

Section 1. Research Writing Basics

Unit 1. Academic/Research Writing Principles

Outline

- Academic English
- Academic English traditions
- Academic English writing principles
- Where to find credible sources

What is Academic English?

■ **Academic English** is the English used in the world of research, study, teaching and universities

In the world of Science, Academic English is used to convey **research**

What is research?

■ **Research** is an **argument** that contains **a position** and **evidence** in support of that position and **aims to prove** that a position is the correct one

What is research?

And argument is all about **rhetoric** — the art of effective or persuasive writing

English rhetoric, aka academic English traditions

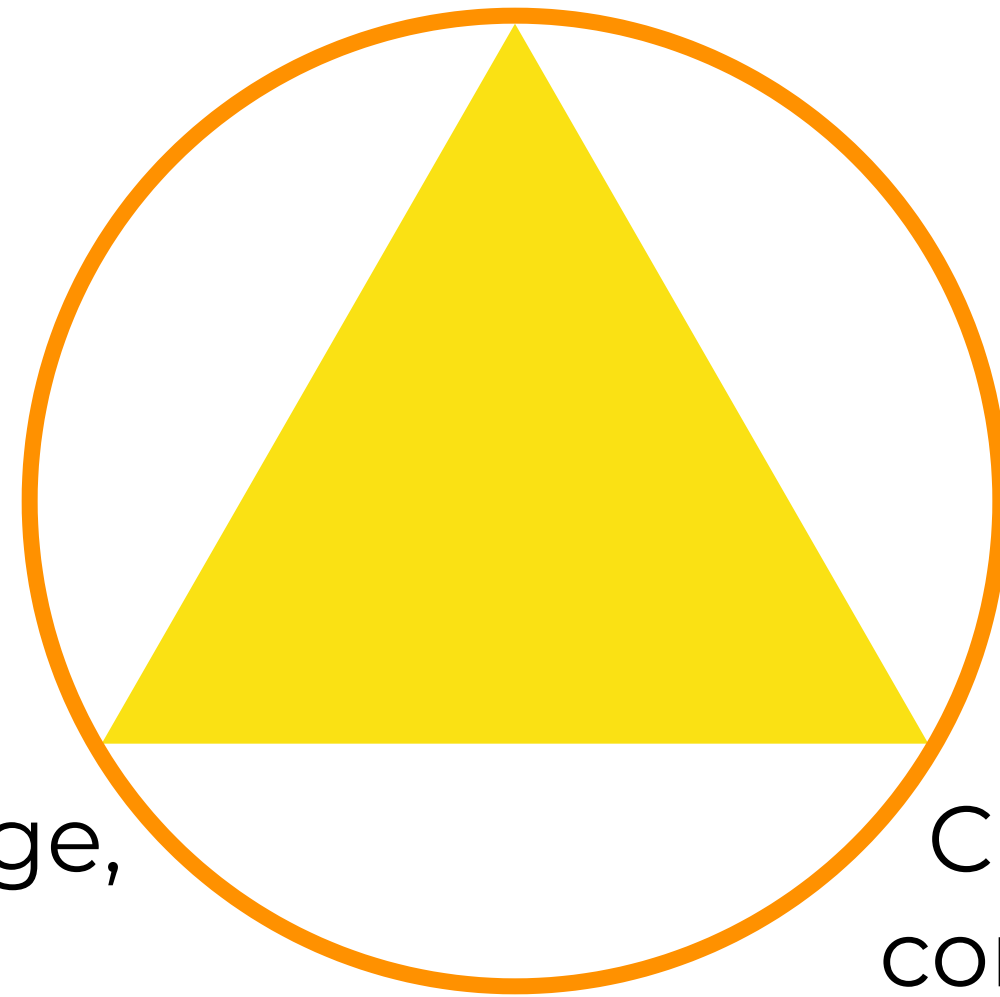
Aristotle



The rhetorical triangle of effective communication

LOGOS

Information, argument,
structure, reasons, evidence



PATHOS

Audience, knowledge,
belief, values

ETHOS

Credibility, authority,
correctness, eloquence

Academic texts

Text = argument

Classical argument (=Aristotelean)

