

**Course Name: Technical Communication for Engineers**

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**Week- 01**

**Lecture 01-Introduction to Technical Communications and their types**

Hello everyone and welcome to a new course that I am going to discuss in next 20 lectures that is technical communication. And this is for engineering and science students but also it should be applicable or useful for you know young scientists and engineers, researchers who would like to communicate their results and all details basically related with research or different kind of communications which we are doing on day to day basis. Further you know that a technical communication has become very very important in various forms. Sometimes we write reports, sometimes we prepare manuscripts. Sometime we write project proposals and several times we also make power point presentations. So, all those intricacies and nuances of all those where we require our this technical communication skill which I will be discussing in these next 20 lectures.

So, first I am going to start about what are the different types of technical communications and other things. The important point here I would like to mention at this stage is that I am not going to focus on the language part that is not the English or any other language. What I am going to discuss here most of the time is related with how you communicate. And that is communication in both forms and generally that is in both forms that is written and oral.

And all kinds of communication in that way is important. And the basic thing in communication which will be repeated many times which is coming here is that all the time our communication should be brief, precise and easily comprehensible. That means that whatever we write, we should write as far as in brief possible. Because more words when we use, probably we are creating more problems for us only and people may not comprehend, may not understand. So, the focus should be always to use brief and precise.

That means the accurate terminology one should be using, appropriate English words and adjective whatever they are there that should be used. And our aim that whenever I am communicating, it should be understood very easily whether my communication in form of written or in oral form. These 3 things are very very important which we will be seeing further or discussing on these points other than many other points. Another

important thing is that those who are at the learning stage means they are students or researchers. They should know that whenever they will go in the market for job or other things, their communication skills will really if they are having good communication skills that will work for them to earn a good job.

Because whatever the domain whether it is in a government job, public sector or in private sector. wherever one goes even in own business, the communication skill has to be very good and by which one can really sell their products, convey their results, convey their research and so on. So, that is why these skills are very much required. And another point is that these skills cannot be learned in just one day. or through these only 20 lectures which we are going to have in this course.

It is an ongoing long-term process but one has to start. And if one starts having knowledge of basic things, intricacies of all those things which are required for a better or good technical communication then it will help and this learning curve will not be very steep. They will have a very comfortable learning curve. Otherwise, if we do not have any background and we start communicating, we might be having several problems there. So, another very old saying is that the practice makes a man perfect.

So, try to practice especially for students I am talking or young researchers or young professionals. that whenever they are going to do a presentation, say oral presentation, they should practice. They should rehearse in front of their colleagues, friends and ask them to suggest any changes or any improvements in their presentation. They can deliver with more confidence and they will make an impact and may be able to grab good projects also. So, practice is very very important for all people of life.

Like for example, if I give my own example, whenever I am going for a big conference or big meeting where I have to get a project or get my point through then I also do practice even today. So that I can manage with time, I should know what I am going to communicate, how I am going to communicate and how impactful my communication is going to be. And that several times I have done in front of my own research scholars and then have given the liberty to you know suggest whatever the improvements they would like to see in my presentations. So, I am not only talking about oral presentation, I am also talking about written presentation. For written presentations, whatever you write, it is always before final submission to a journal or for a sponsoring agencies or anybody for a editor or publisher.

One should read few times and should ask some friends or colleagues to go through the text because the point which you are trying to communicate may not be coming as you wanted. And therefore, a colleague will suggest or give an honest opinion about that the

point is not coming clearly. And therefore, you can make improvements in house before it goes for any kind of publication or anything. So, that is a good practice that keep practicing and one day one should be able to communicate in a much better manner. Sincere efforts with time are also required and that make almost everyone a good communicator and orator.

So, if efforts are made, sincere efforts are made towards communication of both kinds then one can be very good. And finally in this context that the constant assessment predominantly self-appraisal is important for further improvements. For example, whenever we have delivered a talk or whenever I have written a manuscript or other things, I should sit back and think that is it alright to publish? It is in right form, right shape to publish? Or if I have made a oral presentation, after that I should assess that whether my presentation was good? Could I manage everything within given time? Because time management in oral presentations is very very important. And similarly, page management or length of the paper or manuscript management is another very important thing. So, in case of a written communication, the length is important.

In case of oral presentation, time is important. So therefore, we should try to manage whatever the point of view, whatever the research or results or output and discussions within the given space whether that space in terms of pages or in terms of time. So, that is another very very important or basic requirements for a better technical communication. So, now at this stage, we can define what is exactly technical communication. In literature or on net, you may find various definitions of technical communication.

