Interactive web-based course development on “Development of Surface”

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ABSTRACT
This project aims to make use of multimedia tool to develop suitable course content on the “development of surface”. For the course ME1101, the lecture notes are presented in PowerPoint form. As the allocated lecture time is limited to deliver all the lecture materials, students may not be able to grasp what the lecturer is saying during lectures within the short period time frame. Therefore, an interactive web-based version is done so that the students will be able to access the lecturer’s notes on the web. With this, students will be able to access the course material at the student own time and with enhanced visualization due to the software been used.

INTRODUCTION
We see a lot of air-condition ducts around us everyday. Those ducts are formed into shapes from sheet metal. The sheet metal is first cut into the shape, and then formed by aids of simple machine. In this topic, we will learn how to produce the drawing needed for the sheet metal in order to form the ducts.

However, with a lack of visualization of the object, it may be difficult for some learners to understand how the shapes of the developed 3D object may look like before bending and forming. With an aid of multimedia tool, the student may be easier to visualize the drawing on the development.

RESULTS
To have an interactive multimedia tool, Macromedia Flash is used. Macromedia Flash is chosen, mainly because it can create animation with interesting effect, which often can capture the attention of student. Learning Macromedia Flash in the beginning stage proves to be a tedious and time-consuming part of the web-based design. Library books and online tutorials are frequently referred to when using Macromedia Flash.

From this multimedia, students are able to access the teaching material at remote, learning the course work at their own paces. This multimedia on development is one of the topics of the course ME1101. Animation is used to generate interest of the student to the topic.
DISCUSSIONS

Through this multimedia, students get to know about the topic in development of surface. In this interactive program, some of the sub-topics include development of surface on a cone, development of cylinder as well as development of transitional pieces (rectangle to round).

Taking a look at the development of a cone, the program shows step by step of the construction of a cone. Below shows a figure of the development of a cone.

![Fig 1. Development of a cone.](image1)

Step by step, the program teaches the user the manual drawing technique on the development of a cone. The compass, showing where the length AO is obtained, is transferred to the drawing space.

![Fig 2 shows a small compass, with the length of sector 01, is then transferred to the drawing space.](image2)
Other than the development of a cone, there are also other shapes, which include the development on cylinder, truncated cone, oblique cone, and hexagon. Below are some screens captured from the program.

Fig 3. Development on surface created when a cylinder penetrates a cone

Fig 4. Development on surface of a truncated cone

Fig 5. Development on surface of an oblique hexagon
CONCLUSION

Through this project, I learnt and gain some experience on flash programming. I hope that other can benefit from this multimedia and are able to learn development on surfaces at their own paces. From this project, I get not only a better understanding in the development on surfaces, but also on using the multimedia tool that was used to create such animations.