- **Exordium** – the introduction, opening, or hook
- **Narratio** – the context or background of the topic
- **Proposito and Partitio** – the claim/stance and the argument
- **Confirmatio and/or Refutatio** – positive proofs and negative proofs of support
- **Peroratio** – the conclusion and call to action

Academic English Writing principles



Main principles of academic writing

I. Purpose

II. Audience $\leq$ PATHOS ($\leq$ Aristotle)

Main principles of academic writing

III. Formality

IV. Vocabulary

Main principles of academic writing

V. Organization $\leq$ LOGOS ($\leq$ Aristotle):

- 3-part structure
- Unit of composition: paragraph
- Parallel progression/Information flow

Main principles of academic writing

VI. Clarity

VII. Linearity

VIII. Citations and references ← ETHOS (← Aristotle)

I. Purpose

LOGOS

Information, argument,
structure, reasons, evidence

PURPOSE

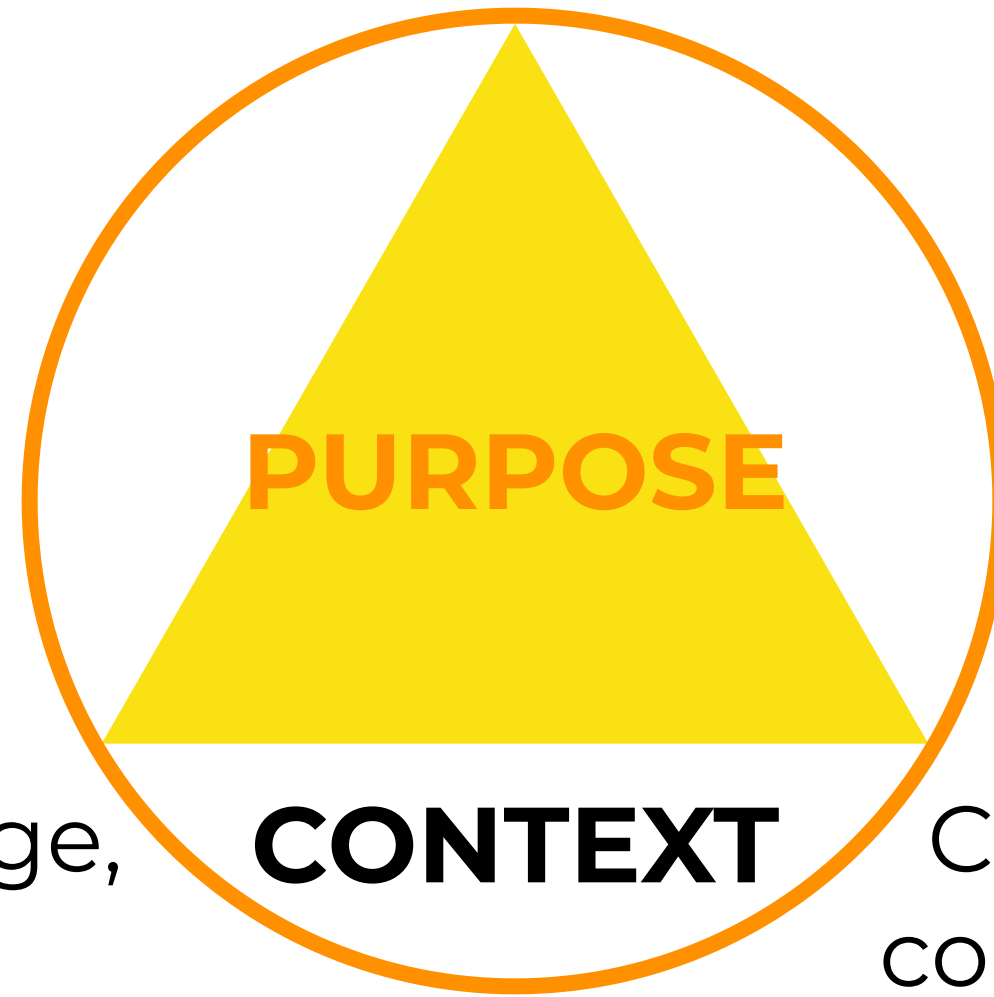
PATHOS

Audience, knowledge,
belief, values

CONTEXT

ETHOS

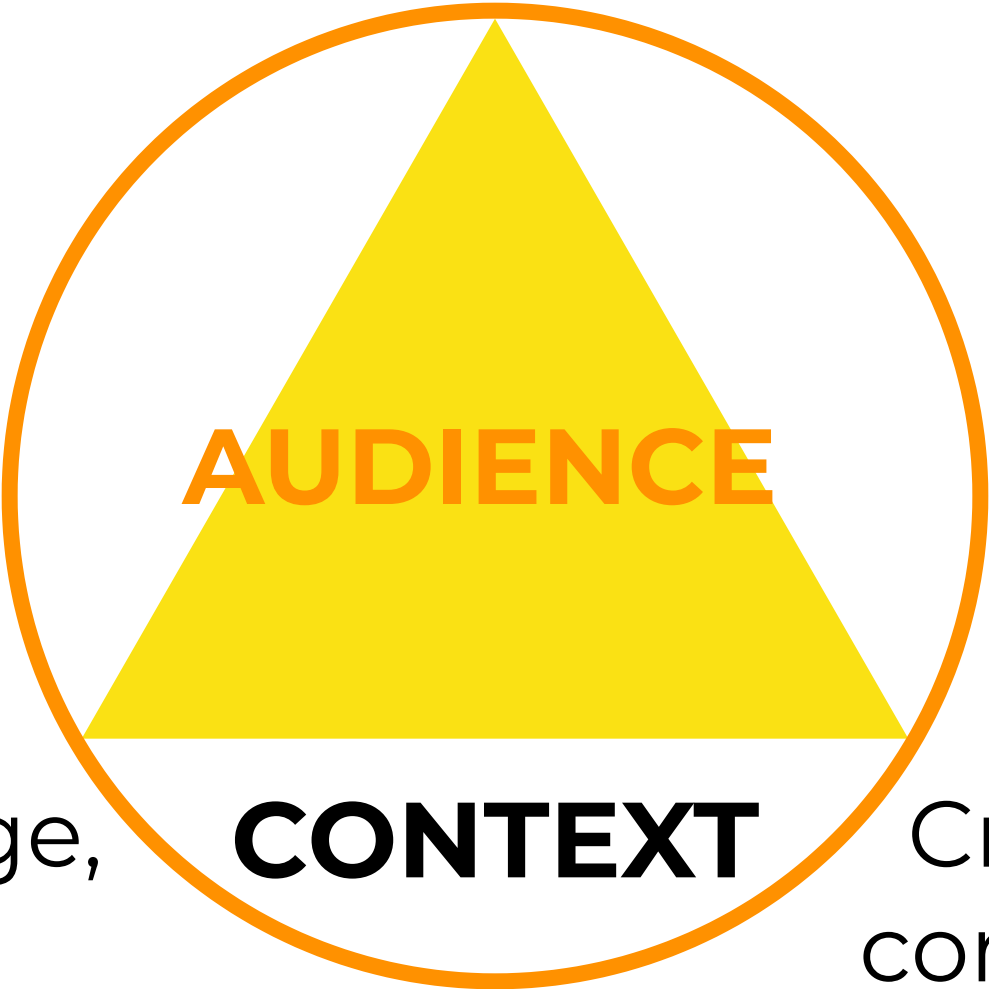
Credibility, authority,
correctness, eloquence



