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INSTITUTE SCIENCES & TECHNOLOGY

1ST YEAR ST



METHODOLOGY OF PRESENTATION

CHAPTER IV



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CHAPTER IV: PRESENTATION OF A MANUSCRIPT (WRITTEN WORK)

IV.1. INTRODUCTION:

The success in defending a thesis or a dissertation is an idea that concerns any student or even a research professor, as they must exert all their efforts to master the presentation. The defense is not just a summary of the thesis or dissertation, but a presentation of all the work the student has done during the research. So, what are the methods and rules followed in delivering a successful presentation?

Generally, the methods vary from one country to another, from one university to another, and even from one professor to another. However, they share two fundamental principles that must be achieved, which are:

1. **Comprehensive Mastery:** The presenter must have a comprehensive understanding of the topic, including theoretical background, methodology, results, and implications.
2. **Effective Communication:** The presentation should be clear, organized, and engaging to effectively communicate the research work to the audience.

While each institution may have its specific guidelines and expectations for thesis defense presentations, these two principles are universally important for a successful defense.

IV.2. PREPARING FOR AND CONDUCTING A SUCCESSFUL THESIS DEFENSE

IV/2.1. BEFORE THE DEFENSE:

Before the defense, the student must prepare a precise summary of the research project and the results obtained, starting with an introduction that explains the reasons for choosing this topic, the issues to be addressed, or the hypotheses to be proven. Then, describe the methodology used to achieve this, listing all research steps in the same order as in the thesis. In the conclusion, mention the most important results and the points to be discussed during the defense (the student should respect the allocated time for the defense by practicing speaking in front of an audience).

IV.2.2. DURING THE DEFENSE:

The student should express gratitude to the members of the evaluation committee for their attendance and acceptance of evaluating this work, with special thanks to the supervising professor. Then, introduce themselves and the title of the work being discussed, attempting to capture the audience's attention. After presenting an outline of the presentation, the student details the topic by mentioning the points worked on in their research, emphasizing the scientific importance of each aspect. Finally, they answer questions from the committee or the audience, demonstrating their competence.

IV.3. GUIDE TO PREPARING A SUCCESSFUL PRESENTATION:

IV.3.1. INTRODUCTION:

The discussion is not a mere repetition of what is in the thesis or dissertation but rather giving life to the subject by addressing points not mentioned in the document. During the presentation, the student tries to defend their ideas and conclusions by presenting their research results in an engaging way that differs from the thesis's presentation.

IV.3.1.1 TRANSFORMING ANXIETY INTO A BONUS:

Public speaking is a source of anxiety for many people, fearing judgment and ridicule even in front of other students. However, facing this challenge is repeated in the student's academic and professional life, making it an opportunity for excellence.

IV.3.1.2. PREPARATION:

Search for reliable references and use them to make the presentation enjoyable for others and to support your viewpoint.

IV.3.1.2. PLAN:

Building a plan is essential. The student needs to lay foundations before diving into writing but without limiting creativity. Knowing key techniques is crucial for a good plan.

A. INTRODUCTION: Start by welcoming the faculty, present your research project and why you undertook it (for a diploma, master's degree, etc.), then state the presentation plan before giving a brief bibliography about the research project.

B. PRESENTATION: Divide it into several parts, not exceeding 3 or 4, and use transitional sentences between each part.

C. CONCLUSION: Summarize key points and what you've learned from your internship period, and mention the perspectives you want to explore further.

D. THANKING AND APPRECIATION: Thank the committee for evaluating the work, specifically mention your supervisor for guidance, and thank the audience for their presence.

1. Thanking the Committee:

- "I would like to express my sincere gratitude to the committee for taking the time to evaluate my work. Your insights and feedback are invaluable to me."
- "I am deeply thankful to the committee members for their thorough evaluation and constructive feedback. Your expertise has greatly contributed to the improvement of my research."