But in a simple terms, technical communication is a broad field and it includes any form of communication which I have been just mentioning. within written communications, there are various communications. Like you are writing an official letter, you are writing your PhD thesis, dissertation, manuscript and sending image. Nowadays even WhatsApp, WhatsApp are also being accepted as official communication. So, any form of communication that exhibit one or more of the following characteristics.

What are those characteristics? First one is the communicating about technical or specialized topics. Before I go in this one, I would like to mention here about the topics. Sometimes you know we use word topic, sometimes we use word title and similar synonyms of topic or title can be used. But almost they are synonyms so the meaning is same. So, if I am using word title that is also I mean topic you know.

So, there is not much difference in this. So, interchangeably it is being used or it will be used in these 20 presentations or 20 discussions. So, this communicating about technical or specialized topic which can be from civil engineering, geology, environmental related

issues or any form basically of any specialization. Everywhere communication is required. So, communicating using technology.

This is another very-2 important thing. Whatever the technology which is available at your disposal, one should employ, one should use that one. The technology maybe if I am going to deliver a speech and if these teleprompters are available, I should try to use that one because I can then make a very impactful presentation. If that kind of facility is not available to us then I should resort to PowerPoint. And even then if power point is not available then I should resort to the blackboards or whiteboards whatever.

And then video conferences also that is one way of communicating, having meetings, having discussions. Emails have become very-2 important tool for communicating. So, one has to be again very brief, precise and you know easily comprehensible. So, the same rule will apply for emails as well. Sometimes, we are developing our own batch pages or developing portals.

So, there again the same communication skills will be required. That whatever the page which is being developed has to have a brief, precise and people should understand, should easily navigate within the portal. So, the ease of using those things is important. That is what easily confirm and develop. If somebody is writing a software and corresponding help files, again help files requires very good communication skills.

So, there again you require this skill. And social media sites also, various sites are there where people are really communicating fast and furious. And there again good communication will always help, will be impactful communication. Another thing is when we provide instructions about how to do something. And there also, it has to be very you know precise and accurate otherwise you know people will not understand.

So, instructions have to be good regardless of how technical task is or even if the technology used to create or distribute that communication. So, sometimes if somebody is working in industry has to write a manual or a help files then these instructions have to be very-very nicely written. When we say nicely written that means this should be easily precise and easily comparable. Importance of technical communication is that to make information more usable. Whatever you are delivering, whatever you are putting in form of written communication that has to be more usable and accessible to those who need that information.

Second is to advance the goals of institutions, organisations, companies that employ them. Because when we represent our institute or when we go for seeking a project or funding or for jobs or any other thing. So, background we are carrying the you know

banner of our institute or organisation or company. And therefore, again a good communication skill is required. For example, you know like if somebody is in the software industry or IT and that kind of thing then software instructions help users to more successful on their own.

That means by following help files provided along with software, a person can learn things easily if the communication in those manuals or help files are good. And they can improve how to use those products and if it is there then that the product is accepted. into marketplace and they will be very cost effective or will reduce the cost to support them. So, that is another very-2 important thing that if these things are written, instructions are written nicely then the burden in terms of cost will not come to the company.

So, there also it helps. Now there are different specialization which are like functional specialization proposal help. one group of technical expert communicate effectively with another technical expert. So, there again if you are having that kind of skill, you can communicate very well. Speeding up development cycles, this will help. Better communication will definitely help to develop things whatever the end is.

Even you develop a product or doing a good research and that kind of thing. Reducing rework caused by misunderstanding. A bad communication may create misunderstanding and then you have to correct that will waste your time and impression also. And finally is eliminating risk associated with miscommunication. So, a better communication will help and will not cost much in terms of time and also money.

Now there can be training programs which provide people with new or improved skills. So, making them more employable and their organizations and products more efficient and safe. And there again the importance of technical communication comes. Further that well-designed and updated websites which I have just mentioned earlier that whatever the web portal, so website, web page or you know whatever blogs are being developed. If they are having a good information, updated information and that too in precise manner, that will have a more viewership that increasing user traffic and satisfy with those websites.

So, that is another important thing. Further, technical illustrations. These are again very-2 important thing. The illustrations which clarify steps or identify the parts of the product. You may prepare a figure instead of writing things in the words.

You may prepare a figure. And keep putting all tags or all labels for the product. So, if a new product is reached to a customer, he would be able to find out each and every knob or button or switch whatever is there and how to use them. So, one has to communicate in

a manner that a new person who has never used that equipment should be able to learn very quickly and more accurately also so that he does not damage the product either. Because if it is in warranty, it is reached and if he is unable to use then he will send back and there will be again loss of time and money. So, what all communications, technical communicators have in common is the user-centered.

