

Smart Marking, Assessment & Reporting Technology

Users' Guide

version 1.0

PicsAl!ve
www.picsalive.com

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1. Introduction

Tests and Assessments (T&A) are an integral part of the teaching-learning process because they provide a framework in which educational objectives are set and the students' progress charted. In recent years, many academic institutions and organisations have invested a large amount of money and resources in Learning Management Systems (LMS). However, in the areas of T&A, LMSes have limited successes and are mainly restricted to multiple choice questions. T&A are still mainly paper-based and the reasons are:

- Insufficient resources. Not enough computers or internet bandwidth for the students to take tests or assessments at the same time
- Reliability of computer systems. Factors such as virus attacks, hardware or electrical failures can severely disrupt crucial T&A
- No motivation for schools to administrator T&A using ICTs as most questions are not suited for automated marking
- Resistance to change. Trainers and administrators are not comfortable with the advent of new technologies and workflow
- IT (Information Technology) Literacy. Students who are not proficient in typing are at a disadvantage as compared with students skilled in typing
- Security Concerns (e.g. hacking and unauthorized access of accounts)

Current T&A processes in schools are inefficient, tedious and time consuming. Test papers are graded by teachers, marks are then manually added and entered into computer systems. Valuable teachers' time spent on these administrative tasks can be better utilized in actively engaging students in the learning process.

A novel concept called SMART (Smart Marking Assessment Reporting Technology) is proposed. SMART is an integrated testing and assessment environment. It revolutionalises the way T&A are conducted by combining the strengths of the paper-based and learning systems. Administrative workloads of teachers will be reduced and students' learning through T&A can be tracked by teachers, parents and all stakeholders.

Figure 1 gives an overview of the SMART system. In the SMART system, barcodes are automatically inserted into test or assessment papers (See Appendix A for sample paper). There is no change in the way tests (or assessments) are conducted and no learning curve for students. Questions are then scanned and automatically segmented from scanned test papers and stored as images. Teachers only need to mark and grade non-multiple choice questions (see Figure 2). The system will reassemble the test papers, generate reports and sent the results to other administrative systems. Results can also be exported to other software for analysis.

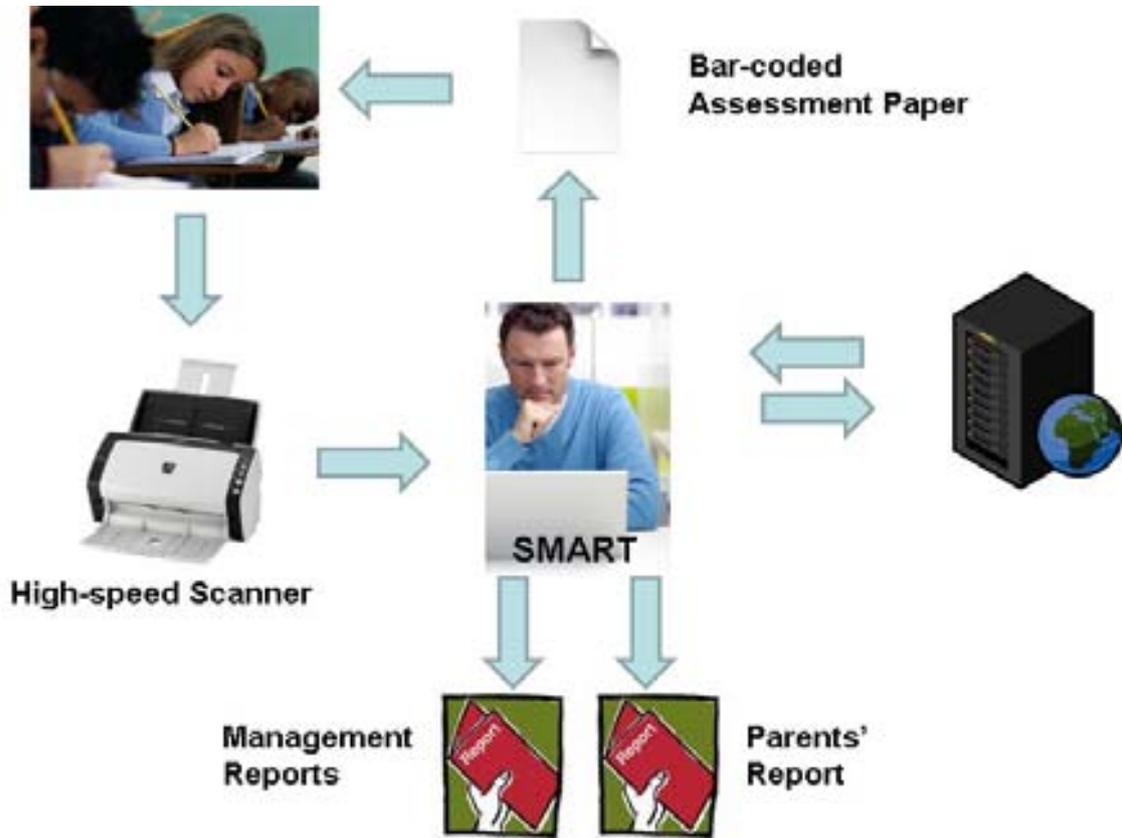


Figure 1.1: Overview of the SMART system

The screenshot shows a marking interface for a physics question. The question asks: "5. When object Y was added into the circuit, the bulb glowed and then went off. What could object Y be?". A circuit diagram shows a 2.8V bulb in series with two 1.5V cells and an object Y. The student's handwritten answer is "A 3V battery", which is marked as a "Good Answer". The interface includes a toolbar at the bottom and a "Marking Parameters" panel on the right.

No.	Qno.	Stat.	Type	Marks
1	1	S	MCQ	10
2	2	S	MCQ	10
3	3	S	MR	10
4	4	S		
5	5	S		
6	1	19	MCQ	10
7	2	19	MCQ	0
8	3	19	MR	10
9	4	19		

Figure 1.2: Individual Questions Extracted for Marking

1.1 Features

The distinctive features of the SMART solution are:

- **Optical Mark Recognition (OMR).** SMART is a flexible software for scanning data from your assessments. Multiple-Choice and Multiple Response questions are automatically marked. Barcode codes are automatically inserted into the assessment papers. You can print your own forms and make copies with a photocopier. Forms can have multiple pages or be double-sided. No pre-printed forms are required
- **Questions are Extracted as Images for Marking.** All questions are individually extracted from the form and stored as images (see Figure 1.2). Non multiple choice questions can thus be manually marked. You can now mark the questions on your personal computers anytime, anywhere
- **Item Bank and Quiz Bank.** Questions are entered and organized in an Item Bank. The Item Bank serves as a resource for importing questions into the Quiz Bank. The Quiz can then be printed as a hardcopy for distribution to students
- **Security.** Marking data is embedded into the image of question for security and privacy. Images can be viewed by any available image viewer software but nobody knows that image contains hidden content. They looked just like any other images with no loss in image quality
- **Integration to Learning Management Systems.** SMART is a bridge between Paper-based Assessments and Learning Management Systems (LMS). Data and responses of students from the SMART system can be uploaded to the LMS for monitoring, profiling and tracking of students' learning over an extended period of time. Additional ELearning courses and resources can also be recommended based on the student's profile

1.2 SMART Licenses

When SMART is first installed, there is a fully functional 30-day Evaluation period. After the evaluation period, SMART MUST be activated to continue usage. Please contact support@picsalive.com for all enquires on activation. There is no need to reinstall SMART during the activation process.

2. Getting Started

2.1 Installation

Installation of SMART is simple and straightforward. If a previous version of SMART had been installed before, please *uninstall* the previous version first.

2.1.1 Installation Procedure

- a. Unzip and double click the setup file
- b. The installation wizard (Figure 2.1) is displayed. Click on the “Next” button
- c. Read the License Agreement. If you agree, click the “Next” button (Figure 2.2)
- d. Select Destination or Installation Folder. IMPORTANT: SMART needs Write access to the Destination folder (Figure 2.3) and the user must login into a Windows account with Administrator rights
- e. Click on the “Next” button to start the installation process (Figure 2.4)
- f. When the installation is completed, click on the “Finish” button (Figure 2.5)
- g. Double click on the SMART icon on the Desktop to launch the application