2. Mentioning Your Supervisor:

- "I extend my heartfelt thanks to my supervisor, [Supervisor's Name], for their unwavering support, guidance, and mentorship throughout this journey. Their expertise and encouragement have been instrumental in shaping this work."

- "Special thanks to [Supervisor's Name] for their exceptional guidance and continuous support. Their insightful feedback has been pivotal in refining the direction of my research."

3. Thanking the Audience:

- "I would like to express my appreciation to everyone present here today. Your presence and interest in this topic mean a lot to me, and I am grateful for your attention."
- "A big thank you to all the attendees for being part of this presentation. Your engagement and questions enrich the discussion and make this experience more meaningful."

IV.3.2. WHAT WILL BE EVALUATED DURING THE PRESENTATION:

IV.3.2.1. PRESENTATION QUALITY:

- Dress Code: Students are not required to wear formal suits but should maintain a minimum standard such as trousers and a shirt for male students, looking neat and respectful for female students, avoiding flashy makeup.
- Speech Quality: Avoid speaking in a monotonous voice to prevent the audience from getting bored or sleepy. Try to minimize expression errors, speak to the entire committee rather than just one person, and avoid reading directly from the written presentation.
- Time Management: Speak within the allocated time, neither exceeding nor falling short. Training will help in understanding this aspect.

IV.3.2.2. CONTENT QUALITY:

1. Choose your words carefully to ensure everyone understands, even those without expertise in your field.
2. Answering Questions: Questions are a logical continuation of what you've previously said. Be concise and clear. If you don't understand a question, simply acknowledge it to have it rephrased and avoid remaining silent in an awkward manner.

IV.3.2. MAKING THE PRESENTATION LIVELY:

the audio-visual aids clarify complex points and make the oral presentation more dynamic. They significantly enhance communication effectiveness, so they must be carefully chosen to be relevant, attractive, simple, and adaptable to your topic. They range from the simplest to the most complex:

1. Distributed written texts.
2. Visual documents (images, charts).
3. A retroprojector device (using transparent paper).
4. PowerPoint slides.
5. Video.

The choice of presentation aids depends on the teaching method used. You can use:

- A computer equipped with PowerPoint software or a Data show projector.

- A television and DVD player.
- A picture projector or a retroprojector device.

Before starting the preparation for the oral presentation, you must consider the teaching method used in the presentation (Diaporama slides presentation or Poster). The most commonly used nowadays is presenting slides using Data show available in all university institutions.

IV.2.2.1. DIAPORAMA PRESENTATION:

It consists of a series of consecutive slides accompanying the oral presentation. It includes texts, images, animations, audio, and videos. It can be controlled manually or programmed automatically, and the presentation is called Computer-Assisted Presentation (CAP). To do this, we need:

- A computer with PowerPoint application.
- Internet for searching images.
- Texts, images, tables, and curves related to the research work in general.

IV.3.2.2. POSTER:

The purpose of the poster is to present the work to beginners, essentially serving as a scientific profile for the researcher. Consideration must be given to the audience reading this poster; therefore, it should:

- Be simple and clear in its approach.
- Attract attention as a visual display.
- Clearly and effectively convey information.
- Include evidence and proofs to convince the audience of your viewpoint.
- Present information in a pedagogical, logical manner without being random in presenting information.

Note: The poster is autonomous, meaning it should be understandable without the need for the presenter's presence.

COMPONENTS OF A POSTER:

1. **TITLE:** Includes the topic of the work, the author's name, affiliation (university and laboratory), the supervising professor, and the responsible laboratory professor. Choosing the topic is crucial to capture the audience's attention, ideally accompanied by an image to make the reader pause for 5 minutes to read the poster.
2. **PRESENTATION:** The student mentions the goal of the work, the methodology, results, and references. It's a summary of the research conducted, and the information should be as visual as possible with concise text to focus on the idea presented in the poster. It should be clear, precise, and divide sections with titles, numbers, and colors (the font should be clear but not too large) to guide the reader. White spaces are important for clarity, and colors should be chosen carefully to ensure readability (30% text, 40% images, tables, and charts, 30% remaining parts in white).

