A Guide to Evaluate Academic Sources to Develop Research Paper: Source Selection in Academic Writing

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Abstract - **It is significant to identify and evaluate sources in a research study to ensure their credibility to be used in an academic research paper. Each source should be evaluated in terms of being related to the research question and covering research objectives. However, despite the importance of source selection as one of the initial steps in conducting a research study, it may seem challenging for researchers to find relevant sources based on the topic of their study and evaluate them appropriately. The main aim of this chapter is to clarify the process of choosing sources for a research project. For this purpose, the process of source selection is divided into several steps including recognizing the types of available sources, their ranks, requirements of the study project, searching and searching tools, and finally the process of evaluating sources.**
Keywords: **Source Selection, Academic Paper, Academic Writing, Scientific Source, Research Paper, Research Methodology**

I. INTRODUCTION

A research question should be initially developed that is not just a handy tool; however, it is considered an essential part of the research. This question is developed by identifying the purpose of the research, and what is going to be found at the end of the study. Then, the topic should be narrowed using an outside-in process. For doing this, all possible subjects or topics should be considered, and it should be narrowed down enough to help the researcher understand what to look for precisely. In other words, this is the stage to choose assigned topics by using background information initially, then, it is time for exploring more about the narrower and more specialized terms by utilizing scholarly works. Finally, the final narrow topics should be selected based on the research questions which can overshadow all other steps of the research project (Lowry, 2016). This process is simply shown in Figure 1.

Fig. 1 Process of Narrowing Topic(Lowry, 2016)

After these steps, the preparation of sources should be started. For this, the following sections review the process of selecting sources as is illustrated in Figure 2.
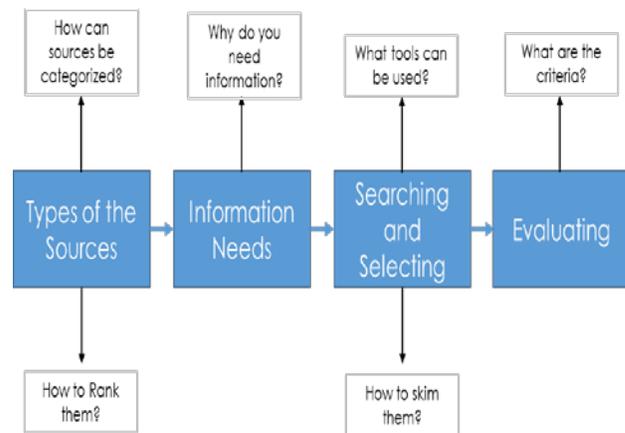

Fig. 2 Process of Choosing Sources

II. TYPES OF SOURCES

A source can be defined as any reference containing information. Thus, there is a vast range of sources to address the information required for the research project. A list is provided in Figure 3 to show the main types of sources.
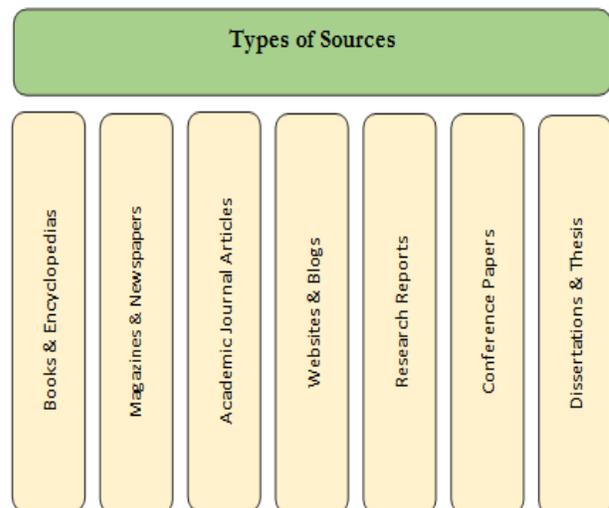

Fig. 3 Different Types of Sources (Taherdoost, 2021)

Also, some tips are provided here which can be useful for ranking the sources. For doing this, the sources are divided into high-quality, varied-quality, and questionable sources which are discussed in the following.

