English Technical Writing

Gerry Rau
Fall 2023 (112-1)
Class 3

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Feedback

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Please submit the feedback

- Before 7pm (before you forget)
  - Normally done before leaving class
- Feedback helps me answer your questions, therefore helps you learn

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Making and Supporting Claims




Argument structure (Implicit claims)	Components (Component claims) and Support	Work time Working with Word	Assignment

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Argument structure

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Evaluate your understanding

1. Why is it important to understand the argument structure of research articles?

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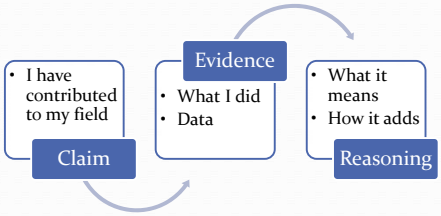
Argument Structure

- All journal articles are written as logical arguments
  - Make a claim
  - Provide evidence for that claim
  - Explain the reasoning

Support



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Evaluate your understanding

2. What implicit claims are commonly made in science and engineering articles?

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Implicit Claims in Journal Articles

Figure 3.1

IMRD

I 1) You have identified an important, unanswered question

M 2) You have gathered data in a valid, reliable way

3) You have a good explanation for your data

R Evidence

D Reasoning

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Implicit Claims in Journal Articles

Figure 3.1

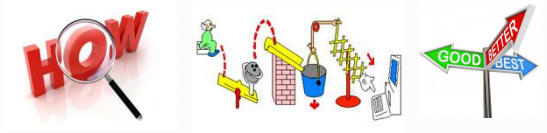
IPTC

I 1) You have identified an important, unresolved problem

P 2) You have designed a workable solution to the problem

T 3) Your solution is better than other existing solutions

C



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Questions on implicit claims?

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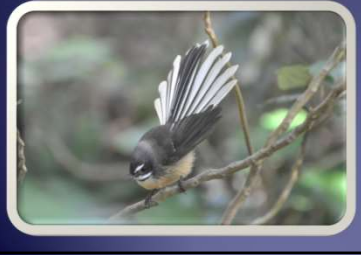
Components



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Evaluate your understanding

3. What components are found in most science and engineering writing?
4. Why are some components found in different divisions in IMRD and IPTC?

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Ten Component Claims

Common Components

1. Importance
2. Need
3. Research goal
4. Framework
5. Research details
6. Testing methods
7. Data patterns
8. Comparisons
9. Interpretations
10. Contribution

Science and engineering research articles frequently (not always) contain these components, although the emphasis and location differ, with variations such as cycling.

Figure 3.2 Ten common components of science and engineering writing

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Ten Component Claims

Table 3.2 Ten common components of science and engineering research articles

Component	Sub-components common in science and engineering
1. Importance	This research is important to society This topic is important to researchers in the field
2. Need	A gap exists in current knowledge or understanding (IMRD) The current best solution is limited or less than ideal (IPTC)
3. Research goal	We answer a question or improve understanding (IMRD) We propose a better solution to a problem (IPTC)
4. Framework	The research is based on an accepted model or framework This is the best model or method to follow for our research
5. Research details	Care was taken to ensure good results (IMRD) A workable solution was developed (IPTC)
6. Testing methods	We can predict results based on the model Testing followed verifiable procedures
7. Data patterns	A pattern can be discerned in the data Exceptions to the pattern can be identified
8. Comparisons	Data [support/question] previous work Data [conform to/differ from] expectations
9. Interpretations	Data are best interpreted in a certain way There is a reasonable cause for the data
10. Conclusion	The question has been answered or the aim achieved The solution is an improvement on the current best design

Main claim

Contribution

Why did we do this?

How will we do this?

What did we find out?

