CHAPTER III

MATERIALS FOR CAI SOFTWARE DEVELOPMENT

3.1 Hardware

Hardware specification that was used in this thesis is informed in table 3.1.

Table 3.1 Hardware specification used in this thesis for CAI production.

Hardware component	Specification
CPU	Pentium-III, 1 GHz
RAM	128 MB
HDD	20 GB
VGA	AGP 16 MB
CD-Recorder	Read24X Write8X Rewrite4X
Sound card with speaker	16 bit
Scanner	600 dpi, 24 bit colors

3.2 Software

Software programs used in this thesis are summarized as in table 3.2 with their function.

Table 3.2 The software tools that was used for CAI production in this thesis are shown with their functions.

Software tool	Function
Macromedia Authorware 6.0	authoring tool for CAI software
Adobe Photoshop 5.5	create and retouch the scene and all interfaces
Macromedia Flash 5.0	create two dimensional simulation/animation
Kinetic 3D studio MAX 4.2	create three dimensional simulation/animation

3.2.1 Features of Authorware

Authorware provides the simple method to develop CAI software (EM-CAI) as mention in section 2.4. Subsequently, the main feature of Authorware will be explained.

3.2.1.1 Intuitive Flowline

Authoring method of Authorware is easy with friendly interface for user. Figure 3.1 shows Authorware's user interface, window named "carmera6.a6p" contains program instructions and windows named "grapgics.a6l" contains graphic library files.

3.2.1.2 Built-In Interactivity

Authorware prepares 11 response type as shown in Figure 2.2. These response type can support all requirement in CAI software development without coding a script.

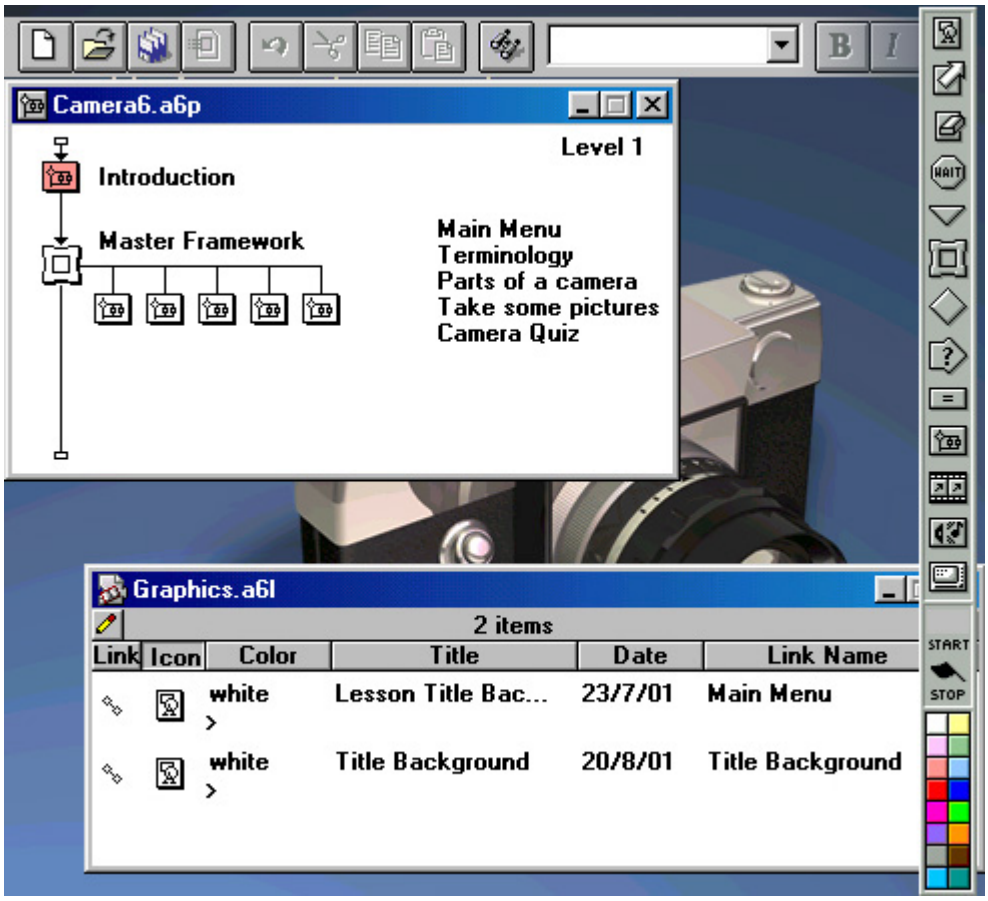

Figure 3.1 Authorware's user interface including program instruction and library file.