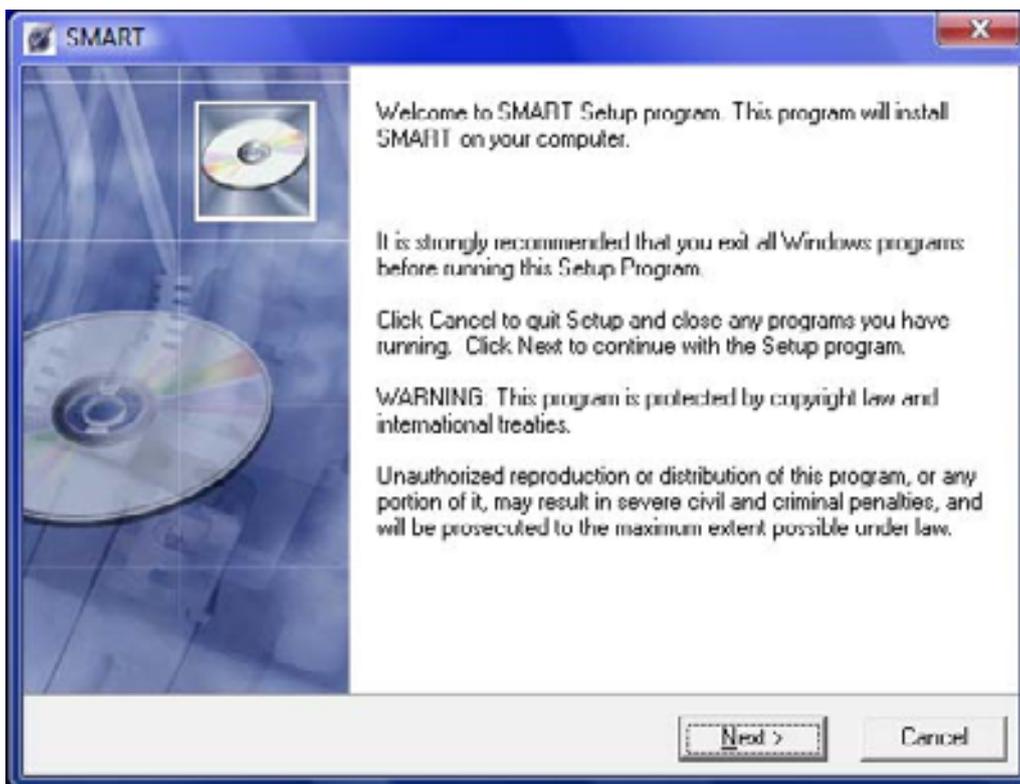


Figure 2.1: SMART Installation – Step 1

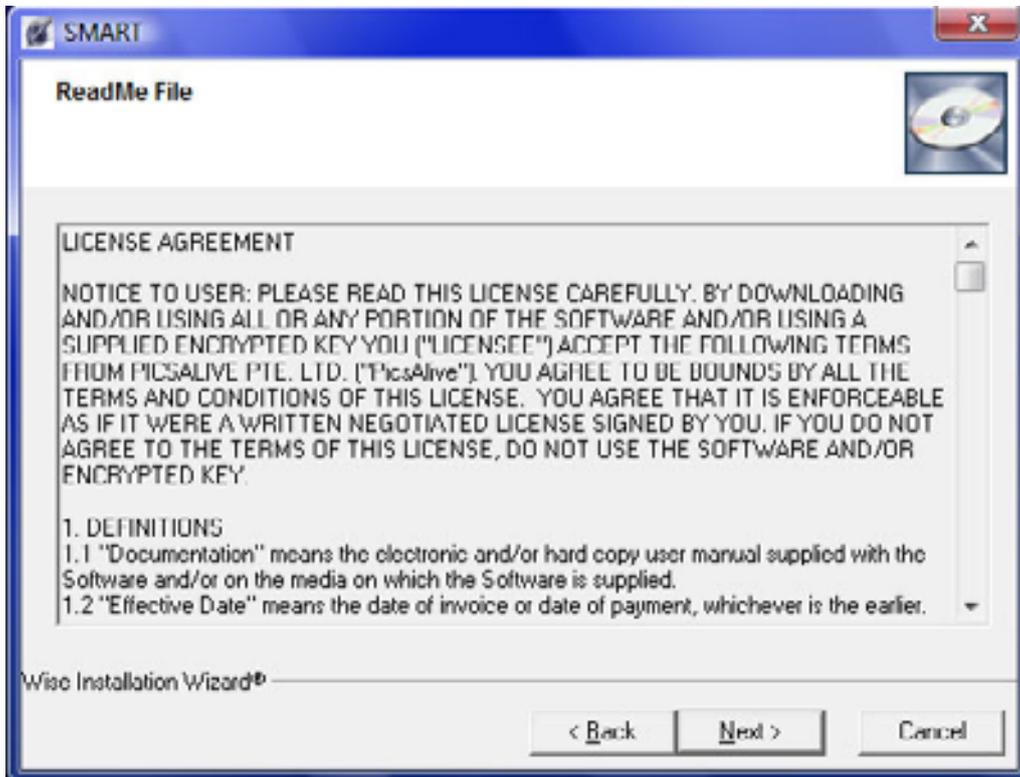


Figure 2.2: SMART Installation – Step 2 License Agreement

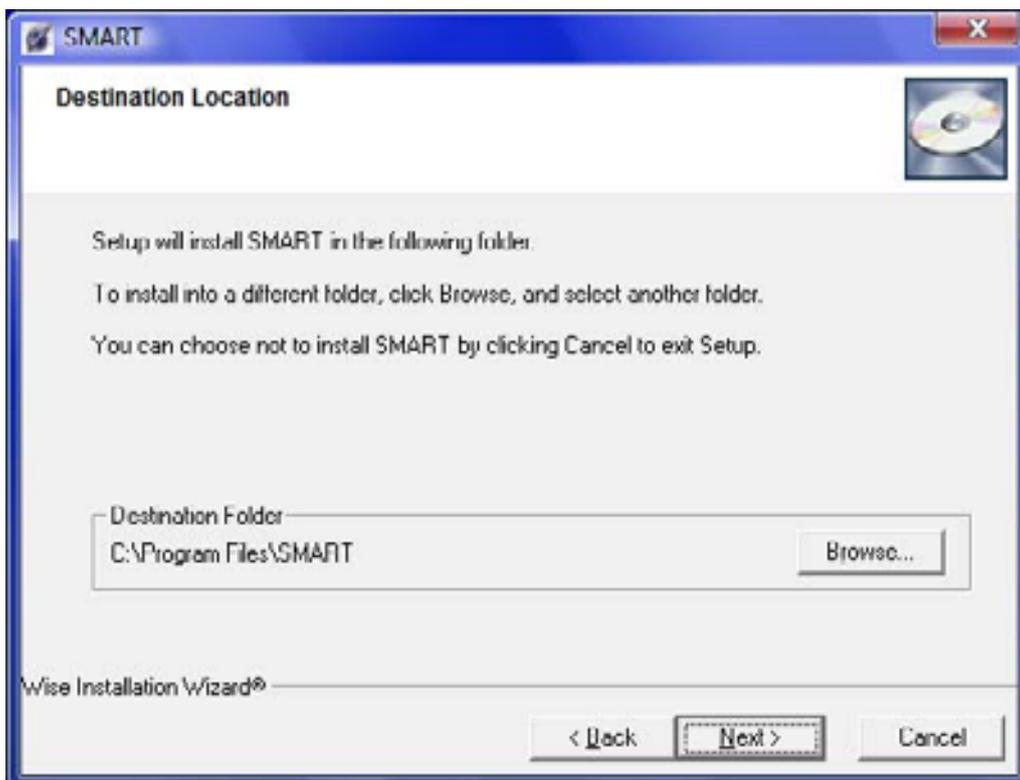


Figure 2.3: SMART Installation – Step 3 Select Installation Folder

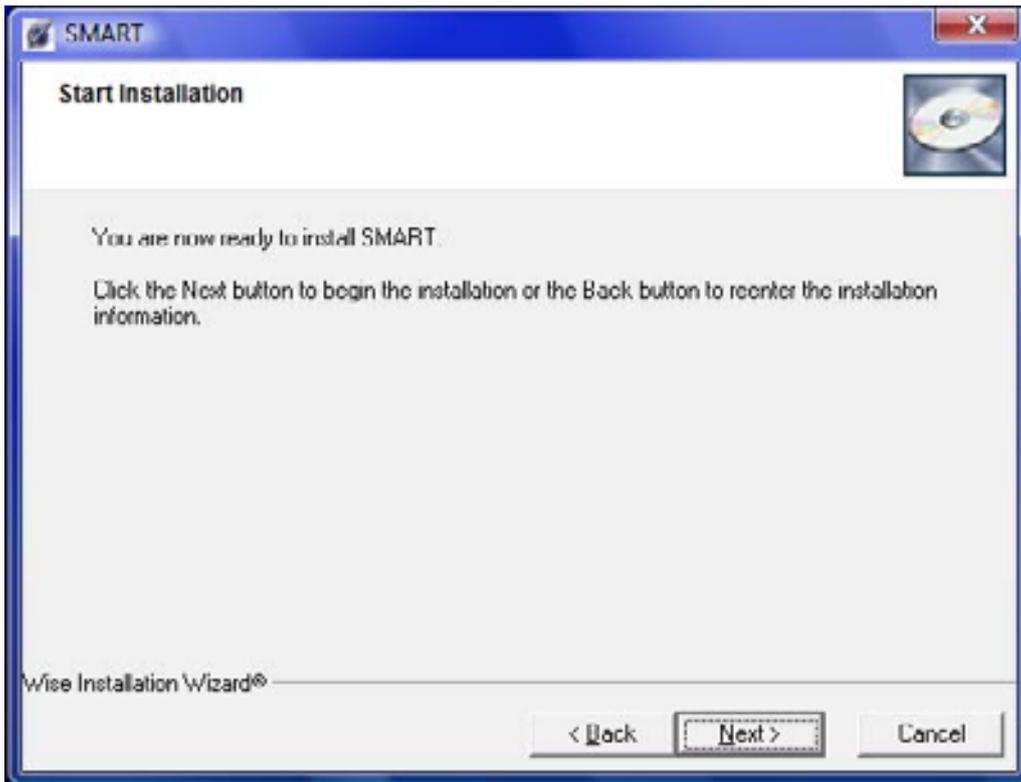


Figure 2.4: SMART Installation – Step 4 Confirmation to Install

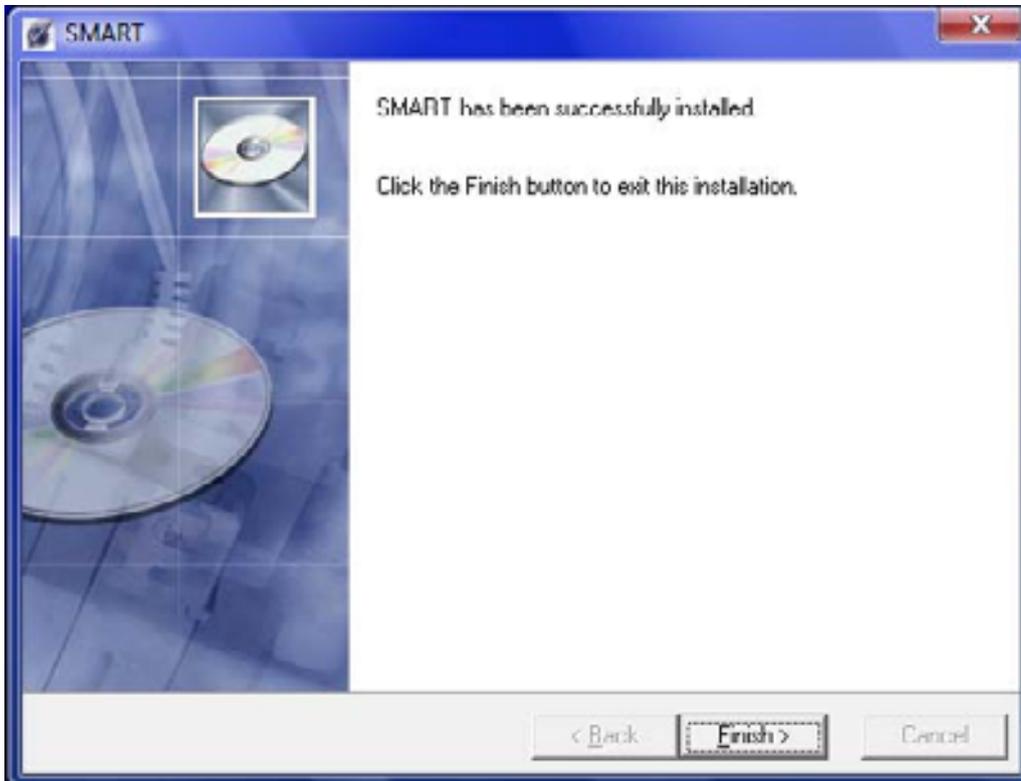


Figure 2.5: SMART Installation – Step 5 End of Installation

2.2 Activation

A license must be purchased before activating SMART. The registered name and email must be used in the activation of SMART. An email will be sent to the registered user after each activation.

2.2.1 SMART Activation

- a. Start up SMART by double clicking on the SMART icon.
- b. In the Help Menu, click on the “Activation...” button
- c. A license agreement dialog box is displayed. View the license agreement. And if you agree, click on the “I agree” button
- d. The activation dialog box (Figure 2.6) is displayed. Select and copy the 32-digit Installation Code (B6ED-3444-09CE-44FD-A64C-FB6F-E059-B6E6)
- e. Go to <http://www.picsalive.com/SMART/Activate> as shown in Figure 2.7
- f. Enter the registered name and email into the website
- g. Enter the 32-digit Installation Code (e.g. B6ED-3444-09CE-44FD-A64C-FB6F-E059-B6E6)
- h. Click on the Generate button
- i. If successful, the activation code be displayed and an email sent
- j. Copy the activation code in Figure 2.7 and paste it into the Activation Code field in Figure 2.6)
- k. Click on the ‘OK’ button in Figure 2.6

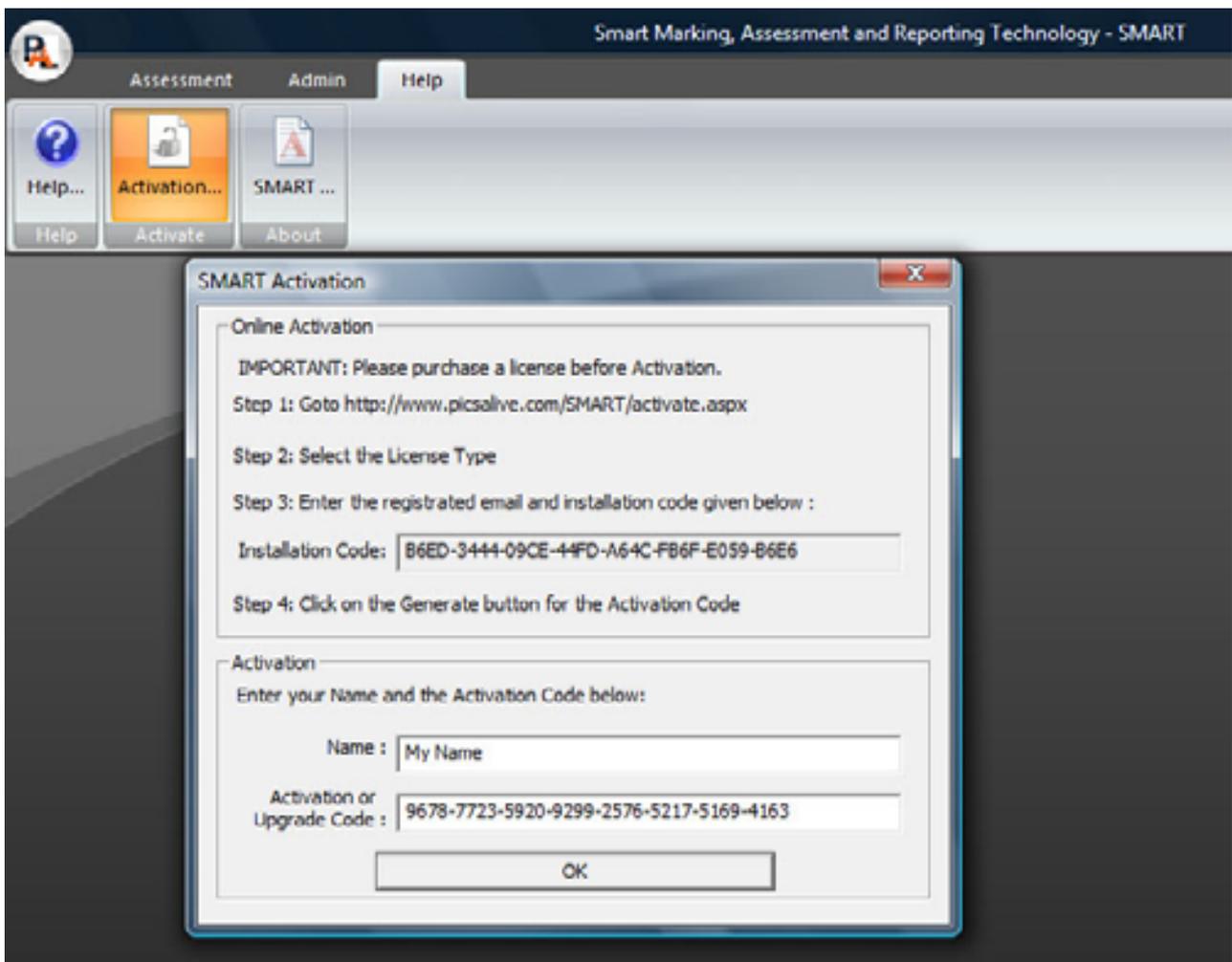


Figure 2.6: Activation of SMART

SMART ACTIVATION

Name * :

Registered Email * :

License Type :

Installation Code (e.g. B6ED-3444-19CE-44FD-A64C-FB6F-E059-B6E6) :

Activation Code :

Note: A license must first be purchased before the product can be activated. For more information, contact support@picsalive.com

* Mandatory Fields

Figure 2.7: Online Generation of Activation Code (www.picsalive.com/SMART/Activate)

2.3 UnInstallation

- Click on the Windows Start Button and select Control Panel
- Double click on the Add or Remove Programs Icon
- Select SMART from the list of Programs. Click on the Change/Remove button
- Click on the Yes button to confirm removal of SMART

2.4 System Requirements

- Pentium® III or 4 processor
- Microsoft® Windows® XP and above
- 512 MB RAM memory (2 GB Recommended)
- High Colour (16 bit) display colours setting (True Colour Recommended)
- 1024x768 display resolution

2.5 Customer Support

If you have any questions or experience any difficulties in SMART, please contact us at support@picsalive.com and we will respond promptly.

3. Item Bank

An Item Bank is a repository for tagging, organizing and categorizing questions. All questions in the SMART system must be first entered in the Item Bank. The Item Bank module (see Figure 3.1) is accessed by clicking on the Item Bank icon in the main SMART module. The Item Banks (according to subjects) are shown on the left of Figure 3.1 and the questions in the Item Banks are displayed on the right. To group and sort questions for viewing, simply drag the question headers to the top as shown in Figure 3.2.

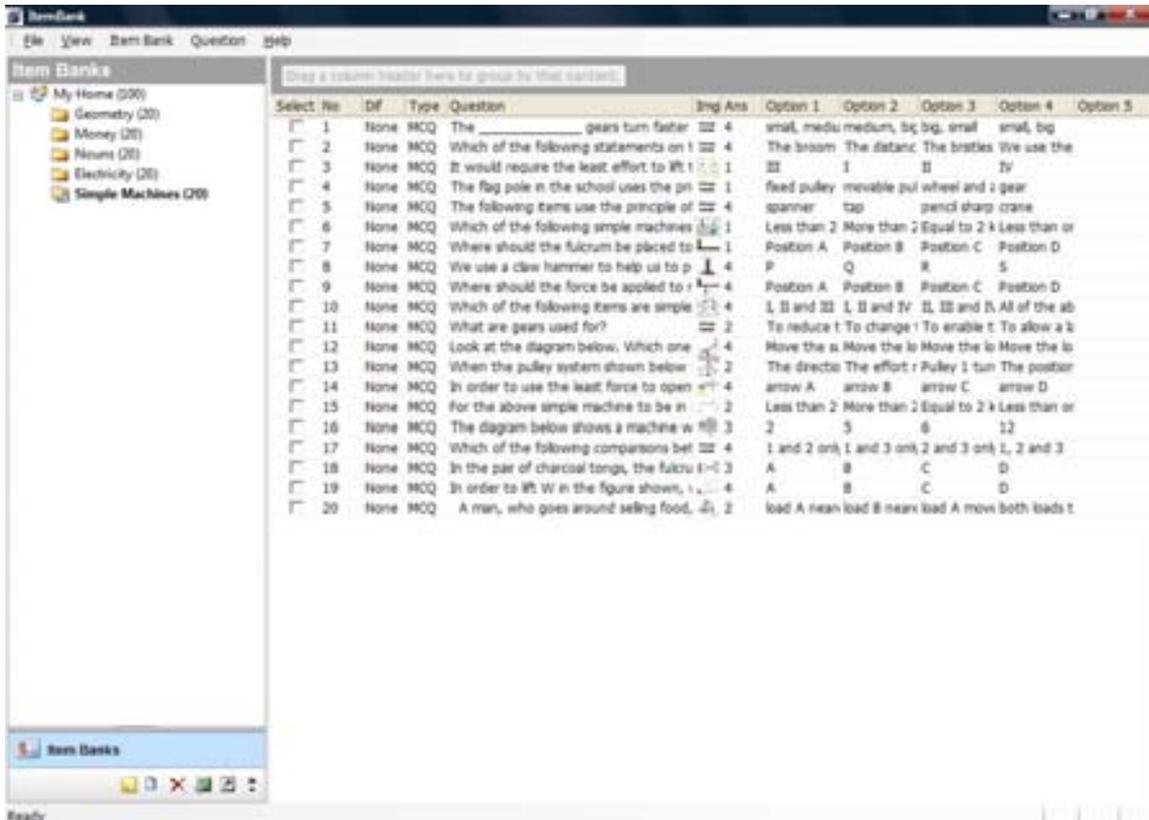


Figure 3.1: Main Item Bank Module

3.1 Item Bank Functions

Users can create, edit, delete, reorganize, import and export Item Banks. The Item Bank supports a hierarchical structure and questions can be organized according to Level, Subjects, Topics and Sub-Topics etc.

