

32144 Technology Research Preparation

Week 6 Tutorial 5 Overview	
Topics Covered:	Introduction to Types of Technical Writing
	Executive summaries and Abstracts
Points:	6
Date Due:	Week 6 – In Class
Submission	In-class contribution to discussions during Week 6 tutorial session

Week 6 Tutorial Preparation

- 1. FINALISE YOUR MOST RELEVANT PAPERS FOR YOUR REVIEW** – This week you should be finalising the **most relevant papers you have sourced to date**. From the sources you have collected, begin to shortlist conference papers, journal articles and industry reports. You do not need to have this task completed before your tutorial in Week 6, however you should have identified 7-8 papers that you can use to develop your synthesis framework (refer to Week 5).
- 2. CONTINUE TO DEVELOP MAIN THEMES** – Using your research question and your most relevant papers, identify a few of the **major themes** that you can use to critical evaluate and analyse your sources. You have already created search criteria for selecting the papers, which is a starting point for your major themes. Now you need to go deeper into those sources to identify your major themes, which should be identified relative to the concepts that define your topic, and can be based on e.g., Linkages and connections, Trends and similarities, Contradictions and contrasts, and Causes, factors, variables, etc.
- 3. READ THE FOLLOWING DEFINITIONS OF WRITING TYPES:** In preparation for completing this week's tutorial activities, read about **Descriptive, Analytical and Critical / Evaluative Writing** on Page 2 below.¹
- 4. READ THE PAPER BY DENNEY AND TEWKSBURY (2013):** You will recall from Week 5 that there are different purposes and approaches to writing a literature review. Denney & Tewksbury (2013) highlight the three primary functions of a literature review: **integrative, theoretical, or methodological**.

“Reviews may be **integrative** (summarizing past research based on overall conclusions of the past research), **theoretical** (identifying and critiquing the ability of different theories to explain a phenomenon), or **methodological** (highlighting different methodological approaches used in past research and the contributions of each type of research) in focus.”²

¹ Adapted from:

http://libweb.surrey.ac.uk/library/skills/writing%20skills%20leicester/page_42.html & http://www2.eit.ac.nz/library/lis_guides_descriptivewriting.html

[accessed 28.8.20]

² Denney, A. S., & Tewksbury, R. (2013). How to write a literature review. *Journal of criminal justice education*, 24(2), 218-234.

Writing Types: Descriptive, Analytical and Critical / Evaluative Writing

This tutorial explains different types of technical writing in IT. It provides examples taken from a scholarly journal article. The activities provided practice in identifying and using technical writing. Before we delve into each different type it is important to understand how language is used, including:

- Procedural language
- Signpost words
- Showing cause and effect
- Evaluative language

Procedural language: is underlined text in each example above. Examples include: were extracted, were performed, to determine, in order to, were carried out.

Comparison/ contrast signpost words: are highlighted in the text. Examples include: **although, in comparison, in contrast, on the other hand, and however.**

Showing cause/ effect or consequences: in *italics*. Examples include: *the reasons for, due to, because of, as a result of, this results in.*

Comparative words: are in red font. Examples include: **low, high, less, more, increased, decreased, reduced, smoother, rougher.**

Evaluative language: is in bold font. Examples include: **the reasons for, makes it clear, will be beneficial, improve, negative, positive, careful consideration.**

Descriptive Writing

What is descriptive writing? Descriptive writing describes something, but will not go beyond an account of what appears to be there. Descriptive writing is needed to establish: the setting of the research; a general description of a product or piece of equipment; the list of measurements taken; the list of procedures or methods; the timing of the research; a brief summary of the history leading up to an event or decision.

Descriptive Writing

- Provides introductory and background/contextual information;
- Lists, catalogues, outlines the way things are; and
- Does not establish relationships.

Example of descriptive writing:

“In this study, polymer strands of discarded car timing belts were extracted and used instead of conventional fibres in high performance concrete (HPC). Tests for compressive strength, modulus of rupture, and flexural toughness were performed in order to determine the mechanical properties of hardened concrete. **In addition,** ultrasonic and electrical resistance tests were carried out at different concrete ages. Fresh concrete properties were measured by a slump flow diameter test” (Khaloo, Esrafil, Kalani & Mobini, 2015, p.32).

Analytical Writing

What is analytical writing? Analytical writing will consider the relationships between ideas, theories, hypotheses, approaches or entities such as types of equipment.

Analytical Writing

- Explores relationships of ideas or parts of something;
- Provides possible situations and alternative responses; and
- Compares and contrasts.

Example of analytical writing:

“Although the incorporation of waste fibres *caused* an increment in flexural toughness, this increment is **low** **in comparison** with other regular types of fibre... *The reasons for* our **low** improvement of flexural toughness are the **increased** porosity of concrete... and the **smooth** surface of the waste fibre... **In other words**, the efficiency of fibres with **smoother** surfaces is **lower than** fibres with **rough** surfaces, such as corrugated steel fibres” (Khaloo, Esrafil, Kalani & Mobini, 2015, p.35).