1. *High-Quality Sources:* These sources are written by experts, reviewed carefully, and provide in-depth information about the topics based on the research.
2. *Varied-Quality Sources:* These sources are often applicable and useful; however, they do not provide in-depth information, are not reviewed, and are not based on research works. Thus, they should be used carefully.
3. *Questionable Sources:* these are usually based on the writers' opinion or aim to attract a large volume of readers and are not reviewed. Therefore, it is preferable to avoid using them in a research project (Horkoff, 2015). Examples in this regard are provided in Table I.

TABLE I QUALITY OF SOURCES (HORKOFF, 2015)

High-Quality Sources	Varied-Quality Sources	Questionable Sources
Documents of institutions and universities, textbooks and reference books, scholarly journal articles and scholarly books, trade books, and magazines (e.g. Harvard Business Review), and government documents.	Popular magazine articles, News published by reputable newspapers and organizations such as Canadian Broadcasting Corporation, and The Economist.	Personal websites, blogs, internet discussion, free online encyclopedias, talk radio shows, and boards television news (including biases), etc.

Therefore, as many sources are available and applicable in any research project, the critical question is to realize which sources are suitable for a work and can meet the requirements of the project. There is when categorizing the sources can be helpful to determine.

1. What kind of information can be obtained from each source?
2. Which requirements can be addressed using these sources?(Lowry, 2016)

Considering the importance of sources, it is also challenging to realize how to categorize sources. For this purpose, a set of questions can be asked to examine the categories which are described in following.

A. Contains Qualitative or Quantitative Information

Quantitative Information contains numbers and measurable quantities such as length, age, time, and temperature; however, qualitative information or data uses concepts to explain a descriptive subject. For example, emotional situations, names of countries, and gender are considered qualitative data.

B. Is Factual or Opinion-Based

Subjective information is less based on facts, on the other hand, objective or analytical information is factual. Both facts and opinions can be useful to make arguments; however, facts are also applied to inform audiences. Opinions; however, are used to persuade them. Thus, whether authors decide to use factual or opinion information would be determined by the purpose of the study, and also their willingness to rely on different perspectives or just their own. They also can use the combination of these opinions in case of being necessary. In these cases, authors can both educate or inform their audiences and intend to persuade them based on the description of a subject (event, phenomenon, or situation)(Lowry, 2016).

C. Is One of the Scholarly, Professional, or Popular Publications

Academic or scholarly sources are written based on the research and ideas of the academics which are often published in scholarly journals. Different methods are employed to recognize whether an article is scholarly or not as it is described in the following.

1. A scholarly article is not published in daily or weekly magazines;
2. Flashy graphics and commercial advertisements are not usually included in these articles;
3. They are not written based on everyday language;
4. Experts in specific areas provide detailed information and further or new knowledge as the writers with their deep understanding about the specific subject;
5. The referencing and the style are also academic;
6. "Academic Search Premier" allow researchers to identify the scholarly journals.

However, non-scholarly or popular articles are written based on the interesting ideas of a person which is not necessarily coming from research. They are usually published in daily, weekly, or monthly magazines such as National Geographic, The Economist, and Time. They can be recognized through different ways such as the following.

1. Authors of these type of sources are not usually expert ones in the subject and they are just staff writers and reporters writing for general people;
2. They provide broad information instead of detailed;

3. The language and style are chosen as everyone can simply perceive them;
4. Many colors, pictures, and advertisements are included.
5. They do not include references or may include a few references with an informal style of referencing.

Another category is professional articles that are provided for individuals in a specific profession such as music, nursing, etc. written by the staff writers or professionals, and are easily understandable for all people in the field.

D. Is Secondary/Primary

The difference between these categories is not always apparent; however, generally, primary information is the raw or original data gathered by the researchers for specific research using different data collection methods such as surveys, questionnaires, interviews, or observations; and then analyzing them using the methods that are suitable for their works.