3. **RECOMMENDATIONS:** Continuation of the presentation and research work, including proposals to complement the work.

4. **REFERENCES.**

HOW TO CREATE A POSTER:

- Scenario: Determine the main title and other section titles.
- Storyboard: Identify the images, data, and accompanying text.
- Layout: Use A3 paper, choose parts and colors carefully, use Arial/Helvetica font size 18 at least, save it as a PDF to prevent changes during printing on A₀ size (120cm x 80cm).¹

REPLACE THIS TEXT WITH YOUR TITLE

Replace with authors names
Replace with affiliations

ABSTRACT
Click here to insert your Abstract text. Type it in or copy and paste from your Word document or other source.
This text box will automatically re-size to your text.
To change the background color of this text box: Double-click near the edge to open the Format tool, select 'Colors and Lines', and change the fill color to whatever you like.

INTRODUCTION
Click here to insert your Introduction text. Type it in or copy and paste from your Word document or other source. Click once on the dashed border to highlight, then drag the bottom edge up to fit. Or change the font size to fill the box.
To have the box automatically re-size to your text: Double-click near the edge to open the Format tool, and select 'Text Box', then check 'Resize AutoShape to Fit Text'.
To change the background color of this text box: Double-click near the edge to open the Format tool, select 'Colors and Lines', and change the fill color to whatever you like.
The various elements and text boxes included in this template are examples of what we commonly see on posters of this kind. They are simply placeholders and you should feel free to add, delete, re-arrange, re-name, or re-size as best suits your needs.

RESULTS
Simul Europe has provided this template to assist in preparation of a medical or scientific research poster. The dimensions are set to 18" / 45.72cm height by 32" / 81.28cm width.
Please add your results here.

DISCUSSION
Click here to insert your Discussion text. Type it in or copy and paste from your Word document or other source. Click once on the dashed border to highlight, then drag the bottom edge up to fit. Or change the font size to fill the box.
To have the box automatically re-size to your text: Double-click near the edge to open the Format tool, and select 'Text Box', then check 'Resize AutoShape to Fit Text'.
To change the background color of this text box: Double-click near the edge to open the Format tool, select 'Colors and Lines', and change the fill color to whatever you like.

METHODS AND MATERIALS
Click here to insert your Methods and Materials text. Type it in or copy and paste from your Word document or other source. Click once on the dashed border to highlight, then drag the bottom edge up to fit. Or change the font size to fill the box.
To have the box automatically re-size to your text: Double-click near the edge to open the Format tool, and select 'Text Box', then check 'Resize AutoShape to Fit Text'.
To change the background color of this text box: Double-click near the edge to open the Format tool, select 'Colors and Lines', and change the fill color to whatever you like.
To change the font style of this text box: Click on the border once to highlight the entire text box, then select a different font or font size that suits you. This text is in Arial 18pt and is easily readable up to 8 feet away.

CONCLUSIONS
Click here to insert your Conclusions text. Type it in or copy and paste from your Word document or other source.
To change the font style of this text box: Click on the border once to highlight the entire text box, then select a different font or font size that suits you. This text is in Arial 16pt and is easily readable up to 6 feet away.

REFERENCES
Click here to insert your References. Type it in or copy and paste from your Word document or other source.
Click on the border once to highlight and select a different font or font size that suits you. This text is in Arial 16pt and is easily readable up to 6 feet away.

Figure 1: Label in 20pt Arial.

Figure 2: Label in 20pt Arial.

Chart 1: Label in 20pt Arial.

Table 1: Label in 20pt Arial.



Developing and characterising a novel combined nanoelectrode system

L. P. Robinson, A. Mount

Electrochemistry at nanoelectrodes

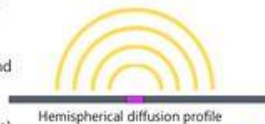
Nanoelectrodes have several advantages for electrochemical sensing.



