

**Course Name: Technical Communication for Engineers**

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**Week- 05**

**Lecture            05-            Background            and            review            work**

Hello everyone, Namaskar and welcome to new discussion which we are going to have about the background and review work which we need to put in our reports, papers, dissertations, thesis under this technical communication for engineers course. As we know that we have completed so far the topics title, abstract, keywords, introduction and now we are going to have this discussion on background and remaining discussion will come in subsequent lectures. So, first what is basically review or literature review which we do and that develops our background for a paper or manuscript. But unfortunately, there are uncertainties of how to write a literature review. Because the problem here is that how backward you would go to find out the relevant papers or manuscript which are related with your work. So, that kind of uncertainty is always there.

But going too much back will always not yield good results or you cannot have a good review. So, it is always better before preparing a review for your chapter or paper, one should understand what basically review means here. So, this is usually because unlike other stages of thesis reports such as the method and results, they are never written in a literature review before. So, people those who have never written may find little difficulties.

Basically, every section of a manuscript or paper is challenging for those who are writing first time. But once you have written and published and successfully you have you know awarded or submitted then the confidence will come about all these things. Nonetheless, so background and this review is about what is the purpose basically to inform the readers about the topic which one has chosen or one is working on his paper or manuscript or thesis. So, basically in order to generate interest of the target audience or the readers of manuscript or paper by providing a detailed analysis of the problem. So, in literature review, we include what the work so far has been done and then identify the gaps and then you start fitting your own work that this is what the work which is being attempted in this work or in this paper.

So, background basically forms the crux of the study because earlier in previous lecture, I have given an example that if you do not know that what work has already been done in a particular discipline or research area then you may find after some time that the work which you have produced is already done by others. So, in order to avoid that kind of situation, it is always better to you know go through the background of the study and perform or do this literature review. Prepare a review so through that you would know that what kind of work has already been done in that discipline and what are the gaps also. So, the background forms the crux of the study because it introduces an unaware audience to the research and its importance in a clear and logical manner. This is what we do and produce the background review work.

And sometimes or at times, the ground may even explore where the study builds on or rebukes findings from previous study. Somebody has done research and your findings are completely different than what. So, that you can do it but firstly you have to bring that what others have previously done. That is, thereby it is again important to do the literature review or prepare a background for your work. So, any relevant information which you feel that it would be useful for the readers before basically writing the paper, that kind of information should be made available in the review work or in the background work.

Now, we will see that how background is different from the introduction. You know that the introduction which we have already discussed only contains the preliminary data about the research topic, the topic which you have taken and it does not take the purpose of the study. why that study is being performed. So, because the gaps at that stage are not known when introduction is being written. And whereas on the contrary, the background clarifies the importance of the study in detail, the purpose of the study.

And whereas introduction provides an overall view or overview of the research topic from a broader perspective. And whereas you would see that the background provides a detailed understanding of the topic. And that is why whatever the work which has been done by the earlier workers should come there. So, that becomes your background to do further work. Now, we know that the introduction generally will end with the mention of the research questions.

That what are the research questions, aims and objective of the study. And whereas in contrast to the introduction, background follows no such format and only provides

essential context to the study. Basically, it is providing the purpose of study and for that we are reviewing the already done work through the literature. So, first step in this one to provide a brief overview of the research topic which has been chosen or on which the work has been done and its significance in the field. You know the importance you have to show that why that work is being done.

And the importance will only come in light once you say that these are the gaps in the study. So, that is why highlight the gaps in existing knowledge or understanding or unresolved issues that the study aim to address. And therefore, the background of a study is the first section of the paper. and which will establish the context underlying the research which is going to be further presented in subsequent sections. It contains the rational or the key problem statement, a brief overview of the research questions that are addressed to the rest of the paper.

Because after all, why that research or why that manuscript is being written? Because that means that nobody has done that kind of work. So, how you would prove that nobody has done? For that you have to present the work of others and then show the gaps and then you bring your own work So, how one should write the background of research paper? Some of the components or some of the points which we have already covered but very specific now particularly we will discuss that how one should write. So, the first is the length and detail presented in the background varies for different research papers. It depends whether you are writing a short paper or very detailed paper. So, the length will depend on that.

