

 <p>ISSN 2631-2131</p>	<p>4. ENGLISH MEDIUM OF INSTRUCTION IN MULTILINGUAL SCIENCE CLASSES: TEACHING SCIENCE OR LANGUAGE?</p> <p>–By Bhandari D. P.</p>
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Abstract

English medium of instruction in multilingual science classes: teaching science or language? is an attempt to identify the effects, methods, and approaches of teaching science in English medium of instruction in Multilingual (ML) science classes. The article is prepared on the basis of in-depth interview taken with science teachers who are teaching science in multilingual classes. Three science teachers are selected purposively from different three (English Medium Instructions) EMI school of Kathmandu valley. After taking the interview it was transcribed, coded and generated the theme. Based on the themes generated it was found that the EMI is important for teaching and learning but it is not everything. Similarly, it was found that the teaching of science is not similar to teaching the grammar structures and always not possible to use English as medium of in making the concept clear of theoretical ideas of science.

Keywords: English medium of instruction, Multilingual classes Teaching science,

Background

It is generally known that English is an international language. It is spoken throughout the world. It is the first language for many native speakers and also a second and foreign language for millions of people throughout the world. It is a trade language for many national and international businesses. It is also a major official language for United Nations. It is also taken as an official language by many countries of the world. It is lingua franca and the main medium of communication for many people who speak languages other than English. It is also a main subject of teaching and learning.

Most of the higher education throughout the world is offered in the English medium. Moreover, English is the language of global interest; it is the medium of international communication. It is also the language of politics business throughout the world. Freeman (2007) mentions that it is witnessing a tremendous increase in the demand of English around the world. It is not only due to different changing demographics but also because of the trend towards globalization. The present-day world is using English language as a means to transmit its development, changes, problems, and many more things. Because of rapid change in developmental sectors and many other fields it is needed to develop global awareness and which is possible because of English language as the medium of communication. The importance of English language in the world can be more clear from the saying of (Holmes, 2008) as cited in Khatri (2019) that where new jobs are created by industrialization, they are of introduced by groups of using a majority group language with status often a world language such as English, Spanish or French. Globalization has also contributed to this trend. In this present time people are involving in global jobs they are also engaging in different works throughout the world, which is possible because of the English language.

Apparently, teaching English in Nepal is traced back to the 1910 BS when Jang Bahadur Rana established Darbar High School to teach English to the members of Rana family. Gradually the craze to English language in Nepal is being increased. Schools started to teach many subjects in English medium and it became a means of advertisement to enroll the students to their schools. Even though Nepal is a multilingual and multiethnic country with 123 languages and more than 103 ethnic communities, children in most ethno-linguistic communities are deprived of basic education in their respective mother tongues (Bista, 2011). When the private school started teaching in English medium, the government schools also started using English as the medium of instruction and in today's time it became a main medium of instruction of teaching and learning in many schools of Nepal.

English is second or foreign language in Nepal. It is a compulsory subject from class one to masters' level and also a main specialized subject in higher education of Nepal. Now days it is being a trend to run schools in English medium instructions. Private schools have already made English as the medium of instruction and medium of communication in their school premises. Most of the schools have selected the English medium textbook for their students. Students are encouraged and forced to speak in English inside and outside their classroom. It is being like a fashion to run school in English medium instruction. Regarding the position of English in Nepal, Awasthi (2003, as cited in Bhattarai and Gautam, 2007) states:

Nepal is providing education through six Universities about 1000 constituent and affiliated

colleges, some 1500 higher secondary schools and 42100 schools of which 7154 are privately run and the rest are publicly run. English occupies a prominent position in the total education system in Nepal. (p. 32)

Phyak (2016, p. 210) confirms, “public schools are shifting to EMI to compete with private schools”. Not only private schools but also community based schools also have started running schools in English medium. The government has also developed the text book in English medium. Most of the community schools in our context are using the translated version of the government textbook. Some public schools are using the private publications’ text books to make their teaching and learning in English medium. Though the community schools are using the English translated version of the textbook, many teachers of community schools are not well trained to run effective English medium classes.

In an effort to promote English medium teaching in public schools, the government is set to start intensive training for teachers from primary schools across the country. The National Centre for Education Development (NCED), with support from British Council, decided to provide the training after significant number of students started to quit public schools to join private ones mainly because of English medium classes.

