Akshaya Institute of Technology., Tumakuru

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RESEARCH METHODOLOGY & IPR

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MODULE-II

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Module-2

Literature Review and Technical Reading, New and Existing Knowledge, Analysis and Synthesis of Prior Art Bibliographic Databases, Web of Science, Google and Google Scholar, Effective Search: The Way Forward Introduction to Technical Reading Conceptualizing Research, Critical and Creative Reading, Taking Notes While Reading, Reading Mathematics and Algorithms, Reading a Datasheet.

Attributions and Citations: Giving Credit Wherever Due, Citations: Functions and Attributes, Impact of Title and Keywords on Citations, Knowledge Flow through Citation, Citing Datasets, Styles for Citations, Acknowledgments and Attributions, What Should Be Acknowledged, Acknowledgments in, Books Dissertations, Dedication or Acknowledgments.

Literature Review and Technical Reading

- The primary goal of literature review is to know the use of content/ideas/approaches in the literature to correctly identify the problem that is vaguely known beforehand, to advocate a specific approach adopted to understanding the problem, and to access the choice of methods used.

- It also helps the researcher understand clearly that the research to be undertaken would contribute something new and innovative.

- The quality of such review can be determined by evaluating if it includes appropriate breadth and depth of the area under study, clarity, rigor, consistency, effective analysis.

New and Existing Knowledge

- New knowledge in research can only be interpreted within the context of what is already known, and cannot exist without the foundation of existing knowledge.

- Now we are going to look at how that foundation of knowledge needs to be constructed so that our new knowledge is supported by it.

- The new knowledge can have vastly different interpretations depending on what the researcher's background, and one's perception of that new knowledge can change from indifference to excitement (or vice versa), depending on what else one knows.

- Knowledge that is sought to be produced does not yet exist by describing what other knowledge already exists and by pointing out that this part is missing so that what we have is original.

- To do this, one again needs the existing knowledge: the context, the significance, the originality, and the tools.

- Where does this existing knowledge come from? Normally, one finds this knowledge by reading and surveying the literature in the field that was established long ago and also about the more recent knowledge which is in fact always changing.

- Often, but not always, the textbooks contain the older established knowledge and the research papers the newer work

- Reading the textbooks on one’s topic provide the established knowledge and the background to be able to read the newer work usually recorded in the research papers.

- Very often, reading a textbook is not too difficult for it is written as a teaching instrument, and the author of the textbook normally starts from the basics and take the reader, through everything that one needs to be able to understand that topic.

- This is not at all the case with a research paper where the goal is normally to present a small piece of new knowledge, and that new knowledge will not have stood the test of time in the same way as the knowledge in a textbook would have.
- .

- The research paper is written for other researchers out on the edge of knowledge and it assumes that the reader already knows a lot in that field.

- A researcher may find oneself continually going back to other sources to try and interpret what is going on in a particular research paper.

- It can be difficult to find the right work to read, but the objective with all this reading and learning is to be able to get the knowledge that one needs to build the foundation

- The review process must explain how a research item builds on another one.

- This is because useful research should elucidate how and why certain technical development took place, so that it is easy for the reader to comprehend why the present talk is being undertaken, and a good literature survey would provide a convincing under to that question.

- An effective review of literature ensures a firm foundation for advancing knowledge, facilitates theoretical growth, eliminates as areas that might be of interest, and opens new avenues of possible work.

- An efficient literature review is centered around concepts and not authors.

- Generally, a good literature survey is the first expectation of a supervisor from the research student, and when done well can create a good impression that the state of art in the chosen field is well understood.

- Simple rules for writing an effective literature review are important for a research scholar, are provided

- A literature review should be able to summarize as to what is already known from the state of the art, detail the key concepts and the main factors or parameters and the underlying relationships between those, describe any complementary existing approaches, enumerate the inconsistencies or shortcomings in the published work, identify the reported results that are inconclusive or contradictory, and provide a compulsive reason to do further work in the field.

