

## **Language of instruction as a barrier to learners' performance in Science Elementary Technology: a case study of Primary Six learners at Muhima Primary School**

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### **Abstract**

This study titled “Language of instruction as a barrier to learners’ performance in Science Elementary technology.....” was conducted at Muhima Primary school (E.P.Muhima) located in Nyarugenge District. It attempted to highlight to role of the language of instruction on learners’ poor performance in SET, clarify the importance of use of up-to-date teaching and learning aids in teaching SET programs and its impact on learners’ performance and understanding when the language of instruction lacks ground in the learners’ daily life environment. To gather information and get a clear picture of the current situation, triangulation was used. Hence, apart from the questionnaires, personal interviews and classroom observation, two SET tests: a pre-test and a post-test were also administered. Findings have collected by means of stated different instruments have revealed that students are not successful in learning of SET; the main problems being related to the fact that both teachers and learners have gaps in using English-the language of instruction; misuse of few available teaching materials and failure to manipulate them clearly as SET content is concerned, and finally those linked to non-usage of appropriate learner-centred teaching approaches that can promote cooperative learning among learners.

**Key-words: Language of instruction, science, elementary technology, and Performance**

## **1. Introduction**

Rwanda has decided to build a knowledge-based economy, with particular emphasis on science and technology as an engine of development. In this regard, the Ministry of education undertook education system reform in which different changes among others the language of instruction, existing curriculum were affected. Moreover, note that in 2008 the Government took a decision of making English the sole medium of instruction at all levels of education, a policy that was implemented immediately from January, 2009 though later based on UNESCO policy, the policy was slightly modified and teaching in English had to start in P3. Through Rwanda Education Board, the National Curriculum Development Centre found it wise to revise the Science and Elementary Technology (SET) curriculum in line with competence-based education despite teachers and learners' low level to fully interact in English through the teaching and learning process. The emphasis was put on methodology in order to equip learners with knowledge, skills and attitudes for development such as practical skills in order to solve the problem situations from real life. The problem is that most teachers who were in practice had done their education in French and Kinyarwanda-the mother tongue, and did not get sufficient prior training in English, the language they were supposed to use teaching. The situation becomes more complicated with learners since English is not rooted in Rwandan daily communication where Kinyarwanda dominates. Uwambayinama (2013) reiterated such a problematic situation claiming that the most important challenges were found to include but not be limited to teachers' and students' low levels of proficiency in the English language Science subjects seem to be already complicated to learners and teachers fail to make learners understand their content, especially when there is lack of relevant teaching aids, equipped laboratories, etc. The teaching of SET in Rwandan primary schools and particularly at E.P.Muhima became more challenging since learners have big gaps in using English language while SET appear to be usually tough form many learners.

To be brief, this study was designed to analyze the impact of the language of instruction behind the poor performance of P6 learners in SET in the academic year 2016/2017, and the role of teaching approaches and teaching materials in learners' failure to understand many key-concepts used in SET subject as well. Hence the study aimed to attain the following objectives: (i) To find out ways to improve learners' level of understanding despite barriers-related to the language of instruction in teaching and learning of SET at EP Muhima; (ii) To specify the appropriate teaching/learning approach to overcome the language of instruction as a barrier to learning and performing in SET at EP Muhima; and finally highlight the role of the teachers and learners in overcoming the language of instruction barriers to learning and performing in SET.

### *1.1. Background information to the study*

Muhima Primary School (EP MUHIMA) is one of the public primary schools located at Ubucuruzi village, Nyabugogo cell, and Muhima sector in Nyarugenge district that accommodate more than 3000 learners from P1 to P6 coming from different suburbs of Nyarugenge and Gasabo Districts. Through the teaching and learning process and through classroom observations made, we noticed that P6 learners do not perform well in SET, and one of the reasons might be the problems related to the language of instruction. Despite different methods adopted by teachers, the learners' performance was still low. We thought that using visual aid and cooperative approaches as ways to facilitate learners' understanding might be

effective in improving learners' comprehension. Hence, we decided to teach relying on cooperative learning strategies and using adequate teaching learning aids as the teaching of SET should be more practical-oriented. The designing and organization of teaching materials should put much emphasis on learners to interact and internalize the material taught. The teaching and learning materials should also be selected and collated systematically to serve the positive impact towards the effective teaching and learning process and promote cooperative learning so as to improve level of performance.