They think about the audience. They think who is going to read their product or read their manuscript, who is going to use their product. So, it is user-centered, target-oriented and attitude for providing the right or correct information content in the appropriate way, completely right way at right time to make someone's life easier and more productive. So, better communication will provide all this that life easier and more productive. So, I will here mention about that a good English may not be you know always good for technical communication. So that a person may speak a very complicated English but whether that is really understood, that is another important thing.

So, that was my point that always it is not that a complicated English is good, it is the technical communication, which is about communicating in a manner that the person to whom you are communicating should understand things very easily. So, let us try to run this video if it works. Excuse me sir, excuse me sir, good afternoon. What can you say about the recent increase in the electricity tariff? Electricity tariff, it is appalling. That is the reason I've been in a compendious, laconic lacuna.

Wow. Not a recapitulation. But let me tell you this, that it is leka and pulchraterious that in a legotla, in an imbizu, flagitious and enervating lematas were excogitately ruminated. We all saw it, how the recidivistical politicals moved from budget disappearance to budget doctoration. Now we are faced with a debilitating, exasperating, a rebarbative and a humongous electricity tariff. And this tariff is emanating with a financial lobotomization. But I pray that this will not ignite a clamorous demonstration.

Now come to think of it, how dare they deplete the citizens of their obseiferious and vociferous bodies vivendi. Enough of this vilification and solipsism. This is execrably prognatious, pestilential and attenuating. Imagine the imbibition of the political rudimentary which has kept us in an abject ululation. Why? Now! Now Nigeria is in a political somnambulism and malocclusion.

Nigeria is in a financial and economic bantigism. Look at the way the game politics is becoming a bugaboo. What a political holy bully. What a political hoity-toity. What a political foodie-doodie.

What a political hocus-pocus you have come with. What a political jabba-wocky. What a

political

poppycock.

What a political gobble-de-cock. Sir, I'm... With this consentination, I ask that you accept my penitentious circumlocution. Accept my penitentious circumambagus, grandiloquence, and magniloquence. But I will tell you this.

I will not koto in Japoho. Thank you. I will refuse to koto in Japoho. So, now after seeing this video, you must have realized that the point which I was trying to make is technical communication does not require always a very good or complicated English or new words or less used word of English. As you have seen, the person was replying in a very complicated English I would say. And the other person who asked a very simple question, she probably could not understand. So, it is a very good example of a very bad communication though person is having good English.

Now as I have said in the beginning that we will be also discussing in this particular lecture about the types of technical communication. So, 2 major types we have discussed that first is the oral and then of course the written and then oral. And both are important and require systematic learning. So, this is what we are going to do in this course that we will try to see how systematic learning can be done. So, whenever we are having some study or research or other things, the purpose here or purpose to uncover problems with low products are presented then how products are presented to user helping those products become more user friendly.

So, if I am delivering a lecture, I should be able to communicate the point or the topic which I have chosen to the audience or if I am writing a manuscript then I should be able to communicate. So, user here may be the audience, user may be the reader also. So, that always do not think in terms of only a product and that thing. Product can be a lecture also or product can be a class in front of a student or product can be a speech or you know special lecture in a conference also. So, I am having a partial list of different aspects within the technical communication.

So, it is for engineers, scientists of course. It is written in technical and for editors also. This is the indexers who also uses information architects, instructional designers, technical illustrators and globalization and localization specialist, usability and human factors professionals, visual designers, web designers, developers and teachers and researchers of technical communication. where my focus is going to be more. But anyway, this discussion overall in this course is going to be useful for almost everyone. But being teacher, most of my examples might be coming from this domain only.

Trainers and learning developments and this is non-exhaustive list as said that the partial

list. So, more users can be added here who requires good technical communication. So, when we think in terms of varieties of purpose required communication skills then we go for like seminars or making a presentation. So, for which sometimes you have to prepare a document and then make a oral presentation as well. And in educational domain, seminars are very common which students have to do in their course maybe for few times within 4 years or their PhD also.

Many times, we go for knowledge updation or presenting our research work or any other thing. Then we have to make presentations in conference and workshop again in both forms because we have to submit the abstract maybe sometimes full paper extended abstract and so on. And so that we have to do both kind of communications. Dissertations again, a PhD thesis again and group discussion.

Sometimes these are mainly oral but sometimes notes are also prepared. Technical reports written and oral and research and consultancy projects. Again in many organizations including IITs, this is a very common activity which is being done. And every time we have to write a proposal to seek the funds or get the funds and then we have to make oral presentation about what the new thing which I have developed, what is the new research which I have produced and so on. Manuscript: This is manuscripts mainly written.

