

HINDI MEDIUM IN THE ANGLICIZED MARKET: SOME REFLECTIONS FROM THE STATE OF UTTARAKHAND IN INDIA

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ABSTRACT

According to the New Education Policy the mother tongue plays an important role in the shaping of a child's cognitive skills and thus play a key role in a child's cognition and development. However, the English language also plays a key role in opening up avenues of opportunities for the students. Thus, the issue whether the mother tongue should be the medium of instruction at the school level or whether English should take precedence over the mother tongue is an ambivalent and complex issue.

In India the scenario is such that the students who hail from affluent backgrounds receive education in English medium board schools, whereas those who hail from economically backward families, owing to their economic backwardness are forced by their circumstances to pursue education in grossly underfinanced government schools where vernacular languages such as Hindi, are the medium of instruction. However, when those students who came from these vernacular medium board schools wish to pursue higher education in the science stream, they have to use English as a medium of instruction which is a big challenge for them as till the intermediate level their medium of instruction was the vernacular languages. In this research, the researcher delves into the challenges faced by the Hindi medium board students of the state of Uttarakhand, in pursuing Higher education in the science stream. Hindi is a vernacular language that is spoken in a number of States of Northern India including Uttarakhand where this research was conducted

Keywords: *English, Science, Higher Education, Uttarakhand, Hindi Medium Board*

INTRODUCTION

India is a multi-lingual country. The English language was introduced in India by the British mainly for the purpose of recruiting personnel for subordinate services to meet their own ends, however, the English language continued to develop as a pan India language during the independence movement. After independence, although leaders like Gandhi had visualized Hindi as a pan India language but as there had been dissenting voices from the South, English was adopted as one of the State languages to bridge

the language divide in India. Today, owing to its efficacy, English is gradually emerged as the most vied language in the linguistic map of India but has unfortunately created a class divide. However, as the English language is the language of global knowledge production, with the most extensive repository of books and reading materials, and has an extensive job market, it brings with it empowerment and is thus rightly been seen as a language of advancement. Being the official language of 54 countries, and being given a special status in almost 70 countries, (Rao, "The Role of English as a Global Language", *Research Journal of English*, Pg 78)

English is the *lingua franca* of the world. It is the language not just of science and technology, but is also the language of diplomacy, commerce, travel and tourism, education, et al. It is also the most widely used language on the internet. Thus, as English plays a crucial role not just in the pursuit of global knowledge but also in every day dealings in most spheres of life, its acquisition is of vital importance for becoming a truly global citizen.

However, due to social and economic disparities that pervade the country, the dichotomy with regard to the English language looms so large that the knowledge of English is the primary determinant in defining social status of people in India. It is unfortunate that in India, whereas, on the one hand we have a small percentage of students who hailing from a privileged class receive quality education from English medium schools, yet on the other hand there is a large percentage of the have-nots who after obtaining their schooling from rickety underfinanced government schools, with inadequate number of teachers, are expected to pursue higher education in Science through the English medium. These students face a major handicap in pursuing education through the English language as they do not have any background of comprehension in the English language.

The importance of English for advancement in learning cannot be undermined, yet in a nation such as ours where there wide linguistic diversities and economic and educational disparities, with no uniform education policies, a number of educational boards exist which impart education through various vernacular languages. It is thus imperative in such a complex linguistic scenario the sudden emergence of English as the medium of science education for students hailing from vernacular boards be addressed and the linguistic disparities be addressed.

In this project the researcher has endeavoured to study the pedagogic challenges faced by students who hail from Hindi medium board backgrounds of the state of Uttarakhand in pursuing higher education in the science stream in the state of Uttarakhand. As most of the students

pursuing science education at the University level come from small towns and rural areas, they have very limited knowledge of the English language and as their English language skills are not good, they do not just face difficulties in comprehending the subject, but also face psychological hurdles and lose golden career opportunities which would have taken them higher in life had they had good communication skills in the English language.

APPROACH

Before we proceed with the research is imperative to give a general background of the higher education scenario of the State. In higher education, in the state of Uttarakhand, it is required of the students who pursue any discipline in science to use English as their medium of instruction. This requirement poses a great challenge to students who come from Hindi medium backgrounds and have to abruptly switch from the Hindi medium to the English medium as their medium of education.

A large number of students who hail from the non-English medium schools are unable to comprehend science in the English medium of instruction and thus are not able to clear their examination. For conducting this research, the researcher, interviewed students and teachers and collected data sample of 242 students through questionnaire in order to get authentic information for the study.

RESEARCH METHODOLOGY

(i) *Theoretical Framework:*

The research question and the pedagogical issues have been examined through the Post-Colonial lens. As this study deals with linguistic dilemmas of learners hailing from a segment of a Post-Colonial society, while conducting the research, the researcher kept in view the ideological stance of Post-Colonial scholars such as Ngũgĩ wa Thiong'o who question the relevance of English as a colonial language and criticize its hegemonic role. In this

regard, his collection of essays *Decolonising the Mind: the Politics of Language in African Literature* raise some pertinent questions. However, there is a counter view which claims that English has become an unavoidable language in the post-colonial era and any effort to ignore its importance can stop the opportunities for a nation in the era of globalization. I have examined both the approaches and drawn insights into this debate.