### *1.2. Statement of the problem*

Good teachers have always judged and monitored their students' progress through observations, experiments, written assignments, and research projects [Kentucky Institute for Education Research, 1995]. Through undertaken classroom observations, it was revealed that students' performance in SET is low. We recognized that they lack knowledge in SET-related key-concepts. The issue with the language of instruction as a barrier also remains a great challenge since it links to the realities that there is poor connection of teachers' ability to teach different subjects in English at different levels, while learners themselves are very poor in English and English is not present in the Rwandan base community as daily communication is concerned. As Mamenta (1985) put it forward, teachers cannot provide comprehensible input to their students if they cannot use the target language extensively while teaching. The author went on to state that this lack of ability to establish clear communication between teachers and students blocks the progress of learning and is a source of poor student performance, especially in cognitively demanding subjects such as science and mathematics. Moreover, teachers need to promote understanding by encouraging role playing, brainstorming and other teaching/learning activities that can lead to positive reinforcement and will of speaking in the instructional language. They also have to rely on the use of appropriate and interpretable teaching aids to facilitate students' understanding.

Through teaching sessions, despite the poor mastery of English what disturbs teachers is the realization that many students have more serious concurrent and perhaps concomitant problem of missing the essential prerequisite knowledge in SET. Not only do learners lack the information and practical skills in elementary science and technology, but also the comprehension of their study material which is severely compromised by poor vocabularies and technical terms in elementary science and technology, most of which have no equivalence in Kinyarwanda-the mother tongue. It becomes evident to researchers that the students may have inherited these problems from their previous class levels as a result of not using English properly on both teachers and students' side. Even though, there is a way to motivate learners to become excited to learn SET materials and instructional key-concepts, and encourage cooperative learning; teachers are still worried about learners who really struggle with the skills of reading and group working strategies and how they can help them to develop such skills so as to promote self-learning and self-teaching to improve comprehension as well as performance in SET. To enhance the effectiveness of the program, teachers must provide sufficient practical activities to the concerned learners beforehand, and make regular reviews on its effectiveness.

A study by Johnstone and Selepeng(2001) banked up the claims by Cummis (1981,1982, Spurlin, 1995, Krashen ,1982) stating that students who are struggling to learn science in a

second language lose at least 20 percent of their capacity to reason and understand in the process. In the same perspective, Thomas and Collier (1996) claimed that children whose primary language is not the language of the classroom may take 7 to 10 years to catch up to their peers academically if they have no support in school language development. Therefore, what is learnt is not much stored in memory since what is learned by rote is easily forgotten. After realizing that the language of instruction is a problem, we deeply thought about negative outcomes that can be associated with language of instruction, and decided to investigate the situation by carrying out this study finding answers to the following research questions: (i) How to cater for the language of instructional barriers and improve learners' level of understanding in the teaching and learning of SET at EP Muhima? (ii) What are the appropriate approaches to employ and overcome language of instruction-related barriers for positive learning and performance in SET at EP Muhima?, and (iii) What are teachers and learners' role in overcoming language of instruction barriers to learners' performance at EP Muhima?

Briefly, the study focus is limited to improving success in the teaching of elementary science and technology in P6 at E.P.Muhima by enhancing their level of comprehension of the language of instruction in SET through effective use of teaching and learning aids and cooperative learning. It generally aims to examine the influence of the use of T/L aids and cooperative learning approaches to enhance learners' performance despite the poor mastery of English, the language of instruction. In time, the study takes a time-span of the academic year 2016/2017 while it only involved all P6 registered learners at E.P.Muhima. .

## **2. Literature review**

Hart (1998) suggested that a good literature review should serve several purposes such as helping in inquiry processes', helping the researcher to distinguish between what has been done and what needs to be done; understand the structure of the problem, and discover important variables relevant to the study. This section brings about knowledge to the existing problem of language of instruction in learning SET as performance is concerned, referring to others' views in line with the topic. It highlights the effect of poor mastery of the language of instruction on students' performance as viewed by different scholars.