II. Audience

LOGOS

Information, argument,
structure, reasons, evidence



AUDIENCE

PATHOS

Audience, knowledge,
belief, values

ETHOS

Credibility, authority,
correctness, eloquence

III. Formality

Academic English texts:

- more formal
- use a more objective and impersonal tone, technical terms, precise terminology
- *I believe → It is hypothesized or Evidence suggests...*
- *Contractions («don't» or «can't» are avoided)*
- *Formality → seriousness and credibility of the research*

IV. Vocabulary

- **general words** which are acceptable for academic use
- non-general '**academic**' words
- **technical words** specific to an individual subject area

General words = academic

- *The aim of this report is to...*
- *What I want to talk about today is...*
- *There are several possible reasons for this, for example...*
- *In comparison, the control group...*

Academic words and word lists

- not common through ordinary study
- frequent in academic disciplines:
 - sub-technical vocabulary
 - specialised non-technical vocabulary

The most well-known example:
Academic Word List (AWL)

Technical words

= words which are particular to your field of study

Examples:

- *photosynthesis (for biology)*
- *inertia (for physics)*
- *externalities (for economics)*

Feel the difference

Example 1:

- General (informal):

*I think climate change is a big problem.
It's causing a lot of issues like rising sea levels
and extreme weather events.*

- Academic (formal):

*Climate change represents a significant global
challenge, manifesting in various consequences
such as the acceleration of sea level rise and
the intensification of extreme weather phenomena.*

Feel the difference

Example 2:

- General (informal):

This study shows that exercising regularly can make you feel happier.

- Academic (formal):

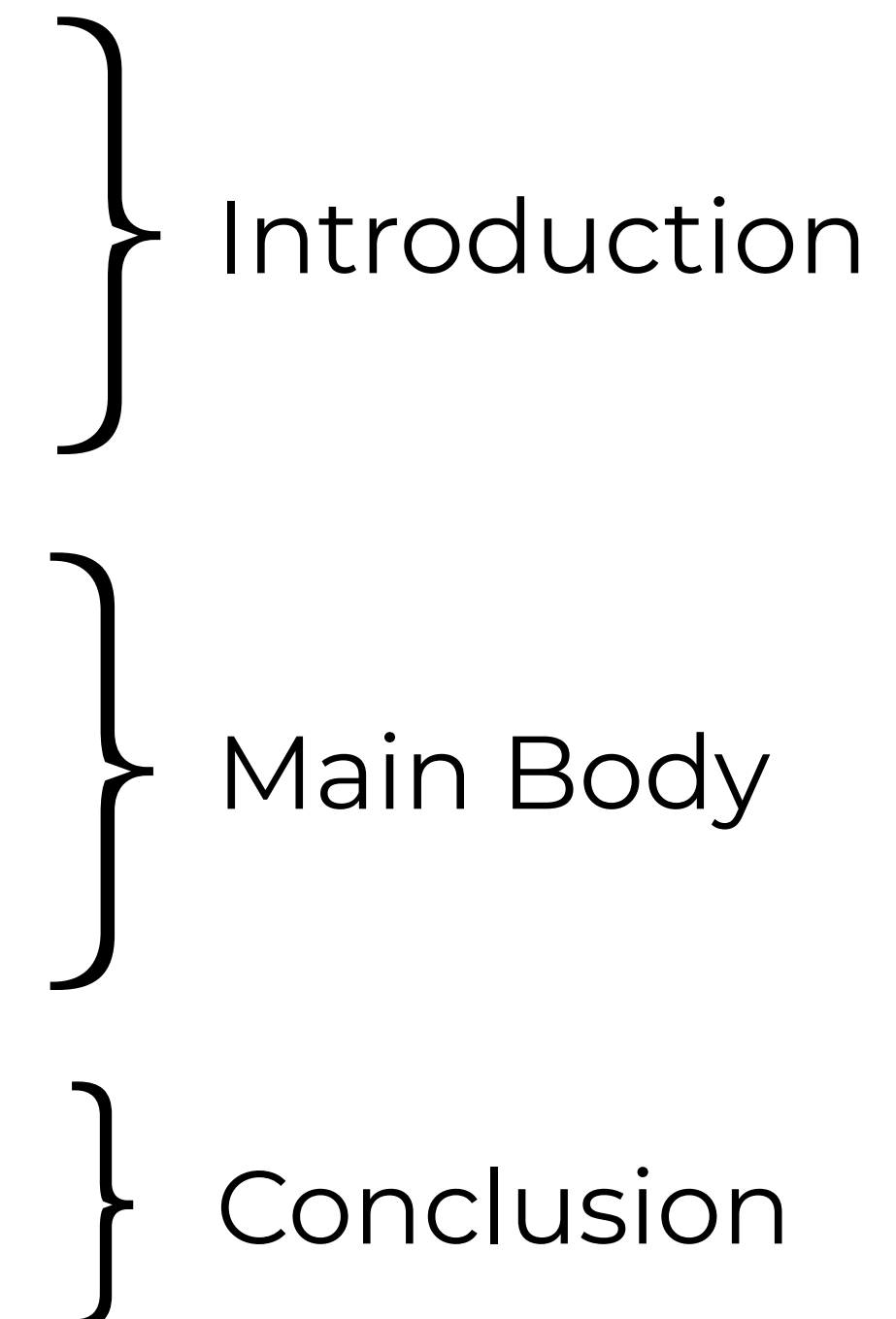
This empirical investigation demonstrates a positive correlation between regular physical exercise and subjective well-being, thereby suggesting a potential link between physical activity and enhanced emotional states.