In the ancient Indian education system, education was imparted through the Gurukul system where only the boys were imparted education. Women and other marginalized sections of the society were largely deprived of education. However, it was the Madarsas that opened up education for the marginalized for the first time during the medieval times. With the advent of the British in India, and the establishment of missionary schools in India, it was for the first time that education was institutionalized and Universal rights of education were granted to everyone irrespective of their caste and gender. The modern education system was also introduced by the missionaries. Thus, one can say that modernism entered India with Colonialism.

(ii) Field Work:

As part of field research, the researcher conducted two workshops in which she interacted with students, interviewed faculty members, and took samples by floating questionnaires to students.

A. Interactions with students:

As part of the field research, the researcher interacted with the students of higher education institutions of the State. During these interactions the students discussed their problems with the researcher due to the transition they have to undergo in switching their medium of instruction from the Hindi language to the English language.

Some of the views of the students are mentioned as follows:

The researcher Karuna Budhlakoti, a student who is currently pursuing B.Sc. from Kumaun University. Karuna completed her

intermediate from Government Girls' Inter College, Bagar, Nainital in 2020. Although she was a topper of her school and earned the seventh position in the State in the Uttarakhand Board Examination, yet she has started facing a phobia of the English language now. In her words, "My friends and I did our schooling from a village school and we have never spoken English all our lives." As soon as she joined college, lockdown was imposed as a result of the ongoing Covid 19 pandemic. She shares her language related woes in the following words, "Due to the Covid crisis our classes are going on-line. Most of the concepts taught by the teachers are in English and because till class twelve the terminology used was in Hindi, it is very difficult for me and my friends from Hindi medium backgrounds to grasp what terms are being used." Karuna further states, "Had these been normal times and had we been going to attend classes in the campus, one could have discussed his or her language related issues with the teacher one to one, but in an online class, which abound in technical glitches in the remote hills of Uttarakhand, it feels very awkward to raise your hand, or post a "silly" language related question in the chat box, when others are asking intellectual questions, so my friends and I choose to stay mum about our "insignificant" issues.

The researcher interviewed Karuna recently, and was shocked to find that Karuna, owing to the pressure of pursuing science in the English language, had dropped science and taken up arts in college. However, later on as a result of the counselling received from some elders, she again joined the science stream but the English language related issues still loom large on her.

Another student Pooja Pande, who did her schooling from Sainik School, and is now a student of B.Sc. at DSB Campus Nainital shares a similar experience. She told me, "In classrooms when concepts are discussed in English and we have to refer to English books, we are left bewildered as we cannot understand the concepts discussed in the class well enough."

Likewise, Kishor, Manta, Jeetendra, Pawan and Geeta who are all pursuing B.Sc. from DSB

Campus, Kumaun University Nainital shared his English language related plight which were identical to the issues discussed above.

Besides interviewing the students, the researcher also interviewed the faculty of science of various colleges to get a clearer picture of the scenario. These interviews are as follows:

B. Interviews with faculty members of Conventional Universities:

Prof. S.D. Tiwari, who is Head of the Department of Botany, at Indira Priyadarshani Government Girls Commerce PG College, Haldwani, Kumaun University shared his vast teaching experience with students who had their medium of instruction in Hindi till senior secondary school. He told the researcher that although it is mandatory that science education be taken in the English language by students for further academic and career advancements, but he and his colleagues try and solve the issues of the students who come from Hindi backgrounds by explaining the English biological terms in Hindi also. He further stated that whereas some of the English terms have their equivalents in Hindi, others do not. He gave the example of the term *Arcemonium*, which is the Botanical name of fungus and told the researcher that as it does not have an equivalent term in Hindi, so it has to be taught as *Arcemonium*. However, terms as *Bryophyta* can be understood as “*Harita*”, a term which the students hailing from Hindi medium had hitherto been familiar with. He also shared an interesting bit when he told the researcher that as the Hindi equivalents are tougher than the Latinized terms, the students, once they are familiar with the Latin plant names, themselves choose to use the Latin term instead of the Hindi one.

The researcher interviewed Dr. Deepak Kumar, Assistant Professor, Department of Mathematics, and discussed the issue with him. According to Dr. Kumar, the linguistic debate has been going on since the M.M. Roy Committee was constituted. He was of the opinion that the issue of languages is a very complex one in India where there are a number of regional languages and if teaching of disciplines, particularly science in regional

languages is permitted then the situation would become very chaotic. He assumed a hypothetical situation in which science education is promoted in the vernacular languages but reckons that if it is done so, it would obstruct a seamless transference of facts and in that case a link language would be required to communicate facts. Dr. Deepak is of the view that in this age of globalization scientific thought needs to be disseminated in the *lingua franca* of the world, which is English.

The researcher also interviewed Dr. Amitabh Vikram Dwivedi of the Department of English, Mata Vaishno Devi University, Katra, Jammu and Kashmir told the researcher that the problem of switching from vernacular medium to English for gaining higher education in science is not peculiar to Uttarakhand only but to other states where the vernacular medium is the medium of instruction. He further told the researcher that only 2% of the Indian population is competent with respect to the four English language skills viz. reading, writing, listening and speaking, which are interrelated to each other. As India is a multi-cultural and multi-lingual country, there are around 19,500 classified and unclassified languages in India, and that there the three-language formula is applicable in most of the states. Shedding light on the condition of government schools, Dr. Dwivedi said that the scenario of the Government schools is such that the students start getting elementary knowledge of English from class six, even the English alphabets are introduced to them from class six, which is quite denting for the students who wish to pursue the science stream in higher education. Citing the hypothesis of Lenneberg, Dr. Dwivedi said that according to Lenneberg acquiring skills in a foreign language becomes a difficult task as you age. The people who start learning a language after they reach puberty find it hard to acquire skill in that language with the same comfortability with which you have learned the mother tongue. Lenneberg posited the critical period hypothesis which states that once you reach puberty, both the hemispheres of your brain are treated as two different entities, and that there is a proper division between the two

