

# Physics Lectures and the Tablet PC

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## Abstract

A Tablet Personal Computer was introduced as a lecturing tool, into first year physics lectures, for an academic who was already using a laptop computer to give multi-media physics presentations. The Tablet PC with Microsoft OneNote software (Figure 1) was found to be effective for real time modelling of physics diagram construction, as well as the normal presentation applications of the lecturer. It was lighter than the previously used laptop and required the lecturer to carry less ancillary equipment. The students found the real-time demonstration of diagram construction, in nearly every lecture, beneficial to their understanding of the subject. The electronically captured images were stored for uploading onto the unit webpage at a later date.

## Introduction

The Physics staff at Murdoch University pride themselves on delivering a good quality Physics degree in the external mode which benefits from the use of on-line materials. The university also requires that units are structured in such a way that "the single coherent package of unit materials allow all students flexibility of access to the unit" (1). This means that all students doing the unit, internal or external, can access the on-line content which includes the study guides, lecture PowerPoint slides and audio. This is beneficial for external students and those internal students who have to miss lectures because they are working, have unit clashes, illness or family responsibilities.

Internal Physics lectures can have many parts, PowerPoint presentation, audio recording, applets on a CD, demonstrations, diagrams on the whiteboard or overhead transparency projector (OHTP), video clips, student discussion, hands-on activities and role playing. All of these activities require equipment which has to be transported across campus to the lecture theatre. Any light weight, portable, piece of equipment that can bundle several of these activities into one package, and assist with providing materials for external students, is therefore worth investigating.

The opportunity arose to trial a Tablet PC and as the academic teaching / research interests in this unit centered around the use of physics diagrams to enhance student learning, it seemed like an appropriate tool to use in lectures to model diagram construction.

