



Introduction to Scientific Research (469691)

MSc Graduate Program Electrical Power Engineering Clean Energy and Energy Conservation Engineering

Lecture 5: Research paper/thesis components

Instructor:
Amjad El-Qanni, PhD

Spring 2019

The slides copyright is to Jam Olazo - Slideshare

Why do you need to learn how to write a research paper?



➤ In college, you will be asked to write *many* research papers, and you need to learn what goes into writing a successful paper.

➤ This PowerPoint presentation will give you step-by-step directions on how most high school and college teachers/professors expect you to write a basic research paper.

Learning Targets:

1. How to choose a topic?
2. How to write a thesis or introductory statement?
3. Understand the difference bet. plagiarism and acceptable plagiarism
4. Learn how to use “parenthetical notations.”
5. Bibliography & proper format.

from an old French word,

“sercher”

- to seek or search

prefix **“re”** - again

Research



It is defined as “**intensive search with the purpose of becoming certain**”.

It is a **systematic investigation** into reality to gain knowledge.





#structure

#structure of a research paper

*Main parts of
a composition:*

- ☐ Introduction
- ☐ Body
- ☐ Conclusion



- Abstract
- Introduction/ thesis statement
- Literature Review
- Methodology
- Results
- Discussion
- Conclusion
- Reference
- Appendices





Structure of the Research Paper

Section	Purpose of the Section
Abstract	To briefly introduce the reader to the aims of the study, the methodology, results and findings.
Introduction and/or thesis statement	<p>To state a clear overall purpose for the study, often framed in a discussion of the need the research is satisfying.</p> <p>To define the research question(s) of the study.</p> <p>To give a very brief background of relevant theory and practice for your topic.</p>
Literature Review	<p>To summarize what conclusions have been reached in the research literature and whether different writers agree or not.</p> <p>To highlight main issue and controversies around the problem.</p>



Structure of the Research Paper

Section	Purpose of the Section
Methodology	<p>To demonstrate that you are aware of the research methods used to study this topic.</p> <p>To explain and justify the method of data collection and analysis.</p>
Results	<p>To present the findings of your research in an orderly manner, using heading planned in your methodology or headings arising from patterns found in the research.</p>
Discussion	<p>To comment on the trends/findings and show your understanding of what your data suggests.</p> <p>To highlight anything unexpected that came up.</p>



Structure of the Research Paper

Section	Purpose of the Section
Conclusion	<p>To sum up your findings and highlight the significance of the outcomes of your study.</p> <p>To discuss the limitations of your study and indicate where <u>further research is needed</u>.</p>
Reference	<p>To list alphabetically all the reference materials that have been cited in the text of the report.</p>
Appendices	<p>To present relevant details such as letters to participants and organizations.</p> <p>To present details of questionnaires, surveys and other relevant instrument that you developed for the purpose of the study.</p> <p>To present relevant documents, e.g. Reports/policy/historical documents.</p>



#how to write?



#how to write?

Abstract



It is a summary of a body of information; it expresses the main claim and argument of a paper.

Questions that an abstract answers:

- Why did you do this study or project?
- What did you do and how?
- What did you find?
- What do your findings mean?



#how to write?

Introduction



The primary purpose of an introduction is to frame the paper for its readers. It should provide:

- **brief description** of the topic
- statement as to **why the topic is worth researching** or why it could be found interesting
- statement of the research **objectives**.
- statement of the method(s) and the **scope of study**.
- An **overview** of the rest of the paper.



#how to write?

Literature review

Four guide questions:

- What is the **present state of knowledge** regarding the topic under consideration?
- How are the studies **related** to the one being proposed?
- What is the **quality** of the studies reviewed?
- How will the proposed study **contribute** to the existing literature?



#how to write?

Methodology

- To demonstrate that you are aware of the **research methods** used to study this topic.
- To **justify** the research method and approach you have taken or your study.
- To explain and justify the **method of data collection and analysis**.



#how to write?

