – value (2 tailed)*. A lower p-value and a higher t-value indicated positive correlation. *Cohen's d* was calculated to find the effect size. It was 2.29 indicating the effect was very large (d = .8 is large value). The details are given in Tables 3, 4, and 5.

Result: There was a significant difference in the scores of post-test (M=22.45, SD=3.81) and pre- test (M=16.525, SD=3.896) conditions: t (39) = 14.492, p <.01.

Figure 2 shows the scatterplot indicating the effect and direction of the relation between the post score and the pre score.

The summary of the findings is given in Table 6.

Though, the grades improved in the terminal exam in History and Science, it couldn't be attributed solely to the intervention in the absence of a controlled study.

Implication

The IIMD based on word lists was useful to both the content and language teachers in realizing the programme outcome. It

- Created a vocabulary rich environment.
- Promoted collaboration among teachers
- Developed cognitive and metacognitive skills of the students.
- Proved the efficacy of corpus based word lists in developing content vocabulary

Apart from the improvement in the post test scores, there was improvement in the grades of the term-end examinations in History and Science. However, it cannot be attributed solely to the intervention in the absence of a controlled study in this regard.

It is suggested that a country-wise school corpus be developed and subject-wise word lists extracted for the purpose of IIMD and classroom teaching. Word lists are indeed the backbone of the technology based Data Driven Learning (Johns 1991).In the meantime the following steps can be taken at school level

- A whole-Institute approach in drafting curriculum goals
- Collaborative effort by content teachers and language teachers
- A systematic approach to Integrated Instructional Material Design

Conclusion

Different models of CLIL, like Adjunct or Linked Course model are discussed in countries across Asia and Europe though the roles of the content and the language teachers arenot clearly defined in CLIL. In lower classes, CLIL comes natural to class teachers who handle all subjects.In higher classes IIMD can be introduced to promote integrated learning. Even without a systematic integration, there has always been a spontaneous integration in schools. For example, a biology teacher may tell that the suffix '–cide' means'to kill' and explain the words, 'insecticide', 'pesticide' and 'weedicide'. A language teacher may ask the meaning of the word 'democracy', to elicit the meaning of the word 'demagogue' or 'endemic'. But if it is made systematic and a comprehensive teaching model is created, the students' content knowledge and language knowledge will develop simultaneously.

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Tables

	Total no. of words	Shared with GSL	Shared with AWL
Science	264	15	12
History	81	5	7

Table 1: Keywords comparison with GSL and AWL

N	Cronbach's Alpha	N of Items
40	.708	30

Table 2; Reliability Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post score	22.4500	40	3.80923	.60229
	Pre score	16.5250	40	3.89600	.61601

Table 3: Paired Samples Statistics

		N	Correlation	Sig.
Pair 1	Post score & Pre score	40	.775	.000

Table 4: Paired Samples Correlations

		Paired Differences					t	df	Sig.(2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	post score-Pre score	5.92500	2.58583	.40886	5.09801	6.75199	14.492	39	.000

Table 5: Results of Paired Samples test

	Mean difference	t	Cohen's d	p - value
Post score-pre score	5.925	14.492	2.29	p < 0.01

Table 6: Summary of the findings

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                    │  Integrating Content and │
                    │        Language          │
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┌──────────────────────────┐   ┌──────────────────────────┐
│ Language linked integrated│   │ Content linked integrated │
│ content learning (Role of │   │ language learning (Role of│
│   content teachers)   │   │   language teachers)   │
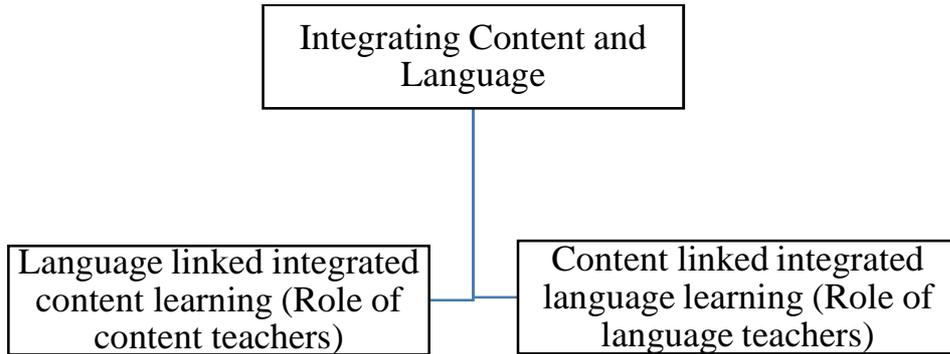└──────────────────────────┘   └──────────────────────────┘
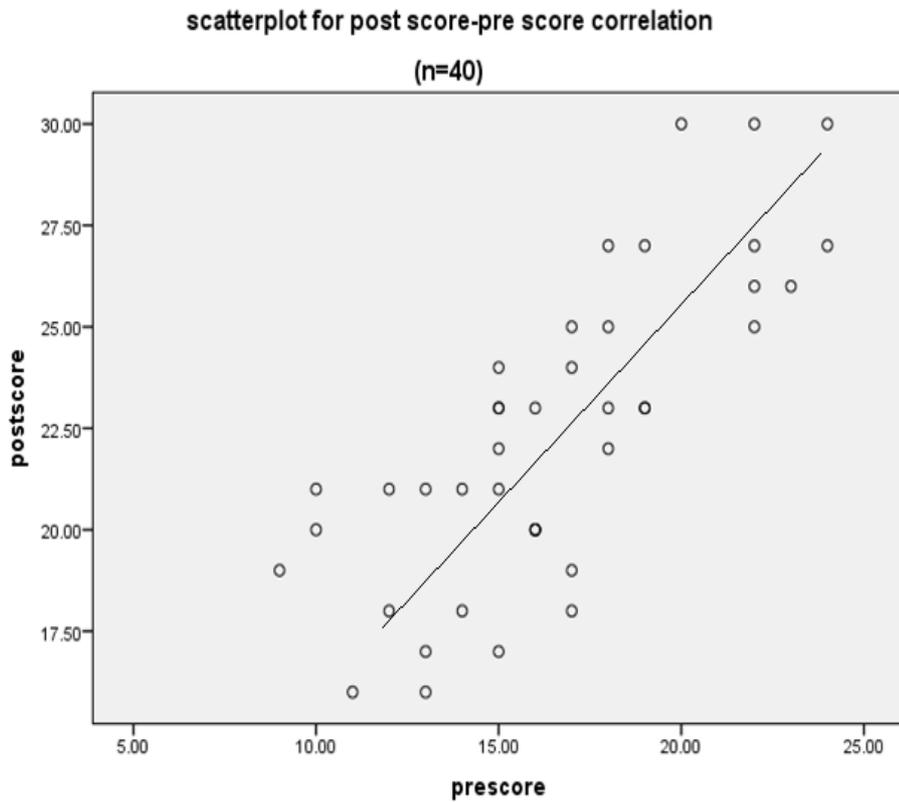
Figure 1: Role of teachers in CLIL

Figure 2: Scatterplot depicting the scores of the pre and the post tests