A good literature survey is typically a two-step process as enumerated below:

(i) Identify the major topics or subtopics or concepts relevant to the subject under consideration

(ii) Place the citation of the relevant source (article/patent/website/data, etc.) in the correct category of the concept/topic/subtopic (with the help of a tick, for example)

- It could be that as one is reading and comes across something that one considers to be very important for one's work, a core principle or a description of something that just sounds really good, and one is excited to have found it.

- Naturally, one highlights that section or underlines it, or put an asterisk in the margin, so that one could come back to it later. Effectively, one is saying that it is important and hence the marking so as not to forget it.

- After having marked or highlighted the section, it is suggested that the paper be put away or the book be closed. Then one should write about the highlighted part without copying it.

- As one writes about why one thinks that part is important and what it contains, one is automatically changing it and making it fit into one's foundation in the way that makes sense.

- There are shaping and crafting of that piece of knowledge to fit where one needs it to be.

- To build the knowledge foundation, one needs to be reading and learning continually. But that is not enough, one also needs to be writing about what one has read.

- A comprehensive literature survey should methodically analyze and synthesize quality archived work, provide a firm foundation to a topic of interest and the choice of suitable research methodologies, and demonstrate that the proposed work would make a novel contribution to the overall field of research.

Analysis and Synthesis of Prior Art

- After collecting the sources, usually articles, intended to be used in the literature review, the researcher is ready to break down each article and identify the useful content in it, and then synthesize the collection of articles

- A literature survey grid of N topics and M sources is shown below to help crystallize the information in different categories.

A researcher should analyze the relevant information ascertained in Table by undertaking the following steps:

(i) Understanding the hypothesis,
(ii) Understanding the models and the experimental conditions used,
(iii) Making connections,
(iv) Comparing and contrasting the various information, and
(v) Finding out the strong points and the loopholes.

	Source 1	Source 2	…	Source M
Topic 1		✓		
Topic 2	✓			✓
⋮				
⋮				
Topic N	✓	✓		

- It is always good to be suspicious of the claims made in the sources that have been thoroughly reviewed, especially in the case of tall claims.

- If one is amenable to easily accept whatever is available in the literature, one may find it difficult to go beyond it in one's own work and may also fail to carefully analyze with a suspicious bent of mind one's own results subsequently.

- The goal of literature survey is to bring out something new to work on through the identification of unsolved issues, determine the problems in the existing models or experimental designs, and present a novel idea and recommendations.

- No matter where one gets the available information, one needs to critically evaluate each resource that the researcher wishes to cite.

- This methodology analyzes available materials to determine suitability for the intended research.

- Relying on refereed articles published in scholarly journals or granted patents can save the researcher a lot of time.

- Here are a few criteria that could help the researcher in the evaluation of the information under study:
  - Authority: What are the author's credentials and affiliation? Who publishes the information?
  - Accuracy: Based on what one already knows about the topic or from reading other sources, does the information seem credible? Does the author cite other sources in a reference list or bibliography, to support the information presented?
  - Scope: Is the source at an appropriate comprehension or research level?

Bibliographic Databases

- “Bibliographic databases” refer to “abstracting and indexing services” useful for collecting citation-related information and possibly abstracts of research articles from scholarly literature and making them available through search.

- Performing simultaneous searches through such large databases may allow researchers to overtly rely on any one database and be limited by the intrinsic shortcoming of any one of them for quality research.

- A researcher should be able to quickly identify the databases that are of use in the idea or problem that one wishes to explore.

- In this section, we present some details about a few of the popular bibliographic databases most sought after by engineering researchers, but do not attempt to provide exhaustive details.

Web of Science

- Web of Science includes multiple databases, as well as specialized tools.

- It is a good search tool for scholarly materials requiring institutional license and allows the researcher to search in a particular topic of interest, which can be made by selection in fields that are available in drop down menu such as title, topic, author, address, etc. The tool also allows sorting by number of citations (highest to lowest), publication date.