Conclusion



The '**results**' and '**discussion**' should be the focus of this part.

- To **sum up your findings** and highlight the **significance of the outcomes** of your study.
- To outline any **implication or recommendations** indicated by the findings.



#how to write?

Conclusion



Results - to present **the findings of your research** in an orderly manner, using heading planned in your methodology or headings arising from patterns found in the research.

Discussion - show your understanding of what your data suggests.



#how to write?

Reference(s)

- To **list alphabetically** all the **reference materials that have been cited** in the text of the report.

Referencing your paper

- References need to contain all works cited in the text.
- References should consistently follow one recognizable system.



#how to write?

Appendices



- To **present relevant details** such as letters to participants and organizations.
- To present details of **questionnaires, surveys** and other relevant instrument that you developed for the purpose of the study.
- To present **relevant documents**, e.g. Reports/policy/ historical documents.



#where & how do we begin?

Choose a subject

- **that interests you** but from which you can still learn much
- **not too broad**
- **not too difficult**, one for which you can find materials from popular magazines or books aimed at general reading.
- that has some interest for the **average reader**.



Choosing a
Subject for
Research Paper

Bulletin

- Observation or experience
- Interview
- The library
- Special bulletins and reports



Gathering of
Materials

Common type of outline:

I. MAIN IDEA

- A. Subsidiary idea or supporting idea to I
- B. Subsidiary idea or supporting idea to I
 - 1. Subsidiary idea to B
 - 2. Subsidiary idea to B
 - a) Subsidiary idea to 2
 - b) Subsidiary idea to 2

II. MAIN IDEA

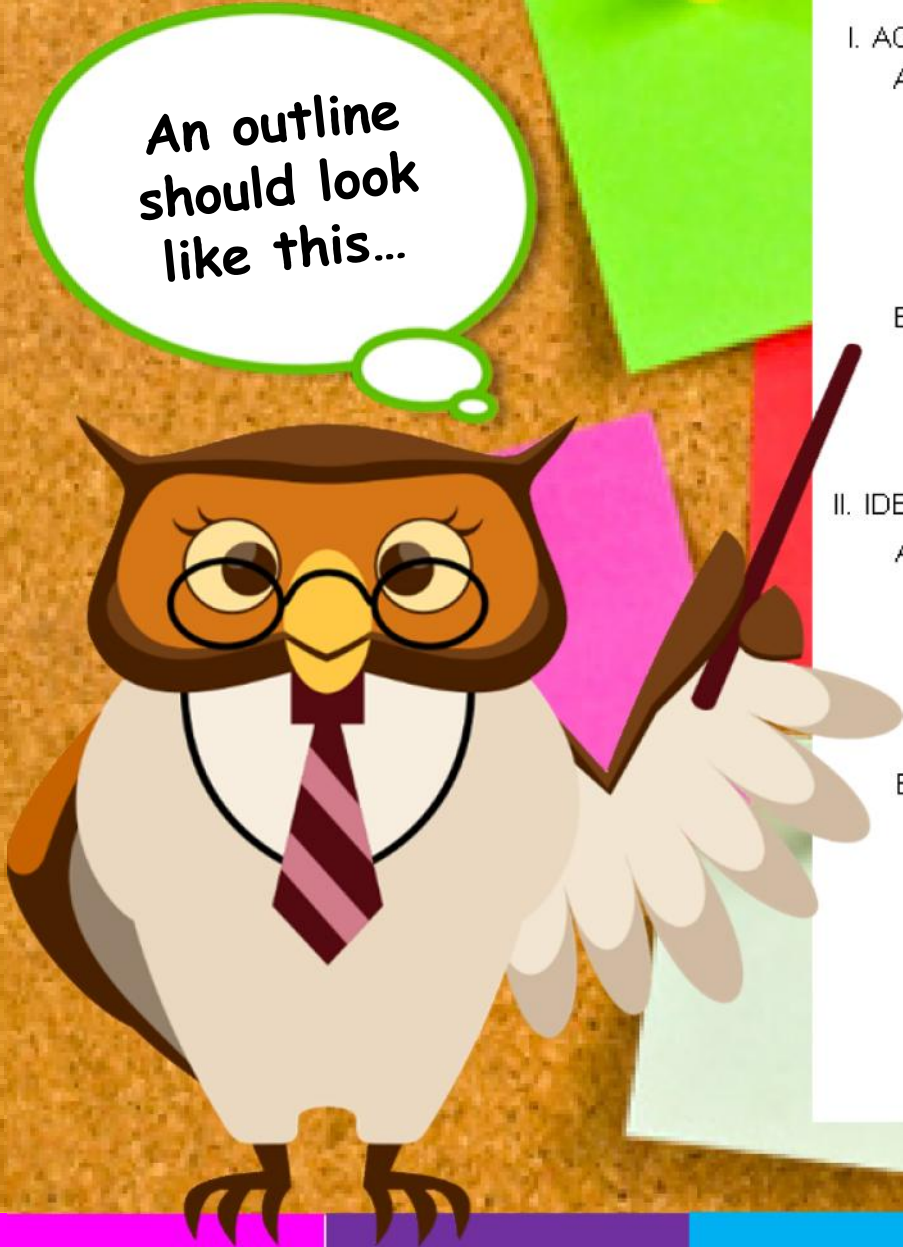
- A. Subsidiary or supporting idea to II
- B. Subsidiary idea to II
- C. Subsidiary idea to II