And length of course will depend on the details. So, it will depend on another thing which will depend in the complexity and novelty of the research topic. So, if somebody is working on a very complex problem then probably the paper or manuscript may be very lengthy and one has to provide too much details. But if it is a work, lot of work has been done in that area but you have done some new innovation, new novelty, then accordingly the length will vary. So, there is no basically fixed length or detail are there as per the requirements.

As per the requirement one would prepare this background. And sometimes a simple background suffers even if the study is complex. So, what I am trying to say, the balance has to be there. If a study is complex, all details should come and the length may be more. But if a study is simple then this length of the paper and details can be reduced.

Because many times all research parts are not really bringing a new insight. The area has been changed little bit or the sample types have been changed. So, therefore, one need not to spend too much energy or length towards the background. So, first is the point which we would like to consider that start with a strong beginning. That means the background or review work should start with a strong beginning, defining the research topic and then identifying the target audience.

So, this step will allow you to find the target audience. Second component here is the key component or cover key components that explain all theories, concept, terms and ideas in the review part or background section. It is same thing. So, that whoever the audience is, they will feel so far they might have been unfamiliar or not knowing the details. So, through this presentation, theories, concept, terms and ideas, they will become familiar.

So, that the subsequent sections of your paper or thesis, they would be able to understand in a much better manner. And essentially, that is the purpose of writing review or background. Further, it is a take note of important prerequisite. What are the prerequisites? That go through the relevant literature in detail that what work has already been done. Take notes while reading and cite the sources.

And this part we will be discussing about the cite of the sources that means giving references to other works those who have already done. And in review, maximum citation will be there because you are using other works. So, that will come and once we come for references, bibliography or citation or impact factor during that time, we will have a complete separate discussion on citation. Now, maintain a balance. This is another important point while writing a background of a research paper that one should make sure that the background is focused on important details.

But one should not lose the focus so that a balance has to be there. And generally, you are writing or trying to appeal a broader audience. So, from keeping that mind, one should write. If it is too specific background work then only few people will read and obviously, it will affect the citations. But in the background, you can have a target audience in a broader sense.

Another important point is include historical data. Review work is that only. So, current issues largely originate from historical events or findings. So, that also should be included in the review work. Now, that point I have already covered indirectly but here it is coming that the research borrows information from a historical context.

Because whichever the paper you are using, they must have also reviewed the things. So, up to that point or year, they have covered that part. So, everyone is basically borrowing the information from historical papers or earlier published work and add that relevant data in the background or reviews. Further explain novelty. This is very-2 important that why your work is important, why your you know paper is important.

And that only be possible if you can explain that what is the new thing, innovation or novelty in your work. So, if the research study or methodology is unique because study might be or development or new methodology, new algorithm, any new thing that you should highlight very clearly in your review work that these were the gaps, the new invention, new novelty has been developed and this is what is being presented in the present research paper or thesis. Now, further another important point that increase engagement and that means to make the background engaging, build a story around the central theme of the research or topic of the research. Why this point here is important? Because you want that the audience or the reader, whoever has started reading after topic, abstract, keywords and introduction part, they should not you know close or deviate. They should continue to keep that interest and that is only possible if you keep this point in mind while writing a literature review or background that you have to keep engaging them.

That means their attention should always be focused towards the work. Further, there are some more tips are there while writing the background of a study. Start with the statement of the problem and basically this sets the context for the study. Provide an overview of the research topic which we have already been discussing that includes its significance in the field. The importance, why it is important, why you are writing that is always should be highlighted.

Further highlight gaps, that point we have also discussed earlier that what are the gaps in the existing knowledge? What are the gaps in the existing instrumentation if work is on that? Or what are the gaps or lacking a model or an algorithm? Those things must be highlighted at this stage. And then you try to explain why your research is going to contribute or filling those gaps or going to improve that algorithm or model. So, this has

to be very much highlighted. Basically, what you are first trying to highlight the gaps and then highlighting your work that how these gaps are going to be filled by your research or your contributions. And of course, one more important point is that justify the study.

that you would try to explain why your research is important and what practical or theoretical contribution it can make to the field or that particular specialization. So, you know justification is required here also apart from highlighting the gaps and how the gaps are going to fit. But again and again this point is coming the importance of your work. Justify the study basically indirectly it is importance of your work, why this work is being done. There are some additional tips which one can use while writing this literature review or background work of even paper that cite sources.