In fact, primary data is not translated by anyone else and is directly obtained by the author. On the other hand, secondary data is the already published data that is gathered by someone else and can be used in research. Thus, they are second-handed sources such as textbooks, magazines, newspapers, and articles that are some examples of secondary information (Adelaide; Lowry, 2016).

III. SOURCES AND INFORMATION NEEDS

This section should be used together with the former one as knowing the categories is essential to choose the suitable information required for the study. When requirements are recognized, the question of why you use sources as well will be addressed. These need areas are as the following.

1. *Learning the Background of the Study:* These sources help the author develop research questions, and also the way to respond to the research question. For this purpose, all the categories can assist the researcher to enhance understanding and knowledge about the subject regardless of being so specific like journal articles.
2. *Answering Research Question:* In this situation, qualitative or quantitative information should be used based on the research type. The scholarly and professional sources are applicable; however, in the art disciplines, popular ones are applied. Both primary and secondary information is also useful in this regard and the authors aim to inform or educate in all fields except art with the purpose of entertaining or selling.
3. *Convincing the Audiences about the Answers:* Secondary sources should be used to intend them regardless of being educative or informative.
4. *Describe the Importance of Different Situations which Surround the Research Question:* Sources should be used to help the researcher explain the situation clearly to the audiences. In this case, sources such as arts like

fiction which are not usable in other needs are applicable.
5. *Reporting Others' Answers About The Research Question:* Simply, just the sources should be used to answer a similar research question; however, in case they seem convincing to audiences as well (Lowry, 2016).

IV. SEARCHING AND SELECTING

After understanding different types of sources, and required information for the study, the main focus would be on the criteria to consider while choosing sources. First, research questions should be identified, then main concepts are required to be applied, and considering related terms would be the next stage. The main concepts are recognized by the nouns which are critical in the meaning of research questions. Related terms are defined as the alternative names that came from the main concepts such as the ones associated with the main concept considering different aspects. For doing this, an interactive searching strategy should be applied. Thus, a set of search statements should be tried and in case of realizing that they are unrelated or not good enough, the statement can be changed. It is also important to use neither too narrow nor too broad statements as research terms.

As an important point in the research strategy, it should be considered when to use AND/OR/Not words to gain a narrower and more precise search. Use AND when the main concept possesses more than one idea since this term helps to combine these ideas. When there is a diverse range of synonyms for the concept OR can help to combine them. Also, NOT/ Minus (-) can be used when you aim to exclude a part of the ideas. After recognizing research strategies, the question is where to search? There are different applicable search tools. Google Scholar is one of the well-known ones which are useful for finding journal articles and books using links to the online copies where possible. This tool can be used to find related sources and verify citations as well. Different specialized databases can be also used for this purpose. They are research and library databases that aim to conduct a target search based on the areas of specializations, published dates, types of sources, etc. to be used in case of need for scholarly information about a specific topic that are not available in common web searches. For example, many university libraries provide this possibility for their users.

In addition, different web search engines can be also used including common ones like google and being as well as specialized ones with a specific focus that ignores the excluded information, and Metasearch engines with access to multiple search engines and even can provide the best results between all of them. Science.gov (http://www.science.gov/) and Dogpile (http://www.dogpile.com) are examples of specialized web search engines, and Metasearch engines; respectively. Other specialized web search engines are directories such as Ipl2 (http://www.ipl.org) which provide categorized or classified

websites based on the subjects which provide the possibility of more selective searches for users. Generally, web search engines are applicable in the case of seeking for public opinion, background information, and news (Lowry, 2016).After searching the statements using suitable tools, the relevant ones should be recognized by skimming the sources. Several points can be applied for this process to save time and energy which are summarized in Table II (Horkoff, 2015).