hemispheres. This phenomenon happens biologically to everyone. When we talk of language acquisition, the left portion of our brain is responsible for the language acquisition and when there is partition of the brain, then it becomes difficult to acquire the second language at latter stages. Citing his example Dr. Dwivedi said that till elementary school, he was educated in an English medium school, but was sent to a Hindi medium school from class six through graduation. He said that as he was better than his classmates in English, as when they were beginning to pick up on alphabets, he was already fluent in the English language and had already read most of the children's version of classics so there was always this feeling of competition in him that he had to do better than the rest of his classmates in English, and this is what kept on pushing him and thus he honed his English language abilities.

Prof. D.R. Purohit, Retired Professor of English and Senior Fellow at Indian Institute of Advanced Studies, Shimla, recalling his initial days of teaching states that over four decades ago, told the researcher that when he started his career as an English teacher, foundation level classes, known as general English, was compulsory for both the students of science as well as arts. As part of the curriculum, the students learned how to write English, they learned the intricacies of the grammar, and how to write their reports. The Central Institute of English and Foreign Languages (CIEFL) had prepared specialized texts for students of science, which he has taught to the B.Sc. students, so this could be the structured role of the English teachers, the ad hoc programmes will not serve. Now the Central Universities have introduced a specialized foundation course for both the science and arts students called Communication Skills. However, in Prof. Purohit's opinion the students of science as well as arts should not be taught the same course and the English curriculum for the science students should be tailor-made for them depending on the discipline specific requirements.

Prof. Purohit says that the need of the hour is to change the mindset of the people. He said that it is unfortunate that people attach a particular

superiority complex with the knowing English. Giving an example he said, if a scholar makes proper use of all the scientific terminology but communicates in a regional dialect, for instance, Garhwali, then he will be considered to be an outdated, backward, rustic fellow by his peers. Prof. Purohit said that students of science should take inspiration from great minds such as our former president, Dr. A.P.J. Abdul Kalam, who spoke simple English, not the King's English or the Queen's English, but he knew all the science in English. The same can be said of the ISRO Chairmen whose English expressions are simple, but they are well-versed in the astronomy and the astronomical terminologies.

Underscoring the importance of English as an international language of science, Prof. Purohit said that as English is the lingua franca of science, scientific papers are mostly accepted in English in international journals of reputation. Prof. Purohit shared his experience with the researcher and said that during his career as a teacher of English, he has been approached by many teachers of science who have come to him for language editing of their papers as their papers are often rejected by the international journals because to their substandard English. Prof. Purohit shared that the teachers of English can play a major role in teaching the scholars of science how to improve their research expressions. Prof. Purohit is of the opinion that the teachers of the various disciplines of Science and of English should meet at regular intervals and discuss the English language related problems of their students so that together they can collectively design a foundation level course in English keeping in view the requirements of the science students. Besides this, there should be workshops at regular intervals in which both the science teachers and the English teachers should sit together and discuss the problems and find solutions to the problem of the students.

The researcher also interviewed Prof. Anju Sehgal Gupta, who retired from the Department of English, School of Humanities, IGNOU, New Delhi, recently. Professor Gupta has been working in the field of linguistics with various reputed universities

and organizations for over four decades. Prof. Gupta told the researcher that IGNOU runs special courses for the learners of science keeping in view the requirements of the science subjects. She told the researcher that their Department works with the School of Science to develop curriculum for the various subjects that come under the School of Sciences. Giving an example of the English language curriculum that they have designed for the Health Sciences programme, Prof. Gupta stated that they have special programmes for the doctors as well as the nurses. Likewise, they have a specific course in the English language at both the Bachelors' as well as the Masters' level programme in Computer Science as well. These specific English courses have components that help develop all the four English language skills, viz. reading, writing, listening and speaking, of the learners. Furthermore, these courses in English are revised from time to time. Prof. Gupta stated that these courses are not just foundation level courses but are specific courses at the Bachelors' level which cater to the specific needs of the learners of the Science stream.

A. Interviews with faculty members of ODL Universities:

Prof. H.P. Shukla who is professor of English and Director, School of Humanities, is of the opinion that as the modern sciences have a Western origin so as such, they can find their full and rich expression in a European language. They can be taught in a European language such as French, German, English, and the like, but they cannot be taught successfully in Hindi because the Hindi language has not evolved in those lines and in its present stage of development, it is not capable of re-introducing the scientific and technical writings and concepts very faithfully in Hindi. So, Science cannot be taught in Hindi pretty much like the Vedas cannot be taught in English.

Prof. Shukla further stated that students of science need a much fuller emersion in the English language for which they need to do a full course which requires them to read authentic English texts on contemporary thought and culture.