- Put quotes around phrases, add more keywords, or use the “Refine Results” panel on the left to narrow down the search by keyword, phrases in quotation marks, type of material such as peer-reviewed journal articles, date, language, and more.

- Expanding the search results is possible by looking for alternate word endings, breaking the search concepts down, thinking of alternate search terms (including scientific names if applicable) and connecting them with OR, and using the database's features for finding additional references.

- "Cited reference search" option enables a researcher to trace articles which have cited a formerly published paper. Using this element, it is possible to find how a familiar idea has been applied, improved, or extended subsequently.

- A structured search like this that enables narrowing and refining what one is looking for is effective to ensure that the results throw up relevant sources and time spent in studying those is likely to be well utilized.

- Based on the researcher's need the search result can be broadened or narrowed down using the built-in fields provided in this website.

- When clicked on any of the search results, this website provides the title of the paper, authors, the type of journal, volume, issue number and year of publication, abstract, keywords, etc., so that the researcher has enough information.

Google and Google Scholar

Google is a great place to start one's search when one is starting out on a topic. It can be helpful in finding freely available information, such as reports from governments, organizations, companies, and so on.

However, there are limitations:

(i) It's a "black box" of information. It searches everything on the Internet, with no quality control—one does not know where results are coming from.

(ii) There are limited search functionality and refinement options.

What about Google Scholar? Google Scholar limits one's search to scholarly literature.

However, there are limitations:

1. Some of the results are not actually scholarly. An article may look scholarly at first glance, but is not a good source upon further inspection.

2. It is not comprehensive. Some publishers do not make their content available to Google Scholar.

3. There is limited search functionality and refinement options.

There are search operators that can be used to help narrow down the results. These help one find more relevant and useful sources of information.

Operators can be combined within searches. Here are some basic ones that one can use:

(i) OR—Broadens search by capturing synonyms or variant spellings of a concept. Example: Synchronous OR asynchronous will find results that have either term present.

(ii) Brackets/Parentheses ( )—Gather OR'd synonyms of a concept together, while combining them with another concept. Example: RAM (synchronous OR asynchronous).

(iii) Quotation marks " "—Narrow the search by finding words together as a phrase, instead of separately. Example: RAM (synchronous OR asynchronous) "Texas Instruments".

(iv) Site—limits the search to results from a specific domain or website. This operator is helpful when searching specific websites such as the BC government, which is Example: RAM (synchronous OR asynchronous) "Texas Instruments" site: http://ieeexplore.ieee.org.

(v) Filetype—limits the search to results with a specific file extension one could look for pdf's, PowerPoint presentations, Excel spreadsheets, and so on. Example: RAM (synchronous OR asynchronous) "Texas Instruments" site: http:// ieeexplore.ieee.org, filetype: pdf.

The Search Tools button at the top of the Google results gives you a variety of other options, such as limiting the results by date.

There are other operators and tools that one can use in Google and Google Scholar. Google is but one search tool a researcher can use—it is not the only one!

It can be hard to sift through all the results in Google or Google Scholar, especially if the intent is to find scholarly resources from a specific subject area.

To find the best resources on a topic, one should search in academic databases, in addition to Google.

Databases provide access to journal articles and conference proceedings, as well as other scholarly resources. One gets more relevant and focused results, because they have better quality control and search functionality

Effective Search: The Way Forward

- A scholarly publication is one wherein the published outcome is authored by researchers in a specific field of skill.

- Such work cites all source contents used and is generally peer reviewed for accuracy and validity before publication. Essentially, the audience for such works is fellow experts and students in the field.

- The content is typically more complex and advanced than those found in general magazines. .

- While most of the engineering researchers need to refer articles that appear in scholarly journals, books or other peer-reviewed sources, there is also a substantially useful content in more popular publications.

- These are informal in approach and aim to reach a large number of readers including both the experts in the filed and also amateurs, but the content focuses on news and trends in the field.