Critical/ Evaluative Writing

What is evaluative writing? Evaluative writing is used to provide an evaluation of the arguments and evidence provided by other writers before accepting their conclusions.

Evaluative Writing

- Involves making a judgement on the quality of something
- Outlines implications & solutions, draws conclusions & makes recommendations; and
- Views something from many different angles, or questions something in order to ascribe value.

Example of evaluative writing:

“The **reduction** of ultrasonic pulse velocity **makes it clear** that adding fibre **increases** pore volume in concrete with respect to plain concrete” (p.35).

“Although **higher** waste fibre content can **improve** the post peak behaviour of concrete, **careful consideration** is necessary before adding waste fibre of more than 0.5% volume fraction *due to* its **negative** impact on some mechanical characteristics of concrete” (Khaloo, Esrafil, Kalani & Mobini, 2015, p.36).

NB: All examples are from the following article: Khaloo, A.R., Esrafil, A., Kalani, M. & Mobini, M.H. 2015, Use of polymer fibres recovered from waste car timing belts in high performance concrete, *Construction and Building Materials*, vol. 80, pp.31-37.

The annotated examples above demonstrate how writers use these different types of writing in a journal article. Use the key in the Text Box below to see what language features have been identified.³

In-Class Tutorial Activities

³ For more information on writing evaluations, see the following links:

http://www.usyd.edu.au/learningcentre/wrise/mining_engineering/conclusions/concl_argument.html
<http://iwrite.sydney.edu.au/ENGINEERING/Proposal/Academic-writing-/Using-evaluative-language.html>

1. IDENTIFYING AND USING WRITING TYPES – DESCRIPTIVE, ANALYTICAL, & CRITICAL

ACTIVITY 1: Identify and Discuss examples of different writing types – In breakout groups, identify writing types within one of the papers you are reviewing.

- a) Choose one of the research articles you are currently reading for your assignment. Using this this article, **FIND**:

- **ONE** example of descriptive writing,

To address this problem, we examine the effectiveness of classified accordingly. statistically-based approaches Naive Bayesian anti-spam filters, as it is content-based and self-learning (adaptive) in nature. **Additionally**, we designed a derivative filter based on relative numbers of tokens. We train the filters using a large corpus of legitimate messages and spam and we test the filter using new incoming personal messages. More specifically, four filtering techniques available for a Naive Bayesian filter are evaluated.

- **ONE** example of analytical writing, and

While spam filters have become **more effective and wide spread**, **many** spam messages continue to be delivered to end users. The difficulty in eliminating spam *lies in* differentiating it from a legitimate message. **However**, the message content of spam typically forms a distinct category **rarely** observed in legitimate messages, making it possible for text classifiers to be used for anti-spam filtering.

- **ONE** example of evaluative writing.

The cost of a false positive is much **higher** than that of a false negative. The existence of false positives **destroys** the faith of the user in their spam filter *because* email users tend to delete spam from a bulk folder without reading them, and deleting legitimate messages (due to spam filters) is **unacceptable**. **In that case**, it is **acceptable** to allow some false negatives **rather than** having any false positives.

Underline the features of language that indicate the type of writing. Share and discuss your examples within your group.

- b) Using the same article, answer the following:

- **ONE TO TWO** sentences that summarises the article,
We train the filters using a large corpus of legitimate messages and spam and we test the filter using new incoming personal messages. More specifically, four filtering techniques available for a Naive Bayesian filter are evaluated.
- **ONE TO TWO** sentences that compares or contrasts the approaches, methods, results or conclusions of the article, and
 - **But** the results in the case of a 1-order dependent Bayesian filter are **better** than the Naive Bayesian filter. **This implies** that phrases like "Click here," and "Buy Free" are **better** indicators of spam than the independent words "Click," "here," "Buy," and "Free".
- **ONE TO TWO** sentences that evaluates the article.

However, the fixed token approach has been found to be the most effective among the four techniques evaluated in the report.

Show your sentences to your tutor and group members. Can they identify the language features you have used?

2. WRITING EXECUTIVE SUMMARIES AND ABSTRACTS

READ THE FOLLOWING ON EXECUTIVE SUMMARIES AND ABSTRACTS. Using your understanding of different writing types think about how you would write an executive summary OR Abstract.

The **executive summary of a report** presents the key issues and facts of the report in a concise form. It is one of the most important sections since it is read by almost all readers.

An **abstract** is similar to an executive summary except that it is used in theses, journal articles, conference papers and occasionally in chapters from academic books.

The summary or abstract should normally include:

- Purpose or background to the document
- Significance or importance of the topic or research
- Research approach (optional: only if original research has been conducted, e.g., surveys, interviews, observations or experiments)
- Main findings and conclusions
- Recommendations (Advisable in industry or government reports but some reports only have conclusions. Academic abstracts do not have these.)

What it does *not* contain:

- References
- Acronyms
- Examples.

While it is usually presented first, before the Introduction, it is the last part to be written. Many readers will read ONLY the EXECUTIVE SUMMARY or ABSTRACT, so it must present the entire report, thesis or article in miniature. It must give the readers all the facts they need to get the important messages of the document.