At this point, I have also covered earlier that ensure that every idea, finding or theory that is not your own is properly attributed to its original source. If you are borrowing a sentence from others' publications, you must give the credit or cite that work. Otherwise, you would land up in a plagiarism case, whether it is a thesis or any other thing. At the end of this course, last one or two lectures we would be spending about plagiarism and how to avoid plagiarism in the research or in publications. Because now it is very much possible because of digital world, it is possible to check that from where the material has been lifted.

And if you have not given credit to that publication or work then you fall in that trap of plagiarism. So, that is why always cite the source. If you have borrowed a figure, give the reference that this figure has come from this publication. If you have borrowed the data, cite the source. If you have taken an idea or you know a few sentences, paragraph from some or findings of others which are useful in yours or to support your study, then you should also cite that such and such has already developed and now I am improving on that.

So, who has developed his name or that citation should come. Now, another thing is analyze what has been written about your field of research. Highlights what is new and significant in your study. This is iteration process I would tell from my own experience. Once you write then read it again maybe several times.

You know that kind of analysis, self-analysis has to be done. And then you try to highlight the significance of your research, study and novelty in your work. This point

we have already covered that historical background should be there. This demonstrates your competency to other researchers and general editors. This must be doing otherwise the point which we have covered here that the ite resources will come again here.

Now, avoid these mistakes while writing the background. What are the mistakes? Normal mistakes people will commit especially the first time writers, they might face this kind of problems. So, it is better to know what are the things should be avoided. The first is ambiguity, never leave that.

do not be ambiguous. Write in a straight manner so that while writing, assume that the reader does not understand any intricacies about your research. So, you do not leave any ambiguity. And unrelated themes that steer clear from topic that are not related to the, just do not try to fill the gaps or fill few pages. So, unrelated things should not be there at all. And if you write, then you are increasing the ambiguity in your work.

So, that is not required at all or that should be avoided. Poor organization, do not place information without a structure. So, before you start writing a review, make certain points that what you are going to write. First you would write about the topic, then you would write what the work has been done, then you would write the gaps and then finally you would write the significance or importance of your work.

So, that structure has to be maintained. Further, make sure that the background reads in a chronological manner. Chronological manner means here that whoever has done the work first, their work should be highlighted first or in the background and then latest work. This is what the chronological order or chronological manner is. Now, organize the subsection in that if flows well. So, you can have even subsections in the background and the best practice is have a separate paragraph for each kind of subsections.

Instead of writing a number or giving a number or heading for a subsection, you can have a separate paragraph. While writing a background for a research paper, one should not be you know daunting task but direction to go about it can always help. So, whatever we have discussed so far, it will help to write the background or review Sometimes, depending on the work, you have to you know do little changes in these guidelines sort of points which I have discussed. Otherwise, most of these things can be followed and one can nicely prepare about this thing. Now, there are some certain FAQs means frequently asked questions about literature reviews.

So, one by one I would be going on the left column and right column. So, left column is having questions, another one is having sample answers, probable answers. So, first question is what is this review literature. So, this is an evaluation of previous research on your topic. Very simple way of defining that evaluation of previous work on your topic.

The topic which you have chosen, title on which you are working, how much work has already been done, to what extent it has been done. that is what it is. Second is what is its purpose? So, purpose here to provide background information which is needed to understand your work, your study by the audience. Second is assume your readers that you are familiar with important research that has been carried out in that area of your area of research. And third point here is establishes your study as one link in the chain of research.