The researcher also interviewed Prof. Malati Mathur. Prof. Mathur is professor of English and Director School of Humanities at Indira Gandhi National University, IGNOU. Responding to the researcher's question that the students who come from Hindi medium board backgrounds face enormous challenges, both psychological as well as pedagogical, in making a transition from the Hindi medium into the English medium for acquiring higher education, Prof. Mathur responded saying that if a University has made a policy that instructions would only be imparted in English medium, that would be a very flawed policy because the students who come from the Hindi medium board backgrounds would be at a very great disadvantage and it will not be a level playing field for one, because there would be other students in the same class who might come from an English medium background and of course would do much better, and then again it is not fair because it leads to a huge complex because there may be students from the Hindi medium backgrounds who might be very bright but because they come from Hindi medium backgrounds, and because of the language impediment they might lag behind in class because they might not be able to comprehend so they will not be able to do well and they will experience a trauma, so the Universities should relax their policies and allow students to write in whichever language they feel comfortable in. A lot of Universities are going in for translation into the English languages but then problem with subjects of science and computer technology is that there are a lot of terms and computer related commands are in English. Thus, there has to be some kind of a balance, maybe have a bridge course, for at least the first semester, so that at least they learn the jargon because these students are thrust into the mainstream and have to do the entire coursework in English. In Prof. Mathur's view, this practice should start in school itself where the students are prepared for higher education in Science right from the middle school so that imparting education in English at the University level does not come as a shock to them.

Prof. Mathur vouched for the three-pronged approach as is also advocated in the New Education Policy. She shared that there was room for the three-language approach in other policies prior to the new education policy as well. However, how well it is implemented in the schools, that's where the crux lies. In Prof. Mathur's view, the ideal situation should be that the third language that the student opts for should not be too close to one's mother tongue. For instance, if a person whose mother tongue is Hindi, and opts for Punjabi, the three-pronged approach would not work for him. The language which he opts for should be very different, like Bengali or a south Indian language, that is how a level playing scene is created as everybody will have the same advantages and disadvantages regarding picking up of different languages.

Quoting the example of Prof. C.D. Narasimmaiah who was a very vociferous supporter of English previously, later on became a staunch supporter of the regional languages and endorsed them. Likewise, Sri Aurobindo, who was raised to be an Anglophile by his father, gravitated towards the Indian culture, which contributed immensely to his Awakening. Prof. Mathur is of the opinion that for any individual to gain maturity, he or she must widen his linguistic horizons. In her view, the closer you are to your language, the closer you are to your culture. However, this should not make us parochial in approach but make us appreciate all cultures at an equal footing. Every language and culture has its good points and we should try and imbibe those good things from other languages and cultures. In her view this is how English has survived. It has taken a hold on people because it has been so dynamic and accepting of other language from different cultures, taken in words from different cultures.

As a matter of fact, both English and Sanskrit belong to the same language tree, the Indo-European language tree and etymologically all the words can be traced to the same root, which is Sanskrit. For instance, the Greek for King is Rex, which originates from the Sanskrit Rajan, likewise the Latin Pater again owes its origin to the Sanskrit Pitra, the same goes for words like mater, brother,

fraternity and daughter as well. Perhaps Gabriel Garcia Marquez was right when he at the end of his masterpiece *One Hundred Years of Solitude* unfolds that the mother of all languages is Sanskrit. In Prof. Mathur's words, if one needs to see the underlying unity behind things, he or she needs to transcend the superficial differences.

Answering to the question how does the English language help to make the human mind truly global, Prof. Mathur said that as the English ruled large parts of the globe for such a long time, the English language reached all corners of the world and therefore is spoken and understood by a majority of people worldwide. Secondly, as English has been accepting of different languages, so it has taken in so many words from so many different languages that people are able to communicate well in it, and as the modern-day subjects such as pure science and computer science are articulated in English, that is why it has become an international language and has assumed the kind of importance it has.

The German linguist Lenneberg posited the critical period hypothesis in which he posits that acquisition of a second language gets difficult post puberty, however, Prof. Mathur differs from this view of Lenneberg as in her view, language acquisition is an individual thing. She is of the view that some people have this talent for languages as they have this ability to pick up languages very quickly and some people just do not have this ability, even before puberty. Quoting a personal example, Prof. Mathur stated that her father had a job which entailed a lot of touring and transfers as a result he was posted to many places in India, so whereas her mother picked up languages wherever they went, her father never was able to pick up languages, and he only had English and his mother tongue to communicate with people, and thus communicated with his office staff and the local people in broken local languages, whereas her mother was very fluent in all the languages, which she picked up at a later age of her life. Thus, Prof. Mathur is of the view that some people have this ability to pick up languages

whereas some don't and puberty does not play much role in it.

One example from the world of English literature is the author Joseph Conrad. Conrad was a Pole by nationality and only learned English when he was twenty. However, in such an advanced stage of life, with respect to acquiring skills in the English language, Conrad wrote some of the most powerful novels in English, irrespective of the fact that he had picked up English at such a later stage in life.

Responding to the question that should not the policy makers across India shed their parochial linguistic jingoism and frame a uniform language policy across India, preferably in English, especially keeping in view the difficulties faced by students of science at a later stage, Prof. Mathur opined that instead of a few people drafting a policy, and then thrusting it upon the whole of the country, it is imperative that each state of the country work out a policy and then there should be a meeting of all the heads and then work out something that is worthwhile. In Prof. Mathur's view, just by sitting at New Delhi and forming a committee and then saying that this is going to happen all over India, is not at all just and viable and that there should be a more decentralized approach to it and the stakeholders, which are the states, should have a larger say in what should be the education policy at all the levels of education be like. Prof. Mathur said that as India has such vast linguistic and cultural differences, which adds to its richness and diverse flavour, and this should be kept in view while drafting the linguistic policies as well.