3.1.1 Creating New Item Banks

- Select the Parent Item Bank (on the left) to insert the new bank
- In the Item Bank Menu at the top, select “New ...”. Alternatively, click on the New Bank icon 
- Enter the name and description of the new Item Bank in the dialog box (Figure 3.3)
- Click on the “Create New Bank” button

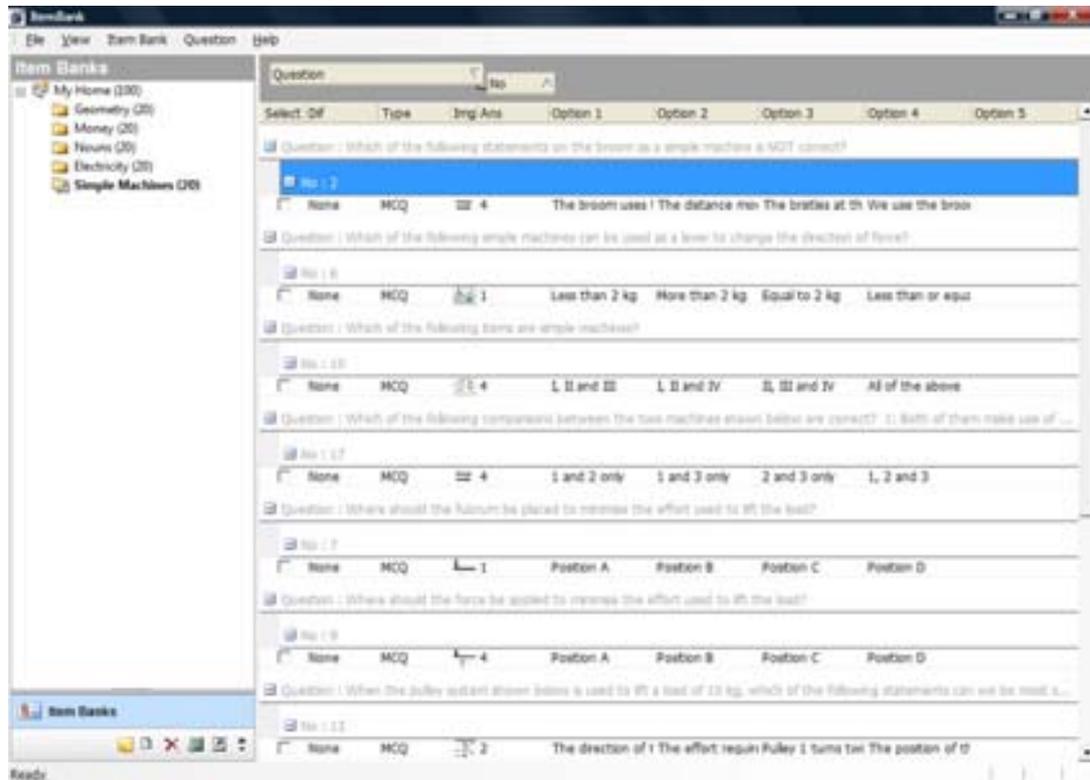


Figure 3.2: Grouping and Sorting of Questions

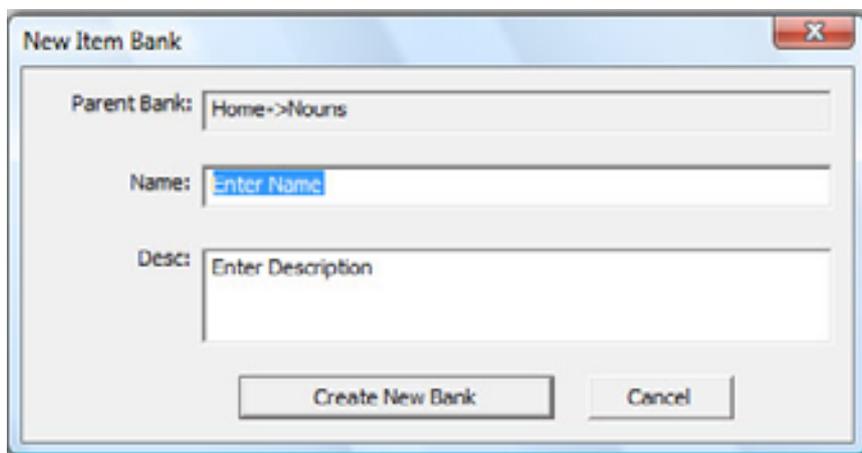


Figure 3.3: Creating a New Item Bank

3.1.2 Editing Item Banks

- Select the Item Bank to be edited
- In the Item Bank Menu at the top, select "Edit ...". Alternatively, click on the Edit bank icon 
- Enter the new details of the Item Bank in the dialog box (Figure 3.4)
- Click on the "Update Bank" button

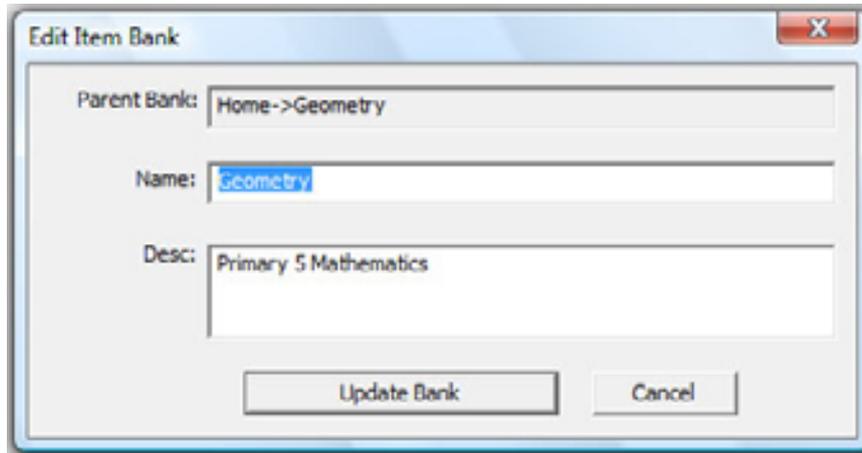


Figure 3.4: Editing an Item Bank

3.1.3 Deleting Item Banks

- Select the Item Bank to be deleted
- In the Item Bank Menu at the top, select "Delete". Alternatively, click on the Delete bank icon 
- A dialog confirming the deletion appears (Figure 3.5)
- Click on the "Yes" button. Note that the Item Bank and all its Sub-Banks are deleted

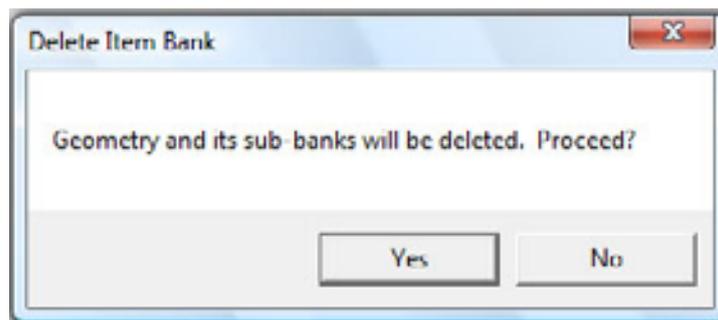


Figure 3.5: Deleting an Item Bank

3.1.4 Moving Item Banks

- Select the Item Bank to be moved with the left mouse click. Do not release mouse
- Move Item Bank to its new position and release the left mouse click
- The Item Bank and its Sub-Banks will be automatically moved

3.1.5 Importing Item Banks

- Select the Parent Item Bank to import
- In the Item Bank Menu at the top, select "Import ...". Alternatively, click on the Import bank icon 
- A dialog (Figure 3.6) appears. Click on the "Browse ..." button to select the file
- Click on the "OK" button. Note that the Item Bank and all its Sub-Banks are imported

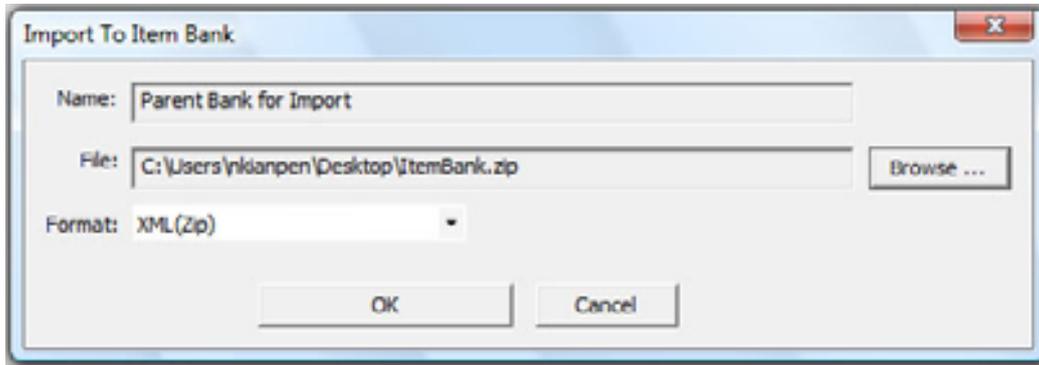


Figure 3.6: Importing an Item Bank

3.1.6 Exporting Item Bank

- Select the Item Bank to be exported
- In the Item Bank Menu at the top, select "Export ...". Alternatively, click on the Export bank icon 
- A dialog (Figure 3.7) appears. Click on the "Browse ..." button to select the output file
- Click on the "OK" button. Note that the Item Bank and all its Sub-Banks are exported

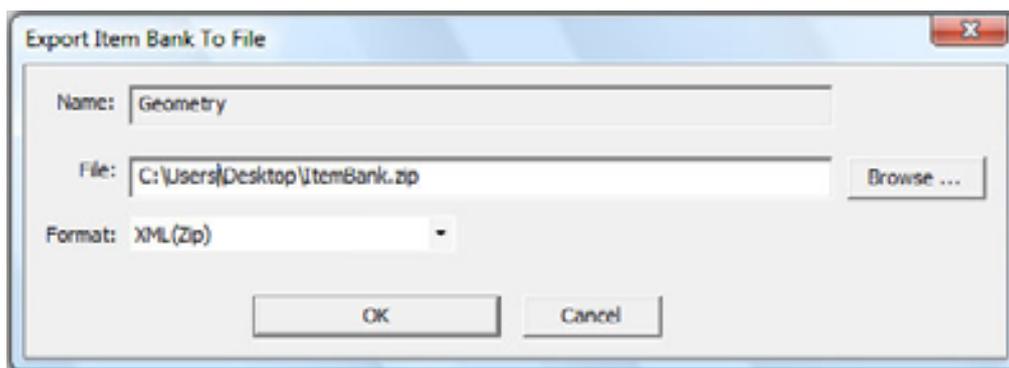


Figure 3.7: Exporting an Item Bank

3.2 Questions in Item Banks

Users can create, edit and delete questions in the Item Banks. There are three types of questions: MCQ (Multiple Choice - see Figure 3.8), MR (Multiple Response – see Figure 3.9) and FIB (Fill in the Blanks – see Figure 3.10). For each question, a worked solution can be entered.

3.2.1 Creating a New Question

- Select the Item Bank to place new question
- In the Question Menu at the top, select “New ...”
- A dialog (Figure 3.8) appears. Enter the question, question type (MCQ, MR and FIB) and difficulty level if applicable
- Click on the “Instructions ...” button and a dialog box appears. Enter the instructions and click on the “OK” button
- Import image if needed. Note that images can be imported from an image file using the “Image From File ...” button or paste from the Clipboard using the “Paste Image from Clipboard” button. Check on the “Diagram before question” box if the image is to be displayed before the question’s text. By default, the image is placed after the question.
- Enter the number of Options. Currently a maximum of five options are supported for MCQ and MR. For FIB questions, users can specify the number of blank lines to be printed
- Click on the “Create and Exit” button

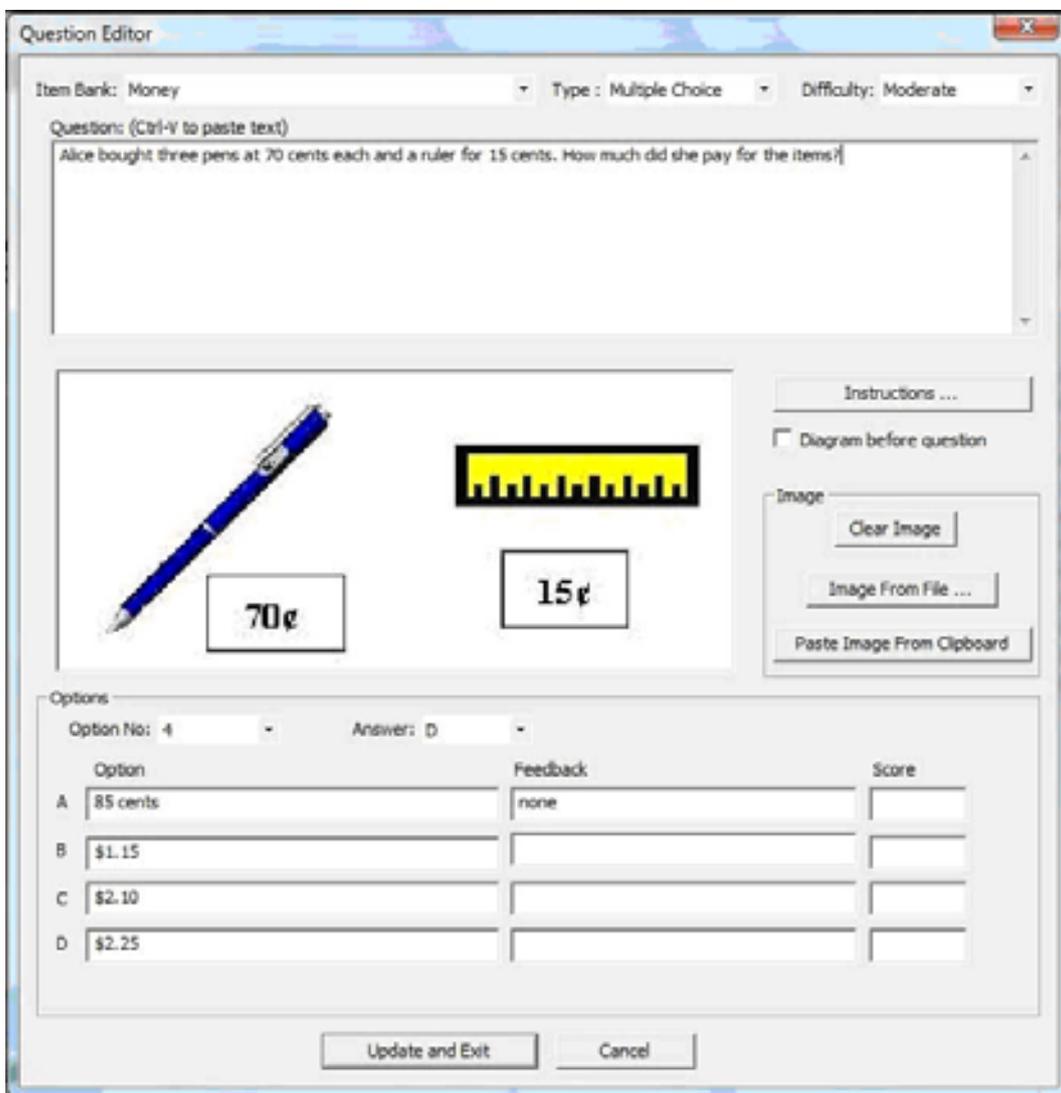


Figure 3.8: Multiple Choice Questions

3.2.2 Editing Questions

- a. Select the Item Bank and the question to be edited by clicking the Select column beside the question. Note that only one question can be edited at any one time
- b. In the Question Menu at the top, select "Edit ...". Alternatively, double click on the question to enter the editing module
- c. A question editor dialog (Figure 3.8) appears.
- d. Click on the "Update and Exit" button

