

# Observed Teaching Session 3 – Lesson Plan

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LTS502 – Teaching and Learning Methods and Media

## I. INTRODUCTION

This lesson plan covers a tutorial setting for the Unit HET306 – Unix for Telecommunications. The tutorial covers material that involves setting up CGI-programs on web servers. CGI (Common Gateway Interface) programs allow for development of dynamic web content that changes based on user information, user input and current system status. It is through the use of CGI that modern web applications (such as Internet Banking, Wiki, Blogs, etc.) are even possible.

In this tutorial students are expected to have prepared by developing a CGI program that “*does something useful*” and to install it – and a web server – on one of the computers that have been allocated to them for the semester.

The aim of the tutorial is to ask students to go beyond looking at what CGI does to actually doing something with CGI and presenting their ideas to the class. Class discussion will be used to expand these ideas and open up new ground for possible future extensions to students.

The work performed for this tutorial is not assessable.

## II. RATIONALE

Using media and technology in a teaching context is often restricted to using electronic projection media or online blogs/group environments. The first approach can be considered a simple extension to traditional presentation methods using available technology while the second - while useful - can often lead to a sense of detachment from the group by both students and teaching staff.

Teaching in the area of technology and computer networks, using available media is often second nature, and the deployment of blogs or message boards for communal conversations within the student group is typical. It would be to examine pushing the use of technology further and developing different techniques that may be used to promote technology use while in a group teaching environment. To this end I propose to try to use technology in an interactive manner within the classroom environment.

### A. Use of Technology

The Unit under consideration is HET306 – “*Unix for Telecommunications*”. This Unit is about introducing students to a new Operating System that many will have never seen before, giving them the opportunity to expand their field of interest. Most of the teaching is expository and while a traditional approach may involve presenting of information, it does not allow students to experiment and learn through hand-on experience which is typically required in Engineering disciplines.

I already push the use of technology during the lectures through the use of live demonstrations on working systems on the Internet, using Unix servers configured at Swinburne and within my own home to demonstrate how systems are designed, deployed and configured. I make changes to server systems in real-time and demonstrate how this effects services provided to the rest of the network.

This form of teaching pushes the limits of what can be achieved with technology in a lecture environment, occasionally resulting in disaster when the technology refuses to work. However, while novel, this approach is not interactive for the students. They are still being exposed to information without experiencing it directly. I hope to push further in this planned teaching session.

### B. Media and Technology

The traditional means to provide interactivity with technology in our field is via the use of Laboratory sessions. Students are required to complete lab work on provided equipment. While this does provide access to technology for experimental purposes, it is still typically done in a solitary fashion – where students work by themselves or with a single partner to complete the lab work.

There is a place for solitary work and students still learn alot from these planned laboratory sessions. However the aspect of group work and discussion in front of a large class is lost in this aspect. For this lesson I plan to try and use some advanced technology in a tutorial setting, and allow the interactive experience of students using the technology to perform a live demonstration – similar to the ones I perform during the lectures – followed by class discussion.

The generic aim here is to push the use of media and technology away from the lecturer and towards the students. Allowing students to make direct use of technology within a non-laboratory teaching environment, and to use the technology for an actual purpose rather than basic research or collaboration.

1) *Brief Description:* The activity will involve the use of my laptop along with a projector in the class room and network connectivity to the Swinburne LAN. Medium size student groups will be required to present some work they have been previously asked to prepare. This will involve a live demonstration of what services they have developed to provide over the network and a brief discussion of why they chose to provide that services and what they did.

2) *Evaluation:* The use of technology will be evaluated by the level of classroom participation and enthusiasm displayed by the students in this task compared with typical tutorial

activities. I expect it to be successful and plan to try to extend more tutorials in the future with these types of activities. This also requires some extra planning during the timetabling phase to ensure that tutorials are allocated into suitable classrooms.