### *2.1. Effects of the language of instruction on learners' performance*

Many authors have attempted to clarify what language of instruction is, and Zorro et.al. (2006) pointed out that a language of instruction is a vehicle through which education is delivered. According to the author, the role of language of instruction can be compared to that of pipes in carrying water from one destination to another or that of copper wires in transmitting electricity from one station to another. Just as a pipe is an important medium in carrying water, and a copper wire an important medium for transmitting electricity; the language of instruction is an indispensable medium for transmitting/ imparting knowledge, skills, attitudes and values from teachers to the learners and among learners themselves. According to Senkoro (2005), the language of instruction is an important factor in determining the performance in learning science. It is also via language that each generation shares, disputes, resolves and refines its experience. However, in order for language to function that way, teachers and learners must be familiar and comfortable with it, what is lacking in most Rwandan school students and teachers since English became a language of instruction. With reference to the study undertaken by British Council,

talking about Rwandan teachers' fluency in English, Lynd (2010) stated that most Rwandan teachers did not have even intermediate levels of proficiency in English. According to the author, the survey found that 85% of primary teachers and 66% of secondary teachers had only beginner, elementary, or pre-intermediate levels of English proficiency based on the Common European Framework for Languages.

### *2.2. Need for English as language of instruction*

According to Tamtam et al. (2010), the current globalization and digital world phenomena has pushed many nations to adopt English as the language of teaching and learning even in the context where English is the second or foreign language to learners. Using English as a language of instruction might not be an obstacle to the full development of learners' conceptual abilities, provided that they are full conversant in the language of instruction (Webb, 2004).

However, with the reference to African context, extensive research shows that African learners are not proficient enough in English to be able to use it appropriately as the language of instruction (Aldous and Brock-Ute, 2011). Rwanda, being a country dominated by one national language-Kinyarwanda (the mother tongue), cannot make an exception as the problem is concerned. There are no facilities for Rwandan children to acquire English language and they all feel okay when addressing to each other in Kinyarwanda, their only common language.

Usually, it is claimed that the language used for learning and teaching is crucial for learners' acquisition of knowledge, understanding, the development of their skills, for the ability to demonstrate their acquired knowledge effectively in assignments and examinations. Hence, different strategies should be used to help Rwandan learners enjoy and get interests in learning SET despite their low level of mastery in English.

### *2.3. Learners' reasons to fail to copy with instructional language*

Recent research done by Anderson, Kagwesage and Rusanganwa (2012) revealed that learners low level of English language abilities is associated with the disjunction that exists between the language of instruction and the mother tongue used by learners often in their daily life in community and of some teachers who use mother tongue often in teaching and learning practices more than English language.

According to Sowell (1989), using manipulative materials in teaching can help both teachers and students learn how to relate real world situations to science symbolism. The author further stated that manipulative and audio-visual aids allow learners to discuss science ideas, concepts, and verbalize their knowledge thinking. Manipulative usage can also improve students' attitude toward science, and give instruction that uses concrete materials to help students retain information and increase scores on test (Sowell, 1989).

### *2.4. Pioneers of new school views about learning and language*

According to Vygotsky (1986), a language is not only a tool for expressing ideas and visualizing them, but also for creating knowledge. Hence, the use of concrete teaching and learning materials in teaching and learning of science would supplement learners' understanding and improve learners' performance and participation not only in elementary science and technology but also in other related disciplines.

## *2. 5. Language of instruction as a barrier to improving performance in SET*

It is deemed important to briefly write about some of the factors linked to the language of instruction that one can consider as barriers to improving performance in the teaching/learning of SET. Styles and strategies relied on by teachers and the impact of less motivation or demotivation resulting from studying in the language of instruction that learners do not master, are described below.

### *2.5.1. Styles and strategies*

Every person has its own personality traits that definitely affect their learning. Sometimes we are not even aware of them, but it is important for the learner to get to know different ways of learning so that they benefit as much as possible from the language of instruction. The term style refers to the fact that the characters of the learners are different in the sense that they might be for example more perceptive visually than aurally or more reflective in the process of the intake of information. The styles affect the way we learn and it is very important for a teacher to be attentive to the diversity of the pupils. The term strategy refers to the fact that we have different methods to approach and solve a problem or a task (Brown, 2000). In the classroom, bearing in mind that Rwandan learners are totally taught in a language that they are not familiar with, it is important to adopt active, friendly and learner-centered teaching and learning environment for all learners as SET is (practical subject) a content which involves things in real life.