3.2.3 Copying and Moving Questions

- a. Select the Item Bank and the question to be copied or moved by clicking the Select column beside the question. To select all questions, click on the menu Question->Select All. Conversely, use Question->UnSelect All to remove all selection
- b. In the Question Menu at the top, select "Copy or Move ..."
- c. A dialog (Figure 3.11) is displayed. Select the destination directory of the questions from the tree list
- d. Select "Copy" or "Move" radical button
- e. Click on the "OK" button

3.2.4 Deleting Questions

- a. Select the Item Bank and the question to be deleted by clicking the Select column beside the question. To delete all questions in the Bank, click on the menu Question->Select All. Conversely, use Question->UnSelect All to remove all selection
- b. In the Question Menu at the top, select "Delete"
- c. A dialog confirming the deletion is displayed
- d. Click the "Yes" button

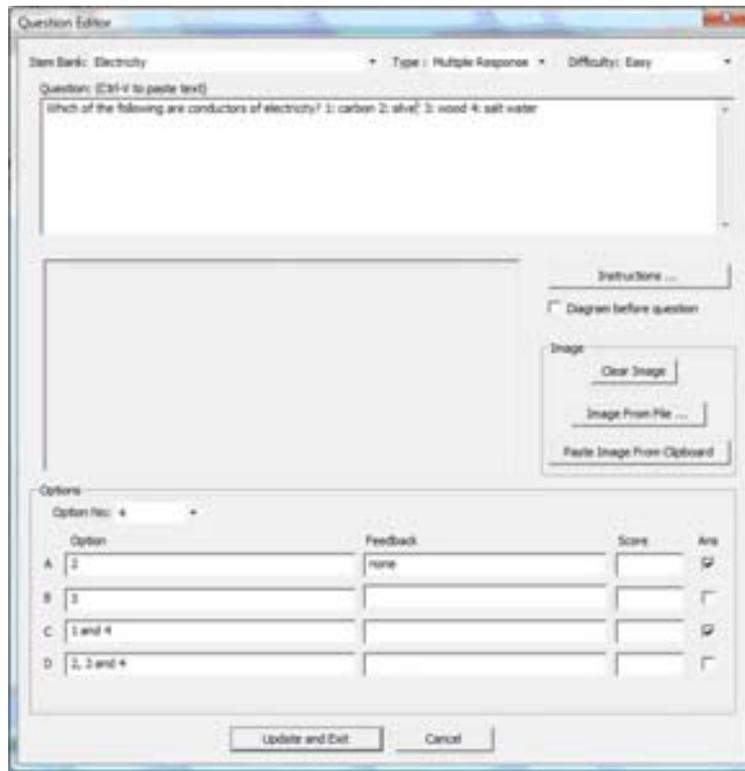


Figure 3.9: Multiple Response Question

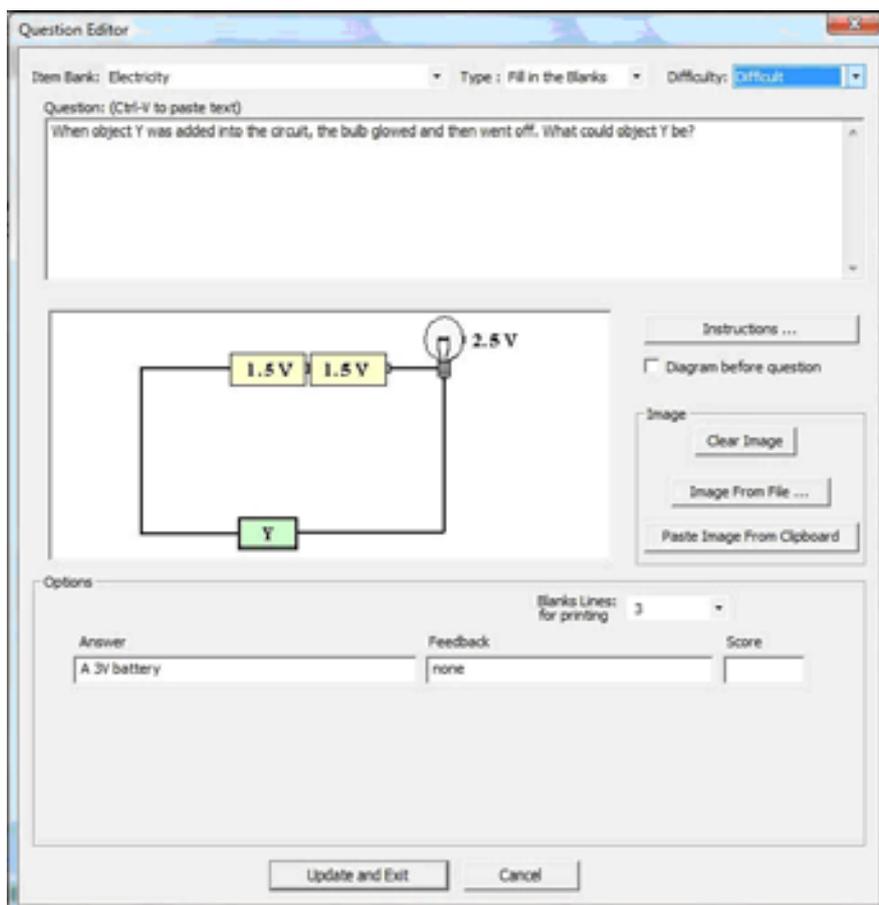


Figure 3.10: Fill In the Blanks Question

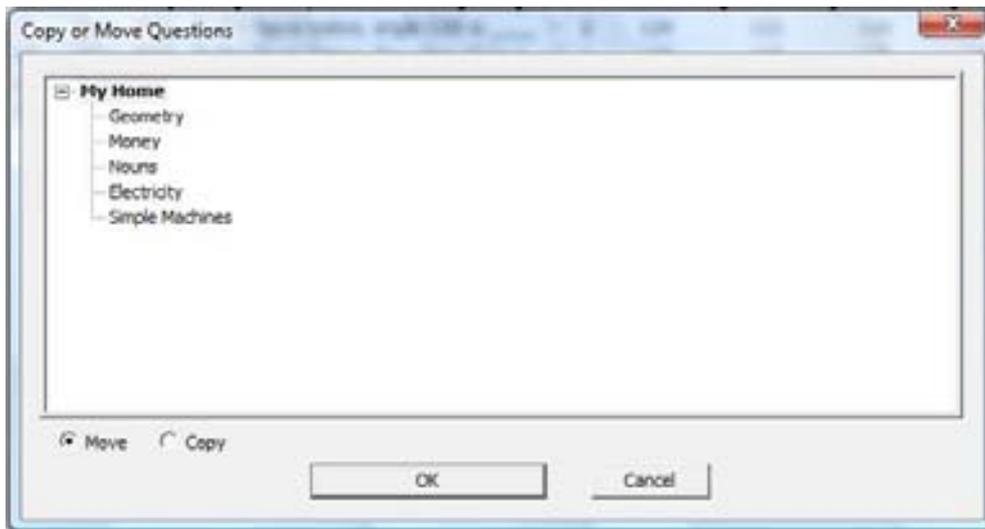


Figure 3.11: Copy or Move Question in Item Bank

4. Quiz Bank

The Quiz Bank imports questions from the Item Bank and exports the question as an Adobe PDF file for printing. Figure 4.1 shows the main module of the Quiz Bank. In Figure 4.1, the left hand side of Figure 4.1 displays the quiz folders or directories and the right-hand side shows the quizzes and the number of questions in each quiz.

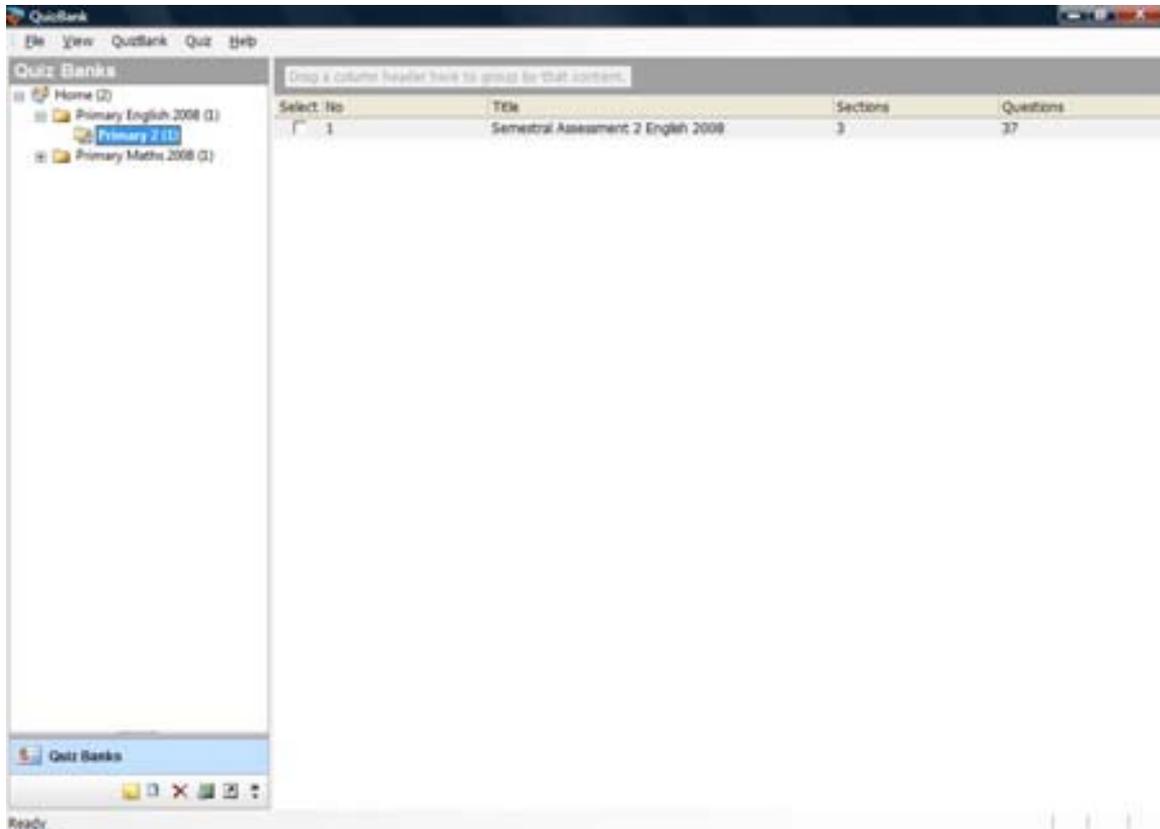


Figure 4.1: Main Quiz Bank Module

4.1 Quiz Bank Functions

If you have any questions or experience any difficulties in SMART, please contact us at support@picsalive.com and we will respond promptly

4.1.1 Creating New Quiz Banks

- Select the Parent Quiz Bank (on the left) to insert the new bank
- In the Quiz Bank Menu at the top, select “New ...”. Alternatively, click on the New Bank icon 
- Enter the name and description of the new Quiz Bank in the dialog box (Figure 4.2)
- Click on the “Create New Bank” button

4.1.2 Editing Quiz Banks

- Select the Quiz Bank to be edited (on the left)
- In the Quiz Bank Menu at the top, select “Edit ...”. Alternatively, click on the Edit bank icon 
- Enter the new details of the Quiz Bank in the dialog box (Figure 4.2)
- Click on the “Update Bank” button

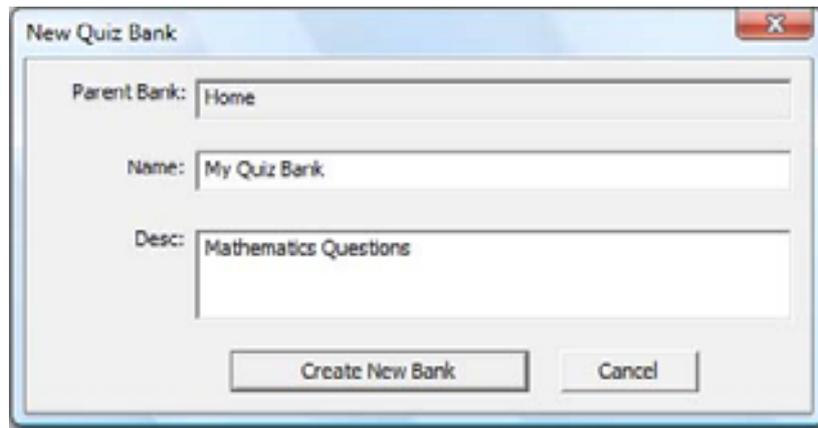


Figure 4.2: Creating a New Quiz Bank

4.1.3 Moving Quiz Banks

- a. Select the Quiz Bank to be moved with the left mouse click. Do not release mouse
- b. Move Quiz Bank to its new position and release the left mouse click
- c. The Quiz Bank and its Sub-Banks will be automatically moved

4.1.4 Deleting Quiz Banks

- a. Select the Quiz Bank to be deleted
- b. In the Quiz Bank Menu at the top, select "Delete". Alternatively, click on the Delete bank icon 
- c. A dialog confirming the deletion appears
- d. Click on the "Yes" button. Note that the Quiz Bank and all its Sub-Banks are deleted

4.1.5 Importing Quiz Banks

- a. Select the Parent Quiz Bank to import
- b. In the Quiz Bank Menu at the top, select "Import ...". Alternatively, click on the Import bank icon 
- c. A dialog (Figure 4.3) appears. Click on the "Browse ..." button to select the file
- d. Click on the "OK" button. Note that the Quiz Bank and all its Sub-Banks are imported



Figure 4.3: Importing a Quiz Bank

4.1.6 Exporting Quiz Bank

- a. Select the Quiz Bank to be exported
- b. In the Quiz Bank Menu at the top, select “Export ...”. Alternatively, click on the Export bank icon 
- c. A dialog (Figure 4.4) appears. Click on the “Browse ...” button to select the output file
- d. Click on the “OK” button. Note that the Quiz Bank and all its Sub-Banks are exported

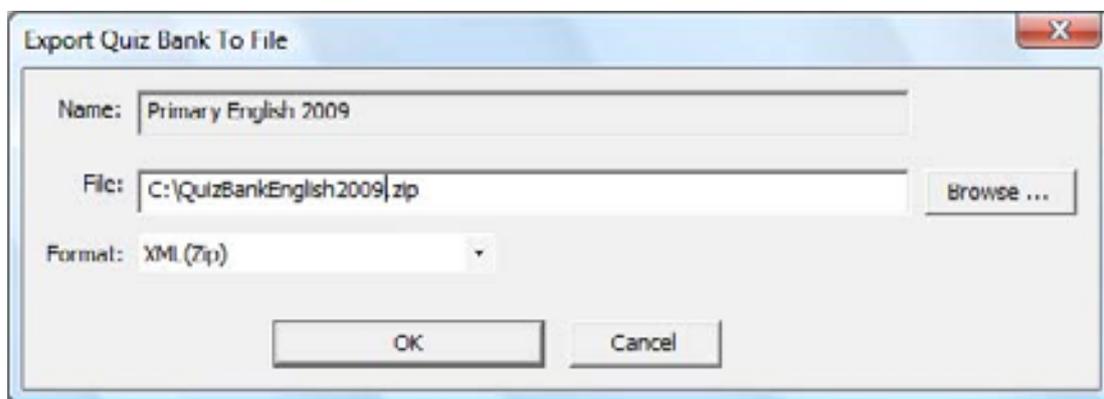


Figure 4.4: Importing a Quiz Bank

4.2 Quiz Functions

4.2.1 Create New Quizzes

- a. Select the Quiz Bank to place new quiz
- b. In the Quiz Menu at the top, select “New ...”
- c. A dialog (Figure 4.5) appears. Enter the Quiz title and instructions (if any)
- d. Click on the “Section” tab at the top (see Figure 4.6).
- e. To add a new Section, click on the “Add New Section ...” button. Enter Section’s title and description (see Figure 4.7). Click on the “Ok” button
- f. To edit a Section, select the Section to be edited with left mouse click. Click on the “Edit Section ...” button (Figure 4.7). Enter Section’s title and description. Click on the “Ok” button
- g. To delete a Section, click on the “Delete Section” button
- h. Click on the “Question” Tab at the top. All the questions in the Quiz are displayed (Figure 4.8).