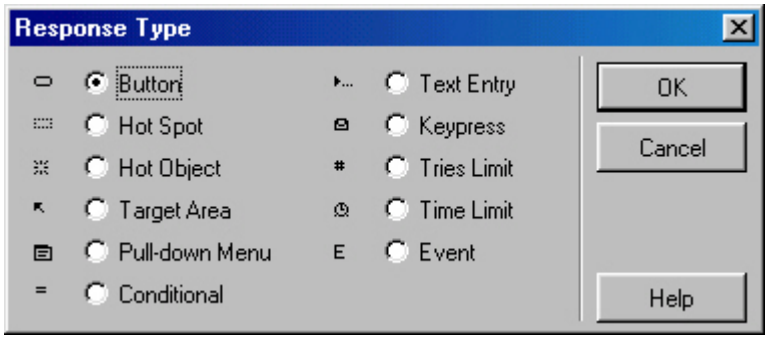

Figure 3.2 Authorware's response type window.

3.2.1.3 Powerful Navigation and Hyperlink

Authorware prepares the easy way to create a link in application without script language. Developer just select and fill in required information in dialog box as shown in

Figure 3.3, Authorware generates codes automatically.

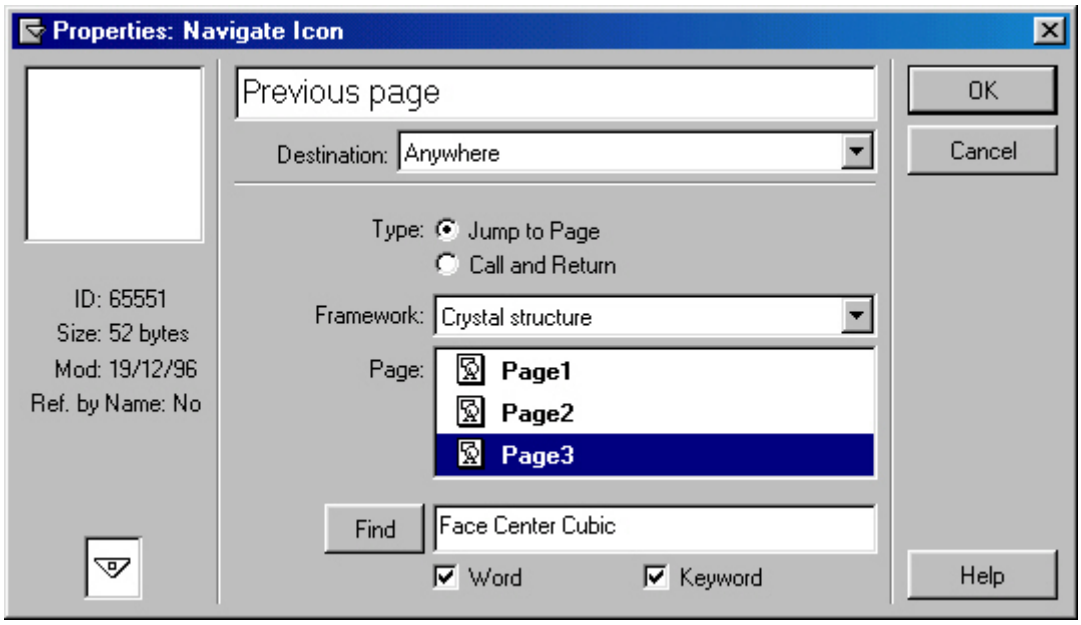

Figure 3.3 Properties window of Navigate icon and the applied values.

3.2.1.4 Media Support

Authorware can use medias in every format available in currently such as video for windows (*.avi), shock wave flash (*.swf), MPEG layer3 (mp3). This capability enhance CAI software created by Authorware.

3.2.1.5 Knowledge Objects

Knowledge Objects, the wizard in Authorware, provides the ready to use functions such as sending E-mail, setting file attribute for developer. Figure 3.4 shows the interface of Knowledge Objects