Format

- For executive summaries or theses, use a separate page before the Introduction – use small Roman numerals (ii, v, etc.).
- For academic abstracts for an article, use one paragraph at the beginning of the article after the title and authors.

Length

- The length of the summary will vary. However, industry values writers who can present concise, one-page executive summaries (i.e., summaries for the busy executive/CEO to read). Lengthy government reports will typically have summaries several pages in length.
- Academic abstracts for articles will usually be 100-200 words in length, the exact length specified by the publisher of the journal or the organizer of the conference. Abstracts for theses will be as long as they need to be: ½ - 1 page for an Honours thesis and a Masters project.

Recommendations

- Recommendations are included as the last part of the Executive Summary. They are numbered and presented as a list. Recommendations are clear statements of the action which should result from the report. They often form the basis for motions to be debated at business and board meetings. Great care should be taken with the wording of recommendations to prevent ambiguity and to ensure the outcomes suggested occurring.

E.g., (from Robertson, T., Dyson, L.E., Normal, H. & Buckley, B. 2002, *Increasing the Participation of Indigenous Australians in the Information Technology Industry*, Faculty of Information Technology, UTS, Sydney, p. 15):

Recommendation 4. That the Faculty establishes ongoing relationships with local schools and colleges with significant Indigenous enrolment. These include Alexandria Park Community School, Matraville High School, the EORA Centre and Tranby Aboriginal College.

ACTIVITY 2: Writing an Executive Summary

Open the *2011 – 2012 Regional Telecommunications Review*. Which pages or paragraphs in that report's Executive Summary mention:

- | | | |
|---|-------|-----------|
| a. Purpose of, or background to, the report | _____ | VIII,IX,X |
| b. Significance or rationale for report | _____ | XI-XIII |
| c. Research approach | _____ | 3,4 |
| d. Main findings and conclusions | _____ | 112-116 |
| e. Recommendations | _____ | XIV,XVII |

ACTIVITY 3: Writing an Abstract

- a) What is missing from the following abstract (Source: McCarthy, R.V., Halawi, L. & Aronson, J.E. 2005, 'Information technology ethics: A research framework', *Issues in Information Systems*, vol. 6, no. 1-2, pp. 64-69)?

Abstract—Information technology has become so pervasive that opportunities for abuses abound. IT Ethics has taken on increasing importance as the size and complexity of IT issues continues to grow. This paper outlines a research framework to analyze: Do significant ethical differences exist amongst undergraduate and graduate MIS students?

(Indicate *Missing* or *Mentioned*)

- | | |
|--|--|
| f. Purpose of, or background to, the study | Mentioned |
| g. Significance or rationale of study | Mentioned |
| h. Research approach | Missing |
| i. Main findings and conclusions | Missing |
| j. Implications of the study | Missing |
| k. Other (specify) | Mentions the research question, however does not discuss any systematic research method. |
- b. Which sentences in the following abstract (Source: Dyson, L.E. & Brady, F. 2009, 'Mobile phone adoption and use in Lockhart River Aboriginal community', *International Conference of Mobile*

Business, 27-28 June 2009, Dalian, China, pp. 170-175 – sentences numbered for the purpose of this exercise) provide the:

- | | |
|--|--|
| a. Purpose of, or background to, the paper | 1 |
| b. Significance or rationale for report | Missing |
| c. Research approach | Missing |
| d. Main findings and conclusions | 2,3,4,5 |
| e. Other (specify) _____ | 5 offers moreso a conclusion than findings, 1 is a breif introduction to the report's scope, and 2,3,4 discuss direct findings resulting from the (unmentioned) research method |

Abstract—**1.** This paper reports on an ethnographic study of mobile phone adoption and use in a remote Aboriginal community in Cape York, Australia. **2.** The researchers found that, within nine months of the introduction of the 3G network, 58% of the Indigenous people interviewed had acquired a mobile phone, a much higher rate of adoption than any other ICT. **3.** The phones were employed for communication, with multimedia uses (music, games, videos, photos) also very popular. **4.** Issues included the cost, robustness and usability of the devices, although most people managed costs well by purchasing pre-paid phones. **5.** The findings suggest a number of possible initiatives that government, service providers and business could consider leveraging mobile phone usage and develop capacity in the community.

ACTIVITY 4: Critique an Executive Summary or Abstract

Read the abstract of one of the papers you are reviewing (preferably the paper you used in activity 1). Take note of what is missing and what is mentioned as we have done in Activity 3a. Discuss with your tutor or students in your breakout room.

In comparison to the suggested reading material, “An Evaluation of Nafve Bayesian Anti-Spai Filtering Techniques” demonstrates a superior abstract due to its ability to maintain brevity as well as discuss each of the discussion points an abstract should mention.

The abstract starts with an ideal proposition for a spam filter and its purpose, establishing the background.

The method of reseach is discussed in depth, mentioning the use of 4 different trained models and their effectiveness evaluated.

The conclusion of the results is clearly stated, admitting to the need for extra precautions required when Naiive bayesian spam filters are employed.

What is missing may be more information on the research method; which factors are used to determine efficiency of the model?