4.2.1.1 Adding Questions to Quiz

- i. To add a question to the Quiz, click on the “Item Bank ...” button (Figure 4.9)
- j. Select the questions to be added. Click on the “View” button to see questions. For multiple selection, click on the questions with the Ctrl button depressed or the “Select All” button to choose all questions
- k. Click on the “Add and Exit” button to confirm question selection

4.2.1.2 Editing Quiz Questions

- l. To edit a question in the Quiz, select the question and click on the “Edit ...” button (Figure 4.8)
- m. Make the required changes to the questions in the Question Editor (Figure 4.10)
- n. Click on the “Update and Exit” button

4.2.1.3 Deleting Quiz Questions

- o. To delete a question in the Quiz, select the question (Figure 4.8)
- p. Click on the “Delete” button

4.2.1.4 Reordering Quiz Questions

- o. Select the question (Figure 4.8)
- p. Click on “Up” or “Down” button to decrease/increase the order of the questions respectively
- q. Click on the “Create” button to create new Quiz

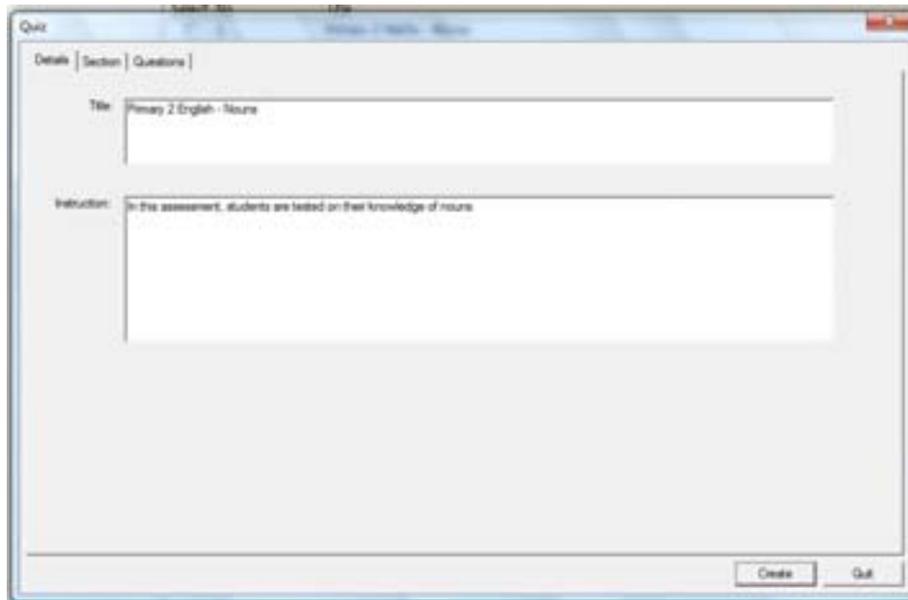


Figure 4.5: Creating a New Quiz

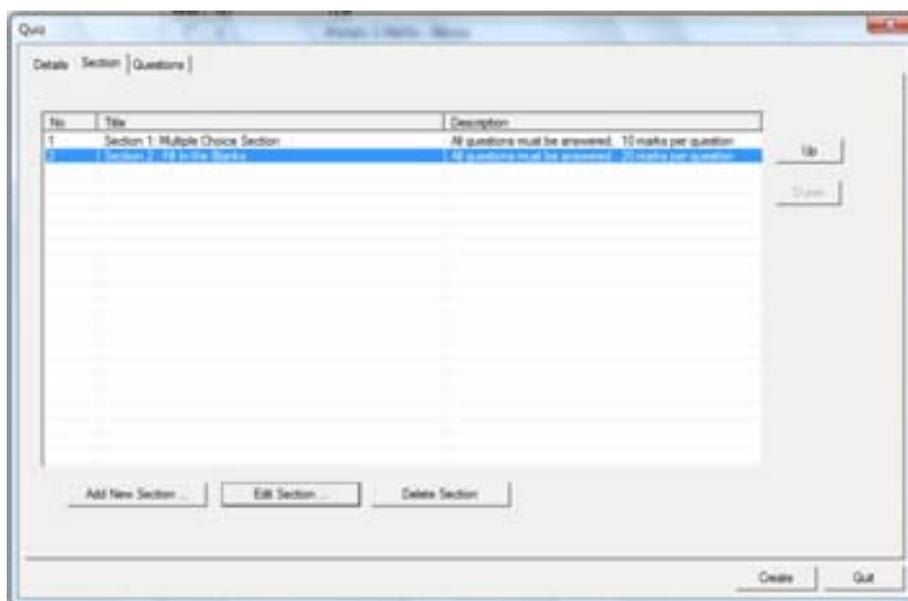


Figure 4.6: Quiz Section Module

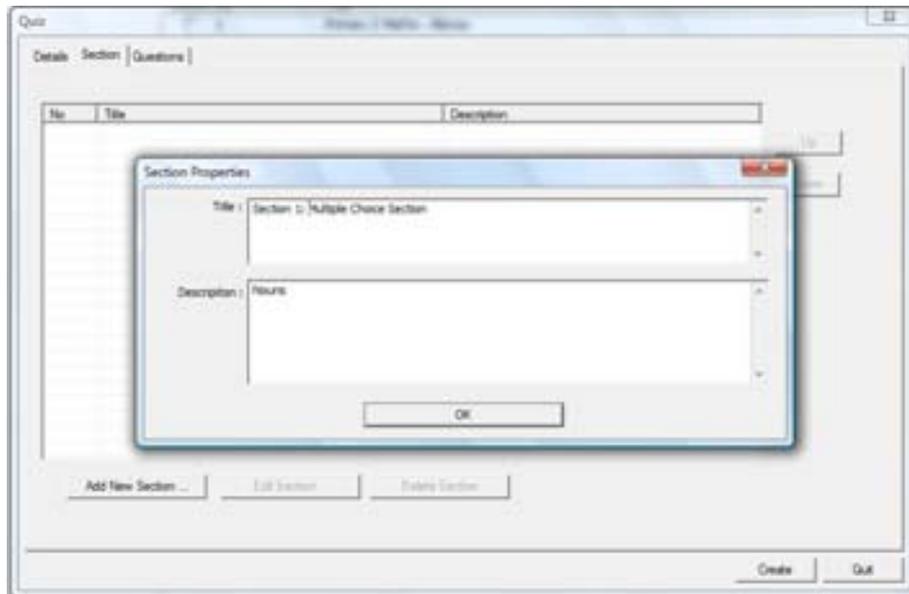


Figure 4.7: Quiz Section Parameters

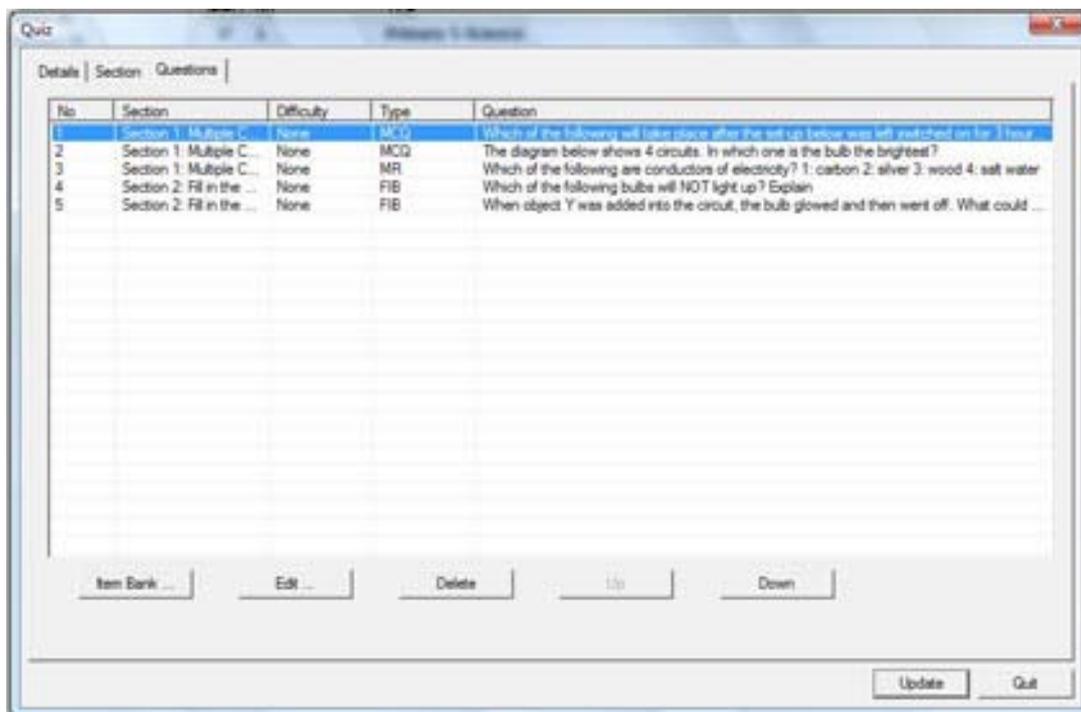


Figure 4.8: Quiz Questions Module

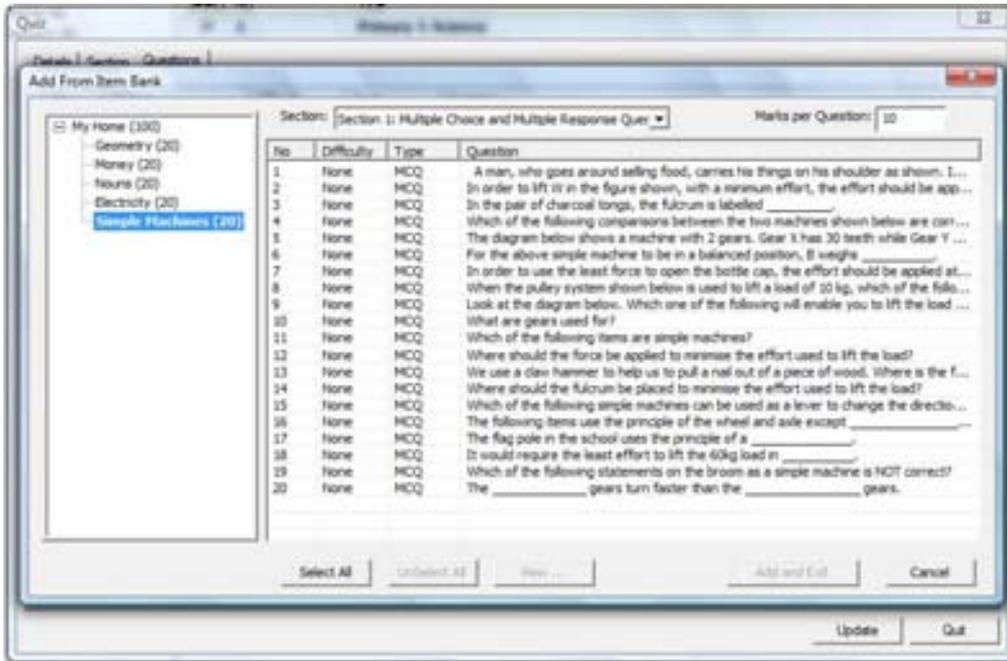


Figure 4.9: Add Questions to Quiz From Item Banks

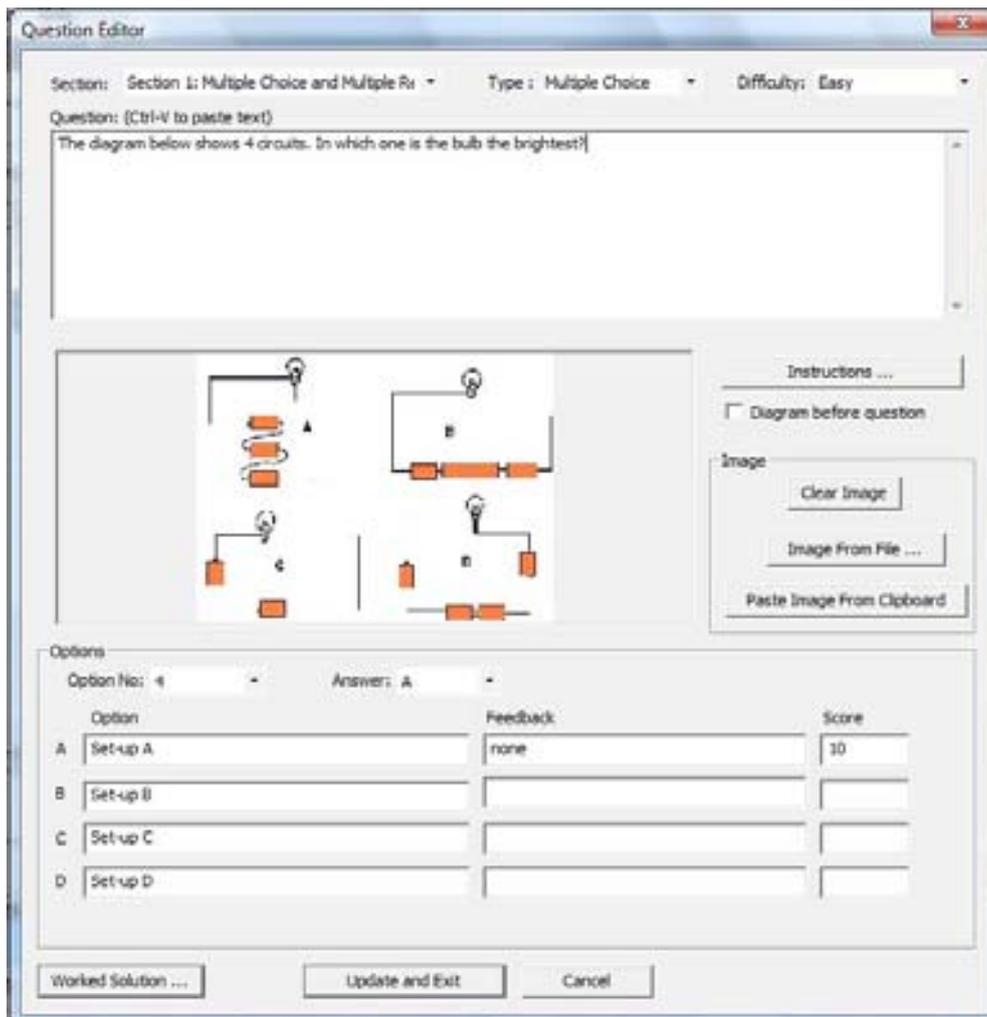


Figure 4.10: Editing Quiz Questions

4.2.2 Editing Quizzes

- a. Select the Quiz Bank and choose the Quiz to be edited (Figure 4.1) by clicking on the Select column beside the Quiz
- b. In the Quiz Menu at the top, select “Edit ...”
- c. The “Question” Tab is displayed (Figure 4.8). Click on the “Item Bank ...” button to add questions, “Edit ...” button to edit the questions, “Delete” button to remove questions and “Up/Down” button to reorder the questions in the Quiz
- d. Click on the “Section” Tab to edit the Quiz Sections (Figure 4.6). Click on the “Add Section ...” button to insert Sections, “Edit Section ...” button to amend Section parameters and “Delete Section” to remove the Section in the Quiz
- e. Click on the “Details” Tab to edit Quiz title and instructions (Figure 4.5)
- f. Click on the “Update” button to save changes

4.2.3 Duplicating Quizzes

- a. Select the Quiz Bank and choose the Quiz to be duplicated (Figure 4.1) by clicking on the Select column beside the Quiz
- b. In the Quiz Menu at the top, select “Duplicate”

4.2.4 Deleting Quizzes

- a. Select the Quiz Bank and choose the Quiz to be deleted (Figure 4.1) by clicking on the Select column beside the Quiz
- b. In the Quiz Menu at the top, select “Delete”
- c. A dialog confirming the deletion is displayed
- d. Click the “Yes” button

4.3 Printing Quizzes

Quizzes can be printed to an Adobe PDF files in three formats: “Question with Barcodes”, “Answer Form” and “Questions without Barcodes”. In the “Question with Barcodes” format, barcodes for question identification, student registration number, marks, answer, page number and assessment identifications are automatically inserted into the paper (see Appendix A). Note that the barcodes for question answer is randomized to prevent students from memorizing the barcodes. In the “Answer Form” format, the questions are not printed and students can only shade the answers (see Appendix B). In the “Questions without Barcodes” format, all barcodes are removed.

