Abstract—English Language enjoys the status of a second as well as an official language in most part of the world. As the former, it is used in the overall social functions and as the latter it is approved by law as the language of education, law, government and administration. Because of this major function of the language, its teaching is much emphasized; starting from primary school but the state of English language teaching and learning today is very appalling. So much is taught and so little learned and experts have sought desperately to find the reasons for this non-performance in the language. Science and technology play a vital role in the development of any nation. This paper stresses the importance of language as an indispensable means of communication in acquiring science and technology. The paper examines and highlights the role of English and mother tongue in teaching science and technology. The neglect of L1 in the acquisition of science and technology globally is decried. Ways of improving language in order to enhance science and technology education is recommended. Many reasons have been presented as being responsible also for this state of affairs. They range from inadequate teaching resources, large classes, poor background knowledge of students, lack of motivation, both on the part of the teacher and the student to poor level of professional development of teachers. Although these are all problems that plague the teaching and learning of English or language today, one thing that stands clear is that the teacher is losing grasp of what takes place in the language classroom. This paper also seeks to re-emphasize the role of the teacher in the Language classroom to enhance the teaching of science and technology. It hopes to identify two key factors which have not been given adequate attention, and which have serious implications for language teaching and learning. A programmed action which the teacher can adopt to help remedy the situation of language teaching and learning is then prescribed and other recommendations made.

Index Terms—English language, teaching, communication.

I. INTRODUCTION

English is the language of education, government and commerce and has become one of the threads that bind us together in the face of our diversity. Indeed English serves as a gateway to lucrative jobs, for moving up the social strata and for the recognition in society. It is for this reason that all effort must be made for there to be effective teaching and learning of the language.

Science is now a household word in every family in the world. The study of this discipline has actually brought an infinite number of benefits to mankind. Numerous and marvellous accomplishments in medicine, engineering, communication, transport, and other areas of human needs have been brought out as a result of the study of science. It is now an incontrovertible fact that scientific discoveries have touched the lives of almost all people living today. It is not surprising; therefore, that many people now view science as the panacea for mankind’s ills.

Technology uses scientific knowledge to satisfy man’s needs. In short, everything of value made by man is the product of technology. Technology produces all that matters in life. To be technologically advanced is to be strong and great as the U.S.A, Russia, Japan, China, Germany and Great Britain decides what happens in the world today. The permanent membership of the Security Council of the United Nations comprises these technological giants. In other words, these countries are responsible for sustaining world peace. However, these powerful countries use they positions to force their will on other countries, thereby causing and perpetuating serious crises, especially in the third world.

Technology means development, good health and long life. This is why citizens of technologically advanced countries have everything that makes life comfortable. They enjoy good roads, effective and efficient means of transport, well equipped hospitals, high quality schools, comfortable and durable homes, abundant supply of food and other modern and functioning infrastructures. Furthermore, a country that is technologically advanced has a great control of information. The importance of information in the affairs of a country cannot be over emphasized. The information minister in Nazi Germany, Goebbels, as quoted by Adama (1998), once remarked that he who controlled information controlled the show. The technologically advanced countries have sophisticated communication gadgets which enable them to have instant access to information not only within themselves but also within other countries. As a result of these numerous benefits, many countries are working hard to acquire technology. Development in technology has, unfortunately, brought about proliferation of weapons of mass destruction as can be witnessed today in various part of the globe.

II. LANGUAGE AND THE ACQUISITION OF SCIENCE AND TECHNOLOGY

Science and language are inseparable. There is no way a study of science is possible without language. It is language that provides the tool for scientific investigation, scientific report, and the dissemination of information. Stressing the role of language in education, as in Chumbo (1984) [1] observes that education and training in whatever form requires imparting knowledge and skills as well as awakening and developing the intellectual potential of the learner. This can be done through language. The language used as a medium of instruction in the educational process is very important because the effectiveness of the educational resources, Effurun Delta State, Nigeria (e-mail: nwokolochinelo@gmail.com).

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Effective Communication: Language Teacher as a Pathfinder

Chinelo Nwokolo
training programme depends (among other things) on whether effective communication has taken place between the teacher and the learner or not.

The above observation by Chumbo fully summarizes and underscores the role of language in the acquisition of scientific knowledge.

Knowledge lasts longer if it is documented. This fact highlights another aspect in which language is useful in the acquisition of science and technology. It is through the use of language that developments in every particular field of science are monitored and documented. Moreover, the production of science textbooks and science journals will not be possible without language.