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Location of Components

Table 3.3 Typical location of components in science and engineering research articles

IMRD (Science)		IPTC (Engineering)	
Section	**Components**	**Division**	**Components**
Introduction	Importance Need for work Research goal (Framework)*	Introduction	Importance Need for work Research goal
Materials & Methods	Research details Testing methods	Product or Process	Framework Research details
Results	Data patterns	Testing	Testing methods Data patterns Comparisons Interpretations
Discussion	Comparisons Interpretations Conclusion	Conclusion	Conclusion

*Often implied by the author's attitude toward previous work cited, see section 5.3

1. Important, unanswered question
2. Gathered data reliably
3. Good explanation for data

1. Important, unresolved problem
2. Workable solution
3. Better than other solutions

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Location of Component Claims

- IMRD

I	Important, unanswered question 1. Importance 2. Need 3. Research goal 4. (Framework)
M	Gathered data in a valid, reliable way 5. Research details 6. Testing methods
R&D	Good explanation for the data 7. Data patterns (R) 8. Comparisons (D) 9. Interpretations (D)
C	10. Conclusion

Redrawn from RAU, G. 2020. *Writing for Engineering and Science Students: Staking your Claim.* Routledge.
Table 3.3, p. 34. Used by permission. [1]

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Location of Component Claims

- IPTC

I	Important, unresolved problem 1. Importance 2. Need 3. Research goal
P	Designed a workable solution 4. Framework 5. Research details
T	Solution is better than existing solutions 6. Testing methods 7. Data patterns 8. Comparisons 9. Interpretations
C	10. Conclusion

Redrawn from RAU, G. 2020. *Writing for Engineering and Science Students: Staking your Claim.* Routledge.
Table 3.3, p. 34. Used by permission. [1]

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Finding components: markers

- Component markers:
  "Phrases or groups of words used by authors to draw attention to key components in an article" p. 43
- We will look at component markers for each component as we look at each division
- For now, try to get a general idea where each component is found in your article

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Evaluate your understanding

5. How are claims supported in research articles?

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Finding components: support

- Evidence
  - Accepted evidence (past research)
  - Mostly in I, P (not M)
  - New evidence (present research)
  - Mostly in R(less in D), T (not C)
- Reasoning

Citations

Graphics

More detail as we look at each division

More detail in Ch 9, Advanced class

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Questions on components?

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Work time:

Exercise 3.1

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First steps

- If you have not done the following, these are first:

1. Have exemplar articles approved
2. Identify the basic structure of your articles
   - IMRD, IMRaDC, IPTC, other?
   - Which sections are in which division?
   - (You will need to make a table of this later)

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Locating components

Exercise 3.1

- Generally, which components are in each division?
  - Look at section, subsection titles
- Mark the main component in each paragraph
- Also (not in textbook)
  1. Mark all the citations in your articles
     Which divisions have the most citations?
  2. Mark the first place each Table or Figure is mentioned in the text—mark each by the division it is in
     Which divisions have tables or figures?
- First look – more details on each in later chapters

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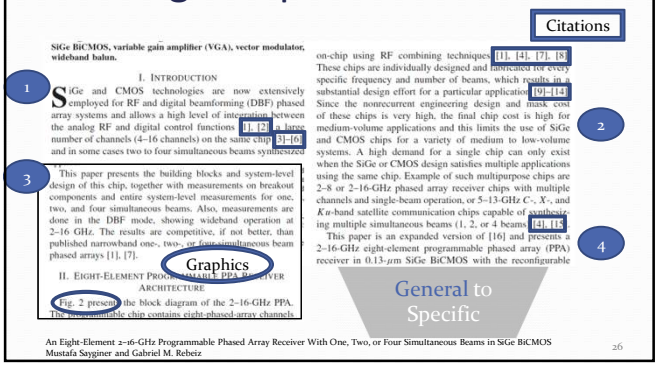
Locating components



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Questions on what to do?