4.3.1 Assessment Paper with Barcodes

- a. Select the Quiz Bank and choose the Quiz for printing (Figure 4.1) by clicking on the Select column beside the Quiz
- b. In the Quiz Menu at the top, select “Print ...”. The main print module is displayed (Figure 4.11).
- c. Click on the “Questions with barcodes” button
- d. Select the output Adobe PDF filename using the “Browse ...” button if necessary
- e. Click on the “Print to PDF File” button

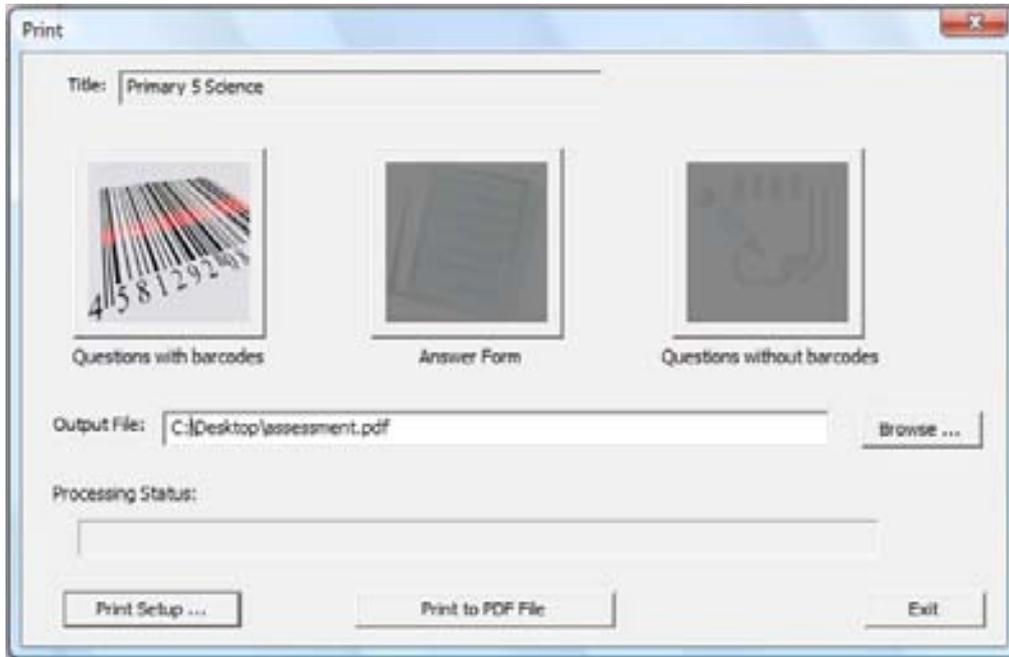


Figure 4.11: Print Assessment Paper with Barcodes

4.3.2 Assessment Paper in Answer Form Format

- Select the Quiz Bank and choose the Quiz for printing (Figure 4.1) by clicking on the Select column beside the Quiz
- In the Quiz Menu at the top, select "Print ...". The main print module is displayed (Figure 4.12).
- Click on the "Answer Form" button
- Select the output Adobe PDF filename using the "Browse ..." button if necessary
- Click on the "Print to PDF File" button

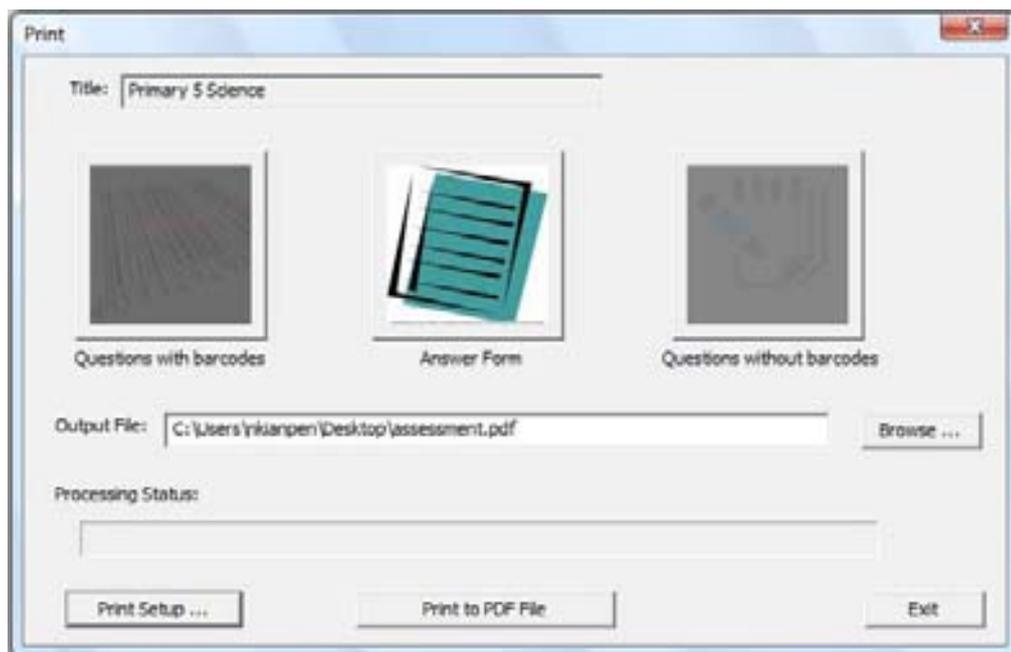


Figure 4.12: Print Answer Form

4.3.3 Assessment Paper without Barcodes

- Select the Quiz Bank and choose the Quiz for printing (Figure 4.1) by clicking on the Select column beside the Quiz
- In the Quiz Menu at the top, select "Print ...". The main print module is displayed (Figure 4.13).
- Click on the "Questions without barcodes" button
- Select the output Adobe PDF filename using the "Browse ..." button if necessary
- Click on the "Print to PDF File" button

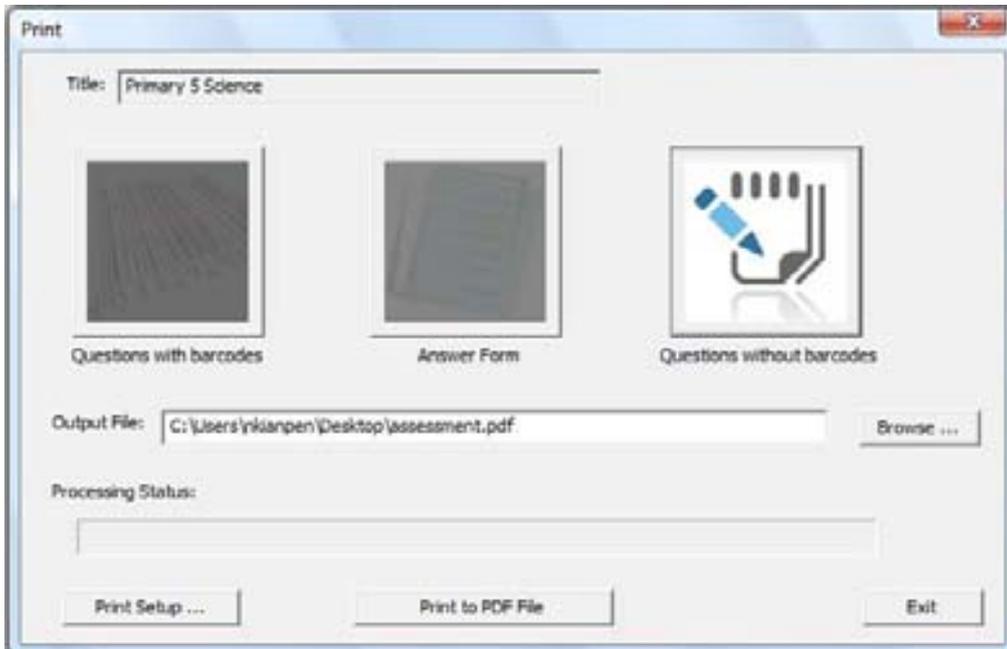


Figure 4.13: Print Assessment Paper without Barcodes

4.3.4 Print Setup

- Select the Quiz Bank and choose the Quiz for printing (Figure 4.1) by clicking on the Select column beside the Quiz
- In the Quiz Menu at the top, select "Print ...". The main print module is displayed (Figure 4.11).
- Click on the "Print Setup" button and Figure 4.14 is displayed
- Set the Print Header either manually or by using an image.
- For manual setup of Print Header, select the "Manual Config" radial button and click on "Details". Figure 4.15 shows the manual setup parameters. User can edit the parameters and click on the Select box to display the fields. Text alignment (Left, Centre or Right) can also be selected. To save the configurations as a default, click on the "Set as Default" checkbox at the bottom
- For setup of Print Header by image, select the "Image" radial button and click on "Details". Figure 4.16 shows the image setup dialog box. Users can paste an image from the clipboard or import an image file using the "Paste Image From Clipboard" button.
- Check the "Users to shade Identification Numbers" box to allow students to shade their registration number on the first page of the assessment paper. Check on the "Print on Every Page" box to allow students to shade their registration number on every page of the paper
- Set the paper size (A4 or Letter)
- To display text at the end of the paper, click on the "Show Text" box (Figure 4.14). Enter the text to be displayed at the end of the paper
- Click on the "OK" button

