WRITING THE FINAL REPORT

SP2171
2020/21 Semester 2

OBJECTIVES

By the end of this lesson, students should be able to write the various sections of their final reports by:

- appropriately organizing information within various sections
- using transitional sentences/phrases or markers to highlight ideas and relationships between ideas
- writing evaluative statements
- highlighting future research directions

MAIN STRUCTURE OF FINAL REPORT

Abstract (300 words)

Introduction *(1500 words)*

-context

-topic

-existing research

-significance

Future direction *(1000 words)*

-research gap/problem

-approach

-process

OTHER DETAILS ABOUT THE FINAL REPORT

Formatting	**a title page, a table of content a list of figures and tables, and a reference page.**
Word Limit	**2800 words**

MAIN STRUCTURE OF FINAL REPORT

Abstract (300 words)

Introduction *(1500 words)*

-context

-topic

-existing research

-significance

Future direction *(1000 words)*

-research gap/problem

-approach

-process

-significance

ABSTRACT

In the abstract, you should summarize the main content of the report:

- the context of the research topic
- the research gap/problem
- the future research directions (and its significance)

(word limit: 300)

MAIN STRUCTURE OF FINAL REPORT

Abstract (300 words)

Introduction *(1500 words)*

-context

-topic

-evaluation of existing research

-significance

Future direction *(1000 words)*

-research gap/problem

-approach

-process

Introduction: Three levels of ideas

Level of information	Function
Level 1: Context	• General background information • Existing works/research which are broadly related to the research topic
Level 2: Main topic	• Information about the topic itself (and its significance) • Evaluation about work done
Level 3: Research gap/problem	• Research gap/problems (and significance)

TASK 1. INTRODUCTION

Identify the different levels of information in sentences 1-15 of the text in your worksheet and write your answer in the table that follows the text.

TASK 1: INTRODUCTION

Level of information	Sentences (write down the sentence number)
Level 1: Context (background information)	
Level 2: Context (ideas related to topic)	
Level 3: Key topic	

TASK 1: INTRODUCTION

Level of information	Sentences (write down the sentence number)
Level 1: Context (background information)	**S1 to S4 (context)**
Level 2: Context (ideas related to topic)	**S5-S10 (the effects of video gaming)**
Level 3: Key topic	**S11-S15 (the functional and structural neural correlates of frequent video gaming by adolescents)**

INTRODUCTION: DIFFERENT TYPES OF INFORMATION

Links or Relationships	Common uses
Problem - solution	Demonstrates how specific issues/ tensions/ limitations in a study/ group of study are addressed or solved in another study/ group of studies.
Cause and effect	Demonstrates how studies provide reasons, causes or effects in relation to specific aspects of other research.
Process Description	Describes the steps taken to solve a problem
Compare and contrast	Groups studies according to similar or contrasting approaches, methodologies, materials used, results

Adapted from Lee, Ho & Ng, 2009

INTRODUCTION: TASK 2

Annotate texts 2(A) and 2(B) by classifying the different types of information which you can find in them.

INTRODUCTION: TEXT 2 (A)

Earlier research on properties of MLE mainly focused on large samples. It was found that MLE has good large sample properties such as asymptotical unbiasedness. However, it was found subsequently that MLE is significantly biased and has a low efficiency when dealing with small data sets and/or data sets with high censoring levels. In the attempt to search for unbiased estimators, Engelhardt and Bain (1973, 1974, 1977) modified the MLE method and proposed several methods but one limitation is that the methods involved cumbersome calculation of the covariance matrix. In the 1990s, several new methods were proposed to correct the biases of the ML estimators. Jacques (1993) modified the two estimating equations of MLE and named the method generalized MLE. Subsequently, Ross (1994, 1996) proposed two simple correcting formulas for the ML shape parameter estimator, applied to complete data and singly censored data respectively. Hirose (1999) provided another bias correcting method and tabulated the coefficients of the bias correcting factors for the MLE of both Weibull parameters. Among these methods, the ones proposed by Ross (1996) and Hirose (1999) are more promising because they involve simple formulas that can be easily applied without loss of accuracy. Moreover, their bias correcting formulas can be added to the end of the conventional MLE routine to generate more accurate estimates.

Lee, W.Y., Ho, L. and Ng, M. E. T. (2009). Research Writing: A Workbook for Graduate Students. Prentice Hall. Singapore.