### *2.5.2. Lack of motivation as a result of not mastering the language of instruction*

According to Brown (2000), there are more sides of motivation in the context of language of instruction. One is the motivation related to instrumental goals; the other one is the integrative motivation that comes from the learner's desire to be involved in the second language culture and many instances of intrinsic motivation may indeed turn out to be integrative while others may not. Referring to the Rwandan Curriculum and what we observed, at E.P. Muhima, P6 all the subjects, SET included, are taught and assessed in English, the language that is up to now less used in Rwanda. As the teaching of SET and other science subjects are concerned, and based on what happens with learners at E.P. Muhima, most of them are of low level in English. Hence, it becomes difficult for learners to interact with peers in English and respond to teachers, which lead them to lower performance.

To sum up, the review of literature gives us crucial foundation of how to conduct effective research about language of instruction and its effects to the learners' performance in SET. Since, the content is taught and acquired in second language, poor understanding of language of instruction is a big issue and obstacle in the acquisition of science and elementary technology are always observed.

## **3. Research methodology**

This section is concerned with steps and approaches followed to make the research achieve reliable and valid results. It highlights the research methodology to be employed within the classroom to improve performance in SET at E.P. Muhima. It discusses the research design, target group, methods and tools of data collection as well as the schedule of activities.

### *3.1. Research design*

Research design is defined by Roger and Jupp(1997) as the science and art of planning procedures for conducting studies so as to get the most valid findings. Data were collected from different respondents: learners, administrative staff and teachers. Though the study is qualitative-oriented as data analysis is concerned, quantitative approaches also made part of this work where statistical analysis was involved.

### *3.2. Population and target group*

Population can be defined as the group of people with one or more characteristics in common (Sowell, 1982). One can claim that all the learners from P1 to P6 at E.P. Muhima numbered in three thousand were part of the population. As the target is concerned, a number of 300 learners (159 females and 141 males) from different classes of P6 were involved.

### *3.3. Instruments and tools for data collection*

Data collection has involved more than single instruments namely: questionnaire, interview, informal discussions, and classroom observations. Hence, triangulation was thought to be of great help as gathering data is concerned.

#### *3.3.1. Questionnaires*

Nunan (1992 cited in Tabaro, 2014)) highlighted that the questionnaire is a relatively popular means of collecting data. According to the author, a questionnaire enables the researcher to collect data in field settings, and the data themselves are more amenable to quantification than discursive data such as free-form field notes, participants' observers' journals, and the transcripts of oral language. Questionnaires can be the mixture of open-ended and ended questions. In this study, questionnaires were set for learners and teachers to identify their prior knowledge, attitudes and views in learning and teaching elementary science and technology. They were also used in order to be aware of students' barriers in answering questions considering their poor understanding of the language of instruction in learning SET. In this study, 300 questionnaires were jealously distributed and all of them returned fully-completed by involved learner-respondents.

#### *3.3.2. Interviews*

A semi-structured interview was chosen in order to obtain a representation of the interviewees' viewpoints in relation to the research questions. We have implied the semi-structured form because we wanted all the interviews to be based on specific themes that can provide a structure to make the analysis easier and less subjective, as well as providing a foundation for detecting similarities and differences in the interviewees' answers. This has provided us with a clear picture of the interviewees' views on performance in SET, instead of focusing on the interviewer's questions based on theory only, which according to Bryman (2001) risks narrowing the interview and missing the nuances of the real situation. The interviews took place in privacy without recording the conversations. The method used is verbal communication and taking notes was deliberate. 3 teachers of primary six and the teachers who teach SET in primary 5 and 6 at EP Muhima participated and were interviewed in privacy, while 5 groups of five learners of P6 in each, were interviewed. For learners, we have decided to use objective question to save the time and it is obvious that by taking notes it is more difficult to concentrate on what the interviewee is saying and the combination of listening, writing and talking at the same time

could of course hinder the fluency of resulting questions and instant feedback from the interviewer to the interviewee.