### C. Learning Context

The learning context is to provide students the opportunity to explore beyond the basic boundaries of the core Unit content. For assessment purposes, students need to be able to understand:

- How to install a web server
- What CGI programs are
- How to configure a web server to support and run CGI programs

For their personal understanding of the material, the learning experience is much improved if students have a better understanding of not only what a CGI program is, but how to put a CGI program together and what exactly is possible using CGI.

Students have been asked to prepare for this tutorial by developing a CGI program that “*does something useful*”, where the definition of *useful* is up to them. They have been specifically informed that their programs need not be commercial grade, and that the web appearance is unimportant. Students are not expected to produce a service that provides the next “*big thing*”. They are however expected to have a reason for producing a service that solves a small, yet real task. Of primary interest here is the functionality and exposure to the power of scripting and CGI.

In this respect students are learning by doing rather than reading. In Engineering in general, the importance of laboratory and practical work has long been recognised as the key means for re-inforcing concepts in students.

By making the task open to interpretation, students are asked to develop something different and something that interests them. Since the task is non-assessable this allows students to be more engaged in the task at hand. This should also make the class more interesting as each presentation should be different.

## III. PLAN

The tutorial session for HET306 is a 1 hour long session and seats between 20-30 students. The tutorial is repeated three times during the week as enrolled student numbers are approaching 90.

### A. Learning Objectives

As previously stated, the primary objectives here are to expose students to material beyond the primary scope of the Unit and to encourage them to explore the boundaries of their knowledge. Working in the area of developing networked services and systems involves continuously pushing the boundaries of what is currently possible to develop new and interesting applications for people to use.

A primary aim of this Unit in general is to show students that there is world beyond the confines of Microsoft Windows

and that when it comes to providing services on the Internet, this alternate world is of primary importance.

From this lesson students are expected to:

- Identify a problem that can be solved with a simple application
- Implement a web-based service to solve the problem
- Demonstrate their work to others
- Improve their communication skills
- Critique the work of others and offer suggestions for improvement

The content is not assessable, the tutorial is a means for students to continue their knowledge development in these key areas.

### B. Strategy

The primary strategy is to make use of the networked computer systems allocated to students (for this Unit) for the duration of the semester. These systems are to be used to deploy the developed services. We also plan to make use of the University network to access these services – in real-time – from a laptop situated in the class room.

The strategy will be facilitated through ensuring that the network services are functional and able to be used with the available facilities. Occasionally the technology may break down. Given that this subject is about networking and developing network based systems, any unforeseen breakdown of the technology provides an teaching opportunity to discover, analyse and resolve the problem in a class setting.

Student demonstrations have been prepared in small groups, these groups will present one at a time. Only one student from each group is required to actually present any work, but the presentation should include a rationale of what service they aim to provide and why they chose to do it. This should be followed by (in any order):

- A demonstration of using their service over the network
- A presentation of how their service was designed/implemented

1) *Student Feedback and Discussion:* Following each presentation I try to solicit class comments and questions. Unlike I have witnessed in other disciplines, this appears to be more difficult in an Engineering classroom where the culture is more accepting of presentation without discussion.

A strategic approach to this can be difficult, sometimes students are willing to engage and at others no comments appear forthcoming. Approaches that can be tried (have occasionally worked in the past are):

- Kick the questions/comments off with one of my own
- Threaten to just sit and wait until somebody does provide a comment
- Try and guide comments by nudging students in the direction of what they might like to comment on (this could be done by perhaps asking “*So who would use this service if it was available? Would you add anything to make it more useful?*”

Obviously the second point above cannot be relied upon to work but occasionally I've found that after a period of total silence from me, students begin to feel guilty for not participating and start to contribute. I am not suggesting that guilt should be a primary teaching tool but just occasionally it can be useful.

### *C. Class Schedule*

A short period of time will be required to setup and deploy the equipment to make it ready for the class. During this

time, most of the students will arrive. Since students are demonstrating a network based service, there is no need for them to upload content onto the demonstration laptop during the class or prior to their presentation. All preparation should have been completed prior to the tutorial.

It will be essential to gauge the number of groups presenting at the start of the tutorial and to restrict the presentation times so all groups get to present their material.