Furthermore, Prof. Mathur said that as far as the science education is concerned, they should be introduced to science education in the English medium from the middle school onwards itself, at least the terminology should be in English so that they do not face difficulty in picking up science in the English language once they reach college, they do not feel alien in the language. Furthermore, there should be a six months' bridge course so that the students are made familiar with the scientific terminology and the jargon in English, which will benefit them in the long run. Thus, these foundation

level courses should be tailored according to the need of the science students. The stakeholders should be taken into confidence and asked what is it that they want, and what kind of courses could enrich them and do it accordingly.

Answering to the question that the fifteenth finance commission's initiative to open two professional courses, namely Engineering and Medical Science, in the regional languages, Prof. Mathur said that theoretically it is a good initiative, because there should be a level playing field and this is one of the ways to achieve it, however, she expressed her reservations about the efficacy of such an initiative, because, first and foremost very good translators are required and secondly a lot of these terms will be transferred as it is, into the regional languages and the only difference is that it will be rendered in a regional script, which does not do much good. Thus, such kind of initiatives need to be well thought out and then implemented.

Prof. Mathur is of the view that the students of science should be taught English thoroughly as today's students are tomorrow's teachers and yesterday's students, who came from the Hindi medium boards who are today's teachers, must have been compelled to take up the English medium mode of instruction of science and therefore themselves have trouble teaching in English to students as their language skills too have not developed accordingly, which is a double disadvantage for students hailing from the Hindi medium board backgrounds. In such a scenario there should be workshops not just for science students but for science teachers as well. These workshops should be subject specific as the science teachers too need to be enabled to grasp those terms in English and articulate and explain them properly. In Prof. Mathur's opinion, these workshops should be focused workshops. Furthermore, similar programmes should be held for teachers of science as part of the UGC refresher courses.

Likewise, Prof. Durgesh Pant, Director, School of ICT and Computer Science, Uttarakhand Open University believes that each child is born with linguistic capabilities and talent and is firmly of the

opinion that the linguistic disabilities of the students can be overcome. Prof. Pant also believes that besides encouraging students to get a sound knowledge of English, they should also be encouraged to be passionate about their regional languages. He states that he sees no contradiction between English and the regional languages of India. In Prof. Pant's opinion, only when one is deeply rooted in one's own culture and tradition, does his English acquire a different meaning. He further stated that the more a child becomes sensitive towards his or her own language, the more it helps me to come to terms with other languages. In his opinion one need not unlearn his or her mother tongue in order to learn English as one can expand his or her linguistic horizons by being rooted in one's own linguistic traditions.

Understanding science in the English language is a double challenge for the Hindi medium students of the Open and Distance mode of learning because the self-learning materials that they are provided are in the English language. Responding to the question how these issues confronted by the students from the Hindi backgrounds, enrolled in the Open and Distance mode of education, are resolved, Prof. P.D. Pant, Director, School of Sciences, Uttarakhand Open University, stated that although students from the far-flung areas of the state do face problems in comprehending the literature which is in English, but as there are a lot of facilities in the virtual mode, the students can interact in virtual mode as well. Furthermore, it is mandatory in science stream in distance education to organize workshops for ten days in each session. Prof. Pant shared that there are 137 lectures in various disciplines over the course of the workshop in which there are sessions by renowned scientists and subject experts both from the University as well as from across India. Each day there are three sessions in which two sessions are for discussions and one is exclusively for demonstration. During the last three days of the workshop, the students undergo rigorous hands-on training. Prof. Pant, lauding the able leadership of Prof. OPS Negi, Hon'ble Vice Chancellor, of Uttarakhand Open University stated

that now that the Science block of the University is on the verge of completion, very soon there would be lecture theatres and laboratory facilities for the students, where students can come and avail state-of-the-art facilities. He said that till now there were no laboratory facilities at the Model Study Centre but very soon there would be one now and the students would benefit from it immensely. Prof. Pant is hopeful that once infrastructure is developed then classes can be held on dual mode, distance as well as on-line modes. Quoting Prof. Nageshwar Rao, Hon'ble Vice Chancellor, Indira Gandhi National Open University, Prof. Pant said that Prof. Rao said that open Universities are in a win-win situation after the Covid pandemic phase as the Open and Distance Universities can initiate ODL and online programmes together by providing the course to students in digital format, the lectures in audio-video format, alongside with the power point presentation of various topics. If these novel interventions are made in the Open and Distance mode of learning, the reach of the ODL Universities will increase exponentially.

Prof. Pant expressed faith in the New Education Policy in which the importance of mother tongue is highlighted because in his opinion if a student faces difficulty in understanding a concept in class, it will be easier for the students to discuss his problem with their parents and the parents will also be able to sort out the queries of their wards better if the books are in the mother tongue.

Prof. Pant had words of encouragement for students and said that they should concentrate in the study of science rather than worrying about their English language abilities. Giving the example of some developed countries such as Japan, France, Germany and China, they said that these countries promote the mother tongue and appreciate and encourage people to research in science in their mother tongue, vis-à-vis, English. Sharing a personal experience, he said that when he had gone for a brief research project to Germany, he was strictly told by the authorities of the institution that English would not work there and that he would have to acquire basic skills in the German language for the first two

months prior to researching in Germany and should have a certification of knowing German from an authentic body. Thus, anybody who is availing research grants from German bodies and the German government have to write their dissertation in the German language. The same applies true for other countries and regions such as France, Japan, China, Scandinavia, et al, where science is studied in the mother tongue. As all countries have invested a lot in the field of science and research, they are very advanced in research in science and their example needs to be emulated by countries such as India. However, in India the importance of English cannot be undermined as it acts as an essential link language to bridge the linguistic divide between various states of India and the same holds true for international platforms and symposia as well where people of different countries congregate and exchange ideas among themselves. Thus, Prof. Pant suggested that a healthy balance should be maintained between the regional languages and English as well.