English medium of instruction in Nepal

English was taught as compulsory subject in our school education in the past. But these days English has been started to use as the medium of instruction even in the government schools. If we go back to the medium of instruction system of Nepali schools, it is found that the private schools had already started using English as the medium of instruction but government schools seem to be motivated later. The expectation of parents, desire of students started to make the English as a medium of instruction in different public schools of Nepal. It is common perception among Nepalese people that children will have better future prospects if they have English medium schooling (Aryal, 2013). This shows that the opportunity in English is to be provided from school level. Wagle (2015) as cited in Shah (2015) argues that if about 150 Nepali medium schools could out perform in school leaving examination (SLC), the medium of instruction may not be responsible for poor quality education in public schools. The MOE can advisably look at other aspects such as quality teachers, teaching materials and resources, curriculum and syllabus and school management. In the same way, Shah (2015) says that there may not be much harm to go for EMI education provided that the MoE can ensure the availability of qualified and proficient English speaking teachers in service professional development courses teaching materials and

resources, technical support to the schools and proper plans and principles.

Nepal is also a country, in which English is a subject as well as medium of instruction. EMI refers to a situation where learners for whom English is an additional language are receiving some or all of their education in English, i.e. at any stage of the education cycle. EMI policy, particularly in basic education, is controversial and EMI practice, especially at primary school level, is contested (British Council concept paper on EMI)

Many studies are conducted on EMI; they show that even many schools are adopting English medium of instruction it is not found effective. Nepal is called developing country, it has not been adopted any concrete policy regarding the medium of instruction and implication of EMI in public schools like many developing countries in Nepal. The government sometimes said that EMI can be adopted in even public schools but the full effect to implement the EMI is not found. Some of the developing countries like Ghana, Turkey, Rwanda have failed to continue EMI because of the lack of educational infrastructure, teachers' proficiency in English, proper teacher education program and in-service professional development (Tylor, 2010) as cited in Shah 2015. So that, in Nepal also it is needed to find the situation of EMI applied school's situation its' effectiveness in those schools. If it started to use without proper plan and study it could be difficult to continue. Many researches on EMI have been carried out from teacher's prospective but still there lack from students prospective. My interest is to find the effectiveness of EMI in public schools from students' prospective. EMI is neither simple nor straightforward; rather it is quite a complex, confusing and challenging phenomenon for the teachers of public schools and for students. It is being difficult for those teachers who have been teaching all subjects from their earlier teaching career and also being difficult for the students who did not get ample exposure in English from their earlier classes. These factors drew my interest on EMI and its situation in public schools of Nepal.

Multilingualism

Multilingualism is the use of more than one language, either by an individual speaker or by a group of speakers. Multilingualism is the complete competence and mastery in another language other than mother tongue. Multilingualism refers to the language situation where the speakers use more than two languages in the same setting for similar purposes. The people who are multilingual do not necessarily have exactly the same degree of abilities in all the languages. Typically, multilingual have varying degrees of command of the different repertoires. The differences in competence in the various languages might range from command of a few lexical items, formulaic expressions such as: greetings, rudimentary conversational skills and the way to excellent command of the

grammar, vocabulary, specialized register and styles. The other languages can be more than one. A person who can speak multiple languages is known as a *polyglot* or a *multilingual*. The original language a person grows up speaking is known as their first language or mother tongue. Someone who is raised speaking two first languages or mother tongues is called a simultaneous bilingual. If they learn a second language later, they are called a sequential bilingual. Multilingualism is a complex, vibrant and ever-intriguing phenomenon. Today the significance of multilingualism has spilled over its local and private roles into having a much broader, global importance and it is one of the most essential social practices in the world.

Situation of classroom

Nepal is multilingual, multicultural, multi-ethnic and multi-religious country so that the classes at school. English is being taught in diverse contexts around the globe. Teaching of English in multilingual and multicultural contexts in Nepal is one of the major challenges in ELT. The majority of classes in Nepal consist of linguistic and cultural diversity where students need to have different learning materials, methodologies and learning styles which help them minimize the problems of interaction and comprehension. Nepal is rich in cultural, ethnic and ecological diversity. The previous census has recorded 123 national languages in addition to 'other' languages. The language situation thus shows that Nepal is a multilingual country. Since the country is multi lingual, the education opportunity should also be given to the children of different language families (Awasthi, 2013).

