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ANALYZING THE ROLE OF INSTRUCTIONAL LANGUAGE IN ENHANCING SCIENTIFIC COGNITION OF ELEMENTARY LEVEL STUDENTS BELONGING TO MARGINALIZED COMMUNITIES; SINDH - PAKISTAN

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ABSTRACT

The study revolves around the analysis of the efficiency of instructional language, i.e. the mother tongue, regional language, national language and international language in developing the cognition of the students relating to the subject of science at elementary level. For this study, a private school was selected through purposive sampling, where the students had a background of a diverse range of mother tongues including Urdu, Sindhi, Balochi, Pushto and Punjabi. The selected students from a class of elementary level in particular have the same native and regional language (Sindhi) who were taught selected topics of elementary level science using different languages of instruction including mother tongue, national and international language. The analysis has been made using descriptive statistics and is based on tests after the teaching sessions which clearly depict the efficiency of instructional languages in enhancing scientific cognition of the students.

Keywords: Language of Instruction, scientific cognition.

INTRODUCTION

The emphasis on bilingualism and/or multilingualism in education, especially involving native languages, even in today's era of globalization is evident from the fact that according to UNESCO (2003, p. 16), the International Agreements for Minority and indigenous groups lay down the Linguistic Rights which entail that the schooling should be in their own language, if desired. Furthermore, there should be access to language of the larger community and national education systems. Certainty of inter-cultural education that promotes positive attitudes to minority and indigenous languages and the cultures they express should be there. Lastly, the access to International Languages should be ensured.

Knowledgeable and skilled linguists and bilinguals argue that it is extremely advantageous for those societies which are multi-cultural to maintain the usage of first language in the learning of bilinguals in schools (Tompkins and Hoskisson, 1995). Here, the first language implies to the native language or the 'mother tongue' of the cultures.

> "Mother-tongue medium instructionrefers to the use of the learner's mother tongue as a medium of instruction". (UNESCO, 2003, p. 14)
>
> "Bilingual educationrefers primarily to the use of two languages in aformal education system". (UNESCO, 2003, p. 17)
>
> "Multilingual educationrefers to the formal use of more than two languages in the curriculum". (UNESCO, 2003, p. 17)

In the global perspective, more than one official language is not common. In fact, in more than 20 states, there exists more than one official language, for instance, in India alone there are around 19 official languages and similarly in South Africa there are around 11 official languages in use. It is also a fact that majority of the countries in today's world are monolingual, that is only one official language is considered for legal or Government purposes. But this does not, in any way, mean that these societies are not bilingual or multilingual, rather the other languages used in the country are not authorized as official languages.

In many countries that were previously under colonialregimes, the official language tends to be the language of the formercolonizers. In addition to official languages, several countries recognizenational languages, which may be necessary in education? The choice oflanguage in the educational system confers a power and prestige through itsuse in formal instruction. Not only is there a symbolic aspect, referring tostatus and visibility, but also a conceptual aspect referring to shared valuesand worldview expressed through and in that language (UNESCO. 2003 ,p.13 -14).

> "Countries withmultiple regional languages of wider communication or more than oneofficial language may support multilingual education that includes children'smother tongues and the more widely spoken languages of the nation. Aswith bilingual education, a multilingual education programme is considered 'stronger' as the mother tongue is used more extensively as a medium of instruction" (UNESCO 2008, p.7)

> "In 1987, a new pedagogical approach called *Pedagogies convergent* (or'Convergent pedagogy') was introduced on an experimental basis. This newmodel had been developed at the Belgian Centre international audiovisual d'étudesetderecherches (CIAVER). The e term convergence describes apedagogy that emphasizes interactive learning and links teaching methods of the first and second languages. The e child's mother tongue is used as thelanguage of instruction throughout primary school and the second languageis taught in such a way that the learners become functionally bilingual. Thegoals of this model are to improve school access and learning outcomes forstudents, to integrate the school into the social and cultural environmentof the students, and to produce functionally bilingual learners" (UNESCO 2008,p.9)

Perhaps the most renowned international organization for education development, the UNESCO also emphasizes on the use of mother tongue. A Committee of UNSECO (1953) advocated through their extensive work and research that the children can easily and quickly learn and better express themselves through their mother tongue as compared to any linguistic medium which is unfamiliar.

Numerous modern research reports on literacy and language suggest that for overall development of language skills, it is essential to become fluent in one's own first language. The language skills enhanced through this way also complements cognitive development and academic achievement (Ball, 2010).

According to the research of Coleman, there are more than 70 languages spoken in Pakistan withover a million people speaking each of the six major regional languages. Out of the total population only seven percent use Urdu as their first language but numerically it is widely spoken by the greatest number of people in the country. Coleman, in his research, divided the schools in Pakistan into four major types; private elite (English medium), private non-elite

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(nominally English), Government (Urdu) and Madrassas (Urdu). The British Council research report of Coleman points out the fact that in Pakistan, as 95% of the children do not study in their mother tongue, the overall results tend to be poor excluding the elite schools.