### 3.3.3. Classroom observations

For a more wide-ranging picture of the school situation and learners performance, observations at different places and sessions were made. The observations took place in classrooms, the staff room, and the school yard. Both teachers and students were under observation. In order to check the extent to which learners, teachers and staff understand and use the language of instruction, and how it impact the academic performance. For teacher-respondents, we have used direct observation by informing teachers before so as to let them be prepared in advance and check what happens everywhere around. However, we have also implied indirect observations because there is always a risk that people who know they are being observed act a bit differently than they would normally.

Briefly, the methods highlighted above have enabled us to collect needed information and see what are the challenges faced by both teachers and learners in learning SET as a result of poor mastery of English language; lack of using teaching aids in an appropriate way and how the situation should be catered for.

## 4. Data presentation, analysis and interpretation

The information collected is presented, analyzed and interpreted accordingly. The results are grouped under different themes as they have provided answers to the research questions that eventually lead us to a conclusion of the study. The collected data are presented in tables and data are analyzed and interpreted by constant comparison of the result of findings.

Table1: Respondents

Sex	No. of respondents	% of respondents
Male	141	47%
Female	159	53%
<b>Total</b>	<b>300</b>	<b>100%</b>

As the result shows there is a big number of girls of 159 (53%) and 141(47%) boys. The situation can be explained by the fact that generally in Rwandan schools from primary up to lower level secondary education, girls tend to dominate in numbers. It is claimed that boys tend to drop out the school more than girls.

### 4.1. Learners' performance revealed from both the SET pre-test and SET post-test

To get an image of learners' performance in SET, two tests were planned and administered to learners with the aim of finding whether what is assumed that learners fail in SET is true. One test was given in the beginning of the study while the other one was provided when we are approaching the end of the study, after three months since we started to find out if there were an improvement in performance after teachers were advised to use cooperative learning approaches and appropriate teaching aid to help learners understand some key-words in science and technology despite their poor background in English, the language of instruction. Results of the two tests are presented in Table 2 below, and interpreted accordingly.

Table 2: Result of the pre- test

Marks in class	Centre of classes(xi)	Frequency(fi)	Fixi
10-20	15	17	255
20-30	25	20	500
30-40	35	62	2170
40-50	45	91	4095
50-60	55	50	2750
60-70	65	30	1950
70-80	75	20	1500
80-90	85	10	850
90-100	95	0	0
100		$\sum fi=300$	$\sum fixi=14070$

$$\frac{\sum fixi}{\sum fi} = \frac{14070}{300} = 46.9\%$$

Data presentation before using cooperative learning and use of teaching and learning aids in learning science for learners of p6 at Muhima and this table is the set of marks obtained in the pre-test. Results in Table 2 indicate that P6 students at EP Muhima were not ready to successfully perform due their low level of understanding in English, and their average of scoring is nearly 47%. These results show a big problem since these learners are candidate of national exams and as science is a good subject which provides contents of daily life. The fact that learners' low performance in SET is compromised by poor understanding of language of instruction implies that the method to be implemented need to cater on this issue as the language is the key to learning and performance. Hence, we came up with the ideas that cooperative learning is used to avoid the passivity form of learning of learners in a classroom; it may increase the level of learners for their better performance in teaching and learning science where students feel more comfortable asking questions to their colleagues rather than their teacher.

Table 3: Result of the post-test

Marks in class	Centre of classes(xi)	Frequency(fi)	Fixi
10-20	15	0	0
20-30	25	5	125
30-40	35	16	560
40-50	45	50	2250
50-60	55	76	4180
60-70	65	81	5265
70-80	75	43	3225
80-90	85	21	1785
90-100	95	8	760
		$\sum fi=300$	$\sum fixi=18150$

$$\frac{\sum fixi}{\sum fi} = \frac{18150}{300} = 60.5\%$$

Results in Table 3 indicate the students' scores after the implementation of cooperative learning and use of appropriate teaching and learning materials in learning and teaching SET at EP Muhima. The results indicate that the methods applied were of good help to learners as they improved in their performance. The results of learners in the post-test show that learners performance have increased significantly from 46.9% level of scores to 60.5% average level of

scoring. After analyzing the great improvement made, one can confirm the success of attainment of objective and success of strategies employed.