It means that our Nepali classrooms are multicultural so that learning English. A classroom that welcomes a multilingual atmosphere is more likely to produce children who understand that to be equal to someone, does not mean they have to be the same as them. Multilingual instruction fosters meaningful diplomacy by growing appreciations of the children of different linguistics backgrounds. Most of the Nepalese classes are multilingual. A multilingual class is one with a mix of students from various places who may speak different languages. Students in multilingual classes cannot talk in their first language because the students with other first language may not understand it. In our classes students are from various linguistic backgrounds.

Statement of the Problem

The present situation is the time of globalization. The world is being global village due to the language and development of science and technology. The spread of the development is possible because of the English language. The English language is now become the dominant language over other languages. The early shift from mother tongue instruction to English in this case,

has implications for academic success or failure as reflected in Cummins (1981). According to Cummins (1981) it takes about two years for a child to acquire basic interpersonal communication skills (BICS) that are needed for informal communication or conversation. But it takes about five to seven years to acquire sufficient cognitive academic language proficiency (CALP) i.e. sophisticated language required for academic success (Cummins, 1981). Proficiency in the mother tongue helps in acquiring the second language. This implies that if the child has high levels of proficiency in the mother tongue, such language skills can influence the child's academic progress (Cummins, 1979; Lemmer, 1996). In our context also English is taught and learnt as a foreign language. In past it used to be taught as a subject but now the English language has been started to use as the medium of instruction. The government has also made the policy to adopt English as the medium of instruction. For example, MoE (2014a), in its National Early Grade Reading Program document mentions that "the main reason why community schools are shifting to English is to stave off the threat from private schools and to try and keep their enrolments from declining and responding to parental demand for English" (p. 8). The national School Sector Reform Plan (2009 – 2015), a major policy and program document to reform the education system of Nepal, has made it clear that the choice of medium of instruction in schools will be determined by the SMC in consultation with other stakeholders. This policy seems to be operating, as parents interviewed report that they want their children to study in English medium.

So that schools have started using English as the medium of instruction. Many schools including the government schools have also started teaching every subject in English. However, the students from diverse linguistic and educational background are getting trouble in learning all the content of every subject in English. Our classes are also diverse linguistically and are multilingual. In this scenario teaching every subject in English does not seem to be effective. To be specific the situation of teaching science in EMI is observed. Science is technical subject and has many terms and vocabularies are easy to explore in English. However, there are many problems of teaching science in English because every term and every content those are in the science of school level are difficult to teach only in English. If only the EMI is adopted to teach science, there may be vagueness in teaching and learning science. The students may not be able to grasp all the examples in science. The teachers of science sometimes think that whether they are teaching English language or technical subject science.

In the 21st century, technology is highly advanced. The school curriculum should prepare learners to meet the challenges of the new millennium. The learners should be encouraged to do Mathematics and Science (including computer literacy) that will help them to cope with the changing world of technology. In the past, especially in our schools, Mathematics and Science

were reserved by clever students, but now many students are interested to learn science and mathematics. This is one of the challenges that teachers face in the classrooms as some of them have little or basic knowledge in these subjects (Mathematics and Science).

In the context of this study, it is important to prepare all the learners for the future by providing them with quality education. This could be possible if the teachers are committed and confident in their teaching and if they use innovative teaching styles that are learner-centered. This is hardly possible if the language of instruction is one that teachers and learners do not command well. Also, if the interaction or communication in the classroom occurs in a language that both the teachers and the learners know well, it seems likely that the learners' academic performance would improve.

Review of related Literature

Literature review in research refers to the study of previously done work to find the gap in research. According to Heartly (2008) literature review can show the history of field, review the work done in specific time period, plot the development of a line reasoning, integrate and synthesize work from different research areas, evaluate the current state of evidence for a particular viewpoint and reveal inadequacies in the literature and point to where further research needs to be done. According to Cresswell (2012) a literature review is a written summary of journal articles, books, and other documents that describes the past and current state of information on the topic of our research study. The purpose of this study following types studies were studies as the literature.