III. MAIN IDEA



- Have some **ideas of topics** in which you will be needing information.
- Begin your reading with a few general articles which give an **overall survey**.
- Try to anticipate the **important questions** your paper will have to answer.
- **Jot down** what seems to be the major divisions of the subject.

Make a
Preliminary
Outline



An outline
should look
like this...

ORIGINS OF AGRICULTURE

I. AGRICULTURE COMPARED TO HUNTING-GATHERING

A. Advantages of Agriculture

1. More efficient use of land
 - a. agriculture: 1 sq km supports 50 people
 - b. hunting-gathering: 25-30 sq km support 5-6 people
2. More stable food source through year (with storage)
3. More free time in non-critical seasons

B. Disadvantages of Agriculture

1. Malnourishment
 - a. farmers often deficient in protein
2. Labor intensive in critical seasons
3. High risk if crops/herds fail

II. IDENTIFYING DOMESTICATES IN ARCHAEOLOGICAL RECORD

A. Plants

1. Seeds are bigger in size
 - a. example: teosinte to maize
 - b. example: domesticated sunflower is at least 5 mm
2. Seed coats are thicker
3. Found outside natural range of distribution

B. Animals

1. Horns change in morphology
 - a. example: sheep
2. Body size changes
3. Changes in coat or fur
4. Age-sex distributions in skeletal collections
 - a. few old males
 - b. many slaughtered young males
 - c. many old females
5. Found outside natural range of distribution



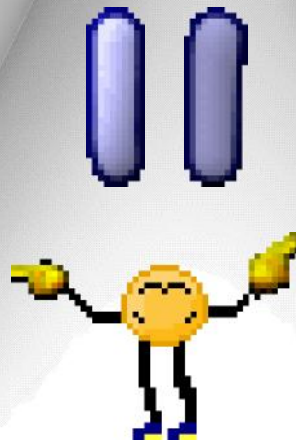
Suggestions for
note taking:

- Use unrolled index, preferably 4x6 inches in size.
- Cover only one subject on each card.
- Write the subject on the left hand corner.
- Name the exact source.
- Use direct quotations if you want to include your paper the author's exact wording.
- Make most of your notes brief statement in your own words.

Note taking



Quoting means
to **REPEAT**
another *source*
word for word,
using **quotation**
marks.