The study of science requires particular habits of thought. These habits of thoughts are acquired through the use of language. As Strevens (1973) [2] asserts, being a scientist or a technologist entails learning a number of habits of thought and these habits are directly brought about the use of language. Without the use of language, one’s thoughts cannot be organized, for language is a vital tool for thought and communication. It is in recognition of the close relationship between language and thought that Bentzies (1940) [11]. Asserts that we can scarcely think at all without using words. Even if we do not speak, we are constantly using words in our heads to help us to think. It is hard to imagine thinking going on at all without using words.

Similarly, Gowers (1973) [3] pointing out the close relationship between language and thought, affirms that It is only by clothing his thoughts in words that a writer can think at all. The inability to put his thoughts in words sets a boundary to his thought. Language is not merely the medium of our thought: it is the very staff and process of it.

From the assertions above, it can be seen that a thought, a prerequisite for the study of science, is dependent on language.

Computer is now a household word because of the various useful services to which it is put in this era of technology. An important fact which many people ignore or fail to appreciate is that computer services are not possible without language. Illustrating this fact with reference to the English language, Adama (1993) [4]. Notes that there exists in English more than half a million technical and scientific terms, adding that the same language is the medium for eighty percent of the information stored in world computers.

The arguments highlighted above, demonstrate clearly that language is a sine qua non for the acquisition of science and technology

III. THE ENGLISH LANGUAGE AND THE TEACHING OF SCIENCE AND TECHNOLOGY GLOBALLY

It is clear, following the observations made in the previous section above, that English is the dominant medium of instruction in the world. It is through the language that scientific knowledge is acquired. It should be noted that English is not merely in international language but it is also the world’s language of science and technology, hence the assertion of Bamgbose (1995) [5]. as follows:

Today, like it or curse it, English is the closest thing to a lingua franca around the globe. It has replaced French in the world of diplomacy and German in the field of science. It is the dominant language of medicine, electronics and space technology, of international business and advertising of radio, television and film.

As an indispensable language in the study of science, it follows that English language classes are proper settings for the study of language of technical and scientific writing. The close correlation between competence in English and performance in other school subjects, including such science subjects as biology, chemistry, physics, mathematics, geography etc, attests to the importance of English in the study of science and technology. Having recognized this correlation, many educationists now believe that the failures recorded in these science subjects in public examinations are really failures in English. It is therefore of utmost importance that attention and efforts should be concentrated on how to improve the standard of English in any country.

The state of English studies today is far from being satisfactory. The performance of the secondary school students in the public examinations conducted in the language and the quality of the use of English by secondary school leavers attest to this fact. For instance, Akere (1995) [6], rightly recommends the introduction of programmes which will assist in enhancing the English language skills of teachers who use the language as a medium and those who teach it as a subject at the various levels of education.

There is equally underscore need to develop indigenous languages for the grass root acquisition of science and technology and for effective communication. In line with the result of the project Agu (1993), [7]. Arguing in favor of developing the indigenous languages for academic purpose, urges Africans to nurse the desire to use their languages for both artistic and scientific research as well as technological development. He asserts that the indigenous languages embody the much needed wisdom and knowledge for the scientific technology resurgence of Africa. For a teacher to initiate professional development there needs to be recognition of the need for it. Most teachers in foreign and second language countries hardly realize the need for professional development and even when they do, they seem not to know where to start and what to do. Nowacka (2009) [8] is of opinion that, the English Language teacher must first recognize the need for professional development in order to initiate it and carry it through successfully.

Professional growth for the teacher is a must and cannot therefore be compromised. For Qing Gu (2004) [9]. It is a cognitive process that leads to teacher effectiveness and therefore cannot be ignored if proper teaching and learning must take place. In the introduction to their book, Richards and Farrell (2005) [10] state that, the need for ongoing renewal of professional skills and knowledge is not a reflection of inadequate training, but simply a response to the fact that not everything teachers need to know can be provided at pre-service level, as well as the fact that the knowledge base of teaching constantly changes. (pg1)

In order to keep abreast with these changes therefore, the teacher’s knowledge and skills must be constantly updated. It is only when the teacher of English possesses these special skills that ways of dealing with challenges in the everyday English classroom can be dealt with.
IV. HOW CAN INDIVIDUAL TEACHERS DEVELOP

Having discussed the above, we turn our focus back to the teacher. How can teachers get professional development? There are a variety of teacher development models available which the teacher can select from. The average English teacher is dedicated to his/her duty and above all else desire to see students do well in the subject.