RESEARCH QUESTIONS

This study addressed the following research questions:

1. What is the impact of using native and regional languages as language of instruction for teaching concepts of Science at Elementary Level?
2. What is the impact of using national language as language of instruction for teaching concepts of Science at Elementary Level?
3. What is the impact of using international language as language of instruction for teaching concepts of Science at Elementary Level?
4. How can instructional languages affect the learning of elementary level students from marginalized backgrounds?

OBJECTIVES OF THE STUDY

1. To understand the relationship between students learning and teacher's language of instruction for teaching Science concepts at Elementary Level.
2. To analyze the efficiency of native, regional, national and international languages as languages of instruction for science teaching at Elementary Level and its impact on learning of students from a marginalized community.

METHODOLOGY

For the purpose of this research study, a Private English medium school situated in a marginalized area of Karachi was selected on *purposive* basis from the population of private schools in Karachi. The students in this school belonged from different backgrounds such as Sindhi, Balochi, Pasthu and Punjabi and Urdu speaking communities. Through purposive sampling 20 students from different sections of Class VI, were selected having Sindhi as their native language and who could also read and write Sindhi easily which meant that the native and regional language in this case was the same.

The science teachers, who were fluent in Urdu, Sindhi and English, were asked to teach various topics(which were not taught before) of Science using native, national and international languages as their languages of instruction (see Table 1).At the end of each topic a post-test was given to the students and the results of this test were analyzed by the teacher with the assistance of the researcher to gauge the impact of using native, national and international languages as medium of instruction for teaching Science at Elementary Level. At the end, descriptive analysis was used to draw conclusive results.

Table 1a. Languages of instruction for different themes/Topics

S#	*Theme/Topics*	*Medium of Instruction*
1	Cell	Mother/Regional Language (Sindhi)
2	Animal cell	Mother/Regional Language(Sindhi)
3	Plant cell	National Language(Urdu)
4	Difference between Animal & Plant Cell	National Language(Urdu)
5	Characteristics of Animal	International National Language(English)
6	Parts of Plant	International National Language(English)

FINDINGS

The cumulative findings from the research study are given as under:

Table 1. Achievments and Languages of instruction

Students	*Marks by using Mother /Regional language as medium of Instruction*	*Marks by using National language as medium of Instruction*	*Marks by using International National language as medium of Instruction*
1	85%	85%	65%
2	80%	85%	70%
3	90%	80%	60%
4	85%	75%	60%
5	90%	85%	70%
6	80%	80%	60%
7	75%	70%	50%
8	75%	65%	45%
9	80%	80%	50%
10	90%	85%	55%
11	90%	90%	50%
12	95%	90%	55%
13	85%	80%	45%
14	95%	90%	60%
15	95%	90%	11%

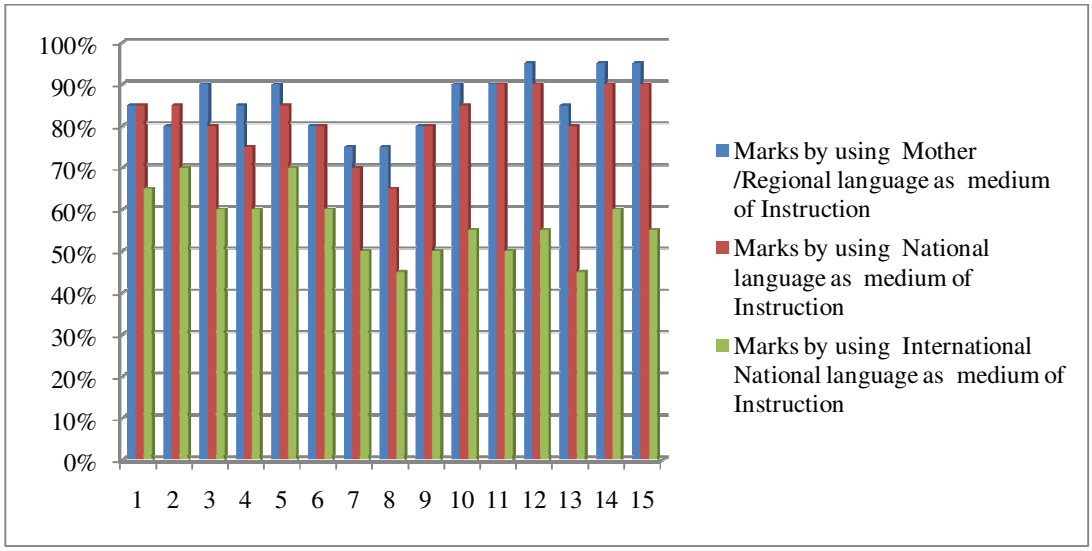

Figure 1. Graphical representation of overall findings

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Table 2. Cumulative result (Average) of post-test for Instructional language

S#	*Language as medium of Instruction*	*%*
1	by using Mother /Regional language as medium of Instruction	86
2	by using National language as medium of Instruction	82
3	by using International National language as medium of Instruction	57