David (2020) studied on the effect and implication of the use of English medium of instruction. Education is founded on such fundamental aspects as communication. Acquisition of knowledge can therefore only take place in the presence of effective communication. The medium through which communication takes place assumes a central role in the entire process of learning and teaching. Mathematics concepts, being perceived by many as challenging, require a medium of instruction that is clear and easily understandable by learners. The objective of this study was to determine the effects, opinions and implications of the use of English in teaching Mathematics in Thai public schools. Three instruments; Questionnaires, an Interview Schedule and a written test were employed to realize the objectives. It was established that English as a medium of instruction in teaching Mathematics has fundamental effects on the Thai learners, including but not limited to misperception, demotivation and academic development impairment. The learners suggested code-switching as a medium of instruction.

Dollete and Husarida (2019) studied on Perceived effectiveness on the use of English language in teaching Mathematics and Science. This study investigated the perceived level of effectiveness on the use of English in teaching mathematics and science in one bilingual school in Jambi, Sumatra, Indonesia. Students from grades 5 and 6 and six teachers participated in the study by providing data on their experiences in learning and teaching Mathematics and Science using English medium for instruction. A questionnaire was used in this study consisting of the socio-demographic characteristics of the students and teacher, school factors, perceived level of effectiveness on the use of English in teaching mathematics and science. Statistical procedures of descriptive statistics and Pearson correlation using SPSS 20 were used to analyze data. The major findings of the study were (1) most participants perceived that English medium instruction helped them in improving their English reading and writing skills; (2) most participants agreed with the helpfulness of English as a Medium Instruction; (3) there was no significant relationship between teachers' socio-demographic characteristics and the perceived level of effectiveness on the use of English in teaching Mathematics and Science; (4) there was a significant relationship between students' socio-demographic characteristics and the perceived level of effectiveness on the use of English in teaching mathematics and science; (5) there was a significant relationship between school factors such as facilities and equipment with the perceived level of effectiveness on the use of English in teaching mathematics and sciences perceived by students; (6) there was a negative significant relationship between school factors and the perceived level of effectiveness on the use of English in teaching mathematics and science perceived by teachers. Recommendations are also discussed.

Hudson (1007) studied on teaching science using EMI learning to teach science using English as the medium of instruction. It studies about key areas such as science and mathematics education are high on the agenda. However, as considerable world knowledge is written in English, Malaysian pre-service teachers are being educated to teach these areas using English as the Medium of Instruction (EMI). This study describes Malaysian pre-service teachers' perceptions about their preparation for learning to teach science using EMI at the conclusion of their first year of a new Bachelor of Education Studies (Primary Science) degree. An open-ended questionnaire collected data from 50 Malaysian pre-service teachers from a Malaysian institute. These pre-service teachers indicated that English vocabulary, grammar, and pronunciation were paramount for their concept development in science education. Education is the value of life (Badal, 2017).

Mansor et.al (2011) studied on Teachers perspective of using English as a medium of instruction in mathematics and science subjects. The policy of changing the medium of instruction in the teaching of mathematics and science from Bahasa Melayu to English is an important innovation affecting

teachers of mathematics and science. It poses special challenges not only for teachers who have been trained in the Malay medium but also for those trained in English. This investigation seeks to find out the achievement of students in mathematics and science subjects after considering the impact of prominent independent variables such as, the school, class and home environment, the teaching methodology and the teachers' attitude. Analysis of the development in the state of Terengganu has been carried out by the distribution of questionnaires to teachers involved. Result of the correlation and multiple regressions indicated that all the three factors are significantly associated towards students' achievement. However, the teaching methodology indicated a low level of moderate correlation which is believed to be the immediate issue that needed to be addressed in the new system.

Moore et.al (2018), studied on teaching and learning science in linguistically diverse classrooms. In their article, the authors present the results of a classroom research project by responding to one main question: How is continuity between everyday language and the language of science construed in a bilingual science classroom where the teacher and the students do not speak the same minority language?

Specifically, Unasal et al. (2017) examine how bilingual students construe relations between everyday language and the language of science in a class taught in Swedish, in which all students also spoke Turkish, whereas the teacher also spoke Bosnian, both being minority languages in the context of Swedish schools. In this forum, we briefly discuss why close attention to bilingual dynamics emerging in classrooms such as those highlighted by them matters for science education.