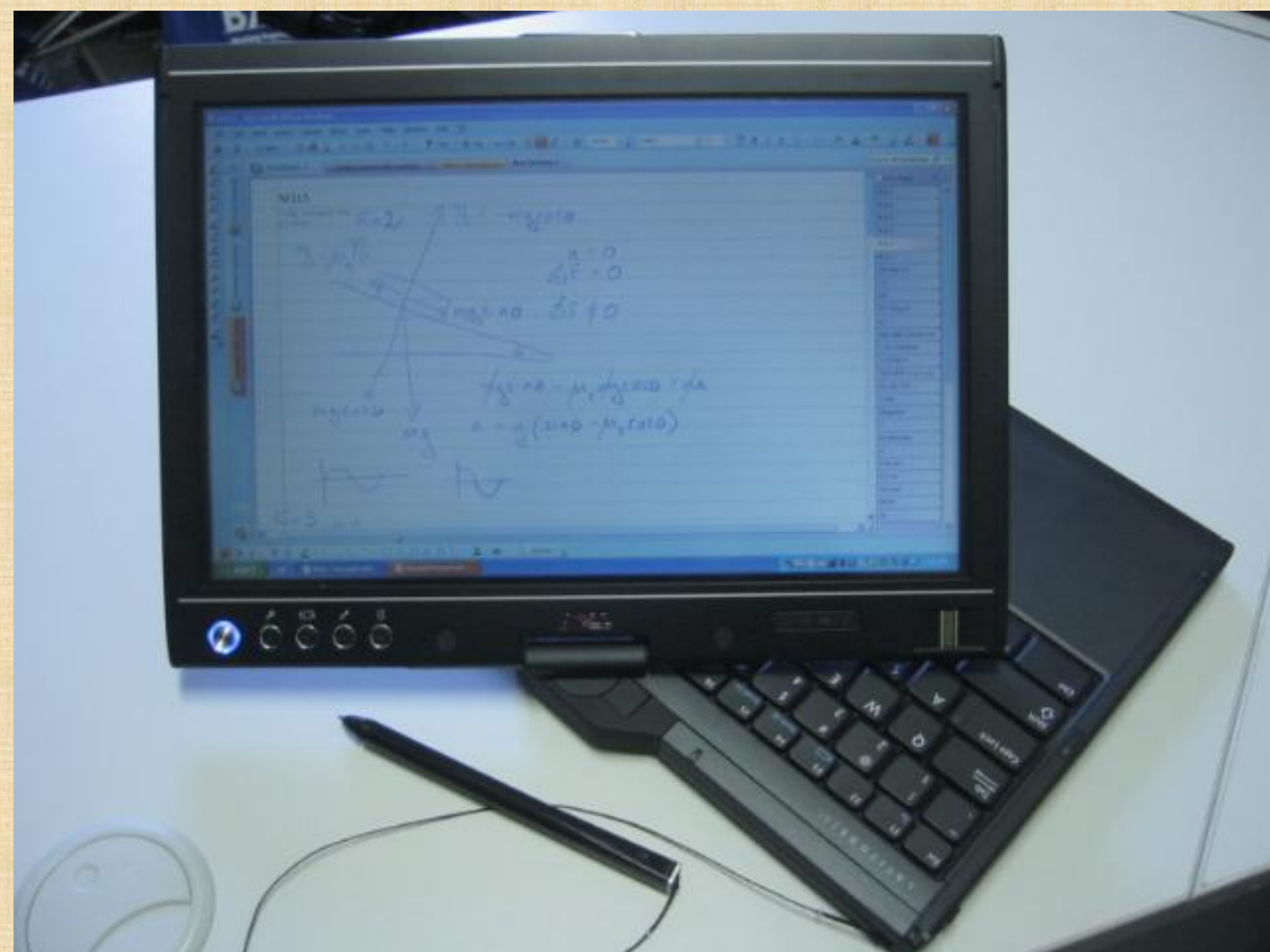


Figure 1 Tablet PC with Microsoft OneNote software as used in physics lectures.

## Experiment

The academic was given time to become familiar with the use of the equipment in a lecture theatre situation before the semester started.

During the lectures diagrams were "drawn" with an interactive stylus on the PC screen. At the same time this image was being projected onto the lecture theatre screen (Figures 2 and 3). The lecturer verbally linked the elements of each diagram to the physics of the situation under consideration as the diagram was drawn. In itself this is nothing new, lecturers have been doing this with OHTPs for decades. What it did allow however was for the lecturer use the same piece of equipment to give the usual multi-media presentation and with the same piece of equipment draw and capture diagrams for later use,.

## Acknowledgements

I would like to thank Chris Foley who gave me the opportunity to play with a Tablet PC for lecture presentations. I will not be going back to my old laptop.