Parentetical
Citations



Keys to Parenthetical Citations

- ☐ Keep quotes **short**
- ☐ Give only information needed to identify the source on your **Works Cited Page**
- ☐ You don't need to cite information that is “**common knowledge**”

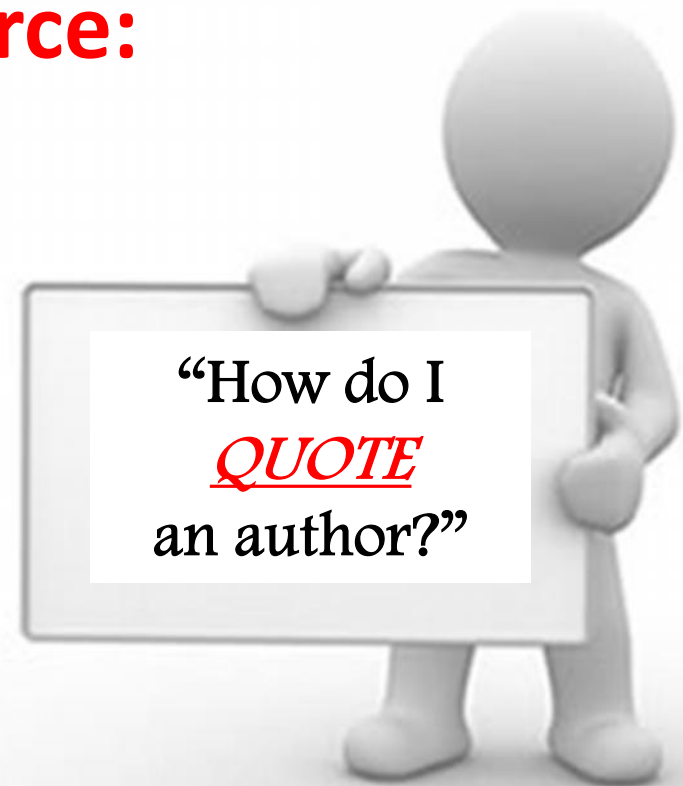
“Make it easier for your reader!”



*P*arenthetical
Citations

- To show that an **authority supports** your point;
- To **present** a position or argument;
- To include especially moving or historically **significant language**; and
- To present a particularly **well-stated passage** whose meaning would be lost or changed if paraphrased or summarized.

In research papers, you should **quote from a source**:



When to QUOTE
an author?



**BE
ORIGINAL
AND
DON'T
PLAGIARIZE**

PLAGIARISM

1. **Passing of someone else's work as your own**, whether we do this deliberately or not.
2. Not acknowledging when using information (**i.e. data, tables, figures or graphics**) from other writers.
3. **Inadequately** paraphrasing a source.