Nomlomo (2007), studied on Science Teaching and learning through the medium of English and Isixhosa: A Comparative Study in two primary schools in the western Cape which compares science teaching and learning in English and isiXhosa in the Intermediate Phase (Grades 4 – 6) in two primary schools in the Western Cape. It explores the effects of using learners' home language (isiXhosa) and second language (English) as languages of learning and teaching science. The study is part of a broader project called the Language of Instruction in Tanzania and South Africa (LOITASA). The LOITASA Project is a North-South-South link between Norway, South Africa and Tanzania which examines the effects of using African languages, isiXhosa and Kiswahili as languages of instruction in education. This study is conceived against the background of English as a means of social, economic and educational advancement, and the marginalization of African languages in education. It explores the various language policies which influence the hegemony of English on the African continent, with special reference to South Africa. Following an interactionist theoretical framework, this study investigated the relationship between language competence

and teacher-learner interaction in science when English or isiXhosa were used as languages of instruction in the Intermediate Phase. It shows the importance of appropriate language input in facilitating teaching and learning in the classroom. The research findings show that teachers and learners communicate better in their mother tongue, isiXhosa, than in English.

Schützenhöfer and Mathelitsch (2014), studied on English as a medium of instruction in science-teaching. This empirical study was carried out at a Grammar School in Graz where pupils were already familiar with bilingual instruction in content-area subjects. When this survey was done in the summer-term 2000 the pupils were in the seventh form of Grammar School, this is one year before A-level. Their Physics lessons on the topic 'Electricity and Magnetism' were divided into two parts, into theoretical instruction and practical lab-work. Divided in groups of three, pupils had to read the instruction of an experiment, arrange the listed components as shown in a circuit diagram, carry out the experiment and make lab-notes of their observations. English as a Medium of Instruction is an innovative bilingual concept which influences foreign language abilities and cultural awareness positively. In the future, the method of EMI will spread even more and prepare young people for a cosmopolitan social and professional life. As EMI is a quite new method, scientific research concerning the instruction of Physics through the medium of English is at the very beginning. There are several questions which cannot be answered with scientific certainty so far.

Objectives

This concept has the following objectives:

- To find out the effect of English medium of instruction in teaching and learning science in MLE classes
- To find out methods and approaches used to teach science using EMI

Methodology

This study is qualitative in nature because it also seeks to develop detail understanding about EMI. Qualitative research presents a non-quantitative type of analysis. Qualitative research is collecting, analyzing and interpreting data by observing what people do and say. Qualitative research refers to the meanings, definitions, characteristics, symbols, metaphors, and description of things. Qualitative research is much more subjective and uses very different methods of collecting information, mainly individual, in-depth interviews and focus groups. The nature of this type of research is exploratory and open ended. Small numbers of people are interviewed in

depth and or a relatively small number of focus groups are conducted. Among the various types of qualitative research this study is phenomenological in its nature, since it tries to explore the experiences of students about the use of English Medium of instruction in teaching and learning. Ontology refers to the study of being and the nature of the reality.

Since our school classes are multilingual, different types of languages are spoken by the students of classes. Some of the students speak Newari language, some are from Tamang community and they speak Tamang language, some of the students are from Maithili community they speak Maithili language; some students have Hindi as their first language, in this way the classes seem to be multilingual. To explore the idea in depth interview will be taken to the science teachers who are teaching science in English medium of instruction. The teachers who are teaching science in these MLE classes will be interviewed using semi-structured interview. After the interview is taken the interview will be transcribed and coded. After taking the interview of the science teacher in EMI schools. Three science teachers will be selected purposively from different three EMI schools to collect the information. The teachers are selected from English medium of instruction schools. After that the interview will be transcribed, coded and generated the theme to draw the conclusion. Finally, themes will be generated to interpret the result.

Result and discussion

English medium is need but not everything

Now days most of the schools are oriented towards the use of English medium of instruction. No doubt English is an international language and is used throughout the world. It is needed for anyone who want to be involved in any kind of work that is done in international area. But if we only focus on English sometimes it is difficult to make some concept clear. Especially in science classes the theoretical concept cannot be made as clear as it can be made in students' first language. As one of the respondent said in interview:

Language is means of communication. Any language can be used to make any concept clear. In the name of standardization there should not be any kind of imposition to learners. It is better to make learners clear using any language. Though most of the terms and things in science classes can be presented using English language but sometimes to make some theoretical concept clear we may use students' first language or we can use any language that is understandable by the learners.

It tells that the concepts of science can be made clearer in student's first language or any language

that is understood by the learners. There can be various concepts which must be presented in English and the learners have learned from their foundation level. It means that learners need English medium but it is not everything in learning.