Prof. Pant also shared with the researcher that there should not be water-tight compartments as far as languages and disciplines are concerned. The various languages and knowledge systems should mingle seamlessly like the fragrance of flowers in the air. He gave the unique example of Prof. Wadia, who was a pioneering geologist of India, and shared with the researcher that although Prof. Wadia was a professor of English, he founded the Geology Department of the University of Jammu.

Sharing his views on the mode of delivery of study material, Prof. Pant said that study material provided by the University is complemented by virtual lectures in which besides the faculty members of Uttarakhand Open University, experts from all over the country are invited to deliver virtual lectures for the students. However, Prof. Pant iterated on the importance of English specially in the field of doctoral and post-doctoral research, especially if research is pursued at the international level. Shedding light on the role played by the Commission for Scientific Terminology, Prof. Pant said that this Commission tries to develop Hindi

terminology for Scientific terms. However, this is a challenging task as it is very difficult to translate most of these scientific terminologies from English into Hindi, and if the term can be translated, its Hindi equivalent is more complicated and hence, the students prefer to use the English equivalents and therefore it could not be popularized among the Hindi medium students. Prof. Pant also recounted that in NCERT books also the scientific terms are copied as such in the Devanagari script.

Prof. Pant also told the researcher that keeping in view the importance of English in science education, in higher studies, the state governments of various states, including Uttarakhand have identified various model schools, known as the Adarsh schools, where science and social science education is imparted in the English language and the students too have to answer in the English language.

Expressing his views on the importance of English in higher education in Science, Dr. Jeetendra Pande, Associate Professor, Department of Computer Science said that while designing the SLM the teachers of ODL need to keep in mind that the language of the content material should be conversational in tone so that the students do not face any difficulty in comprehending the material and as counselling sessions are organized at regular intervals for students, their problems are also resolved in those sessions by the teachers. Dr. Pande said that they deliver simplified video lectures to their students especially in the topics that are difficult, then upload them in learning management systems which can be accessed by the students. Further, they have a foundation level programme, Technical English Programme in Computer Science, in the first semester, which is a core programme, which basically deals in technical communication, which has components in grammar and basic writing skills. Prof. Pande shared that although their School has a comprehensive programme for students in Technical English Programme, yet if a student wants to upgrade his language skills, he may enrol himself in a free online course on SWAYAM and develop his language skills on that. Besides SWAYAM, there are

other platforms too where other similar language courses are available and which the students can make use of.

Responding to the question about his views on the fifteenth finance commission's decision to open two professional programmes, namely in Engineering and in Medical sciences in the regional languages, Dr. Pande said that this initiative is commendable and further gave the example of SWAYAM, has taken this initiative and which has identified a few popular courses and are converting those courses into eight regional languages.

INFERENCE

There are many issues that confront the educational policy of the country, one of it is the politics of language. In a multi-lingual country like India where the linguistic challenges are manifold, the question of the medium of instruction for students who hail from vernacular medium backgrounds is a bit complex. No matter how vociferously the votaries of vernacular languages advocate the teaching of science through vernacular media, the significance of English in Science cannot be denied.

Moving back to the State of Uttarakhand, after conducting this research, it has been inferred that as there are a large number of students who hail from the remote areas of Uttarakhand with very limited knowledge of the English language, their

English language related challenges need to be looked into and a need too has been felt that there should some relaxation towards the use of the mother tongue in not only teaching and learning science but also in writing the examination.

However, since the advent of the twentieth century, as there have been a rapid advancement in the field of science and the scientific community has also increased manifolds, English emerged as the *lingua franca* of the scientific world and it is imperative for the non-English speaking countries to gain a working knowledge of English. Adam Huttner-Koros, a Science communicator from Canberra says, "The academic papers outnumber in publications in the English language several times more than that of in their countries' own languages". He further states that this ratio is astounding as it has reached the 40:1 ratio. Thus, if a scientist desires to make scientific advancement and desires to seek global recognition through his research and publications, he or she will have to enhance his English language skills, besides, scientific knowledge. In this era of globalization in which knowledge is shared and enhanced through various fora such as international conferences, seminars and symposia, decent communication skills in English are required. Furthermore, over 80 per cent of reputed science journals are in English. This itself speaks volumes of the significance of English in science in higher education.