According to Ur (2002:387), [11] “it is what teachers think and do at the classroom level that actually determines what learners learn in the classroom”. This vital position of the teacher is further emphasized by the great burden of “expectations placed upon the personally and knowledge of each English teacher.” Goodwyn (1997) [12].

V. THE TEACHER OF ENGLISH AND PROFESSIONAL DEVELOPMENT

Professional development for the teacher is a continuous process. In the words of Villegas-Reimers (2003) [13], it is the “professional growth a teacher achieves as a result of gaining increased experience and examining his

- Course attendance
- Attendance of workshops
- Seminars and conferences
- Sharing practice
- Observation of colleagues
- On-site / on-line courses
- Using consultants to provide in-school programmes

Richards and Farrell (2005), [1-2]. Provide a list of in-service teacher development activities which they categorized into activities that can be performed by an individual, those that can be performed with a colleague, those carried out with a group and those that are a responsible to institutional directive. The various categories are represented in the table below.

<table>
<thead>
<tr>
<th>Activities for teacher development</th>
<th>Individual one-to-one</th>
<th>Group-based institutional</th>
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<tbody>
<tr>
<td>-Self – monitoring</td>
<td>-peer coaching</td>
<td></td>
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<tr>
<td>-Case studies</td>
<td>-workshops</td>
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<tr>
<td>-Journal writing</td>
<td>-peer observation</td>
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<td>-Action research</td>
<td>-action research</td>
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<td>-Critical incidents</td>
<td>-critical friendships</td>
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<tr>
<td>-Journal writing</td>
<td>-Teacher support</td>
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<td>-Teaching portfolios</td>
<td>-Action research</td>
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<td>-Teacher support groups</td>
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<tr>
<td>-Action research</td>
<td>-Critical incidents</td>
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<tr>
<td>-Team teaching</td>
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</tbody>
</table>

The above are a variety of in-service teacher development procedures which the teacher of English can be involved in for ongoing development.

This is in line with the view of Johnson (2009), [14]. She provides a list of different ways in which the teacher can be involved in professional development in a continuous manner. The following are some of them, both enumerated and discussed.

- Face – to – face workshops: Teachers can benefit immensely from small workshops where they are able to discuss opinions and ideas and get involved in meaningful debate.

- Interaction with experts: It is often useful to liaise with professionals who have lots of experience in the field. Teachers could even listen to talks given by these experts at conferences and seminars and read articles and books written by them in order to further enrich.

- Membership in online communities: Teachers need to take advantage of the availability of online communities as it helps to share ideas and good practice with other colleagues. These may be forums and discussion boards set up online to encourage participation by teachers all over the world in ELT related topics.

- Research: Research could be imposed or self directed. Whatever be the case, it is often of immense benefit to teachers as they learn from the experience and often from the results.

- Giving talks in sessions: giving talks in sessions (seminars, conferences, workshops) whether small in-house sessions or national or international conferences help a teacher develop fast. Most great speakers today started small and gathered experience and expertise with practice.

- Formal training or course: This is the most common form of teachers’ development in Nigeria. Unfortunately, not many teachers have the resources to undertake such programmes, nor can many find the time or convenience to take part. Such training include the postgraduate Diploma in Teaching English as second Language Test Essentials course and INSETT programmes both run by the British Council as teachers development course and CELTA, DELTA courses run by the University of Cambridge. These give the teacher an international qualification in the teaching of English.

- Membership of professional bodies: Very few functional English Language teachers’ association exists presently, and such professional bodies go a long way in ensuring the development of the language teacher. They provide networking opportunities, opportunity to participate in conferences and workshops, as well as foster team feeling. Such professional bodies include IATEFL, TESOL, etc.

- Reflective practice: Reflective teaching is a very important practice in language teaching. Indeed a teacher needs to be able to evaluate his teaching performance regularly with a view to making improvements where necessary. According to Kyriacou(1994:9), [15]. “Reflective teaching goes beyond simply thinking about one’s teaching on a occasional basis. Rather it refers to an orientation towards one’s own practice which is based on inquiry and problem solving”.

- Mentoring: Mentoring has often been viewed as a nurturing process in which a teacher (fresh on the job or with bit of experience) is taught, encouraged, and even befriended by the mentor to enable them develop professionally. For Shaw (1995) [16], it involves “coaching, peer teaching, guidance and counseling”. It is a practice that needs to be part of the process of induction into the practice of teaching. The inexperienced teacher needs someone to look up to, emulate, and learn from, someone to point him/her in the right direction. This is greatly lacking in our schools today and needs to be redressed.