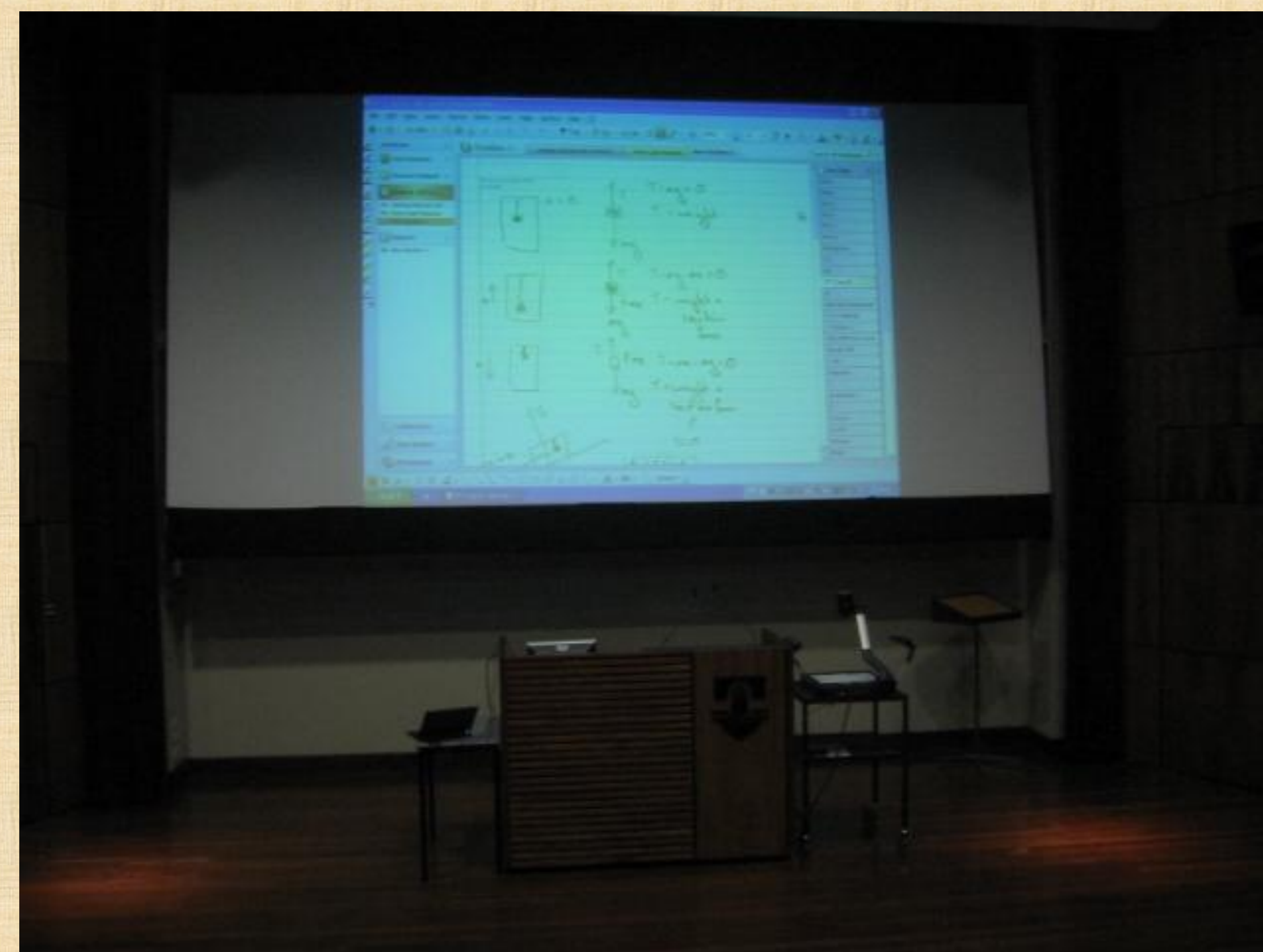


Figure 2 Image of Tablet PC screen as seen by the audience

## Results and Discussion

At the end of the unit, when questioned, the students reported that the discussion of diagrams while watching their construction was a useful aid in understanding the content. The lecturer noted that the projected image from the Tablet PC was clearer and larger than that achieved with an overhead transparency projector (Figures 2 and 3) and this made viewing easier.

The lecturer preferred using the Tablet PC to an OHTP as it allowed for a comfortable pose while writing, eliminated the possibility of getting blinded by the OHTP light, did not require extra accessories in the form of transparencies and marker pens and allowed for relatively seamless switching between various media presentation forms.