- Research outcomes are not typically first disseminated here but are usually meant for general reading.

- A researcher should use all search tools for comprehensive search. No one place or one source exists that will provide all the information one needs; one will likely need to look in all the places that would be described in this chapter and in others not mentioned.

- A researcher must consider what type of information is needed, and where it could be found. Not all information is available online. Some information is only available in print.

- It can take time for scholarly and peer-reviewed information to be published. One might not be able to find scholarly information about something currently being reported in the news.

- The information may not be available, or studies on a topic of interest to the researcher have not occurred.

In such a case, the researcher should look for similar studies that would be applicable to the specific topic; look for broad information (general process, technology, etc.), as well as information that addresses the specific context of the researcher's report.

Searching is an iterative process:

- Experiment with different keywords and operators;
- Evaluate and assess results, use filters;
- Modify the search as needed; and
- When relevant articles are found, look at their citations and references.

- After the search is complete, the researcher needs to engage in critical and thorough reading, making observation of the salient points in those sources, and summarize the findings.

- A detailed comparison and contrast of the findings is also required to be done. This entire process may be needed to be done multiple times.

- The conclusion of the entire process of literature survey includes a summary of the relevant and important work done, and also the identification of the missing links and the challenges in the open problems in the area under study.

- One must note that the literature survey is a continuous and cyclical process that may involve the researcher going back and forth till the end of the research project.

Introduction to Technical Reading

- Finding the right work to read can be difficult. The literature where knowledge is archived is very fragmented and there are bits and pieces all over the place.

- Very rarely will one find everything that one wants close together in one place. However, it is obvious that the number of papers relevant to a particular researcher is very few, compared to the actual number of research papers available from peer-reviewed technical sources.

- It is also important to know where to read from; relying on refereed journals and books published by reputed publishers is always better than relying on easily available random articles off the web.

- While reading an engineering research paper, the goal is to understand the technical contributions that the authors are making.

- Given the abundance of journal articles, it is useful to adopt a quick, purposeful, and useful way of reading these manuscripts.

- One should then read the abstract to get an overview of the paper in minimum time. Again, if it does not seem sufficiently important to the field of study, one should stop reading further.

- If the abstract is of interest, one should skip most of the paper and go straight to the conclusions to find if the paper is relevant to the intended purpose, and if so, then one should read the figures, tables, and the captions therein, because these would not take much time but would provide a broad enough idea as to what was done in the paper.

- If the paper has continued to be of interest so far, then one is now ready to delve into the Introduction section to know the background information about the work and also to ascertain why the authors did that particular study and in what ways the paper furthers the state of the art.

- The next sections to read are the Results and Discussion sections which is really the heart of the paper.

- One should really read further sections like the Experimental Setup/Modeling, etc., only if one is really interested and wishes to understand exactly what was done to better understand the meaning of the data and its interpretation.

Conceptualizing Research

- The characteristics of a research objective are that it must have new knowledge at the center, and that it must be accepted by the community of other researchers and recognized as significant.

- Coming up with a good research objective, conceptualizing the research that meets all of these requirements is a tough thing to do.

- It means that one must already be aware of what is in the literature. That is, by the time one actually has a good research objective, one is probably already an expert at the edge of knowledge else it is difficult to say with confidence that one has a good research objective. If one is doing research at the Ph.D. level or higher, then conceptualizing the research is probably something that one needs to do oneself.

When working at the Ph.D. Level, one needs to be prepared to become that expert, one needs to be continually reading the literature so as to bring together the three parts:

(I) Significant problem,
(ii) The knowledge that will address it,
(Iii) A possible way to make that new knowledge.

- However, if one is working on a research project that is of a smaller scope than a Ph.D., let us say a master's thesis, then conceptualizing the research is possibly too tough to do, and one does not have the time that it takes to become that expert at the edge of knowledge.