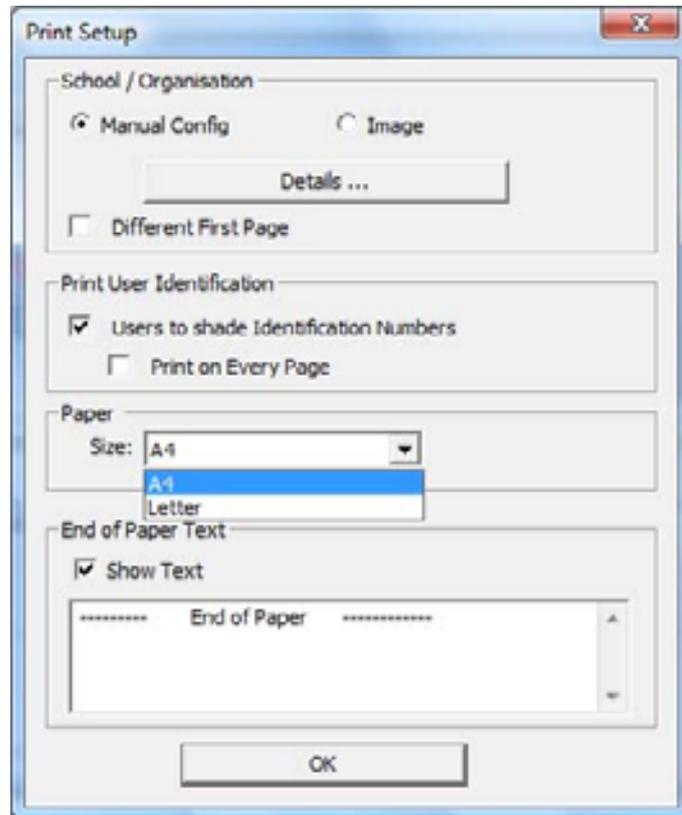


Figure 4.14: Print Setup Module

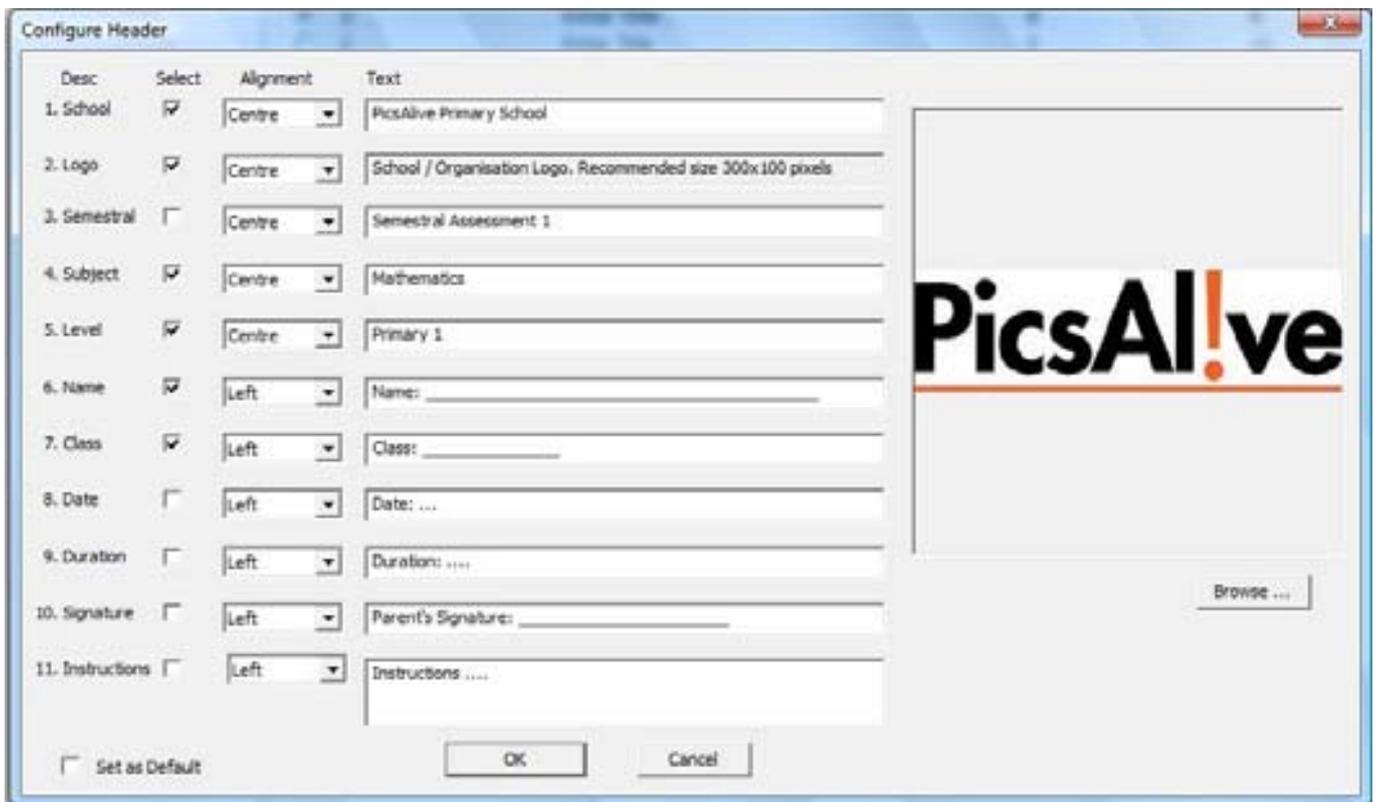


Figure 4.15: Manual Setup of Print Header

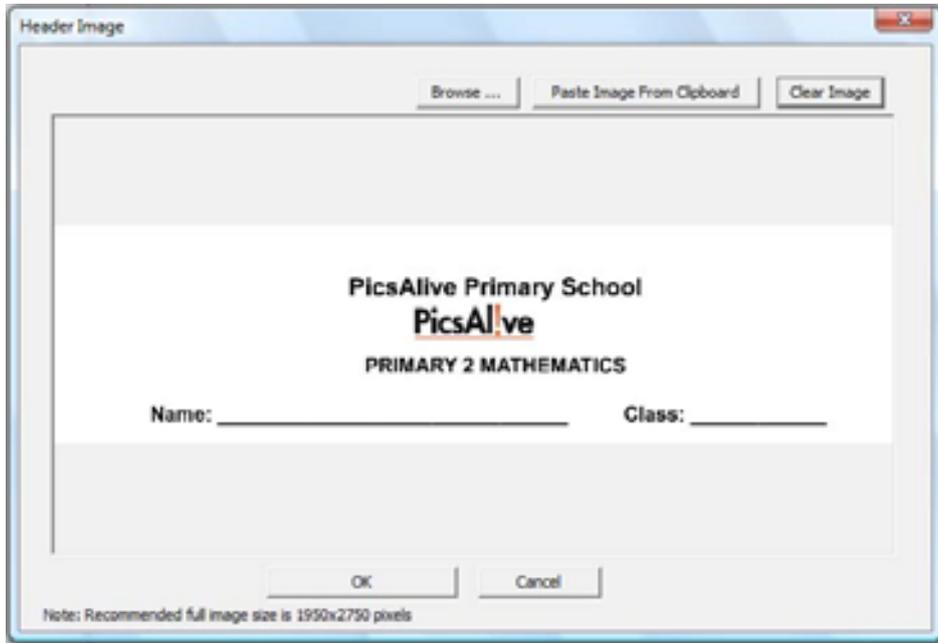


Figure 4.16: Load Print Header as an Image

5. Assessment Module

The Assessment module combines the Quiz questions with the students and classes. This module contains the scanner module and interprets the barcodes for the automatic marking of the assessment paper. Users can also manually mark non MCQ/MR questions and generate the report. The Marking and Report modules are described in the subsequent Chapters.

Figure 5.1 shows the main dialog box of the Assessment Module. The left hand side of Figure 5.1 manages the directories or folders to organize the assessments. Users can create, delete or rename directories with the respective buttons. The right side of Figure 5.1 lists the details of the assessments taken and the percentage of questions marked. For example, the figure shows that 60% of the questions in the assessment are automatically marked by the SMART system. The icons at the bottom of Figure 5.1 shows the other modules linked to the Assessment module for the convenience of the users.

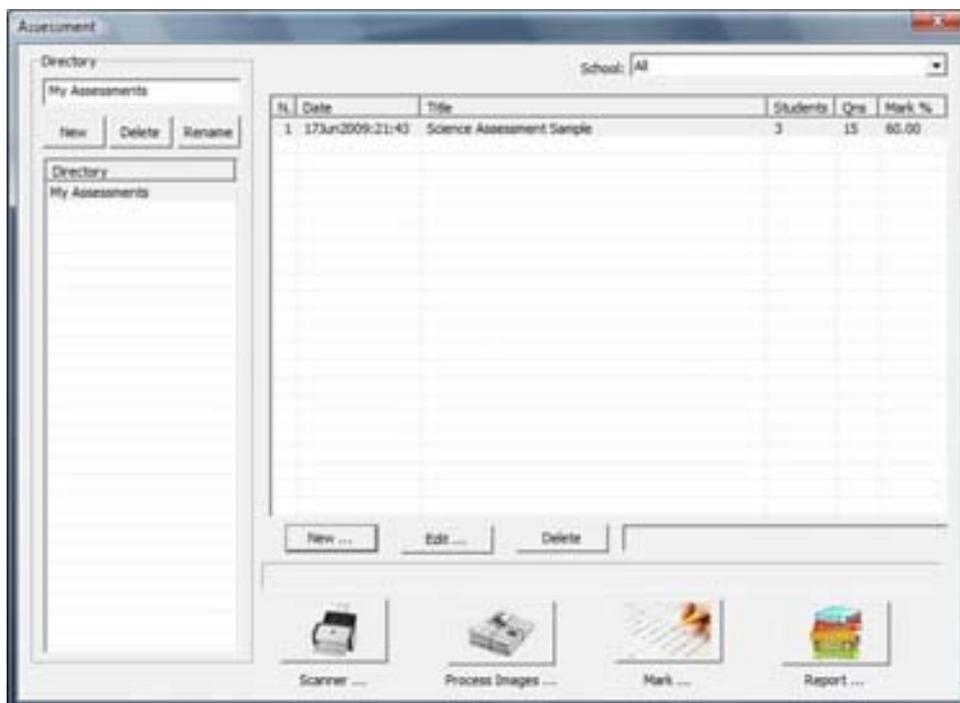


Figure 5.1: Main Assessment Module

5.1 Assessment Functions

5.1.1 Creating New Assessments

- Click on the “New ...” button in the Assessment Module (Figure 5.1)
- A dialog box (Figure 5.2) is displayed
- Select and enter the details of the assessment
- Click on the “Create” button

5.1.2 Editing Assessments

- Click on the “Edit ...” button in the Assessment Module (Figure 5.1)
- A dialog box (Figure 5.3) is displayed
- Change the details of the assessment if needed
- Select the student and view the scanned paper by clicking on the “View Paper” button if necessary
- Select the student and clear the scanned images by clicking on the “Clear Data” button if needed
- Click on the “Load Image” button to rescan the student’s paper and a dialog box (Figure 5.7) is displayed. Select the directory containing the images of the student’s paper. Click the “OK” button
- Click on the “Edit Questions ...” button to manually segment the images of the student. Please see the section on “Manually Editing Student’s Results” in the Chapter more details
- Click on the “Exit” button

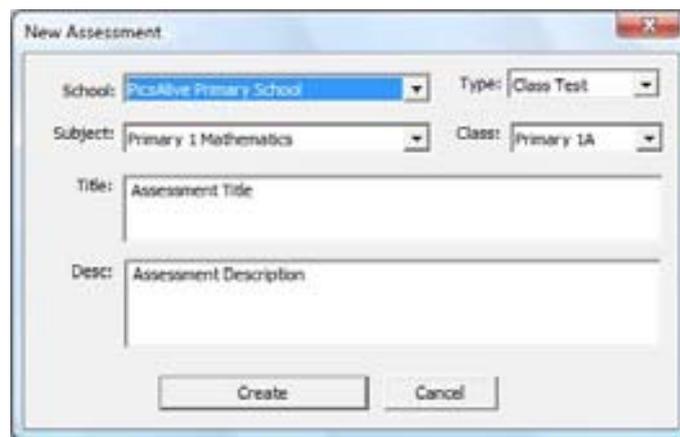
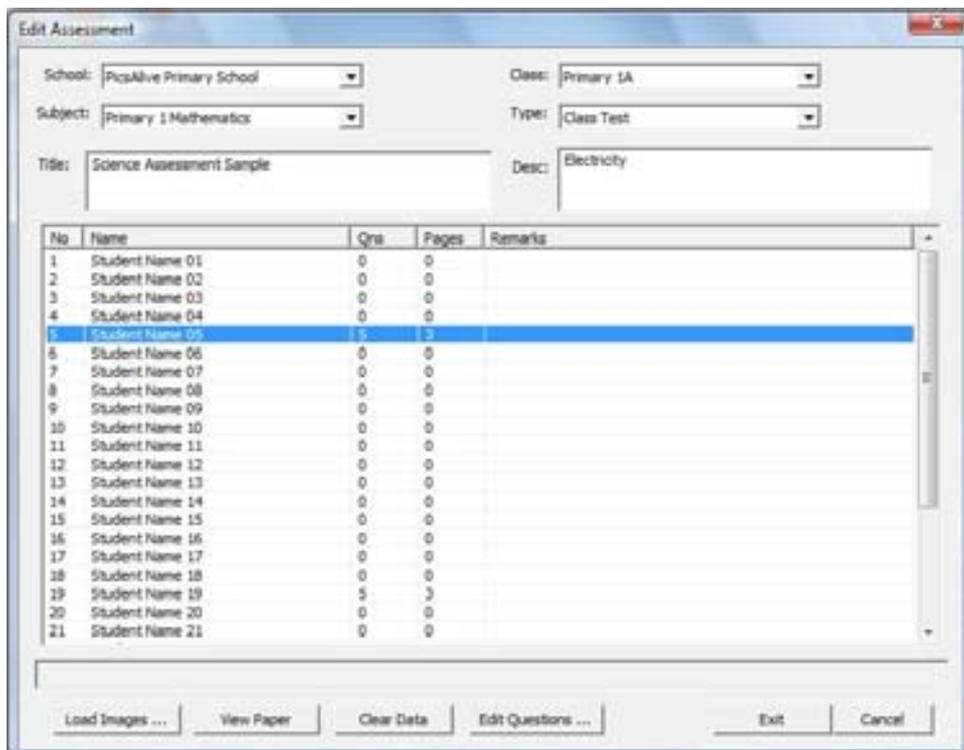


Figure 5.2: Creating a New Assessment



5.1.3 Deleting Assessments

- a. Click on the “Delete” button in the Assessment Module (Figure 5.1)
- b. The assessment will be automatically deleted

5.2 Scanning Assessment Papers

It is important to note that image resolution must be at least 150x150 dpi (dots per inch). The recommended image scanning resolution is 300x300 dpi. To minimize file sizes and speed up the scanning process, the image mode should be set to Black and White. SMART supports nearly all scanners and imaging devices through the TWAIN (Technology Without An Interesting Name) standard. TWAIN is a standard software protocol and applications programming interface (API) that regulates communication between software applications and imaging devices such as scanners.

5.2.1 Scanning Procedure

- a. Click on the “Scanner ...” button  in the Assessment Module (Figure 5.1)
- b. A dialog box (Figure 5.4) is displayed
- c. Click on the “Select Scanner” button to choose the scanner (Figure 5.5) and click on the “Select” button
- d. Select the Directory, file format and the check box to overwrite image files. It is recommended that users use the default settings shown in Figure 5.4. Note that the scanned images will be named sequentially (e.g. image0001.tif, image0002.tif, image0003.tif and so on)
- e. Click on the “Acquire Image ...” button and the scanner parameters dialog box is displayed (Figure 5.6(a)). It is recommended that the scanning resolution be set to 300x300 dpi and the image mode is set to “Black and White”. For double sided scanning, select the “ADF (Duplex)” option (see Figure 5.6(b)) from the Scan Type option in Figure 5.6(a).
- f. Click on the “Scan” button in Figure 5.6 to start scanning. After scanning, click on the “Close” button
- g. Click on the “Exit” button in Figure 5.4

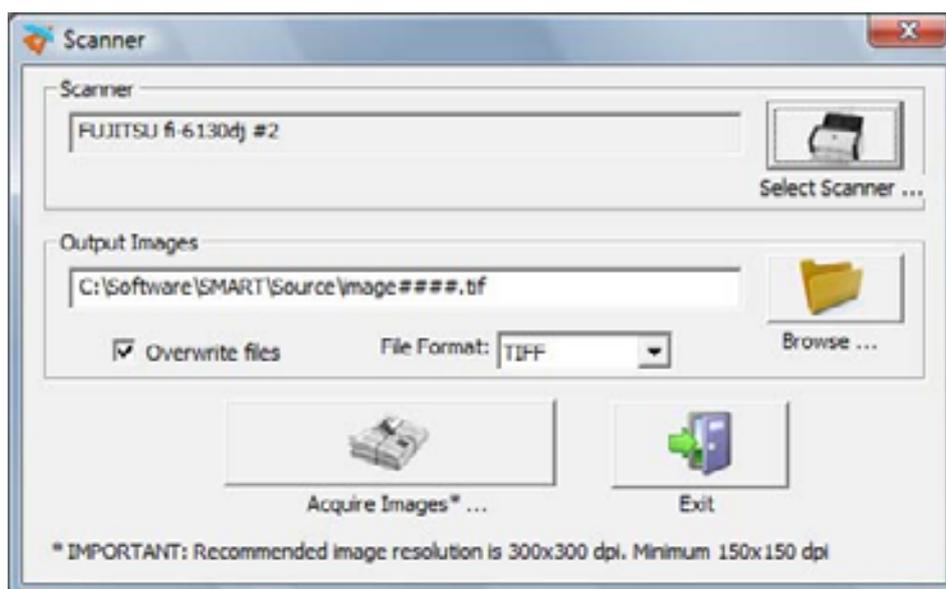


Figure 5.4: Scanner Module

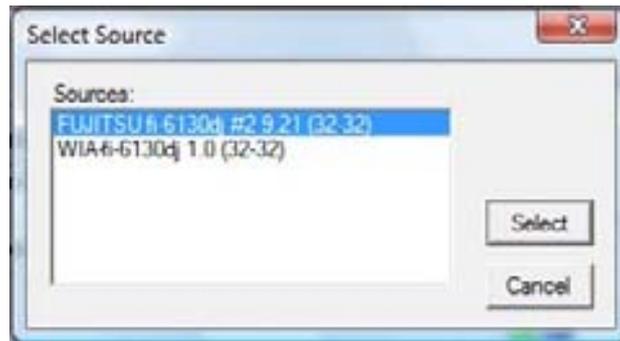
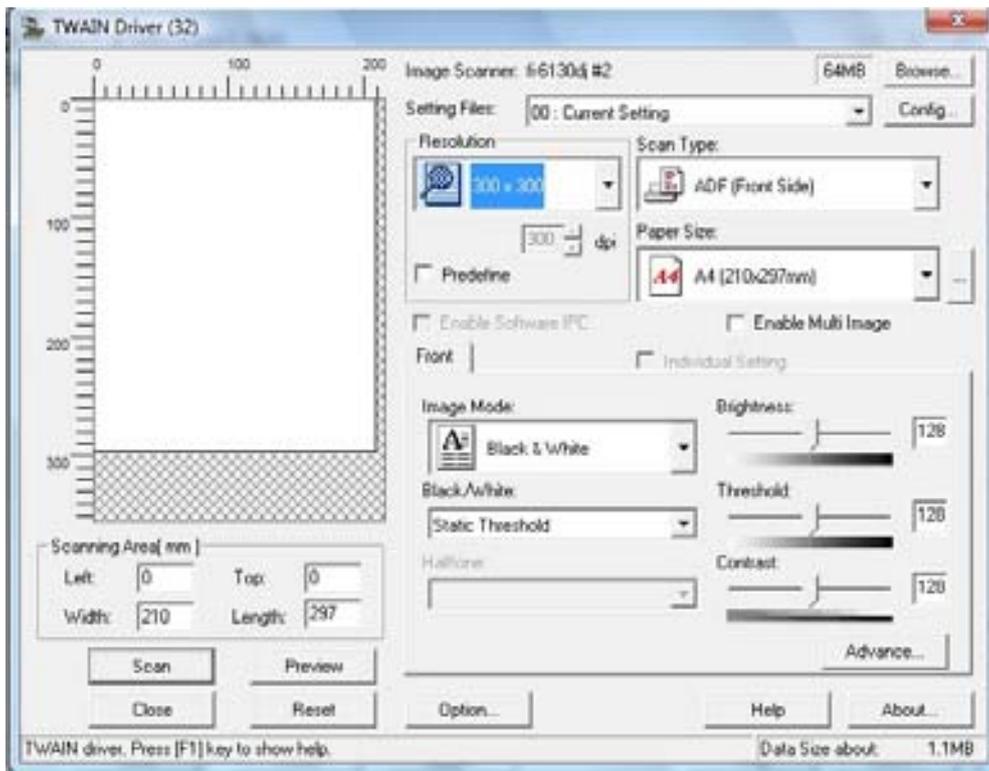