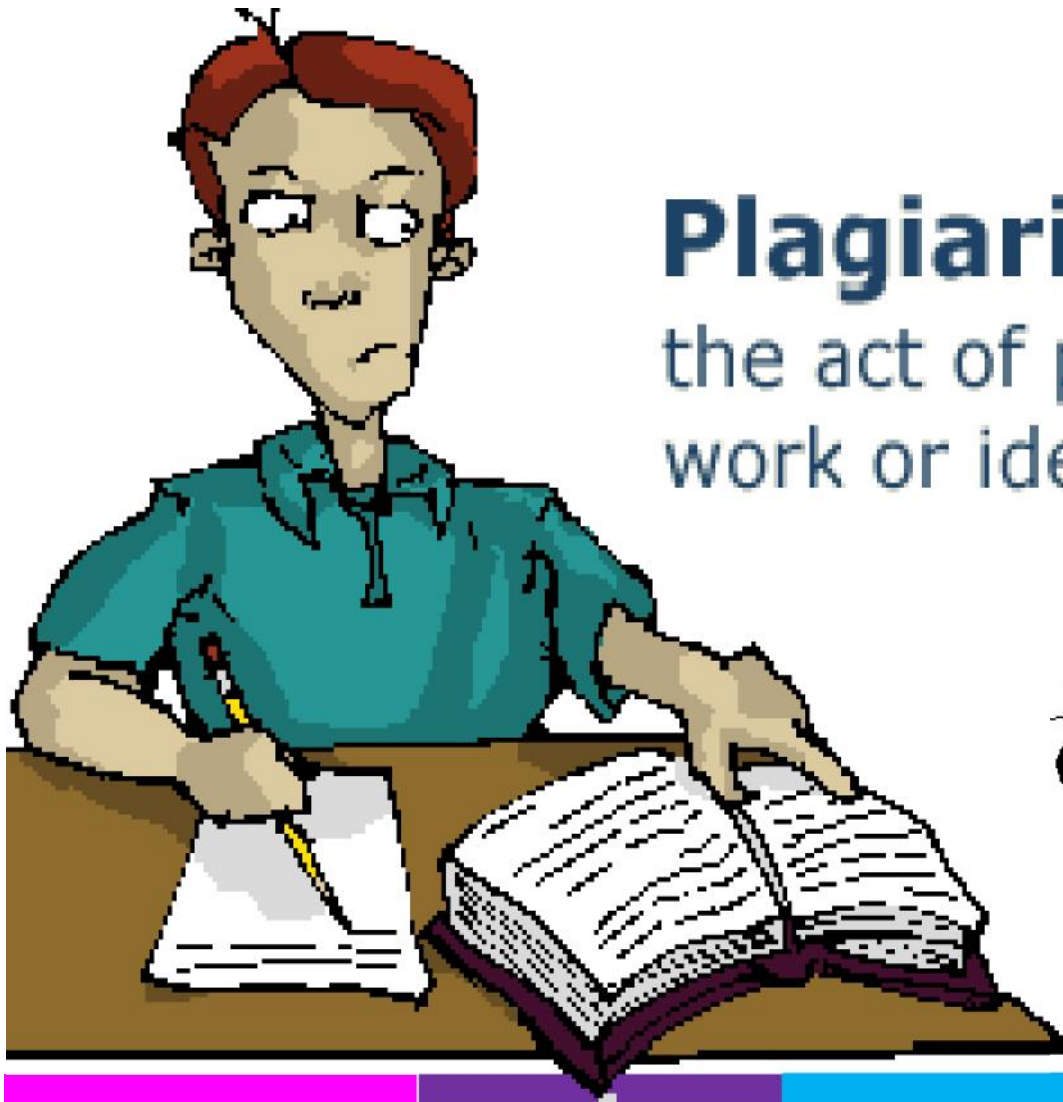
Documenting
A source

Paraphrase!!!



Plagiarism:

the act of presenting another's work or ideas as your own.



Plagiarism v. Paraphrasing

Direct quote from research:

“Japan’s beautiful Mount Fuji last erupted in 1707 and is now classified as dormant. Dormant volcanoes show no signs of activity, but they may erupt in the future.”

Non-plagiarized paraphrase:

Mount Fuji, the highest mountain in Japan, is actually a dormant volcano. Dormant means that it is not active. The last time Mount Fuji erupted was in 1707, and there is always the possibility of a future eruption.

Plagiarism v. Paraphrasing

Direct quote from research:

“Three weeks after Katrina, warnings of the arrival of Hurricane Rita sent residents of cities such as Houston, Texas, rushing to evacuate, fearing for their lives. Fortunately, Hurricane Rita turned out to be much less severe than Katrina. However, mass evacuations like this bring hazards of their own, as panicking drivers may cause accidents on the jammed roads.”

Non-plagiarized paraphrase:

Shortly after Hurricane Katrina devastated the city of Houston, Texas, a warning for a new hurricane named Rita was broadcast, which caused many people to panic and flee the city. However, the mass departure of people leaving Houston at the same time could have caused many car accidents, even though the hurricane turned out to be not as dangerous as Katrina.



#why use a consistent format?



Why use a Consistent Format?