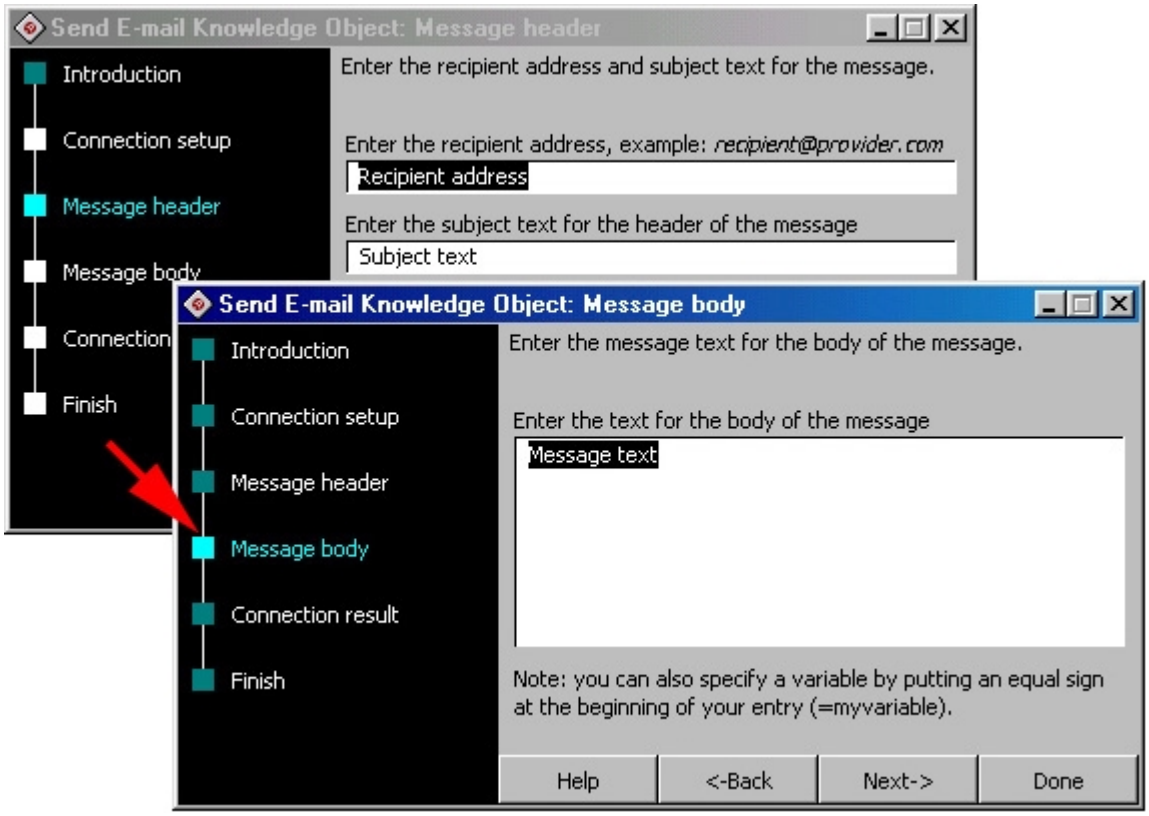

Figure 3.4 The example of Knowledge object interface named Send E-mail.

3.2.1.6 Scripting Language

Authorware provides a simple and flexible scripting language for performing complicated functions. The syntax of scripting language is look like programming language such as C, Pascal. Figure 3.5 shows script editor including script example.

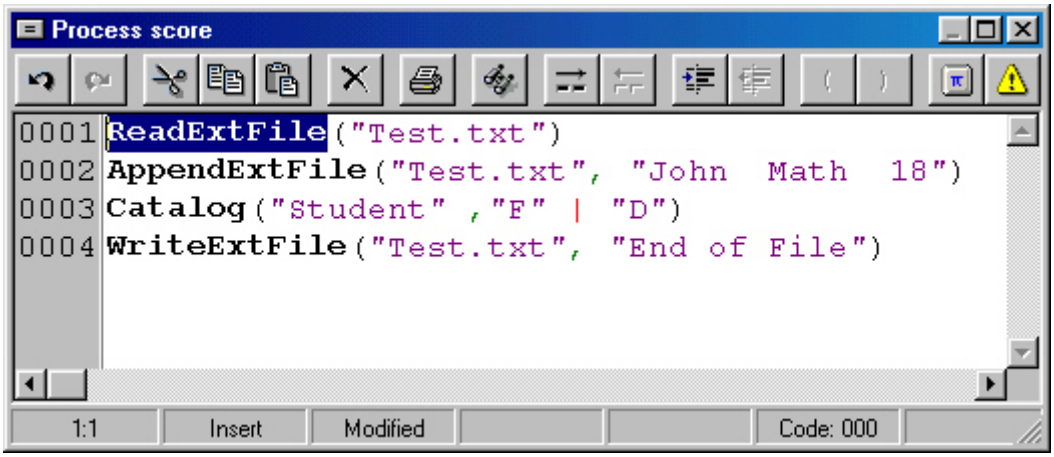

Figure 3.5 Script editor of Authorware and script example.