So, one is the manuscript writing. Another one is communicating through email or written letters to the editor. So, that also requires the good communication skills. Purchase of equipment: Sometime we have to purchase equipment. So, again especially when we are making technical specifications of equipment which we would like to buy for research or for organization or anything for that procurement, we have to be very precise.

Otherwise, all kinds of proposals will come or you know quotations will come. And then it would be very challenging to decide which one to buy and which one is not to buy. Because if you reject some proposals, quotations, tenders then the question book will be raised. There also one has to be very-2 careful. Official letters, we keep writing official emails, official letters and these are all written communications.

Nowadays, SMS, WhatsApp or Twitter instead of Twitter, now it is X. Instagram message and various kinds of communications which we are doing through our smart mobiles. And there it is also I would suggest one has to be very precise and accurate and easily comprehensible because it can create lot of confusions whoever receives this if it is not communicated very well. And again this is the variety of purposes which is required for communication skills. This list is again not exhaustive.



So, there may be many types of other publications which are not listed here. Now key contents of typical written communication. Here we are focusing initially in this course about the written technical communication. So, one by one, we will be taking. So, first is like title and topic.

I am showing what is the content or menu card for our future discussions. So, first one title and topic which I am going to discuss here itself. And then next and so on. So, in next discussion, we will have abstract, synopsis, summary, extended abstract kind of thing or even executive summary. So, different terms are used. Then keywords, everywhere we require keywords because these keywords helps in search and especially nowadays it is a digital word.

So, these will be really helpful that your manuscript or your paper research work is searched quickly. So, if appropriate keywords are used then that kind of thing is there. And if the search is good then it will use your work or product and you may get good citation or that thing. In written technical communications, we also have an introduction section.

We are having then background and review work. We are having input data sets, field data, etc or lab experiment data. Then whatever the analysis methods approach, algorithms which have been used to achieve certain results. And then of course, results are presented. Discussions are also done. and or written there and then outcome observations might be there and finally, we can bring conclusions.

But this is not the end of a manuscript. Generally manuscript will end after the acknowledgement. So, before that we have to write references, bibliography depending what is the requirement and how flexibility is there in that written technical communication. For example, somebody is writing a PhD thesis. there he should write bibliography because there are many references which might not have been cited within the body of the text but the researcher has gone through.

So, there one can do. But in case of if I am writing a manuscript for a journal then I will not use the bibliography, I will be using references. So, when the discussion will come on references and bibliography, we will be discussing the differences and how it is written and so on. And finally, it comes the acknowledgement. This is another very-2 important aspect. If we do not acknowledge the sponsor or higher ups then it might give you the problem or wrong impression.

So, there is no harm of acknowledging or showing gratitude for others. Those who have

helped either in moral sense or in financial sense or guidance point of view, one should always acknowledge. Again this is not the final. There can be in between several other sections where we would like to add during our preparation of our manuscript or thesis. For example, if I take an example of current science where articles should include an abstract. So, they are saying that if you are going to submit a manuscript, to current science, that manuscript should include an abstract which we will discuss in the next lecture.

What is abstract meaning here? What are the things which we should write? What are the intricacies of an abstract writing? All with that we will discuss. Then introduction section or introductory paragraph, brief subheads at appropriate places that means the data which you have used the algorithms or lab data or experiments one has done and so on. And then illustrations showing your results through charts, graphs, maps, etc so that a reader and whoever the audience should be able to understand. And finally, you should also give the references.

So, first one in that list we will be discussing is the topic title. Sometimes for newspapers, this term is used headline. But in really scientific domain, we do not use word headline. Either it can be title of your thesis or topic of research or paper.

So, these 2 terms are more commonly used. But they are used interchangeably. But headlines most of the time for news things whereas these are the things. So, either one And either title or topic can be used. So, let us see what is the importance of this. It is very important and it really showcase your work or presentation. Why? Because the reader will first see the title and if he finds interesting, he will go and read your abstract.

So, that is why it is a showcase of your work or your presentation. So, title is very important. Again the same formula that the title has to be brief, precise, focused, additional requirements, sufficiently informative and easily understandable or easily comprehensible. If these qualities or these characteristics exist with your title, a reader will immediately become interested to read your work. And that is what the purpose of writing all these manuscript, thesis or other things. That whatever you write in form of title, that should be interesting to the reader.

For example, I can give you good examples and I will also be showing some bad examples also. So, good example like how to have a healthier and more productive home office. So, if you go through, it attracts the audience or reader that okay, it is having some good information about productive home office and how to remain healthier also. For example, does a major earthquake precede a thermal anomaly? So, immediately is asking a question that means that within the text, within the paper, I may find the answer of this.