1. ***Helps your reader*** understand your arguments and the sources they're built on.
2. Allow readers to ***cross-reference*** your sources easily | they are doing further research.
3. Provides ***consistent*** format.
4. Gives you ***credibility and reliability*** as a writer.

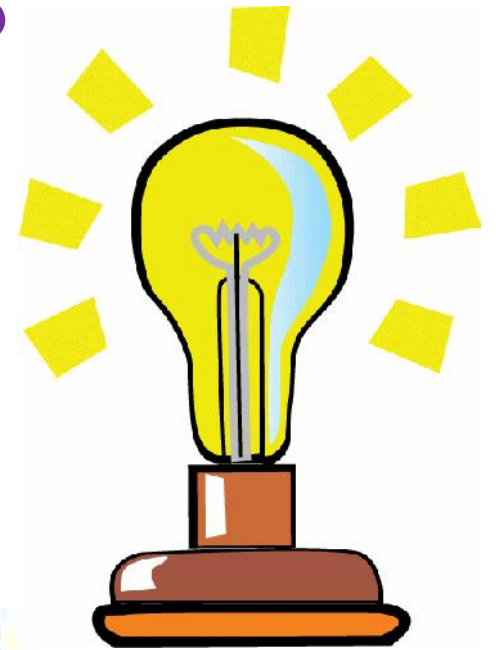
4. Gives you ***credibility and reliability*** as a writer.

3. Provides ***consistent*** format.



Why should you bother?

- ✓ It demonstrates you have looked up the information to prove your points.





#formatting your research

Formatting your research paper. **Which one?**

MLA Format

(Modern Language Association)

- is the official guide to non-fiction writing widely adopted by schools, academic departments, and instructors

APA Format

(American Psychological Association)

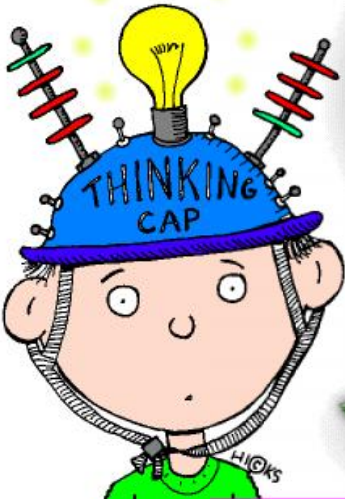
- is an academic format commonly used to cite sources within the social sciences.

Used by various other scientific journals (including medical and public health journals), textbooks, and academia.

ACM Format

(Association for Computer Machinery)


is the largest and oldest international scientific and industrial computer society where they publish their own journals or proceedings.



	MLA Guidelines	APA Guidelines
Paper	Standard size (8.5 x 11" in the U.S.)	
Page Margins	1" on all sides (top, bottom, left, right)	1" on all sides (top, bottom, left, right)
Font	12-pt. easily readable (e.g., Times Roman)	12-pt. Times Roman or Courier. For figures, however, use a sans serif font such as Arial.
Spacing	Double-spaced throughout , including captions and bibliography	Double-spaced
Alignment of Text	Flush left (with an uneven right margin)	Flush left (with an uneven right margin)
Paragraph Indentation	1/2" (or five spaces)	5–7 spaces
End of Sentence	Leave one space after a period unless your teacher prefers two.	Leave one space after a period unless your teacher prefers two.
Page Numbers	On every page, in the upper right margin, 1/2" from the top and flush with the right margin put your last name followed by the page number.	On every page (except Figures), in the upper right margin, 1/2" from the top and flush with the right margin, two or three words of the paper title (this is called the <u>running head</u>) appear five spaces to the left of the page number, beginning with the title page.



	MLA Guidelines	APA Guidelines
Title Page	<p>Only if your teacher requests one. Instead, on the first page, upper left corner place on separate lines, double-spaced:</p> <p>Your name Teacher's name Course name or number Date</p> <p>Underneath, center the title using regular title capitalization rules and no underline. Start the report immediately below the title.</p>	<p>The title page is always the first page.</p> <p>On the line below the page number, the running head is typed flush left (all uppercase) following the words "Running head:"</p> <p>Below the running head, the following are centered on their own lines, using upper and lower case:</p> <p>Paper title Your name Your school</p>

Section Headings	
-------------------------	---


Top level headings should be centered on the page, using upper and lower case.