Linear diffusion profile

Transport to macroelectrodes proceeds through a relatively inefficient linear diffusion profile. They are also highly affected by convection and iR drop.

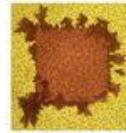
In contrast, the diffusion pattern for nanoelectrodes quickly becomes hemispherical. This profile is much more efficient, and they are not so affected by convection or iR drop. They can reliably detect very low (attomole) concentrations of analyte.



Hemispherical diffusion profile

A Pt microsquare nanoband edge electrode (MNEE) array system in which the Pt nanoband acts as the working electrode has been developed. The project now aims to create a nanoelectrode device based on this system which has all three electrodes necessary for analysis on one chip.

Ag/AgCl as a combined electrode



Dendritic growth

The combined reference/counter electrode is created by electroplating a thin film of Ag onto the Pt microsquare.

Potentiostatic plating causes Ag to grow preferentially at the corners, creating dendrites. A galvanostatic plating protocol is being developed to provide the required smooth, shiny Ag deposit.

To convert the newly plated Ag surface to AgCl, it must be functionalised. Chemical functionalisation by immersion in FeCl₃ has been shown to produce uniform deposits of AgCl.

Combined nanoelectrode system

This design consists of a microsquare at the bottom of each cavity in the array, with the nanoband around the cavity edge.

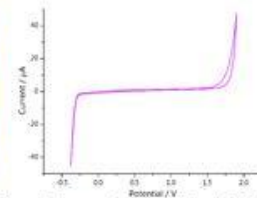
The Ag/AgCl microsquare is a combined reference and counter electrode. As its area is so much larger than the Pt nanoband, the current passing through the square is not large enough to affect its use as the reference electrode.



This could create an on-chip device for sensitive analytical detection.

Characterisation

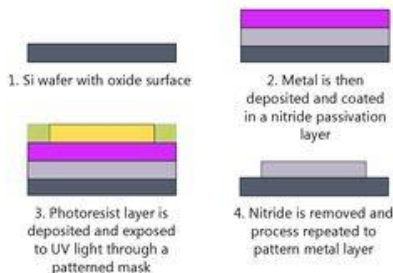
Cyclic voltammetry and electrochemical impedance spectroscopy will be used to verify that the system is behaving as predicted. The nanoband should have a similar response to the current nanoelectrode array.



Example of a nanoelectrode cycling in 100mM KCl solution. This cycle is used to determine the cleanliness of the electrode surface.

Fabrication

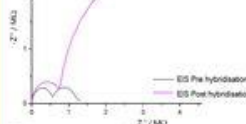
This design has been fabricated at the Scottish Microelectronics Centre using photolithography. In this technique layers of metal and insulator are deposited and patterned to produce the desired arrangement.



Each layer is deposited and patterned sequentially. This approach reliably produces uniform electrodes cheaply and easily.

An application

By coating the surface of the working electrode in a probe nucleic acid, the corresponding DNA sequence can be detected using electrochemical impedance spectroscopy (EIS). Before the target molecule is hybridised, the resistance measured for the redox couple is small. When the correct target is hybridised the resistance, and therefore the EIS response, is much larger.



EIS measurement of 50 nm electrode shows the increase in resistance upon addition of the target nucleic acid.

Pre hybridisation - the redox species has access to the electrode.

Post hybridisation - the access of the redox species is restricted, and so the resistance rises at the electrode.

Objectives

Having made the initial measurements, the next steps will include;

- complete fabrication of the combined system, including optimisation of nanoband and cavity dimensions
- further investigation of the sensitivity of nanoelectrodes for use in DNA sensing and the relationship between the response and concentration of the target
- optimisation of a galvanostatic silver plating protocol

Many thanks to Dr Damion Corrigan, Ilka Schmuesser, Professor Andy Mount, the Mount group and the SMC for their continuing support and expertise.