V. Organization. 3-part structure

Classical Argument

- **Exordium** – the introduction, opening, or hook
- **Narratio** – The context or background of the research
- **Proposito and Partitio** – Hypothesis
- **Confirmatio and/or Refutatio** – experiment = justification = reasoning
- **Peroratio** – The conclusion is drawn from argumentation with no new information

Research paper



Paragraph

«The purpose of paragraphing
it to give the reader a rest.»

(H.W. Fowler)

Basic paragraph structure

- Topic sentence
- Evidence
- Commentary
- Transitions

Task

Zinc oxide is a semiconductor material that has been used in a wide range of applications. In the field of biomedicine, it has been used due to its antibacterial activity and non-toxicity. These and other properties can be improved when ZnO is at the nanometric scale. In this sense, the synthesis of nanoparticles (NPs), nanowires, nanostars, and nanoflowers have been reported. ZnO nanoparticles have been widely studied due to their catalytic, antibacterial, and antiviral properties, which largely depend on their size and morphology. These characteristics can be controlled by varying experimental parameters, such as temperature, concentration, and rate of addition of the reagents involved.¹

¹ López-Miranda, J. L., Molina, G. J., Gonzalez-Reyna, M. A., España-Sánchez, B. L., Esparza, R., Silva, R. F., & Estevez, M. (2023). Antibacterial and Anti-Inflammatory Properties of ZnO Nanoparticles Synthesized by a Green Method Using Sargassum Extracts. *International Journal of Molecular Sciences*, 24(2), 1474. <https://doi.org/10.3390/ijms24021474>

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Topic Sentence

Evidence

Commentary

Transition

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Information flow

Parallel Progression: AB BC CD

Information flow

- Old-to-New flow

A sentence starts with the information known to the reader and finishes with something new

Ideas are linked in a chain = bridging

Old-to-new sample

A nuclear power plant (OLD) contains a nuclear reactor that uses controlled nuclear fission to produce electricity (NEW). The reactor (OLD) consists of fuel rods alternating with control rods inside a large container called a reactor core (NEW). The fuel rods (OLD) contain radioactive fuel (NEW) and the control rods (OLD) contain neutron-absorbing substances (NEW)...