#### 4.2. Findings from learners' questionnaire

Apart from the SET pre-test and the SET post-test given to learners which aimed to give us an image of their performance in SET before and after using strategies to improve the teaching and learning process in SET, a questionnaire was given to respondent-learners. The 4 questions set aimed to find out whether cooperative learning approach is applied in their learning; the extent to which poor master of English-language of instruction and the poor use or non-usage of teaching aids impact on learners' performance in SET. The questionnaire also aimed to detail learners, reasons of failing in SET. Findings from the four questions are presented in the table below followed by a brief interpretation.

**Table 4: Learner- respondents' views on different questions**

Question number	Answers	Number of respondents	Percentages
Q1. Do you consult your classmates for given work in cooperative learning way?	A .I don't	186	62%
	b. Always	64	21.3%
	c. Most often	50	16.7%
<b>Total</b>	<b>3</b>	<b>300</b>	<b>100%</b>
Q2. To what extent do you think English cause problems in understanding and performing in SET?	a. less	15	5%
	b. a bit	52	17.3%
	b. highly	233	77.4%
<b>Total</b>	<b>3</b>	<b>300</b>	<b>100%</b>
Q3. Does the use of teaching and learning aids in SET simplify your understanding and performance?	a. Yes	289	96.3%
	b. No	11	3.7%
<b>Total</b>	<b>2</b>	<b>300</b>	<b>100%</b>
Q4. I fail in learning SET because:	a. I am not interested	63	21%
	b. I am not motivated	37	12.3%
	c. I don't understand the language of instruction	200	66.7%
<b>Total</b>	<b>3</b>	<b>300</b>	<b>100%</b>

Findings from Q1, Q2, Q3 as presented in table 4 present the characteristics of learners' way of learning, their perceptions of how poor English and the use of teaching aids impact on their performance in SET. Findings reveal also to the readers what learners think are based-reasons for them to fail in SET as provided in Q4. Hence, 186(62%) asserted to that they study by their own without consulting their peers for any difficulties they meet. Which proves that their collaboration in learning is low that would affect performance. Responding the way English affect their performance in SET, 77.4% declared that English recognition affect highly level of understanding in SET and 17.3% answered that its effects is not highly recognized it small and 5% stated that English do not affect learning of SET and performance the result mentioned above shows the views of the respondents on the way language of instruction affect their performance as the great number of respondents depicted this shows that the method of the teacher need to vary so as to supplement learners' understanding of language of instruction and the teacher when

teaching need to take into account on the learners ability of understanding so as to improve performance in SET.

Henceforth as teaching and learning aids in SET are available teachers need to make sure that it is better to use them effectively for every single subject lesson these materials would simply works as language of instruction as 66.7% of respondents said that not understanding language of instruction is the major threat to learners 'performance in SET. It has discovered that some techniques like use of cooperative learning are helpful to the learners but the students are not accustomed to use such method and the barrier of time availability as one period is equivalent to 40 minutes.

#### *4.3. Findings from teachers' questionnaire*

Involved teachers got a set of questionnaire comprising 5 questions aiming to find out whether they encourage their learners to cooperate in their learning; how English language appears to be a barrier to learners in learning SET; whether they easily get teaching aids at the school and what they think could be the best teaching approach in the teaching of SET considering poor mastery of English among learners. Ten teachers responded to the questionnaire, and findings are presented and discussed in the following paragraphs.

For the issue of cooperative learning, six respondents out of 10 claimed that their learners are always encouraged to work together as a team while four others said that they rarely do it. This shows that much effort is to be made and teachers have to act as facilitators creating opportunities for learners to interact among themselves solving SET related problems.

As the language of instruction and its barriers to learning are concerned, unanimously teachers claimed that English-the language of instruction remains a serious barrier to the teaching and learning of SET not only to learners, but to teachers too. Teachers have problem in this language since most of them did their education in French and Kinyarwanda many years ago when English language was given no much importance in Rwanda. However, they asserted that to cope with the new language policy whereby the government declared English to be the only language of instruction at all levels of education, and to secure their jobs they have attained short-training in English organised by the Ministry of Education through Rwanda Education Board. One teacher claimed that s/he still going to a language centre to improve in English language skills.