- In this case, the researcher needs the help of someone else, typically the supervisor who may already be an expert and an active researcher in that field, and may advise on what a good research objective might be.

Critical and Creative Reading

- Reading a research paper is a critical process. The reader should not be under the assumption that reported results or arguments are correct.

- Rather, being suspicious and asking appropriate questions is in fact a good thing.
  - Have the authors attempted to solve the right problem?
  - Are there simpler solutions that have not been considered?
  - What are the limitations (both stated and ignored) of the solution and are there any missing links?
  - Are the assumptions that were made reasonable?
  - Is there a logical flow to the paper or is there a flaw in the reasoning?

- These need to be ascertained apart from the relevance and the importance of the work, by careful reading.

Taking Notes While Reading

- A researcher reads to write and writes well only if the reading skills are good. The bridge between reading and actually writing a paper is the act of taking notes during and shortly after the process of reading.

- Many researchers take notes on the margins of their copies of papers or even digitally on an article aggregator tool. In each research paper, there are a lot of things that one might like to highlight for later use such as definitions, explanations, and concepts.

- On completing a thorough reading, a good technical reading should end with a summary of the paper in a few sentences describing the contributions.

Reading Mathematics and Algorithms

- Mathematics is often the foundation of new advances, for evolution and development of engineering research and practice.

- An engineering researcher generally cannot avoid mathematical derivations or proofs as part of research work. In fact, these are the heart of any technical paper.

- By meticulous reading of the proofs or algorithms, after having identified the relevance of the paper, one can develop sound understanding about the problem that the authors have attempted to solve.

Reading a Datasheet

- Researchers in different fields of engineering will need to read certain types of documents.

- For example, mechanical and civil engineers would need to read drawings related to mechanical parts and buildings.

- Researchers in the field of electronics need to read datasheets. On occasions, researchers in other fields may also need to incorporate a certain electronic part in which case careful reading of the datasheet is imperative.

- The same principles like initial skimming of the datasheet are required to ascertain whether further careful reading is needed.

- Datasheets are instruction manuals for electronic components, which (hopefully) details what a component does and how one may use it.

- Datasheets enable a researcher (or a working professional) to design a circuit or debug any given circuit with that component.

- The first page of the datasheet usually summarizes a part's function and features, basic specifications, and usually provides a functional block diagram with the internal functions of the part.

- When working with a new part, or when deciding which part to use in the research work, it is recommended to carefully read that part's datasheet to come up with a bit of shortcut that may potentially save many hours later on.

Attributions and Citations: Giving Credit Wherever Due

- In this chapter, we highlight the importance of expanding attributions and acknowledgments to roles and responsibilities beyond primary authors of journal articles or principal investigators of grant proposal documents.

- This would be applicable especially to scientific research projects that involved diverse skill sets and expertise.

- Acknowledgment in research publications indicates contributions to scientific work.

Citations: Functions and Attributes

- Citations (references) credit others for their work, while allowing the readers to trace the source publication if needed.

- Any portion of someone else's work or ideas in papers, patents, or presentations must be used in any new document only by clearly citing the source.

- This applies to all forms of written sources in the form of texts, images, sounds, etc. and failure to do may be considered plagiarism which will be described in detail in subsequent chapters of this book.

- When a bibliography of previously published patents or papers is placed in the new works of a researcher, a connection is established between the new and previous work.

- As per relevance to context, the researcher provides due credit through the use of a citation.

- Citations help the readers to verify the quality and importance of the new work and justification of the findings.

- A researcher needs to cite each source twice:
  - (i) in-text citation, in the text of the article exactly where the source is quoted or paraphrased, and
  - (ii) a second time in the references, typically at the end of the chapter or a book or at the end of a research article

- It is also important to mention the date the source was published and sometimes also the particular date it was accessed by the researcher if it is related to web content.

There are three main functions of citation:

(i) Verification function: Authors have a scope for finding intentional or unintentional distortion of research or misleading statements. Citation offers the a chance to ascertain if the original source is justified or not, and if that assertion is properly described in the present work.