So, a title can be with a question or question mark also. There is no problem. And I am giving examples of these are the published works in the journals. Second is like we have witnessed this COVID-19. So, blessing in disguise. There were some like pollution reduced and other things were there.

People were in home so they could spend more time with the family. So, that is why in that sense, blessing in disguise. So, you know people had a very bad time during that time. If an article comes like this, immediately people will read. Because they were going through a very bad patch of their life, almost everyone in the world. You know what is the good point about topic which I have just mentioned also that make a specific actionable promise with your headlines or with your topic.

Sometimes unusual adjectives can help and add interest. Now let me give you an example of a headline or a false headline. In many times in newspapers or elsewhere, they will be putting a headline which may bring attention immediately of the reader. But when you go through, then you find that the headline is not matching with the text.

No, this is not good. Let me give you an example. Once I read in the newspaper that Delhi under curfew and when I read the entire text, I found that only one street in Chandni Chowk was under curfew. So, headline immediately caught attention of the reader but then found that that headline is not correct. That should never be the approach in any kind because the headline should match what is inside the text.

That is the showcase. Now, let me also bring some bad example. Like coronavirus is here, a nightmare that could happen. Now see, this is a pessimistic kind of headline and people already had a very tough time. And if you are putting this thing, this is bad example. So, the title has to be in a manner that people also feel good about that and would be intend to read that title also.

So, like the critics of this title seems to play on the above mentioned scare tactics. But it is ultimately fails because the article goes on to say that it cannot happen. So that means the title and the text within the article was not matching and this is a very bad thing. So, even in a scientific domain, whatever the title, it should be the showcase of your work.

There should not be any mismatch. or any other domain. Let me also put like this. Any other domain, not only in scientific domain or in research or engineering or other thing. Like benefits of field investigation for civil engineers, a quantitative investigation. Now, this second title describes the topic and the matter of the study but is not particularly catchy. It is very non-catchy or in that way, I would say a loose kind of title.

You know title has to be attractive and accurate also. So, few points before finalizing title, topic or headline especially the first two, the title and topic. Once you have written a title, just ask a question. Is this a good title? What do you expect from this article? Because you have written the article but at the same time, the self-assessment is always required. So, what do you expect from this article? How a reader will expect? Is it enough to tell you what the article is about? the title itself. Is it concise enough to generate your interest and your opportunity to attract the readers or audience attention? That is the ultimate aim.

But that does not mean that we keep writing wrong titles or titles with pessimistic or scare tactics that kind. Those should be always avoided. And the title should be informative but again, it has to be concise or brief. Avoid technical jargon and abbreviation if possible. Abbreviations should not be used in the title.

If it is very much required then it is alright but otherwise or if abbreviations are already known. For example, if I say GPS in my title then it is alright. People know about GPS. There will not be any problem. But there might be some abbreviation where people may not be knowing.

So therefore, this kind of abbreviations or other jargons should be avoided. So, I am going to show you some good examples or bad examples, really bad examples of communication. See here, someone is communicating to a company and if you go through this, you would find a number of mistakes not only on English aspect but technical aspect also. And many times, you would find that the different sentences are self-contradictory. So, this is one of the very bad examples of communicating. This is official email and that is why I said that even in emails, WhatsApp and X or others, one has to whenever you write any text either on these platforms or email, read at least once.

And if it is a long email, show to your colleague or friend and ask them that please go through, am I communicating the way or the point which I wanted to. And can I be more brief or concise? See, a very simple point could have been written here but the author of this email kept going on and saying repeatedly, contradictorily and lot of mistakes are there. And that shows also like Singapore. So, this shows that the person does not have you know knowledge of even you know nearby countries also.

So, that kind of communication is a very bad communication. And lastly, I will end with this and those who are not good with English, I will translate to them. And it is written in Hindi so those who can read Hindi, I will not speak in Hindi for them. Husband wanted to know health condition of his wife. He wrote a sentence in the WhatsApp that how is

your headache? Basically, he wanted to write how is your headache? And by mistake, he has typed how is headache? Means you know he is saying that his wife is headache and then you know the consequences what would happen if we have made a very bad communication.

So, though it is a personal communication between wife and husband but it can create problems even at the family level. And that is why I wanted to show you this example that each and every communication whether written or oral has to be accurate, has to be brief. and precise. And if that person or the husband would have read once that what he has typed then this mistake would not have occurred. And the consequences which might have faced in his house that say another thing. So, with this, I end this discussion and we will continue on other related topics in this course.