The other teacher witnessed the importance of teaching aids in overcoming difficulties related to the language of instruction for the learners who have not yet mastered English. S/he claims that when s/he started teaching SET in P5, it was a hard task to use little English s/he knew and help learners understand well the provided material. According to this teacher, learners could not interact in English at all, and they could not respond to the posed- probing questions while learning. One year later, s/he got time to discuss the problem with a colleague teaching the same subject at another school, and was advised to take time and design appropriate teaching aid and regularly use them. The teacher has finally confirmed that from the time s/he started using those school-made teaching aids learners have shown willingness to learn participating actively though the problem of failing to interact in English still persist. The teacher hopes that with time, learners' ability to interact in English will improve and they will even be able to interpret SET supporting materials in English to each other. Justifying the case, some of the respondents

claimed that the fact that most learners are not able to respond to teachers if asked SET questions in English orally. Others stated that learners are also not able to interact with their peers in English solving SET planned activities.

For the sake of availability of teaching aids, seven respondents (70%) affirmed that the school do not really provide update teaching aids, while the three (30% remaining assumed that the school avail teaching aids though not sufficient and updated. To get much more information on this aspect, those who opted for the non-provisional of relevant teaching aids by the school were asked to let us know what they do to cater for the problem. Three teachers stated that they sometimes try to make their own teaching aids with reference to the topic they are going to teach. Four teachers said that instead of making teaching aids, they prefer the use of drawings on the blackboard. Hence, one can say that teaching aids remain a serious problem also while it is generally known that if well manipulated they facilitate learners' understanding and simplify teachers' teaching process.

By means of classroom observations and interviews, we have discovered that different teachers do not use appropriate and relevant teaching aids. Later, interviewed on this aspect, most teachers claimed that the Rwanda Education Board does not provide such teaching aids like it was done some years ago. Some of them have even claimed that apart from the general teaching aids, Rwanda Education Board do not provide sufficient textbooks for both teachers and learners; and focus on providing general guideline for the topics to cover in different disciplines, SET included.

Responding to what could be the best approach to use while teaching SET for the sake of helping learners to get clear understanding of key-words in SET; teachers suggested the use of interactive and exploratory approaches whereby the provision of manipulative teaching aids can solve learners' poor understanding in SET despite the use of English as a language of instruction.

To sum up, one can claim that the findings have confirmed the problem of English-the language of instruction as one of the most barriers for both learners and teachers to successfully achieve goals assigned to the teaching of SET in Rwandan primary schools in general, and at E.P.Muhima in particular. There are also challenges linked to non-availability of up-to-date teaching aids, and less-productive teaching and learning approaches used by some teachers in the teaching of SET. It was suggested that teachers should used interactive and exploratory approaches to let learners play with teaching aids and know how they work. Teachers should also use simple English as well and create opportunities for learners to interact while solving SET activities in English. .

## **5. Conclusion and recommendations**

Taking into account the main objective of this study, based on the study findings on improving students' performance in learning SET at E.P. Muhima by overcoming language of instruction as barrier we can claim that cooperative learning and effective use of teaching and learning aids can improve learners' performance in SET as they enable to locate specific information easily. Moreover, if well used, teaching aids make students able to find details, draw inference, and they can even relate one clue to other clues in SET. The improvement can be seen in the result of post

test. As it has been presented in previous pages, the mean of score of pre-test was 46.9% in the beginning. Then, it increased to 60.5% in the post-test after adjusting the use of teaching aids for a successful teaching/learning process. Henceforth, this study has revealed that it is possible to increase the classroom situation making learners more active and overcome barriers related to English as a language of instruction if cooperative learning is promoted. The learners' participation becomes more active and they get rid of their barriers to ask and respond to question in the language of instruction if they learn in groups. Their motivation and confidence in learning SET also increased and they do not become shy to share their ideas and understanding with others and with the teacher.

As recommendations are concerned, for the sake of students' better performance in learning SET, teachers are suggested (i) To apply cooperative learning and use of teaching and learning aids properly while delivering any subjects topic. Definitely it can improve students' performance if well applied; (ii) To select teaching and learning materials (aids) based on students level of comprehension and their previous back ground and use the teaching and learning aids that students are familiar with; (iii) To encourage the learners to use cooperative learning while study and even revising what they have studied; (iv) To be facilitators or motivators not instructors to promote active participation of learners, and finally (v) To use of simple language and mainly focus on factual and simple teaching aids to interpret.