Teaching science is not teaching structure of language

Science is a technical subject and there are many terms that are to be presented in English. As one of the respondents in the interview said:

Science is a technical subject, and students have learnt many basic things in their basic level they might have learnt many things in Mother tongue and in above class most of the technical term of the science can be presented either in mother tongue or English. For example, the mechanical, sodium, potassium, sometimes it may not be difficult to teach in either in mother tongue or English. But it is not easy to teach in mother tongue because teachers are not trained enough to use every mother tongue of the students as our students are from diverse linguistic background.

To present these types of technical term English most and the EMI is important. But if we try using only English medium of instruction to teach every concept student may not understand the concept clearly and sometimes the content is to be taught using some phrases or words but that cannot be presented using appropriate grammatical structures that's why teaching science cannot be taught in English as it grammar of language is taught with appropriate grammatical structure. When tis is asked to respondent he opined as:

That's true. Because concept development is easy in mother tongue because what types of concept he she has from the foundation of the language. The exact translation is not possible to make of each and every word. So what concept does the learner has made in his early age it would be the base for his learning. So teaching science is not as teaching grammar or literature so sometimes any language that is needed for learners to understand is needed.

It clearly said that teaching science is not like teaching the structure of language. It is also not possible to make exact translation of the things occur in science among the languages. So that it only needed to make learners clear about the content occurred in science subject.

Difficult in clearing the theoretical concepts of science in English

Various terms are to be taught in English but the use of only English medium of instruction in

science class sometimes cannot make the theoretical concept clear as one of the respondents said:

For example, Demonstration, e.g. Magnate, Drawing, Practical, concept development is made either by discussion, group work, student's center question answer, based on their experience. Sometimes theoretical concepts are taught using discussion.

There are various hypothetical and theoretical concepts that the learners feel easy to understand in their mother tongue. Since our classes are multilingual sometimes the learners present their own language in the classes to talk about various things. The above mentioned methods like demonstration, question answer, practical field visit can be used while making the theoretical and practical concept of science.

Students mother tongue has effect in science classes

While teaching science in English in any medium the students start using their mother tongue for example if the teacher teaches saying because of germs we can be affected by fever, the students from Hindi background may tell I am sufferer with 'Bukhar'. It can be clear with the saying of one of the respondents:

Yes, such situation frequently occurs for example 'rukh' in Nepali or 'tree' in English Ganchi, germs cause fever Bukhar. It is making that the teacher must be aware about various things from the students. It is needed to learn many words even from the students. It is getting difficult to use only one language.

In this way the mother tongue can be used to make the students clear about different concepts of science. The mother tongue is important to make the learners to make some concepts clearer.

Conclusion

This article has explored the situation of school education and medium of instruction. It mainly focused on public school where EMI is applied and focused on the experience of the science teachers. English as a medium of instruction is an important tool to develop the students learning achievement and it is can be an important to teach some of the fundamental concepts of science. Since, our classes are multilingual students are from different linguistic backgrounds. The science teacher need to develop their professionalism they may need to learn various words and phrases from different language and also they get chance to learn from their students. EMI is also used for developing teachers' professionalism. From the various studies it was seen that the development

of English language among the students can be seen better after it is applied as the medium of instruction. This study also explored that the need of the day and the medium of instruction is to be made clear with clear policy about teaching and learning science at school level. This study can add something for the policy maker, since it raised the voice of students. From the study it is seen that students are also in favor of English as the medium of instruction. But it is seen that many things from different concern authorities have to be done to improve the existing situation.

Even the government schools have started teaching and learning in English there are many problems which have been explored from the data. Some issues which are still up to the government level. For example, the issues related to policy. There is not concrete policy regarding the medium of instruction. Even the schools have started to teach in English medium there is the right to education in mother tongue up to primary level in constitution of Nepal, which need to be addressed by the government so that schools can choose the clear path about the medium of instruction. Similarly, there are some problem regarding the school administration like the materials and teachers training. From the discussion also it is explored that if the teacher is trained enough about EMI in government schools they can do better performance in teaching. In the same way there is the lack of materials in teaching and learning. Only following the English translated books and English medium books may not be enough to enhance teaching and learning in English. For this there must be supplementary materials so that teaching and learning can be more effective in English. In the same way we have many teachers who are teaching following the traditional methods and still they are not ready to be changed and they do not want to be changed. There must be transformation in their thinking and if such teachers do not want to be changed there must be some ways to manage the situation. The door must be opened by such teachers and government. It is very important thing that the student's effort must be great in learning. Now a day we see many students who are not enthusiastic in learning rather they are interested in other many things. It may be due to the home environment and parents' awareness about their children's learning. So that, the parental awareness about their children's learning is also important thing in effectiveness of EMI. It is needed to identify the teachers who are following traditional way of teaching and not able to adopt EMI effectively. After that they must be trained well. It is also necessary to hear the teachers' voice about EMI so that it can adopt effectively.