This is the important point because in my opinion or in general understanding no research is ever complete. You have done certain work but one cannot think that now beyond this point no one would be able to do new innovations or new novelty in that stream or that area. So, new people will come, they will apply new techniques, new instrument data and all kinds of things. So, that is what is that establishes your study as one of the link in a chain of research that is developing and enlarging knowledge in your field. So, your contribution will come, but in future the contributions might be coming.

Another question which is also sample answers are given, what do I need to include? Many of these points we have already covered, but what minimum you require? Basically, this is kind of summary which we have discussed. So, what minimum is required? Well established research in the field. most recent relevant research. Another question which one can ask or it is a FAQ that is how do I organize it. So, sequence we have just discussed but anyway in a summarized form, some possible approaches which can be combined.

First is organized around by key theme or debates. what is going on in that field, then from distance to close. So, first you cover a larger area or broad theme, then you start coming to specific points. And third is generic knowledge, what generic knowledge so far exists that is conceptual framework and understanding of specific context and applying theory to the context. And, fourth important point here is that the methodological approach following the different methods used in your study.

So, these points also should be there. Another question, what referencing system should I use? Very simple answer to this. As per the requirements of the journal or as per the laid down procedures or laid down guidelines by the institute. If somebody is submitting a PhD, then they should follow the guidelines provided by their academic office about how to write references. Basically, what I am trying to say, there are no standard fixed referencing system exist.

Different journals follow different referencing system. When the discussion will come on this, I will be showing examples from 2-3 such publishers. Like Current Science writes in India, Current Science writes references completely in a different manner than majority of the journals because their purpose is to save the print space. But today in digital world, I think that type of writing referencing is not very convenient because people are used to other type of writing references. Anyway, so this is as per the need of the journal, requirements or guidelines given in the journal or in conference one has to write.

Otherwise, they will not publish your work. or will accept your work initially. So, that is why we have to follow their system, not ours. How do I refer to other authors? Various ways are there. Two examples are there that how do I refer the other authors that own the information then use name oblique number in parenthesis. For example, here it was demonstrated in bracket 2 that is in the list of references this reference will come at number 2 or it was demonstrated then in a different system it is written here that number or name and number, number means year in which the publication has been done.

So, two complete different ways are shown here. Other way is to use acknowledging phrasing. For example, you say that this such and such has in the year demonstrated that or you know such and such bracket 2 that is in the list of references to demonstrated that. So, this is one method, one way of writing in particular journal, this is writing in a like current science journal. So, there is no fixed way of writing references.

Nonetheless, we have to follow as per the publisher's or journal's guidelines. Now another important question, how long should it be about the background of literature review? So, we have already discussed this point that if the study is complex then we can avail more length and we can go in more details. But study if it is simple and already lot of work has been done then we can just mention the name of authors or the other studies and need not to go in too much detail. So, how long is a piece of string or your school

specify the length. School means here institute or publisher or anything can use the following as a rough guide.

Around 15 to 30 percent of whole thesis or whole paper. Or thesis is expected to be 60% because this is important point here. Paper, manuscript or thesis, people expect that you have done large work and the background work is just 30%. So, your literature review is more than 40% which is probably too long.

So, this limit should not be there. One should restrict generally. But again, these are just suggestions are there. There are again no straight and fast rules are there. Because if you keep background too much and your work is less then it does not look nice. Because after all you are going to present something which has not been done or attempted by anybody.

So, you should try to highlight that part rather than other work. So, now we are coming to the end of this discussion. Last point here is what am I supposed to do in my literature review. So, in summary, you are expected to show that you can recognize the relevant and important research in your field which has been done in past by many people and they have published. Because you can only include, generally you can only include the research of others or work of others if they have published.

If they have not published, then it becomes really difficult to include their work. But sometime we have to include even unpublished word. But all kinds of details in the list of references should come. There the citation should be very properly written even for unpublished word. And second point here you can understand this research by organizing and evaluating. So, that is what you are targeting the audience that they will try to understand the work which you have done.

So, that is why it is there. And finally here is that you can see where there is a gap. Gap you have to highlight and that is only possible once you have understood what others have done so far. And that will only allow to write a good information about the gaps and you try to emphasize that what is the importance of this research. So, this brings to end of this discussion. Thank you very much.