Retrieved from: Karen Ottawal, Lecture for MISiS teachers. November 2015.

Task

Zinc oxide is a semiconductor material that has been used in a wide range of applications [1]. In the field of biomedicine, it has been used due to its antibacterial activity and non-toxicity [2,3]. These and other properties can be improved when ZnO is at the nanometric scale. In this sense, the synthesis of nanoparticles (NPs) [4], nanowires [5], nanostars [6], and nanoflowers [7] have been reported. ZnO nanoparticles have been widely studied due to their catalytic [8], antibacterial [9], and antiviral [10] properties, which largely depend on their size and morphology. These characteristics can be controlled by varying experimental parameters, such as temperature, concentration, and rate of addition of the reagents involved.¹

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Keys

Zinc oxide is a semiconductor material that has been used **in a wide range of applications** [1] (NEW). **In the field of biomedicine (OLD)**, it has been used due to its antibacterial **activity and non-toxicity** [2,3] (NEW). **These and other properties (OLD)** can be improved **when ZnO is at the nanometric scale (NEW)**. **In this sense (OLD)**, the synthesis of nanoparticles (NPs) [4], nanowires [5], nanostars [6], and nanoflowers [7] have been reported. **ZnO nanoparticles (OLD)** have been widely studied due to their catalytic [8], antibacterial [9], and antiviral [10] properties, which largely depend on their **size and morphology (NEW)**. **These characteristics (OLD)** can be controlled by varying experimental parameters, such as temperature, concentration, and rate of addition of the reagents involved.¹

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VI. Clarity

- «The results were not satisfactory»
What does «not satisfactory» mean?
- Revised sentence: «The results fell short of the expected outcome.»

VII. Linearity

Subject–Verb–Object



an uninflected language...

Everything in English is...

SENTENCE PARAGRAPH ARGUMENT



CONTENT STRUCTURE LANGUAGE

VIII. Citations and references

- Build trust
- Give credit
- Provide evidence and context
- Demonstrate academic argumentation

Where to find sources?

- Online libraries
- Online academic databases

1. Scopus

Scopus

Author search

Sources

Help

Register

Login

Author search

Author last name

e.g. Smith

Author first name

e.g. J.L.

Affiliation

e.g. University of Toronto

☐ Show exact matches only

Search

ORCID

e.g. 1111-2222-3333-444x

Search

Help improve Scopus

7+mln scholarly articles

Coverage	90.6 million core records
References	N/A
Discipline	Multidisciplinary
Access options	Limited free preview, full access by institutional subscription only
Provider	Elsevier