INTRODUCTION: TEXT 2 (A)

Earlier research (chronology) on properties of MLE mainly focused on large samples. It was found that MLE has good large sample properties such as asymptotical unbiasedness. **However (problem),** it was found **subsequently (chronology)** that MLE is significantly biased and has a low efficiency when dealing with small data sets and/or data sets with high censoring levels**. In the attempt to search for (solution)** unbiased estimators, Engelhardt and Bain (1973, 1974, 1977) modified the MLE method and proposed several methods **but one limitation (problem)** is that the methods involved cumbersome calculation of the covariance matrix. **In the 1990s (chronology)**, **several new methods were proposed (solutions)** to correct the biases of the ML estimators. Jacques (1993) modified the two estimating equations of MLE and named the method generalized MLE**. Subsequently (chronology)**, Ross (1994, 1996) proposed two simple correcting formulas for the ML shape parameter estimator, applied to complete data and singly censored data respectively. Hirose (1999) provided another bias correcting method and tabulated the coefficients of the bias correcting factors for the MLE of both Weibull parameters. **Among these methods (comparison)**, the ones proposed by Ross (1996) and Hirose (1999) **are more promising because (comparison)** they involve simple formulas that can be easily applied without loss of accuracy. **Moreover (comparison),** their bias correcting formulas can be added to the end of the conventional MLE routine to generate more accurate estimates.

Lee, W.Y., Ho, L. and Ng, M. E. T. (2009). Research Writing: A Workbook for Graduate Students. Prentice Hall. Singapore.

INTRODUCTION: TEXT 2 (B)

Doxorubicin is one of the most commonly used chemotherapeutic agents against a range of cancers [1]. The widely accepted mode of action of doxorubicin is via its intercalation into the DNA helices, whereby it interferes with the re-ligation of the cleaved DNA ends by topoisomerase II (Top2) during decatenation of the supercoiled DNA, and results in the formation of double stranded breaks [2]. The persistence of DNA breaks in the genome probably induces cell death via either apoptosis or mitotic catastrophe [2, 3]. Other mechanisms of doxorubicin action have been described to involve disruption of the membrane structure and the production of reactive oxygen species [1].

INTRODUCTION: TEXT 2 (B)

Doxorubicin is one of the most commonly used chemotherapeutic agents against a range of cancers [1]. The widely accepted mode of action of doxorubicin is **via** its intercalation into the DNA helices, whereby it **interferes** with the re-ligation of the cleaved DNA ends by topoisomerase II (Top2) **during** decatenation of the supercoiled DNA, and **results in** the formation of double stranded breaks [2]. The **persistence of** DNA breaks in the genome probably **induces** cell death **via** either apoptosis or mitotic catastrophe [2, 3]. **(process/cause effect)** Other mechanisms of doxorubicin action have been described to involve disruption of the membrane structure and the production of reactive oxygen species [1]. **(comparison)**

INTRODUCTION: TEXT 2 (B) (CONTD.)

The therapeutic efficacy of doxorubicin is challenged by the development of resistance, which allows cancer cells to withstand concentrations of the drug that would otherwise be lethal [4]. Although the precise mechanisms of doxorubicin resistance are not fully understood, one major drug resistance pathway involves the active efflux of the drug by membrane associated transporter proteins. This efflux occurs against the concentration gradient and thus prevents the accumulation of the drug to a critical cytotoxic level within cancer cells [5-7]. One major class of membrane transporters that mediate drug resistance is the ABC transporter family of which Pglycoprotein (P-gp) (also known as ABCB1 or MDR1) is a prominent member [6, 8].

INTRODUCTION: TEXT 2 (B) (CONTD.)

The therapeutic efficacy of doxorubicin **is challenged by the development of resistance**, **which allows cancer cells to withstand concentrations of the drug that would otherwise be lethal** [4]. **(problem)** Although the precise mechanisms of doxorubicin resistance are not fully understood, one major drug resistance pathway involves the active efflux of the drug by membrane associated transporter proteins. **(cause) This efflux occurs (cause)** against the concentration gradient and **thus prevents (effect)** the accumulation of the drug to a critical cytotoxic level within cancer cells [5-7]. One major class of membrane transporters that mediate drug resistance is the ABC transporter family of which Pglycoprotein (P-gp) (also known as ABCB1 or MDR1) is a prominent member [6, 8]. **(solution)**

INTRODUCTION: EVALUATION OF EXISTING RESEARCH

Comments are added at appropriate points in discussing earlier works/ studies in such a way that it demonstrates your in-depth knowledge and awareness of pertinent aspects of the current state of knowledge including concepts/ issues/tensions/ methodological limitations.