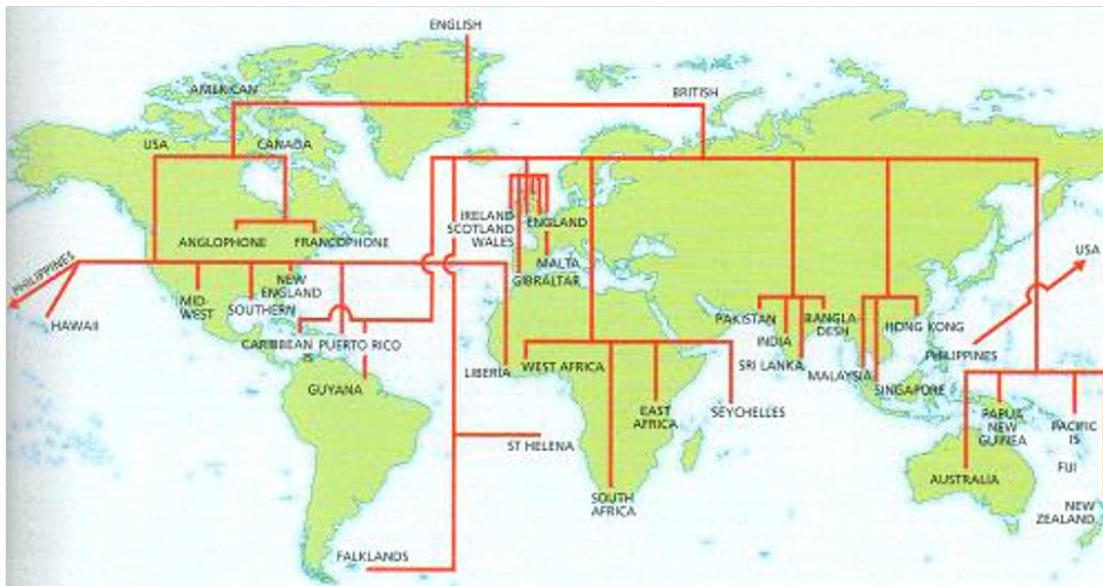


Fig. 1: A family tree representation of the spread of the English language around the world.

(Source: The Cambridge Encyclopaedia of the English Language, 2018)

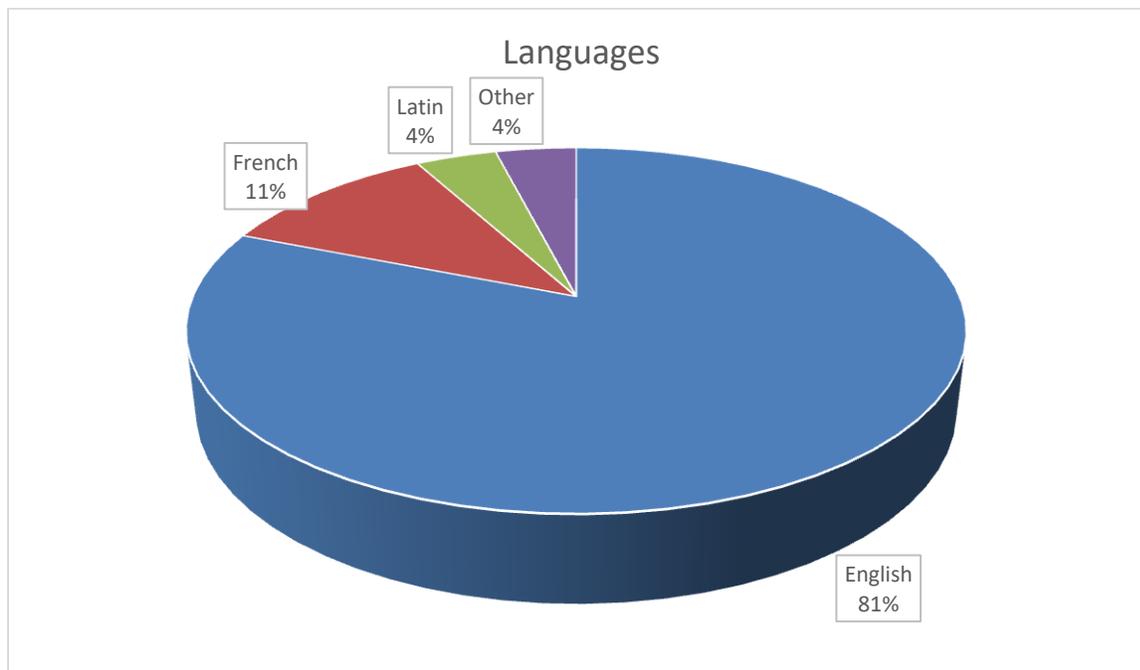


Fig. 2: Language of Journals

RESEARCH FINDINGS

After interacting with the students of the Hindi medium board backgrounds and by conducting statistical analysis of the quantitative data of the

feedback received from the students, it was inferred that the students who have done intermediate from the Hindi medium backgrounds do not just face linguistic problems in comprehending science especially from textbooks, but also face serious

psychological impediments that obstruct their full blossoming. Furthermore, the phobia of English is persistent among students who hail from Hindi medium backgrounds as at a later stage of education they feel the need and the pressure to switch from their mother tongue to English. This handicap acts as an impediment for them in obtaining good grades and even passing University examinations. This is also reflected in their performance in competitive examinations, especially while facing the interview boards because during interviews the panellists mainly put their questions in English and the candidates are required to answer the questions in English.

Interactions with the students of the Hindi medium board, students showed that although the students face difficulty in comprehending Science in the English language in the initial phases, yet envisaging their future career and research related prospects most of the students expressed their desire to study science in the English medium rather than the Hindi medium. Furthermore, the students are also aware of the fact that as English is a global link language offering dazzling academic and career-related opportunities, they feel the need to acquire skills in it.

Interviews with all the science teachers showed that they try their level best to teach science bi-lingually in class and especially encourage students to hone their English language abilities. **The teachers also iterated that they are more concerned with the transference of correct scientific ideas rather than syntactically correct expressions.** Likewise, the teachers of the Open and Distance mode of learning hold workshops and employ IT to enhance the understanding of the learners.