- When teachers of English are well developed in the teaching of the English Language, there will be available at their finger tips, knowledge and skills they need in order to teach better and therefore learn better. It is therefore a must.
VI. DIVERSIFYING THE LANGUAGE TEACHING APPROACH

There are a lot of diverse and multiple approaches, methods and techniques used in the field of English as a second Language (ESL) teaching. There is therefore no one approach, method or technique that offers the teachers and the learner the best of teaching and learning. This makes it necessary to use a cocktail of these various ways of teaching the English language. If we diversify our mode of teaching, selecting a different set of approaches at any point in time, we may begin to get the best out of our English language lessons. A cursory look at some of these various methods that can be employed in a language classroom will help to jog our memories and also help bring to our knowledge a few that we may not have known existed.

While we examine the professional skills of the Language teacher based on their language and knowledge of methods and techniques to use in classroom teaching, we will also look at the very worrisome trend that has overtaken students the world over. This is the lack of interest in reading printed material. They would rather watch television or switch on their PC. The result is that reading culture is dying so fast that no one knows what to do about it or how exactly to begin to solve the problem.

VII. EXTENSIVE READING IN THE ENGLISH CLASSROOM

An assessment of the English Language teaching – learning situation shows that students of English and Literature have poor reading culture. How can they tackle the buck of texts they need to come in contact with to enable them progress in their learning? The act of reading which is fast dying must be revived. To do this, a re-orientation of the language learner is required and there is no other person to do this than the teacher of English.

We often find however that some teachers do not have a good reading culture themselves. They are often preoccupied with work and other meaningful activity, but which denies them the opportunity to read as much as they would want to. They are therefore more often than not, put in the difficult position of teaching texts they are not familiar with to students who may not have read the texts at all or have only read a part of it.

Al Arani (2010:5) {17}.has sought ways to make his English lessons much more interesting for his students. According to him, “teaching English per se is not very stimulating to the students.” Extensive reading can therefore be made to “complement class work at various levels without being seen as a burden by the learners”. For this reason he has explored ways of making English a means of learning rather than an end in itself. He came up with a plan of action which he has applied in his language class with excellent results and it will be worthwhile to examine these.

Use of a Reading Form: Students are assigned the task of reading a story which they must read up within an allotted time. They are then required to fill and submit. It contains basic information the students will need to provide after reading the text. Information needed on the form include:

- A short summary of the story
- The theme and sub-themes of the story as they see it
- Description of characters
- A critical account of the story
- The last bit of information is used as a measure for ensuring that the students actually read the text and also serves as a way of introducing them to the art of criticizing works of literary prose.

Follow-up Discussion: A follow-up discussion of the text and the information on the form is done in the class and each student’s performance is noted for later use.

Inclusion of scores in continuous Assessment: The scores from the extensive reading exercise are made part of their continuous assessment. This serves for them as motivation. They do not therefore see it as a futile exercise, but as one that they get value for, so they take it seriously.

Learners’ Response and Follow-up: It is good to take time to get some feedback from the students to know how they feel about the reading exercise. By interacting with them in this way, the teacher is able to find out from them what kind of books they prefer to read. This will help keep the reading materials within the right interest level for them.

The above is just one way of dealing with the problem. The teacher can be even more explorative and come up with new ideas and an action plan based on the specific needs, interests and level of the students. There are however key things to bear in mind in the attempt to re-kindle the zeal for reading in our students.

We should make them read only what will interest them (no boring literature books)

We should seek their opinions on the kind of themes that interest them

- The reading exercise should be made part of the English language lesson and not be a standalone activity.
- A follow-up activity like class discussion, role play or even mime, makes the whole exercise adventurous.

Benefits of reviving the reading Activity in the ESP Classroom

There are a lot of benefits that can be derived in the classroom if the reading culture is revived.

- Access to new vocabulary in the language
- Improved knowledge of the language
- A more active imagination
- They are more engaged/ involved in the learning process

Their interest and motivation to be in language lessons are more than doubled

- They develop a more active imagination
- They gain greater confidence as class participation increases

Writing, reading and listening could be taught using reading texts

It generally complements classroom teaching

Again, it has been emphasized in this paper that the teacher is the main person who can re-orient language learners to imbibe again, the reading culture. According to Umeh (2010) [18], we often find however that some teachers are not ready to perform this role as they do not have a good reading culture themselves. They are often preoccupied with work and other meaningful activity, but which denies them the opportunity to read as much as they would want to. They are therefore more often than not, put
in the difficult position of teaching texts they are not too familiar with to students who may not have read the texts at all or have only read a part of it. Teachers of Language who have lost the time and zeal to read need to deal with this habit and only then can they be useful in the task that lies before us.