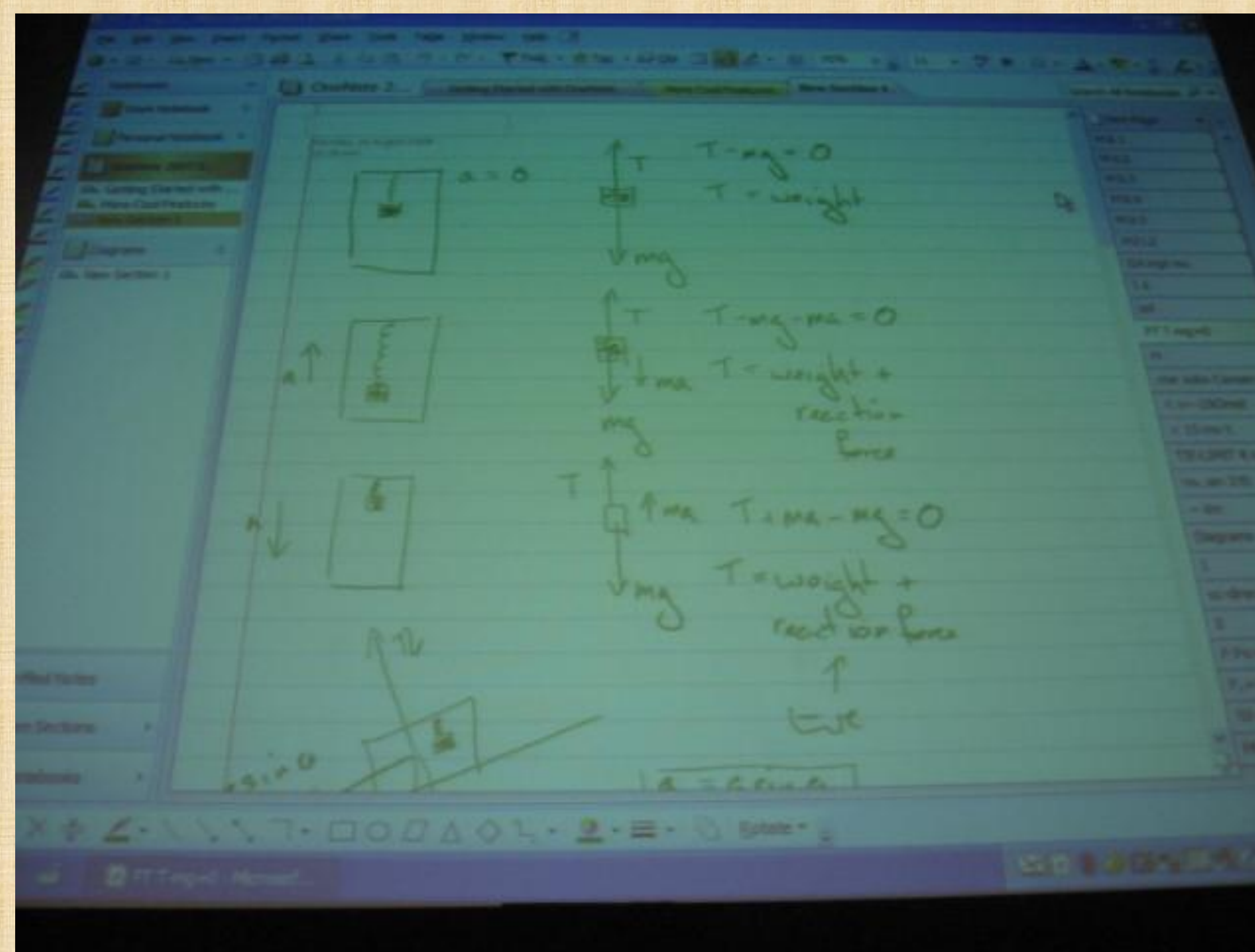


Figure 3 Projected Image

## Conclusions

Using a Tablet PC in first year physics lectures proved successful for both students and lecturer. The students found the modelling of diagram construction to be a useful aid in understanding physics concepts. The lecturer found that it allowed diagram construction to be added seamlessly to the suit of multimedia materials already in the lectures, and it reduced the amount of equipment that had to be transported to and from the lecture theatre.

## References

(1) Murdoch University Flexible Learning Implementation Committee home page accessed 15<sup>th</sup> November 2008

<http://www.murdoch.edu.au/admin/ctees/flic/>