Even many studies have been carried in the field of EMI still many things are left behind to find. This study is a small effort to bring the science teacher experience in multilingual classes who are teaching science using EMI. It brings some unheard things but reality about teaching science in EMI. Teachers are important to make any kind of teaching and learning effective but still, the science teachers are not trained enough to use EMI effectively in science classes with various

teaching materials. Still there is the lack of teaching materials in teaching science in English medium of instruction and it is also needed to develop and construct teaching materials in EMI for the contexts of multilingual classes.

Reference

- Awasthi, L.D. (2004). Exploring monolingual school practices in multilingual Nepal. PhD Thesis. Copenhagen: Danmarks Pædagogiske Danish University of Education.
- Badal, B. (2017). Social Welfare Model of Rural Development. *Nepalese Journal of Development and Rural Studies*, 14(1-2), 1-11. <https://doi.org/10.3126/njdrs.v14i1-2.19642>
- Bista, K. (2011). *An application of cooperative learning to teach English as a second/foreign language in Nepal*. Berlin: LAP LAMBERT Academic Publishing
- Claudia, H. and et.al. (2002). English as a medium of instruction in science-teaching. Institute for Theoretical Physics, University of Graz, Austria
- Government of Nepal (2009). *School sector reform plan 2009-2015*. Kathmandu: Government of Nepal.
- Hudson, P. (2007) Learning to teach science using English as the medium of instruction.
- Husarida, H., & Dollete, R. (2019). *Perceived Effectiveness on the Use of English Language in Teaching Mathematics and Science*. | *IRJE | Indonesian Research Journal in Education* |, 3(1), 177-198.
- Khatri, K. (2019). *Teachers' Attitudes towards English as medium of instruction*. Journal of NELTA Gandaki (JoNG), II, 43-54
- Mansor et.al. (2011). *Teachers perspective on English as a medium of instruction in mathematics and science subjects*: International journal of instruction.
- Ministry of Education (2006) *Education act*. Kathmandu: Ministry of Education. Ministry of Education (MoE) (2014a) National early grade reading program 2015 – 2020 programme document. Kathmandu: Ministry of Education.
- Moore, E. (2014). Constructing content and language knowledge in plurilingual student teamwork: Situated and longitudinal perspectives. *International Journal of Bilingual Education and*

Bilingualism, 17(5), 586–609. doi:10.1080/13670050.2013.860947.

- Nomlomo, V.S. (2007). Science teaching and learning through the medium of English and Isixhosa: a comparative study in two primary schools in the Western Cape. A thesis submitted in fulfillment of the requirements for the degree of Doctor of Philosophy in the Faculty of Education, University of the Western Cape.
- Phyak, P. (2015). *Multilingual education, social transformation and development in Nepal*. In H. Coleman (Ed.), *Language and social cohesion in the developing world*. Selected proceedings of the ninth language and development conference, 2011 (pp. 128-143). Colombo, Sri Lanka: British Council & Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- Ünsal, J. and et. al. (2017). Language Use in a Multilingual Class: A Study of the Relation between Bilingual Students' Languages and Their Meaning-Making in Science. *Res Sci Educ* (2018) 48:1027–1048 DOI 10.1007/s11165-016-9597-8
- Wafula W. David (2020) *The Effects and Implications of the Use of English as a Medium of Instruction in Mathematics on Thai Learners*. *International Journal of Social Sciences & Educational Studies*, 7 (2). pp. 89-107. ISSN 24091294
- Yang, M., O'Sullivan, P.S., Irby, D.M. *et al.* (2019). Challenges and adaptations in implementing an English-medium medical program case study in China. *BMC Med Educ* **19**, 15 <https://doi.org/10.1186/s12909-018-1452-3>