3.2.2 Feature of Photoshop

PhotoShop is the image retouching program. All image in this EM-CAI are created and retouched by PhotoShop. Figure 3.6 shows the user interface of PhotoShop, the images were retouched (scale, rotate,fill color,etc.) by using toolbox and saved in suitable format (GIF or JPG).

Figure 3.6 PhotoShop's user interface and the example of scene that created by PhotoShop.

3.2.3 Feature of Flash

Flash is the vector based animation program. The vector concept (as mention in 2.1.2.1) was used to create any objects, however, Bitmap image can be imported to use in this

program. Figure 3.7 shows the user interface of Flash that compose of the stage (working area) and time line (the upper table used to defind effect, sequence or transformation to Flash object).

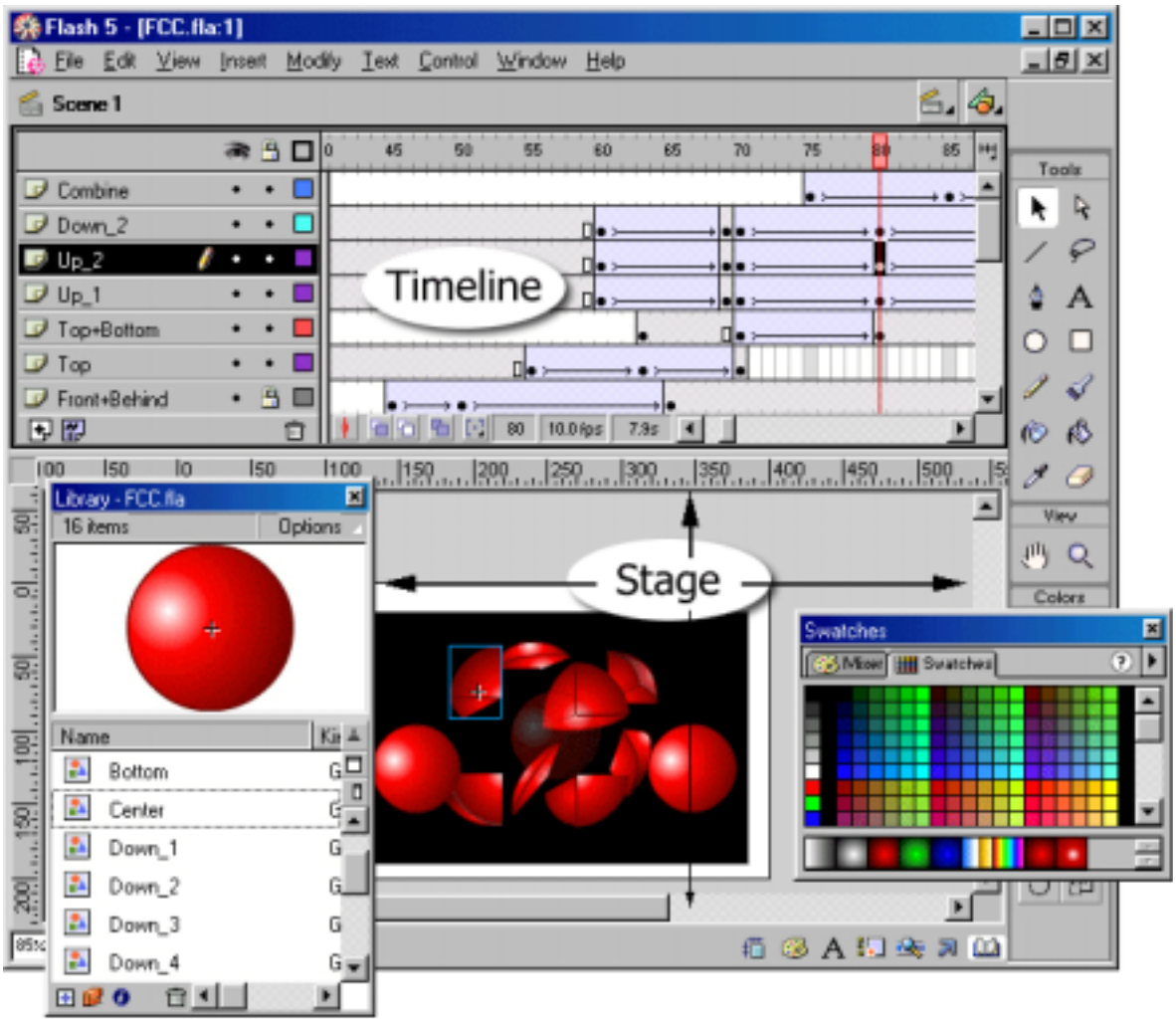

Figure 3.7 Flash's user interface and the example of simulation that created by Flash.