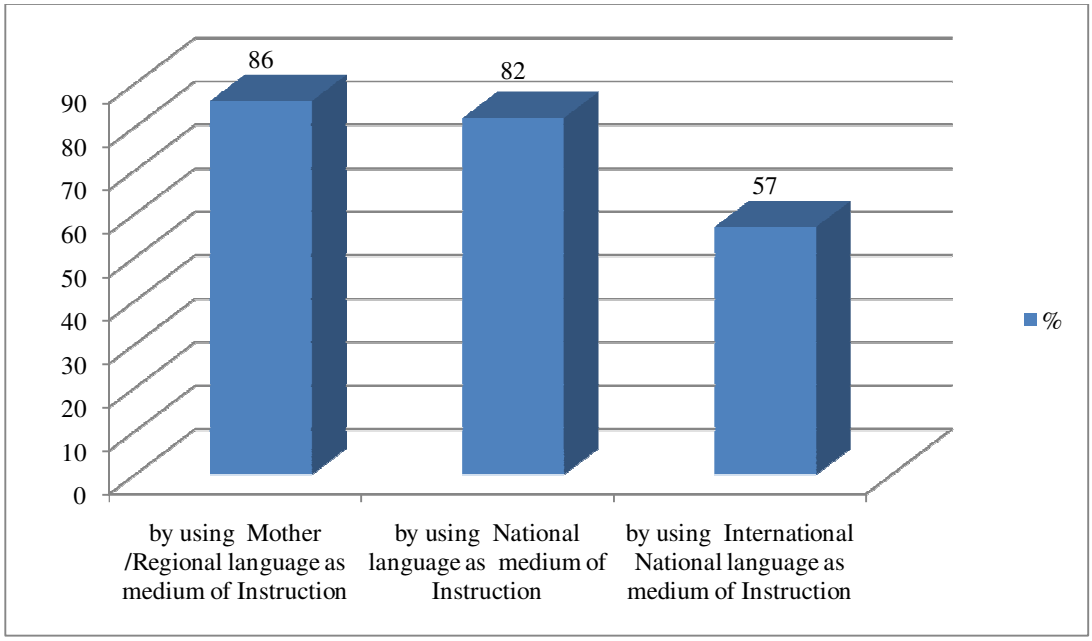

Figure 2. Post-test analysis

CONCLUSIONS & DISCUSSION

The cumulative average result of post-tests, i.e. 86% from native and 85% from national languages in comparison to 57% from international language as instructional language suggest that when it comes to concept clarity and cognitive development in Science, native and regional languages are the most easily comprehendible for the students as far as instructional language is concerned in the selected grade level.

It is an undeniable fact that all humans are most comfortable with the language that they use in their daily life; the language in which they think. It is should be very clear that science is also very closely associated with our daily life, hence, it is only fitting to inculcate native or regional languages in instructions instead of a foreign language especially at elementary level to funnel down the difficult concepts and contents of a subject area such as science.

The study also identifies that the National Language is almost as effective as the Native and Regional languages when used as instructional medium. This is mostly because the students of this level are very much familiar with the languages used in their environment especially when we consider the factor of cultural diversity. All the communities have to have a common medium of communication which is obviously the National Language (Urdu). Therefore, students' comprehension skills of National Language are constantly improving.

RECOMMENDATIONS AND SUGGESTIONS

Use Native and National Language as Instructional Languages for Development of Scientific Cognition Especially For Marginalized Elementary Schools

The efficacy and effectiveness of using native language or the 'mother tongue' and national language as the primary languages of instruction is imperative in the context of teaching a subject such as science. It is also necessary to emphasize the need for using these instructional languages in marginalized elementary schools because of the lack of exposure to the international perspective and the influence of environment and daily life of students on their learning.

Gradual Involvement of Foreign Language in Instructions

The foreign language (English) should only be gradually introduced and mixed with instructions from a low to high level for clarity of concepts and development of clear understanding in scientific content.

The Standard of Teaching Foreign Language As a Subject Should Be Improved

Subject teaching of foreign language skills should be made efficient as clear concepts of science that are learnt in native language can be easily translated to foreign language. This only implies that the students' understanding and skill set of foreign language meet the relevant standards and benchmarks. Teachers can also integrate the vocabulary of a foreign or international language as far as subject-to-subject and grade-to-grade progression is concerned while teaching a foreign language.

REFERENCES

Ball, J. (2010). Enhancing learning of children from diverse language backgrounds: Mother tongue-based bilingual or multilingual education in the early years, UNESCO, http://unesdoc.unesco.org/images/0018/001869/186961e.pdf

Thompkins, G. E. & Hoskisson, K. (1995). *Language Arts.*Content and Teaching Strategies. London: Prentice-Hall, Inc.

UNESCO. (1953). *The use of vernacular language in education. Monographs on Fundamental Education.* France: UNESCO

UNESCO. (2003). *Education in a Multilingual World*. Paris, UNESCO. (UNESCO Education Position Paper). Retrieved on July 01, 2007 from http://unesdoc.unesco.org/images/0012/001297/129728e.pdf

UNESCO. (2008). Mother *tongue matters: local language as a key to effective learning*. Paris: UNESCO

British Council's report. (2010). "Teaching and Learning in Pakistan: The Role of Language In Education". Retrieved from http://www.britishcouncil.org/pakistan-efl-report-launch-in-news.pdf