## References

- Alidou, H. & Brock-Utne, B. (2011). Teaching practices - teaching in a familiar language. In Ouane, A. & Glanz, C. (Eds.). *Optimising learning, education and publish in Africa: the language factor. A review and analysis of theory and practice in mother tongue and bilingual education in sub-Saharan Africa*. 159-186. UIL/ADEA.
- Andersson, I., Kagwesage, A. M. and Rusanganwa, J. (2012). Negotiating meaning in multilingual goupwork: a case study of higher education in Rwanda. *International Journal of Bilingual Education and Bilingualism*, 1-15
- Block-Utne, B. (2007). Language of instruction and students' performance: New insights from research in Tanzania and South Africa. *International Review of Education*, 53 (5-6).
- Brown, H. Douglas. (2000). *Principles of language learning and teaching*. White Plains, NY: Longman.
- Bryman, A. (2001). Multilingualism in South Africa with particular reference to the role of African languages in education. *International review of education*, Vol. 47(3-4): 323- 339.
- effectiveness. *NABE News*, 19(6), 33-35.
- Hart, C. (1998). *Doing a literature review*, London: SAGE Publications.
- John stone & Selepeng (2001). *Students struggling to learn science in second language*. [Online] Available: [www.led.edu.hk/.../kocakulah.pdf](http://www.led.edu.hk/.../kocakulah.pdf) ( January 7,2017).

Kentucky Institute of Education Research (1995). The implementation of performance assessment in Kentucky classrooms, Frankfort, KY: Kentucky Institute of Research.

Lynd, M. (2010). *Assessment report and proposal for an education strategy* (USAID/Rwanda report) [Online] Available: [http://pdf.usaid.gov/pdf\\_docs/PNADY121.pdf](http://pdf.usaid.gov/pdf_docs/PNADY121.pdf) (November 20,2016)..

Maminta, R. E. (1985). *Forms and functions in concept venture in Science and Mathematics* (Occasional papers). Singapore: SEAMEO Regional Language Centre.

Roger, S. & Jupp, V. (1997) (eds). *Data collection and Analysis*. Thousand Oaks (p.p.298-316), CA: SAGE Publications.

Senkoro, F E M K. (2005). Language of instruction: The forgotten factor in education quality and standards in Africa? Paper presentation at the CODESRIA General Assembly Maputo, Mozambique, 6-10 December.

Sowell, E. (1989). Effects of manipulative materials in mathematics instruction. *Journal for Research in Mathematics Education*, 20, 498-505.

Tabaro, C. (2014). Motivation and attitudes as factors affecting learning a second language in a basically monolingual community: The case study of English in Kigali city secondary schools, Brunei: Universiti Brunei Darussalam.

Tamtam, A.et ali. (2010). EMI for engineering education in Arab world and twenty first century challenges. *3rd International Symposium for Engineering Education*. Ireland : University College Cork.

Thomas, W.P., & Collier, V.P. (1996). Language-minority student achievement and program effectiveness. *NABE News*, 19(6), 33-35.

Uwambayinema, E. (2013). Science teachers' challenges implementing Rwanda's English as a medium of instruction policy: A case study of Nyarugenge district rural schools, Fresno: California State University.

Vygotsky, L. S. (1986). *Thought and language*. Cambridge: MIT Press, cop

Webb (2004). African Languages as media of instruction in South Africa: Stating the case. *Language problems and language planning*, 28(2)147-173.

Zorro, I. and Baracaldo, D. A. (2006). Cross-Curricular and a Cross Cultural Bridge in a Teacher Preparation program (Handouts). [Online] Available: in [http://nation/eltconference.org/resources/2006/Imelda\\_Zorro\\_Deisy\\_Baracaldo\\_A\\_CrossCurricular\\_ant\(May 23<sup>rd</sup>,2016\)](http://nation/eltconference.org/resources/2006/Imelda_Zorro_Deisy_Baracaldo_A_CrossCurricular_ant(May_23rd_2016)).