TABLE II HOW TO SKIM SOURCE? (HORKOFF, 2015)

| Books	Articles
Read the dust jacket (helping to gain a broad overview)	Skim the abstract or summary of contents
Read the table of contents (helping to gain a broad overview)	Skim the introduction and the conclusion
Use the index (showing how to cover the specific topics)	Skim the subheadings
Look for subtitles	Skim text features such as sidebars
Search the key terms based on research project How to Skim	Search the related keywords
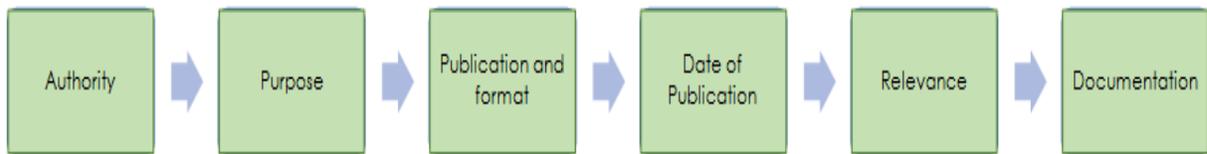
Fig.4. Process of Evaluating Sources

A. Authority Includes

1. The authors, their formal role in institutions and their fields of study;
2. Other sources that are written by the authors;
3. Their preferences for choosing sources;
4. Their viewpoints and orientations.

B. PurposeIncludes

1. The main purpose and research question of the source
2. Whether it is educational or persuasive;
3. Whether it is objective or not;
4. Its economic value;
5. Its intended audiences and whether they are a scholar or general.

C. Publication and Format Includes

1. Place of publication, journal, and the publisher;
2. Whether the source is a progressive or conservative outlet;
3. Whether it is peer-reviewed or not;
4. Sponsors;
5. Possibility of the biases of the publisher;
6. The existence of editors and reviewers.

D. Date of Publication Includes

1. The initial date of publications;
2. The existence of other editions or versions;
3. The latest updates;
4. Investigating reviews, rebuttals, and responses.

E. Relevance Includes

1. Relationships and connections between the project and the source;
2. Whether it is primary or secondary;
3. Matching the scopes to required information;
4. Whether region and time terms are suitable for your purpose.

F. Documentation Includes

1. Whether the source is cited;
2. The reference that the authors have cited;
3. Affiliations between authors and cited ones;
4. Understanding the paraphrases from other sources;
5. Understanding the facts, they used subjectively to support their argument;
6. Identifying ignoring elements in comparison with the main sources and whether they used context approximately or not (Berkeley, 2016; Taherdoost, 2021).

The above method can be applied in evaluating sources, although other ways can be useful as well. For example, a method called ASAP was developed by IRIS (2016) which considers the following steps.

1. *Authority (A):* Examine the reputation, expertise, and other publications of the authors, etc.
2. *Sources (S):* Examine the quality of the sources they have cited in their work.
3. *Age (A):* Use sources with a suitable range of the publication age. For example, five years for technology,

health, medicine, and 10-20 years for art, literature, and history.

4. *Publisher (P):* Search and recognize the publisher using search engines, or search for it in the "about us" section.

Two important evaluating methods have been described in this article; however, there are other specialized points that can be used based on the type of sources for journal articles and internet information that can be found in the literature (Taherdoost, 2021).

V. CONCLUSION

In this article the process of narrowing the topic was discussed as the first step of any research project. In this regards, author(s) should identify all possible topics, assign topics, and define the initial narrowed topic. In the final step, author(s) should decide on the final narrowed topic. After finalizing the research topic, the preparation of sources should be started. Process of Choosing Sources includes four steps namely, deciding on the types of sources, identifying required information, searching, and selecting, and assessment. However, despite the importance of source selection as one of the initial steps in conducting a research study, it may seem challenging for researchers to find relevant sources based on the topic of their study and evaluate them appropriately. It is importance to consider several points when choosing sources, as these points are behind the quality and credibility of your work. There are six general points to consider namely; Authority, Purpose, Publication and Format, Date of Publication, Relevance, and Documentation.

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