Although science textbooks are available in Hindi in the market, however, most of the books have sub-standard content which limits the academic potential of the students.

There is a need to introduce foundation-level courses in spoken and basic English as has been suggested by the students and the science faculty

members of the Under Graduation level in Science to empower the Hindi medium students.

Most of the students of Post-Graduation feel that with some training and orientation in the English language at the Undergraduate level, they would continue to pursue science education in English because English is the language of scientific advancement.

SUGGESTIONS

- There should be a foundation level course in spoken and basic English language skills for the students of science who have received education in the Hindi medium so that they get proficient in the English Language. However, a need is also felt that these foundation level courses need to be cross-curricular in nature and be taught across various curricula especially because English is a global language.
- A need for creating quality reading materials in Hindi at the Under Graduate level is felt by most students.
- There should be a provision to write answers in Hindi in both the Under Graduate and Post Graduate level examination
- If English eventually has to become the medium of instruction in Higher education in Science, then it is imperative that the policymakers shed their parochial linguistic jingoism and draft a uniform, inclusive and progressive language policy for science education for all schools all over India. If this is not possible then the science terminologies which are etymologically Greek or Latin, should not be translated into regional terms. Besides this, the government should invest more in quality state-sponsored education.
- As an ad hoc arrangement, the science teachers at the secondary and the senior secondary levels should be encouraged to use English terminology while teaching so that the students do not face difficulty in comprehending the

English terminology in higher education institutions.

- The science and the English teachers should come together and hold joint workshops to resolve the English language woes of the students.
- The model of community colleges that are introduced in developed countries such as the USA should be adopted in Higher education institutes of Uttarakhand too. Every year a number of migrants with no exposure to the English language come to America and a large number of American institutions are doing commendable work to improve the communication skills of the migrant population of the USA. The Immersion (sink or swim) programme in which non-native speakers are made to sit with native speakers of the language and are compelled to converse in the English language, the Pullout programme in which the non-native speakers of the English language are “pulled out” of the classrooms and get extra coaching in the English language, are laudable initiatives and could be emulated in Uttarakhand as well.

EVALUATION AND DISSEMINATION

After completion of this project, and seeing the viability and success of this project, it would be my endeavour to do my bit to enhance the English language abilities of the science students of higher education of the state of Uttarakhand by employing learner-centric pedagogy in which the bilingually of the learner, which hitherto had been kept out of bounds, will be treated as an opportunity and not a threat to master the English language, and thus, through the platform of my University, I will work in the direction of setting up a virtual or physical language laboratory for the learners of my University, irrespective of the stream, they choose to take up. Once the language laboratory is established, it will be open to all, and where the learners would be able to walk-in anytime as per their convenience and work on their language skills in a conducive

environment. Thus, the practice sessions taken by the students will make them proficient in all four essential language skills, viz. reading, writing, listening, and speaking.

CONCLUSION

According to the norms of the current educational policy of the Uttarakhand State Board Education, it is compulsory for students to opt for two languages till the intermediate level. According to the current regulations of the Uttarakhand State Board Education, Hindi is offered as a compulsory subject for any of the three streams opted by the students, i.e., Science, Humanities, and Commerce. The second language opted for by the students is mostly either English or Sanskrit with English being compulsory for the students of the science stream at the senior secondary level.

It has been observed that the students of the other two-streams, especially those of Humanities, opt for Sanskrit as the second language of choice. Thus, it has been observed that the students of the science stream opt for English as a second language only because of the regulations of the Uttarakhand State Education Board. They do not seem to be opting for English out of a genuine interest in the language and as a result, fail to develop a liking for English. For them, it is a compulsion that has been thrust upon them by the board policy. For the students, the two years of pursuing English is not a means of developing literary tastes and acquiring functional knowledge of English. It is just another subject that they have to take up for the board examinations. Since these students enter the Universities without an affinity towards English, and without actually acquiring any proficiency in English at school level, they face several difficulties when they opt for science education at the university level. As we are aware that the medium of instruction for science education in the Universities of India, including Uttarakhand, is in English, pursuing science becomes a challenging task for these students. Further, it should be noted that the amount of reference books, textbooks,

journals, and research papers available in Hindi and other regional languages is very limited. So, when these students pursue research work, they have a very challenging task of collecting the research material that they can easily comprehend. With the academic material being available usually in English, these students face the challenges of comprehending the material and applying it to their research work.

As language communicates experience, it can transcend the boundaries of culture and its origin. According to Pandit Jawahar Lal Nehru, language was a part of the history of the people, each word calling up images and yet alive and expanding to take new circumstances into account. Both the policymakers and academicians need to be receptive to the growing linguistic needs of the people and adopt a two-pronged approach which involves teaching science at the tertiary level of education through the media of English and Hindi, or the mother tongue so that the students can fare better not just in their examination, but also in their professional lives. However, as English is the de facto language of science and it is only through the medium of English that scientific ideas can be communicated and disseminated among the members of the scientific community that a working knowledge of English should be a must for all

learners of the science stream which is necessitated by a will to learn not another language forced upon them as another compulsory subject, like environmental science. The need of the hour is that the Departments of English and Science should work in unison to address the linguistic needs of the students. Observing the statistics, as the importance of English cannot be undermined, and therefore adequate measures should be made to promote it among the students of Science.

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