INTRODUCTION: EVALUATION OF EXISTING RESEARCH

- **Positive evaluation** such as achievements of certain studies
- **Negative evaluation** that point out existing limitations in the literature or weaknesses of studies
  - i) negative statements in general
  - ii) negative statements/ **research gaps** that motivate your study
- **Neutral** statements that point out deductions, inferences or implications

INTRODUCTION: EVALUATION SAMPLE 1

S1 In the 1990s, several new methods were proposed to correct the biases of ML estimators. Jacques (1993) modified the two estimating equations of MLE equations of MLE and named the method generalized MLE. ***S2*** Subsequently, Ross (1994, 1996) proposed two simple correcting formulas for the ML shape parameter estimator, applied to complete data and singly censored data respectively. ***S3*** Hirose (1999) provided another bias correcting method and tabulated the coefficients of the bias correcting factors for the MLE of both Weibull parameters. ***S4*** Among these methods, the ones proposed by Ross (1996) and Hirose (1999) are more promising because they involve simple formulas that can be easily applied without loss of accuracy.

Research Writing: A Workbook for Graduate Students by Lee Wai Ying, Laina Ho and Mary Ng En Tzu

INTRODUCTION: EVALUATION SAMPLE 1

S1 In the 1990s, several new methods were proposed to correct the biases of ML estimators. Jacques (1993) modified the two estimating equations of MLE equations of MLE and named the method generalized MLE. ***S2*** Subsequently, Ross (1994, 1996) proposed two simple correcting formulas for the ML shape parameter estimator, applied to complete data and singly censored data respectively. ***S3*** Hirose (1999) provided another bias correcting method and tabulated the coefficients of the bias correcting factors for the MLE of both Weibull parameters. ***S4*** Among these methods, the ones proposed by Ross (1996) and Hirose (1999) **are more promising** because they involve simple formulas that can be easily applied without loss of accuracy.

INTRODUCTION: EVALUATION SAMPLE 2

S1 As we go through the literature, we find that most of the existing portfolio selection models assume that the market is continuously open and stock return dynamics is constant across trading and nontrading periods (Merton (1987), Constantinides (1986), Vayanos (1998), Liu and Loewenstein (2002), and Liu (2004)). ***S2*** One important implication of this assumption is that transaction costs only have a second-order effect for asset pricing.

INTRODUCTION: EVALUATION SAMPLE 2

S1 As we go through the literature, we find that most of the existing portfolio selection models **assume** that the market is continuously open and stock return dynamics is constant across trading and nontrading periods (Merton (1987), Constantinides (1986), Vayanos (1998), Liu and Loewenstein (2002), and Liu (2004)). ***S2*** **One important implications of this assumption** is that transaction costs only have a second-order effect for asset pricing.

INTRODUCTION: EVALUATION SAMPLE 3

S1 Nevertheless, **it is still rather challenging** to incorporate consumption to the finite horizon portfolio selection. ***S2*** Dai, Jiang and Yi (2007) **tried to employ the methodology** in Dai and Yi (2009) when investigating the impact of consumption. ***S3*** They presented a complete analysis on the regularity of solution and the behaviors of free boundaries. ***S4*** However, **their approach was based on some technical conditions which are not always reasonable.**

INTRODUCTION: EVALUATION SAMPLE 3

S1 Nevertheless, it is still rather challenging to incorporate consumption to the finite horizon portfolio selection. ***S2*** Dai, Jiang and Yi (2007) tried to employ the methodology in Dai and Yi (2009) when investigating the impact of consumption. ***S3*** They presented a complete analysis on the regularity of solution and the behaviors of free boundaries. ***S4*** However, their approach was based on some technical conditions which are not always reasonable.

INTRODUCTION: EVALUATION SAMPLE 4

S16. As the participants in our previous study were considerably younger (14 years of age) than the average video gamer, the identified neural correlates of frequent video gaming in ventral striatum may only reflect a small fraction of the potential neural long-term effects in adults.

INTRODUCTION: EVALUATION SAMPLE 4

As the participants in our previous study were considerably younger (14 years of age) than the average video gamer, the identified neural correlates of frequent video gaming in ventral striatum may only reflect a small fraction of the potential neural long-term effects in adults.