Second level headings should be flush left, italicized, using upper and lower case.



	MLA Guidelines	APA Guidelines
Tables & Illustrations	<p>Place tables and illustrations as close as possible to the text they refer to.</p> <p>A table is labeled <i>Table</i> and given a number (e.g., Table 1). The table label and caption or title appear above the table, capitalized like a title, flush left.</p> <p>Sources and notes appear below the table, flush left.</p> <p>Photos, graphs, charts or diagrams should be labeled <i>Figure</i> (usually abbreviate <i>Fig.</i>), and assigned a number (e.g., Fig. 1). The label, title, and source (if any) appear underneath the figure, flush left, in a continuous block of text rather than one element per line.</p>	<p>Unless your teacher tells you otherwise, tables and illustrations appear at the end of the paper.</p> <p>Each table begins on a separate page with the label Table 1 (etc.) typed flush left on the first line below the page number. Double-space and type the table title flush left (italicized using uppercase and lowercase letters).</p> <p>Figures Captions appear on the last numbered page of the paper. In this case the label <i>Figure 1</i> (etc.) is italicized and the caption itself is not. The caption uses regular sentence capitalization. The figures themselves follow, one per page.</p>



	MLA Guidelines	APA Guidelines
Order of Major Sections		<p>Each of these sections (if present) begins on a new page:</p> <ul style="list-style-type: none"> ▪ Title page ▪ Abstract ▪ Body ▪ References ▪ Appendixes ▪ Footnotes ▪ Tables ▪ Figure Captions ▪ Figures
Binding	Most teachers prefer a simple paper clip or staple . Follow your teacher's request.	
Additional Information	Purdue University Online Writing Lab (OWL) - <u>MLA Style Guide</u>	Purdue University Online Writing Lab (OWL) - <u>APA Style Guide</u>



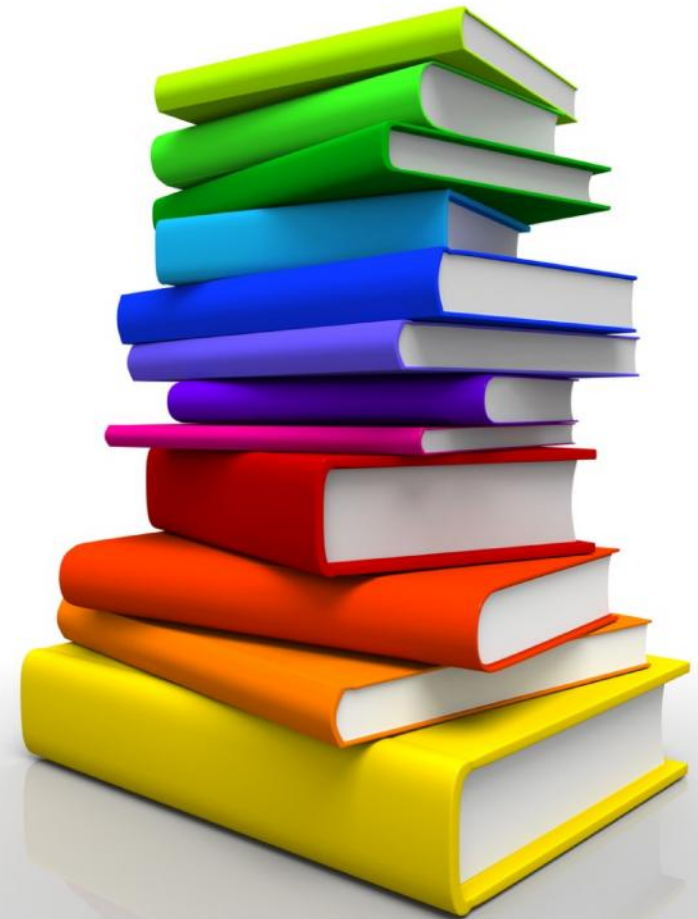


#writing bibliography



Bibliography is a list of the sources you used to get information for your report.