3.2.4 Feature of 3D studio MAX

3D Studio MAX is the three dimension modelling program that used to create simulation in this EM-CAI. Figure 3.8 Shows the user interface of 3D studio MAX program that be divided into four viewport, top, left, user and perspective. Model (three dimension object) is created in the suitable viewport (depend on the shape of model), defined properties

(color, shade,etc.) applied transformation (scale, rotate, shear, etc.) and then rendered (calculation) to yield the output as "simulation" in EM-CAI.

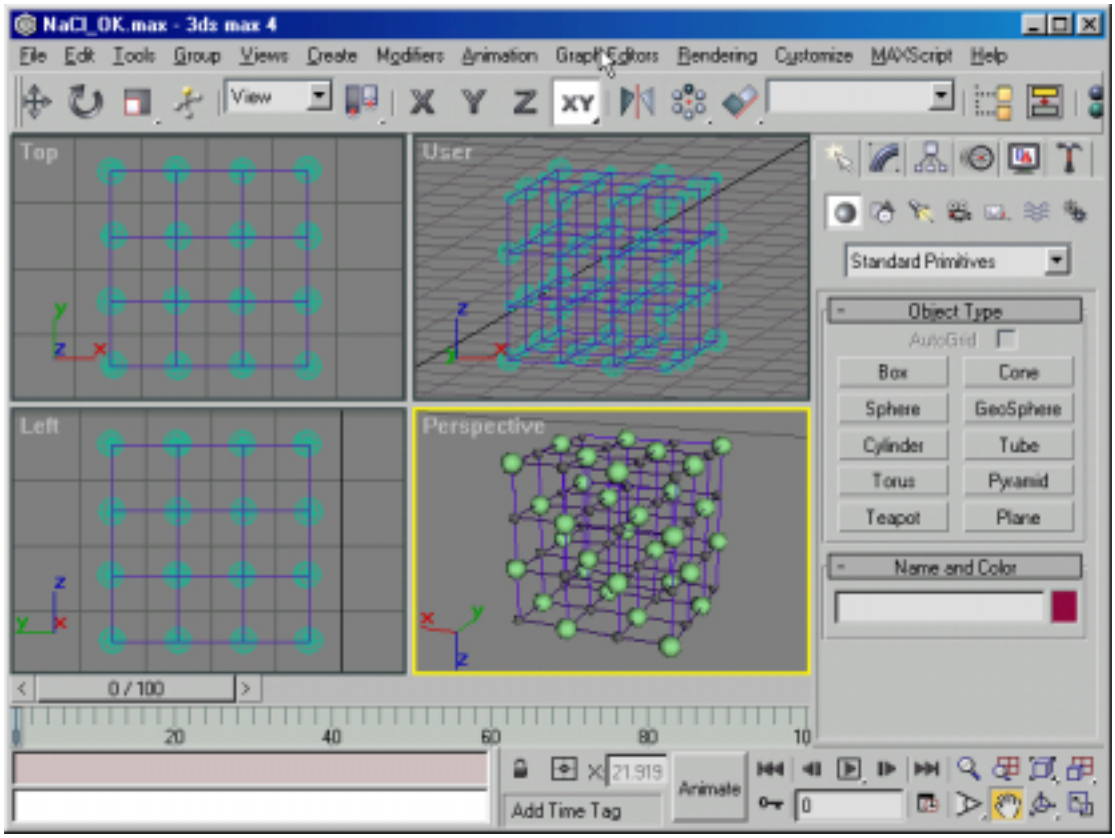

Figure 3.8 3D Studio MAX's user interface and the example of simulation that created by 3D studio MAX.

3D studio MAX takes important role in some chapter of EM-CAI, especially in Chapter 3 Crystal Structure, Chapter 5 Imperfection in Crystalline Metals and Chapter 6 Deformation in Metals.

3.3 Peopleware

Peopleware means the member of CAI development team that prior stated in 2.2.3.

Table 3.3 The names and positions of CAI development team in this research.

Position	Name
Subject Expert	Dr.Soranat Rhaipu
Designer	Dr.Soranat Rhaipu and Mr.Sutha Luealamai
Special Effect	Mr.Sutha Luealamai
Author / Programmer	Mr.Sutha Luealamai
Evaluator	
- **Formative Evaluator**	Dr.Soranat Rhaipu and Mr.Sutha Luealamai
- **Summative Evaluator**	The students that attend this course.