

Chapter 11

Challenges and Trends of TAPS Packages in Enhancing Engineering Education

INTRODUCTION

It can be envisaged that the use of multimedia computer technology as replacement, or supplement to, human educators in engineering education would become widespread in the future. Such technology can be employed to demonstrate and correlate real life application and theory thereby promoting deep learning. Interactive courseware for higher learning institutions may be extremely useful where trained human resources in the engineering education sector are limited. This Chapter discusses the current trends of incorporating new technologies with TAPS packages in the teaching of engineering subjects.

EMPLOYMENT OF TAPS PACKAGES

A number of TAPS packages are being implemented and enhanced at University Tenaga Nasional (UNITEN) for the use in the teaching and learning of Engineering Mechanics subject. A snapshot of students interacting with TAPS packages is shown in Figure 1.

In the aim to promote and enhance the existing TAPS packages, additional hardware and software are being used and tested for its effectiveness. These are further discussed in the next sections.

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Figure 1. Students interacting with TAPS packages in one of the computer labs in UNITEN



Graphics Tablet

A graphics tablet is an input device used by artists which allows one to draw a picture onto a computer display without having to utilize a mouse or keyboard. A graphics tablet consists of a flat tablet and some sort of drawing device, usually either a pen or stylus. A graphics tablet may also be referred to as a drawing tablet or drawing pad. While the graphics tablet is most suited for artists and those who want the natural feel of a pen-like object to manipulate the cursor on their screen, non-artists such as engineering instructors may find it (Graphics Tablet) useful in their teaching as well. A graphics tablet may come in a range of sizes, from smaller 3" by 4" (7.6 by 10.2 cm) models to larger 7" by 9" (17.8 by 22.9 cm) ones. Even larger graphics tablets exist, up to enormous 14" by 14" (35.6 by 35.6 cm) tablets targeted towards professional designers and architects. Some well known graphics tablets include Wacom™, Aiptek™, and KB Gear™.

For the usage with TAPS packages, the high pressure sensitivity of the graphics tablet, allows the instructor/student to control a number of aspects of their drawing, including color and line thickness, simply by pressing the stylus/graphics pen more or less heavily, mimicking drawing with an actual pen. Most graphics tablets also have function buttons on the side, so that the user can perform common actions, such as switching a tool in a drawing program from paint to erase, without having to use the mouse or keyboard. This is useful for an engineering student for example when the student needs to switch to a virtual calculator or notepad to perform calculations or make notes. Figure 2 shows a demonstration usage of the graphics pen where important engineering concepts are being highlighted directly onto an image in the TAPS package.

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