As a rule of **academic writing**, students need to admit the truth when they use other people's ideas, views, data, information, written materials, audiovisual resources, etc. When you use a direct quotation or copied section, follow cite the source and no bibliography truth secret. **It intends to tell reader about accuracy, value and relevancy of the sources that are cited.**



MLA Format

APA Format

BOOKS

Author's last name, first name. Book title. Additional information. City of publication: Publishing company, **publication date**.

Allen, Thomas B. Vanishing Wildlife of North America. Washington, D.C.: National Geographic Society, **1974**.

Searles, Baird, and Martin Last. A Reader's Guide to Science Fiction. New York: Facts on File, Inc., **1979**.

Toomer, Jean. Cane. Ed. Darwin T. Turner. New York: Norton, **1988**.

Author's last name, first initial. **(Publication date)**. Book title. Additional information. City of publication: Publishing company.

Allen, T. **(1974)**. Vanishing wildlife of North America. Washington, D.C.: National Geographic Society.

Searles, B., & Last, M. **(1979)**. A reader's guide to science fiction. New York: Facts on File, Inc.

Toomer, J. **(1988)**. Cane. Ed. Darwin T. Turner. New York: Norton.

MLA Format

APA Format

ENCYCLOPEDIA AND DICTIONARY

Author's last name, first name. "Title of Article." *Title of Encyclopedia*.
Date.

Tobias, Richard. "Thurber, James."
Encyclopedia Americana. 1991 ed.

Pettingill, Olin Sewall, Jr. "Falcon and Falconry." *World Book Encyclopedia*. 1980.

Author's last name, first initial.
(Date). Title of Article. *Title of Encyclopedia* (Volume, pages). City of publication: Publishing company.

Tobias, R. (1991). Thurber, James.
Encyclopedia americana. (p. 600).
New York: Scholastic Library
Publishing.

Pettingill, O. S., Jr. (1980). Falcon
and Falconry. *World book
encyclopedia*. (pp. 150-155).
Chicago: World Book.

MLA Format

APA Format

MAGAZINE & NEWSPAPER ARTICLES

Author's last name, **first name**.
"Article title." *Periodical title* Volume
Date: inclusive pages.

Trillin, **Calvin**. "Culture Shopping."
New Yorker 15 Feb. **1993**: 48-51.

Kalette, Denise. "California Town
Counts Down to Big Quake." *USA
Today* 9 21 July 1986: sec. A: 1.

Author's last name, **first initial**.
(**Publication date**). Article title.
*Periodical title, volume number
(issue number if available)*, inclusive
pages.

Trillin, **C. (1993, February 15)**.
Culture shopping. *New Yorker*, pp.
48-51.

Kalette, D. (1986, July 21).
California town counts town to big
quake. *USA Today*, 9, p. A1.

MLA Format

APA Format

MAGAZINE & NEWSPAPER ARTICLES

Author's last name, **first name**.
"Article title." *Periodical title* Volume
Date: inclusive pages.

Trillin, **Calvin**. "Culture Shopping."
New Yorker 15 Feb. **1993**: 48-51.

Kalette, Denise. "California Town
Counts Down to Big Quake." *USA
Today* 9 21 July 1986: sec. A: 1.

Author's last name, **first initial**.
(**Publication date**). Article title.
*Periodical title, volume number
(issue number if available)*, inclusive
pages.

Trillin, **C. (1993, February 15)**.
Culture shopping. *New Yorker*, pp.
48-51.

Kalette, D. (1986, July 21).
California town counts town to big
quake. *USA Today*, 9, p. A1.



Note: Not the real logo.



Finished!!!
You did it!!!!