(ii) Acknowledgment function: Researchers primarily receive credit for their work through citations. Citations play crucial role in promotion of individual researchers and their continued employment. Many reputed organizations and institutes provide research funding based on the reputations of the researchers. Citations help all researchers to enhance their reputation and provide detailed background of the research work.

(iii) **Documentation function**: Citations are also used to document scientific concepts and historical progress of any particular technology over the years

There are certain cases when references do not fulfill the actual goal of citations and acknowledgments, and thus do not benefit the reader.

1. **Spurious citations**: In certain cases, when citation is not required or an appropriate one is not found, if the author nevertheless goes ahead with including one anyways, it would be considered as a spurious citation. These sorts of citations do not add any value to the reader in terms of properly understanding the paper. Such actions result in loss of time of the reader.

2. **Biased citations**: When authors cite the work of their friends or colleagues despite there being no significant connection between the two works, or when they do not cite work of genuine significance because they do not wish to give credit in the form of citation to certain individuals, then such actions can be classified as biased citations.

3. Self-citations: There is nothing wrong in citing one's prior work if the citation is really relevant. Self-citation of prior papers is natural because the latest paper is often a part of a larger research project which is ongoing.

Sometimes, it is also advantageous for the reader because citations of all the related works of the same author are given in one paper and this may reduce the effort of the reader in trying to find the full versions of those papers.

However, there can also be negative impact on the journal as well as individual researchers due to inappropriate and irrelevant self-citations. Self-citations in such cases may be either spurious or biased or even both.

Impact of Title and Keywords on Citations

- The citation rate of any research paper depends on various factors including significance and availability of the journal, publication types, research area, and importance of the published research work.

- Other factors like length of the title, type of the title, and selected keywords also impact the citation count.

- Title is the most important attribute of any research paper. It is the main indication of the research area or subject and is used by researcher as a source of information during literature survey.

- Title plays important role in marketing and makes research papers traceable. A good title is informative, represents a paper effectively to readers, and gains their attention. Some titles are informative but do not capture attention of readers, some titles are attractive but not informative or related to the readers' research area

- Keywords represent essential information as well as main content of the article, which are relevant to the area of research.

- Search engines, journal, digital libraries, and indexing services use keywords for categorization of the research topic and to direct the work to the relevant audience.

- Keywords are important to ensure that readers are aware about research articles and their content.

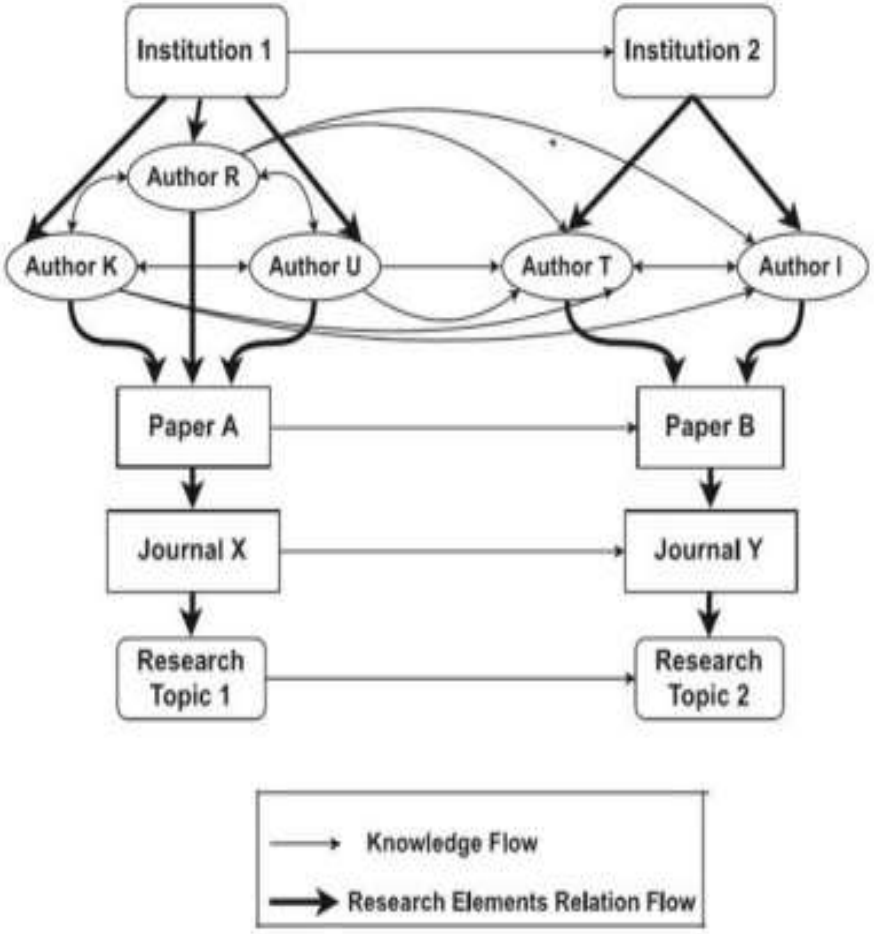
- If maximum number of allowable keywords are used, then the chance of the article being found increases and so does the probability of citation count of the article.