Also, in making a choice from the wide range of professional development activities and training that have been discussed, the developing teacher must bear in mind that formal training should come at the beginning of any professional development. Short courses can also be taken in the middle. It is an ongoing process that needs personal commitment to be successful. Pettis (2002) [19] draws attention to what the teacher of English must do in order to improve teaching competence. First, teachers need to “constantly upgrade their knowledge of language and language learning”. Secondly, they must endeavor to develop their skills in training whatever new knowledge they have acquired into their classroom teaching. Also they must not relent in growing professionally since it is a continuous process.

In order for teachers to upgrade their knowledge of the English language and of the learning process on a regular basis, they need to do professional reading. This involves reading articles, books and research by professionals as well as visiting the World Wide Web. In this way, their knowledge is extended and they can keep up with new ideas in the field. Below is a list of useful websites that the teacher of English could visit to update knowledge and therefore improve teaching.

www.iatefl.org
www.tttjounal.co.uk
www.tesol.org
www.britishcouncil.org/eitecs
www.english-to-go.com
www.eltforum.com
www.etprofessional.com
www.pilgrims.co.uk
www.teachingenglish.org.uk/

To begin the development process, the teacher needs to reflect on his teaching and make an honest assessment as to what is being done well and what needs improvement. It is these assessments that will help the teacher know what combination of development activities will be most beneficial at any stage in the development process.

Finally, the teacher needs to be able to accept change and apply it in actual language lessons. Language teaching approach and techniques keep changing and to keep abreast with the change, teachers should be prepared to change their way of teaching.

Again, language teaching is faced with a lot of problems and some of these problems were discussed in this paper. The teacher was identified as a single most important factor that can bring about positive change in the teaching of English and language generally. It was suggested that if the professional skill of Language teachers was improved, then they will be better equipped to help to make the Language classroom what it should be. Continuous professional development was therefore identified as the only way to provide language teachers, the knowledge and skills they need to make English Language teaching what it should be. The different forms of professional development activities were discussed, providing the teacher with a wide range of choices which should be used in combination, and suited to various stages in the professional development process. Recommendations were then made as to how teachers can kick start the professional development process and how to proceed in it. A sample plan of action to remedy the dying art of reading in our classrooms was also discussed and advice on how to apply them given.

It is only a professional English teacher who will be skilled in the art of using group work to handle large classes, or create very useful and attractive teaching resources on a low budget. Diversifying our method of teaching is also another factor that needs to be incorporated in our teaching as this kindles learners’ interest and motivation. If English for special Purposes must improve, then our teachers of English must get on the part to professionalism.

VIII. CONCLUSIONS

As Akere (1995) [1-3] advocates, teachers trained to teach English and languages should be given special incentives to persuade them to remain in the teaching profession. Efforts should be made to train more teachers in English and mother tongues.

To cater for the language needs of the science students, a science-based English language syllabus should be incorporated into our educational system. The new concept, English for Science and Technology (EST), should be developed and popularized.

As it has been established that the disciplines of science and language are inseparable, both students and teachers of science subject should be made to appreciate the interesting relationship between the two disciplines. The division often made between the two areas should be gradually narrowed down and be eventually removed.

Policy makers have concentrated efforts on the improvement of science and technology education. While there is no gain saying the fact that the efforts are in the right direction, it has to be emphasized that the aspiration for any country to excel in science and technology can only be realized through the use of a well-developed language as a medium for imparting knowledge in the two disciplines.

It is only a professional English teacher who will be skilled in the art of using group work to handle large classes, or create very useful and attractive teaching resources on a low budget. Diversifying our method of teaching is also another factor that needs to be incorporated in our teaching as this kindles learners’ interest and motivation. If English for special Purposes must improve, then our teachers of English must get on the part to professionalism.

Finally the art of reading that is almost completely lost needs to be revived to put life back into our lessons and to produce learners who are balanced in both English Language and literature in English. This is most beneficial to the learner since knowledge in the one complements knowledge in the other. We must not lose sight of their inter-relatedness of the two disciplines.
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