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Working with Word

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Assume minimal knowledge

- Step by step improvement throughout semester
  - Practice in class
- If you are an expert, help others

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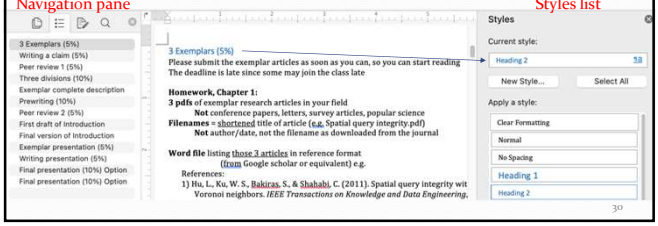
Headings, Navigation Pane

- Allows easy navigation of longer documents
  - Makes it easy to add a Table of Contents (thesis)
- Put headings into your document
  - (Overall Structure, References)



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Improve your tables

See File on ECourse2: Improving Tables in Word

- Tables
  - Fit in – expected format, easy to read
  - Stand out – attention to detail, attractive
- Make your table look like those in the textbook:
  - Indent sub-section headings
  - Remove borders
  - Add border at top and bottom only – double line
- Table title – use format of your journal

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Demonstration in Word

- Headers, Navigation pane
  - Styles can be changed
- Tables
  - Eliminate unnecessary lines
  - Change spacing to make it easier to read
- Different systems/versions look different, but all have the same function

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Work time:

Exercise 3.2

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Writing and supporting a claim

Exercise 3.2

- Write a claim about the Overall Structure
  - "My articles follow IMRD / IMRaDC / IPTC / IPC"
- Support the claim (Evidence)
  - "As shown in Table 1, …"
    - Number of sections
    - Titles of sections
    - Length of divisions
    - Location of components by division
- Improve your tables

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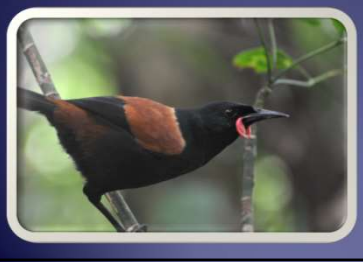
Assignment



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1 Write

- Write a summary claim:
  - "My articles follow [IMRD/IPTC]"
- Support the claim:
  - Point to each table: "As shown in Table 1, …"
    - number of sections
    - section titles
    - length of divisions
- Improve your tables

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2 Read

- Chapter 4 Component Analysis: Introduction
- Exemplars
- Next 3 weeks: components in each division
  - 4: Introduction
  - 5: Process (or Methods)
  - 6: Testing and Conclusion (or Results and Discucssion)

General to Specific

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Looking ahead: Assignment: Writing a claim (2 wks)

Homework, Chapters 2, 3, 4:
Overall structure
Claim about overall structure (does your field follow IPTC or IMRD format?) and support (number of sections, section titles, length of sections, other) with comments on any unusual features or problems
Tables for 3 articles: overall structure (like those in ch. 2)
Text summary pointing to tables: "As shown in Table ..."
Tables well-formatted
Number and Title for each table

Next week

Introduction
Claim about structure of Introduction (does it follow the expected pattern?) and support (order of components, other) with comments on any unusual features or problems
Tables for 3 articles: Introduction (like those in ch. 4)
Text summary pointing to tables: "As shown in Table ..."
Tables well-formatted
Number and Title for each table

Headings
Each part (Overall structure, Introduction, References) has a heading
Headings use Word Style to enable use of navigation pane

References
References for the 3 articles

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Exemplar presentations

- One or two students per week
- The main purpose of this presentation is to
  - Show how to do the exercises in that chapter
  - (To do that, you must read and understand the chapter)
- About 5 minutes (no more than 8).
- Final version must be turned in before 11 AM on the day of the presentation.

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Exemplar presentations

- Read assigned chapter (or sections)
- Do the exercise in the chapter – for one article
  - I 4.1
  - M/P 5.1
  - R&D/T 6.1
  - Citations 7.1
  - Graphics 8.1, 8.2
- Report – structure of exemplar articles
  - Marked pdf, excerpts, tables ...
  - Sharing of information more than formal presentation

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Exemplar presentations (Tu)

Introduction	9/26	Neo
Process/Method	10/3	Hai
T&C / R&D	10/17	Charles
Citations	10/24	Tran
Graphics	10/31	Charlene

- Please sign up for a date to present
  - Show how to do the exercise for that week (previous slide)

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Feedback 3

- Please give me feedback on ECourse2:
  - What you learned
  - What you liked
  - What you disliked/suggestions
  - What questions you have
- Complete the Student Information Sheet (if not done)

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