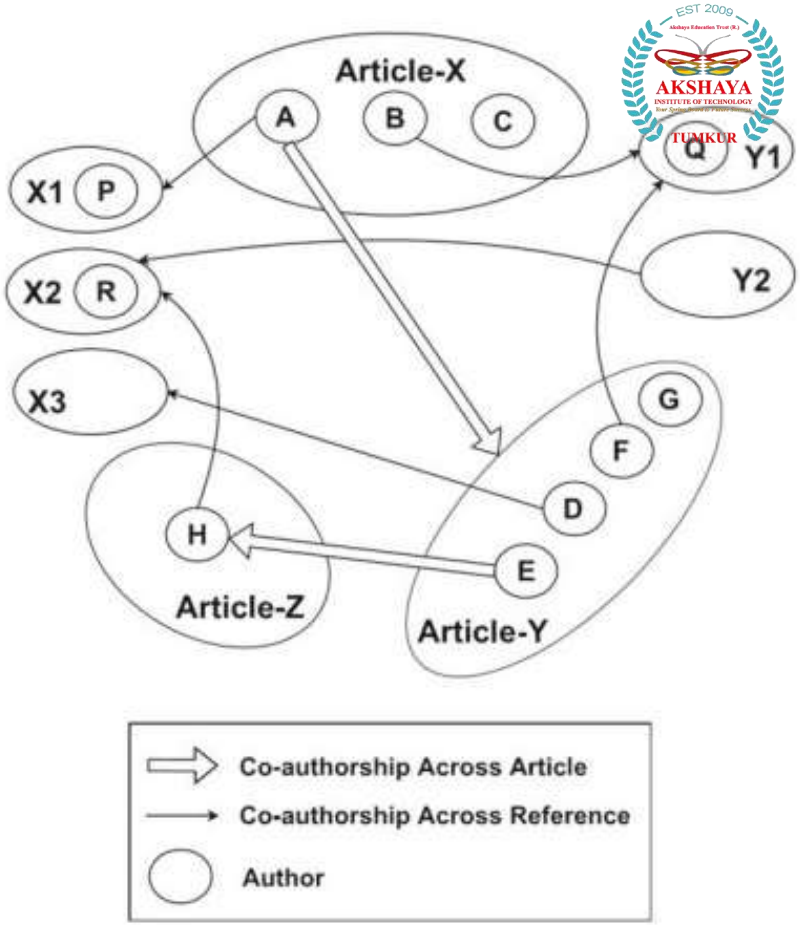
Knowledge Flow Through Citation

- Knowledge flows through verbal communications, books, documents, video, audio, and images, which plays a powerful role in research community in promoting the formulation of new knowledge.