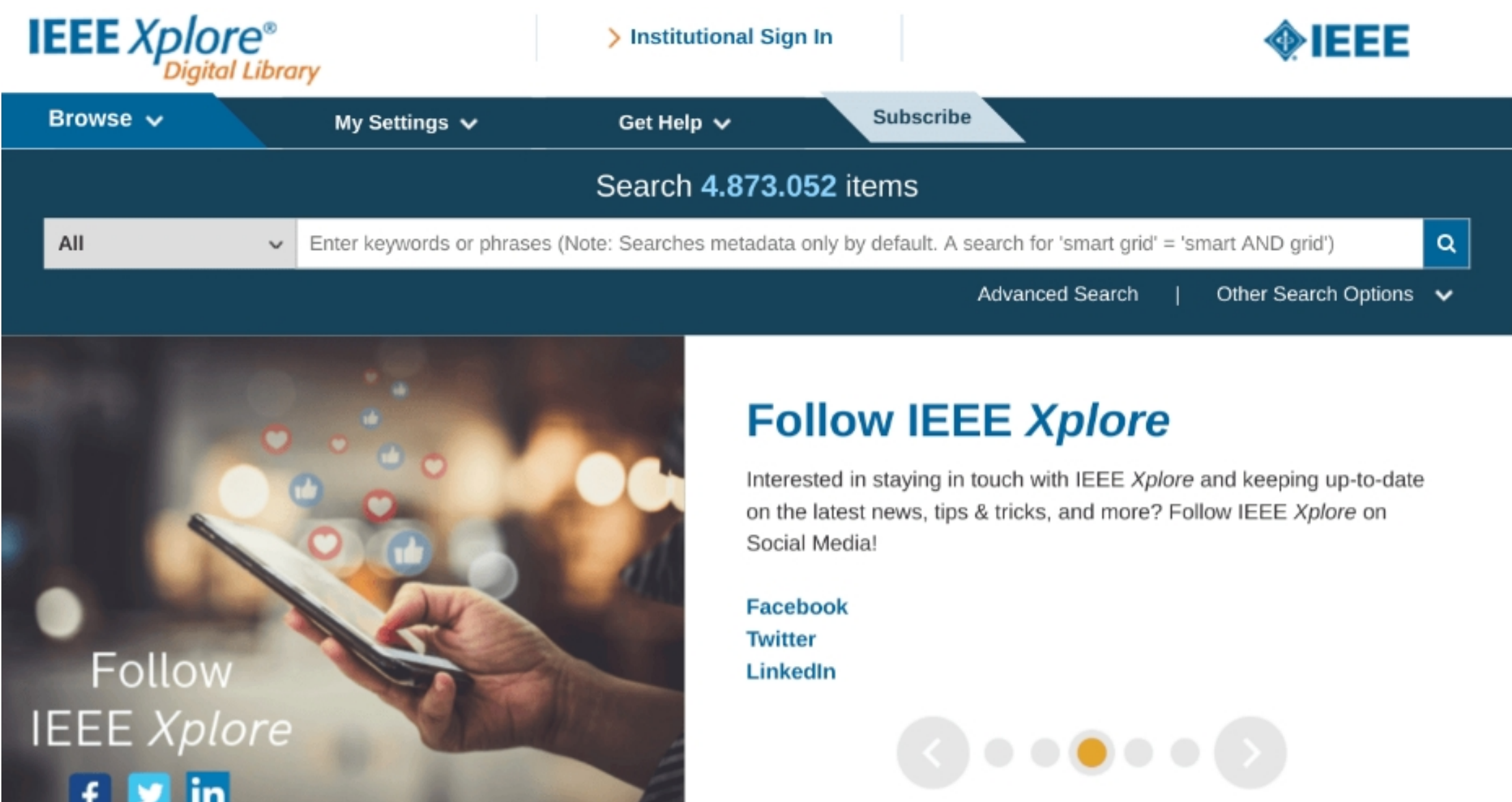
2. Web of Science



100+ million scientific articles

Coverage	approx. 100 million items
References	1.4 billion
Discipline	Multidisciplinary
Access options	institutional subscription only
Provider	Clarivate (formerly Thomson Reuters)

3. IEEE Xplore



Coverage	approx. 100 million items
References	1.4 billion
Discipline	Multidisciplinary
Access options	institutional subscription only
Provider	Clarivate (formerly Thomson Reuters)

4. Science Direct



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Explore scientific, technical, and medical research on ScienceDirect

Coverage	approx. 19.5 million items
References	N/A
Discipline	Multidisciplinary
Access options	free
Provider	Elsevier

5. Directory of Open Access Journals (DOAJ)



Coverage	over 8 million records
References	N/A
Discipline	Multidisciplinary
Access options	free
Provider	DOAJ

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Google Scholar

machine learning

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ZH Zhou - 2021 - books.google.com

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Summary

1. Academic English is based on Aristotelean Triangle of Rhetoric which includes LOGOS, ETHOS and PATHOS
2. Academic writing principles follow from this rhetoric:
 - Purpose and audience
 - Formality and vocabulary
 - Organization: text structure, paragraphing and information flow
 - Linearity
 - Clarity and precision
 - Credibility = citing and referencing
3. Where to look for credible source