INTRODUCTION: SIGNIFICANCE OF STUDY

- Predictions of positive outcomes that may emerge on the basis of anticipated results
- Usefulness or applicability of research findings
- Offer a clearer explanation for a phenomenon of scientific interest
- Tentative and cautious tone of voice (use of modal auxiliaries and expressions)

TAKEN FROM ES5002

INTRODUCTION: SIGNIFICANCE OF STUDY

Examples:

Both of the factors under investigation in this study *may be of importance in explaining* the irregular occurrence of this disease.

Results of this study *may suggest a broader hypothesis for further research* into the effects of atmospheric chemicals on rubber.

TAKEN FROM ES5002

COMMONLY USED PHRASES FOR STATEMENT ON SIGNIFICANCE

… important/significant for several reasons …

… may offer a clearer explanation for ..

… may contribute to a better understanding of …

… may provide insights into..

… may shed light on …

… may provide guidelines for …

… may lay the foundation of. For…

… may provide the basis for …

Taken from ES5002

MAIN STRUCTURE OF FINAL REPORT

Abstract (300 words)

Introduction *(1500 words)*

-context

-topic

-existing research

-significance

Future direction *(1000 words)*

-research gap/problem

-aim

-approach

-process

FUTURE DIRECTION

Way forward (aims based on research gaps and strategy, framework, procedure or methodology)

FUTURE DIRECTIONS: RESEARCH GAPS

Research gaps are highlighted at critical points in the review as different research topics are discussed. Statements of research gaps clearly show the need or create the niche for you to emphasize the need for your research.

FUTURE DIRECTIONS: RESEARCH GAPS

Broad categories of research gaps:

- Related to inadequacies or limitations
- Related to conflicting findings or ideas
- Related to extension of ideas in new directions

Research Writing: A Workbook for Graduate Students by Lee Wai Ying, Laina Ho and Mary Ng En Tzu

TASK 3

For each of the given paragraphs, underline the statements which are used to identify research gaps. Also, suggest the types of research gaps presented.

FUTURE DIRECTIONS: PURPOSE STATEMENTS

Where?

Follow on from discussion of research gaps

What type?

Research Orientation

Report Orientation

FUTURE DIRECTIONS: PURPOSE STATEMENTS

Research Orientation (examples)

1. The study <u>examined</u> the effect of electrochemical oxidation on the acoustic waves in pSi.

2. This research <u>investigated</u> the effect of insertion of one AlN monolayer at lower-barrier-well interface on the localization states.

Research Writing: A Workbook for Graduate Students by Lee Wai Ying, Laina Ho and Mary Ng En Tzu

FUTURE DIRECTIONS: PURPOSE STATEMENTS

Research Orientation (examples)

3. The aim of this study was <u>to develop</u> a new statistical framework based on hidden Markov model to recognize graphic document images.

4. The aim of this investigation was <u>to</u> <u>determine</u> if the change of AT1/AT2 receptors expression is related to apoptotic progress after myocyte schema/reperfusion.

Research Writing: A Workbook for Graduate Students by Lee Wai Ying, Laina Ho and Mary Ng En Tzu

PURPOSE STATEMENTS: REPORT ORIENTATION

Report Orientation (examples)

1. This paper <u>describes</u> the behaviours of radicals, ions and molecules in Acetone plasma.

2. The thesis <u>will present</u> a model for predicting multi-component diffusion behaviour from single component equilibrium and kinetic parameters.

Research Writing: A Workbook for Graduate Students by Lee Wai Ying, Laina Ho and Mary Ng En Tzu

PHRASES FOR STATEMENTS OF PURPOSE

In the first/second/final part of this thesis

The overall/main aim of ..

More specifically, the aims of this study/thesis is…

The thesis proposes/discusses/presents…

… by comparing/evaluating/analysing

… using the framework/strategy of…

Taken from ES5002

FUTURE DIRECTION: EXAMPLE

S. 17 We theorized that because of the prominent navigation component in many three dimensional (3D) video games, the hippocampal formation may be enlarged in frequent gamers. ***S.18*** In order to test this hypothesis, we investigated the structural correlates of video gaming in an adult population within the scope of the present study. ***S.19*** Our main goal was to identify brain structures associated with the lifetime amount of video gaming in an adult population.

TASK 4

Read the abstract and discuss a likely direction that this research will take.

PROCEDURE

Please refer to the sample final reports.

CONSULTATIONS

Please sign up for group consultation sessions.