- In engineering research, knowledge flow is primarily in the form of books, thesis, articles, patents, and reports. Citing a source is important for transmission of knowledge from previous work to an innovation.

- Knowledge flow happens between co-authors during research collaboration, among other researchers through their paper citation network, and also between institutions, departments, research fields or topics, and elements of research.





Three articles (X, Y, and Z) and five references (X1, X2, X3, Y1, and Y2) of article X and Y, respectively, are considered. A, B, and C are authors of article X, and D, E, F, G, and also A are authors of article Y. Article Z has two authors H and E. References X1, X2, X3, Y1, and Y2 have authors (A, P), (H, R), (D), (Q, B, F), and (R), respectively.

Styles for Citations

1. ASCE style (American Society of Civil Engineers)

(a) Reference list: This part is to be placed in the bibliography or references at the end of the article or report. A template with example for the same is given below:

Template for books:

Author Surname, Author Initial. (Year Published). Title. Publisher, City, Pages Used.

Example:

Wearstler, K., and Bogart, J. (2004). Modern glamour. Regan Books, NY.

Template for websites:

Author Credentials / Company Name (Year Published). 'Title'. http://Website URL (Oct. 10, 2013).

Example:

Blade cleaning services (2015): http://www.bladecleaning.com/problematica (29 Oct, 2016).

(b) In-text citation for journals or books: The following part is to be placed right after the reference to the source of the citation assignment:

Template for journal publications:

Author Surname, Author Initial. (Year Published). 'Title'. Publication Title, Volume number(Issue number), Pages Used.

Example:

Johnston, L. (2014). "How an Inconvenient Truth Expanded The Climate Change Dialogue abd Reignited An Ethical Purpose in The United States", 1–160.

2. IEEE style (Institute of Electrical and Electronics Engineers)3 IEEE style is standard for all IEEE journals and magazines, and is frequently used for papers and articles in the fields of electrical engineering and computer science.

The IEEE style requires endnotes and that references be cited numerically in the text.

Chapter in an edited book

[1] A. Rezi and M. Allam, "Techniques in array processing by means of transformations," in Control and Dynamic Systems, Vol. 69, Multidimensional Systems, C. T. Leondes, Ed. San Diego: Academic Press, 1995, pp. 133–180.

3. ASME style (The Association of Mechanical Engineers)

Acknowledgments and Attributions

- Acknowledgment section is a place to provide a brief appreciation of the contribution of someone or an organization or funding body to the present work.

- Acknowledgment displays a relationship among people, agencies, institutions, and research.

- In some case, certain individuals may help in the research work but may not deserve to be included as authors.

- As a sign of gratitude, such contributions should be acknowledged.

- Classification of acknowledgment into six different categories like moral, financial, editorial, institutional or technical, and conceptual support.

What Should Be Acknowledged?

- Every author should know that what should/should not be acknowledged. Author should acknowledge quotation, ideas, facts, paraphrasing, funding organization, oral discussion or support, laboratory, and computer work.

- (i) Quotation: In technical writing such as in the field of engineering, quotes are used very rarely. Quotations are of two types:

  - (a) Direct quotations are used when author use actual words or sentences in the same order as the original one. Author should use quotation marks for the words or sentences with proper acknowledgment.

  - (b) Indirect quotation summarizes or paraphrases the actual quote. In such cases, it is important to acknowledge with proper name and date.

(ii) Authors should acknowledge people who give appropriate contribution in their research work. Persons must be acknowledged by authors, who gave a scientific or technical guidance, take part in some discussions, or shared information to author.

(iii) If the researcher received grant from a funding agency and if those funds were used in the work reported in the publication, then such support should always be acknowledged by providing full details of the funding program and grant number in the acknowledgment section. The authors should also gratefully acknowledge use of the services and facilities of any center or organization with which they are not formally affiliated to.