Figure 5.5: Selection of Scanner



(a)



(b)

Figure 5.6: Scanner Parameters (a) Main Setup Menu (b) Double-Sided Scanning

5.3 Data Processing of Images

If you have any questions or experience any difficulties in SMART, please contact us at support@picsalive.com and we will respond promptly

5.3.1 Extracting and Automatic Marking of Questions

- Click on the “Process Images ...” button  in the Assessment Module (Figure 5.1)
- A dialog box (Figure 5.7) is displayed. Note: If there are existing students’ data in the assessment, a dialog box will appear to select whether to delete or retain the existing data.
- Change the Source Directory and file format if necessary. It is recommended that users use the default settings shown in Figure 5.7. The number of images detected is also shown. The image filenames must correspond to the page numbers e.g. Page 1 of the assessment paper must be saved as image0001.tif, Page 2 must be saved as image0002.tif etc. Note that filenames of images MUST be in sequential order (e.g. image0001.tif, image0002.tif, ... and so on). An error message is displayed if the image resolution is less than 150x150 dpi
- Select the File Format of the images (i.e. TIFF or JPEG formats)
- Click on the “OK” button to start the extraction and automatic marking of questions

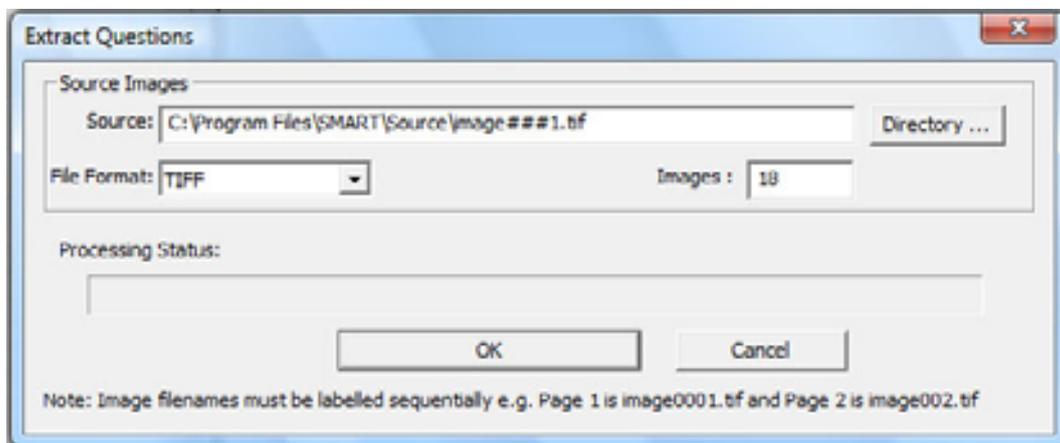


Figure 5.7: Process Images

5.4 Manual Editing of Student’s Results

Users can manually overwrite the student and question data obtained automatically from the SMART system.

5.4.1 Loading Student Images

- Click on the “Edit ...” button in the Assessment Module (Figure 5.1)
- Select student (see Figure 5.3)
- Click on the “Load Images ...” button and Figure 5.7 is displayed
- Select the directory containing the scanned images of the student’s paper using the “Directory ...” button. Note that the number of images detected is shown
- Click on the “OK” button. If the student’s Registration Number or the Assessment ID detected in the images differs from the selected student and assessment, a warning message will be display. Click on “Yes” in the warning message to proceed. The student’s questions will be automatically extracted from the images

5.4.2 Viewing Student Images

- Click on the "Edit ..." button in the Assessment Module (Figure 5.1)
- Select student (see Figure 5.3)
- Click on the "Clear Data" button

5.4.3 Deleting Student Data

- Click on the "Edit ..." button in the Assessment Module (Figure 5.1)
- Select student (see Figure 5.3)
- Click on the "Clear Data" button

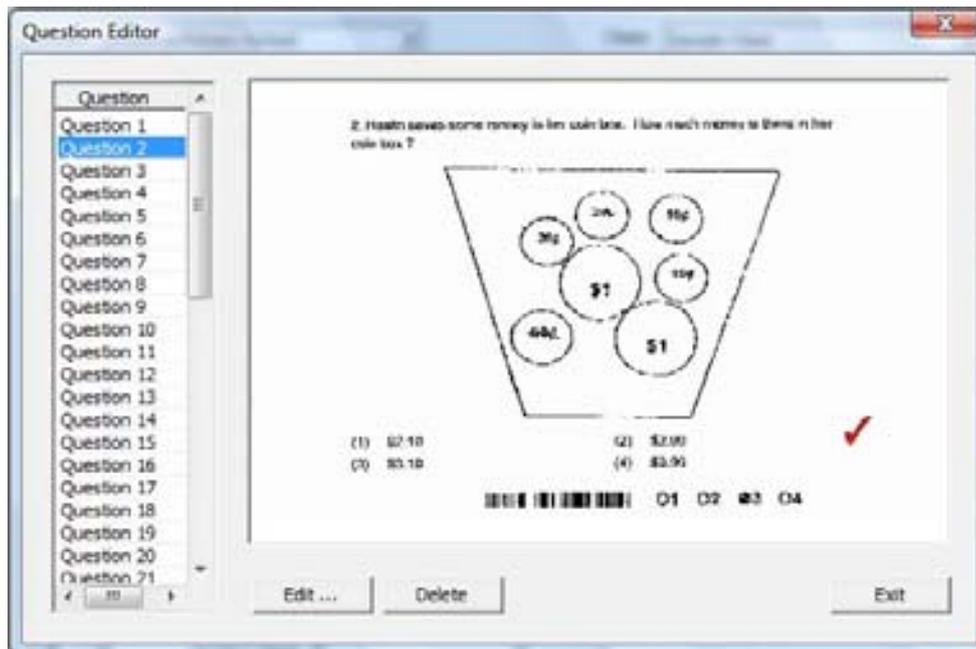


Figure 5.8: Main Assessment Module

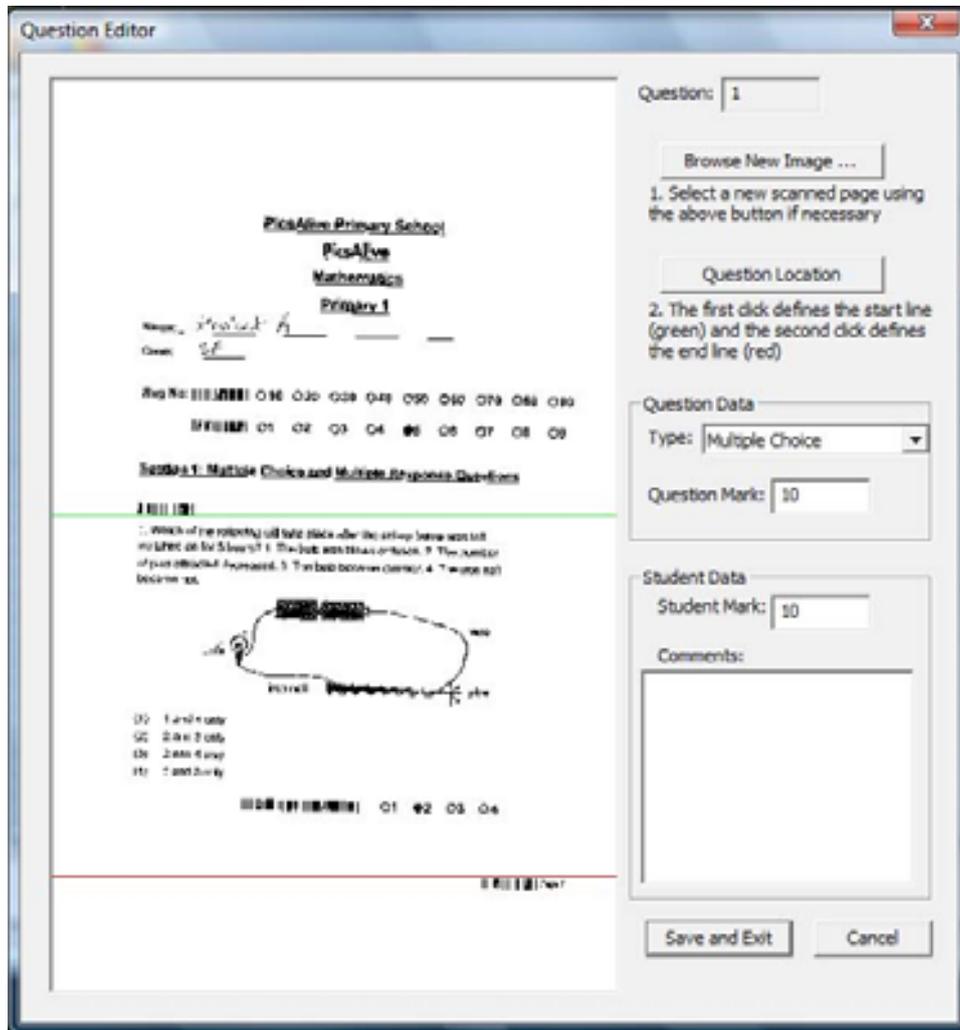


Figure 5.9: Main Assessment Module

5.4.4 Editing Student Questions

- Click on the “Edit ...” button in the Assessment Module (Figure 5.1)
- A dialog box (Figure 5.3) is displayed
- Click on the “Edit Question ...” button and Figure 5.8 is displayed
- Click on the “New ...” button to insert a question or “Edit ...” button to make changes to the question. Figure 5.9 is displayed. To insert a new image, use the “Browse New Image ...” button. To redefine the Start and End location of the question in the image, click on the “Question Location” button. The first click on the image defines the start line (green) and the second click on the image defines the end line of the question. Question parameters like type, question marks, student marks and comments can also be changed (Figure 5.9)
- Select the question and delete it using the “Delete” button if necessary
- Click on “Save and Exit” button in Figure 5.9 to save changes

5.5 Creating Reports

5.5.1 Procedure to Generate Reports

- Click on the “Report ...” button  in the Assessment Module (Figure 5.1)
- A message (Figure 5.10) is displayed after the report is successfully generated

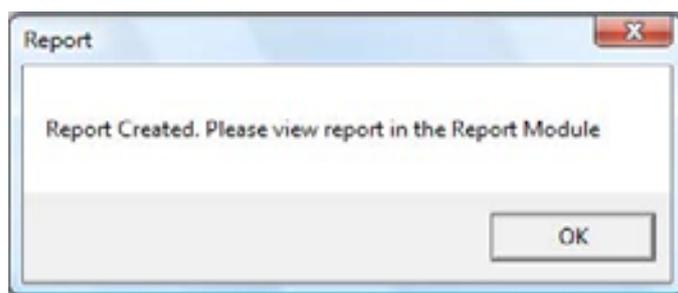


Figure 5.10: Report Generated

5.6 Marking Module

In the Marking Module, all questions individually extracted and presented to the user. All MCQ (Multiple Choice Questions) and MR (Multiple Response) questions are automatically marked. The Marking Module allows other questions types to be manually marked by presenting individual questions to the user and storing user data back into the question. To access the Marking Module, Select the Assessment Module and click on the Marking Module icon. 

Figure 5.11 shows the main user interface of the Marking Module. The image is shown on the left hand side while the marking parameters are displayed on the right side. The icons at the bottom of Figure 5.11 are short-cuts to the functions of the Marking Modules. A list of functions denoted by the icons is shown in Table 5.1.

Notice the Progress field of 66.67% at the top right corner of Figure 5.11. This indicates the percentage of the questions already marked. A list of the questions, students and classes are displayed on the right side of Figure 5.11. Note that the question type and the correct answer are also detected by the system from the barcodes.

A useful feature of the Marking Module is to sort and mark the paper by questions as shown Figure 5.12. Select “Unmarked” from the List field and all unmarked questions will be displayed. Next, select “Questions” from the View field. Marking by questions increases efficiency and marking productivity.

Comments can be added into the image by first typing into the comments box. There are some pre-programmed comments in the drop-down list. Insert the comments into the image using the Insert Text icon . To view the original image, click on the  icon. Figure 5.13 shows the user interface to view the original images.

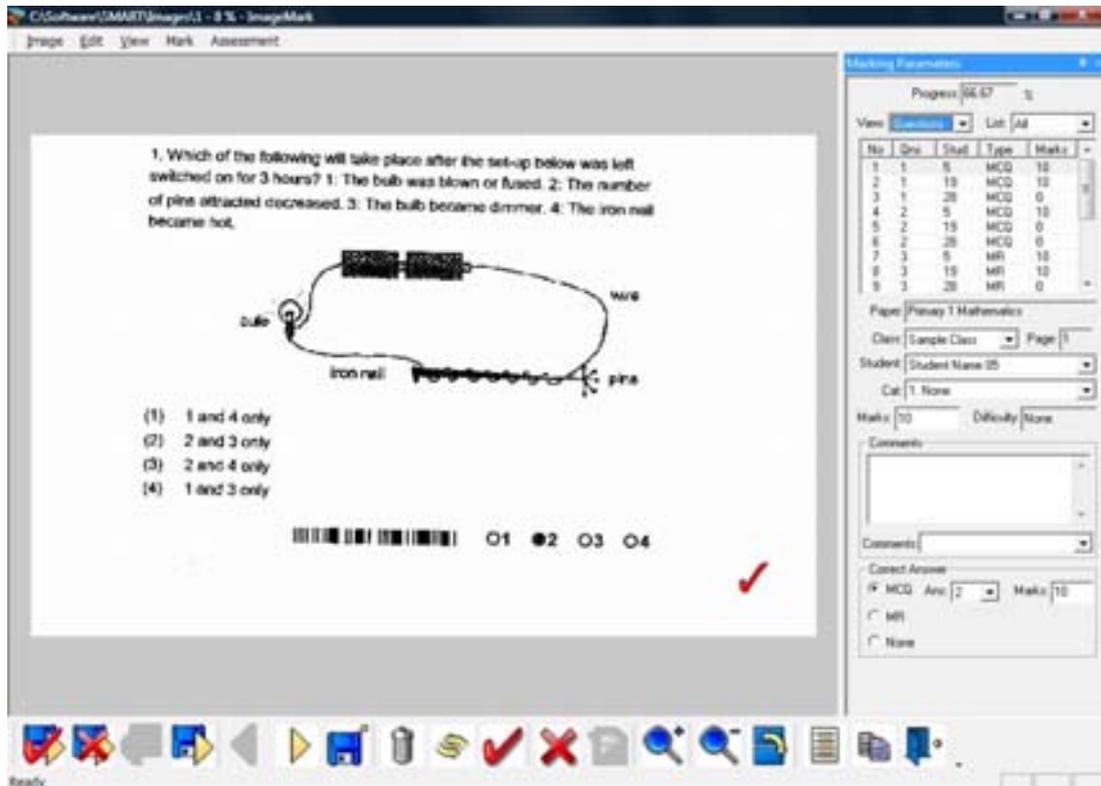


Figure 5.11: Extracted Question Automatically Marked by System

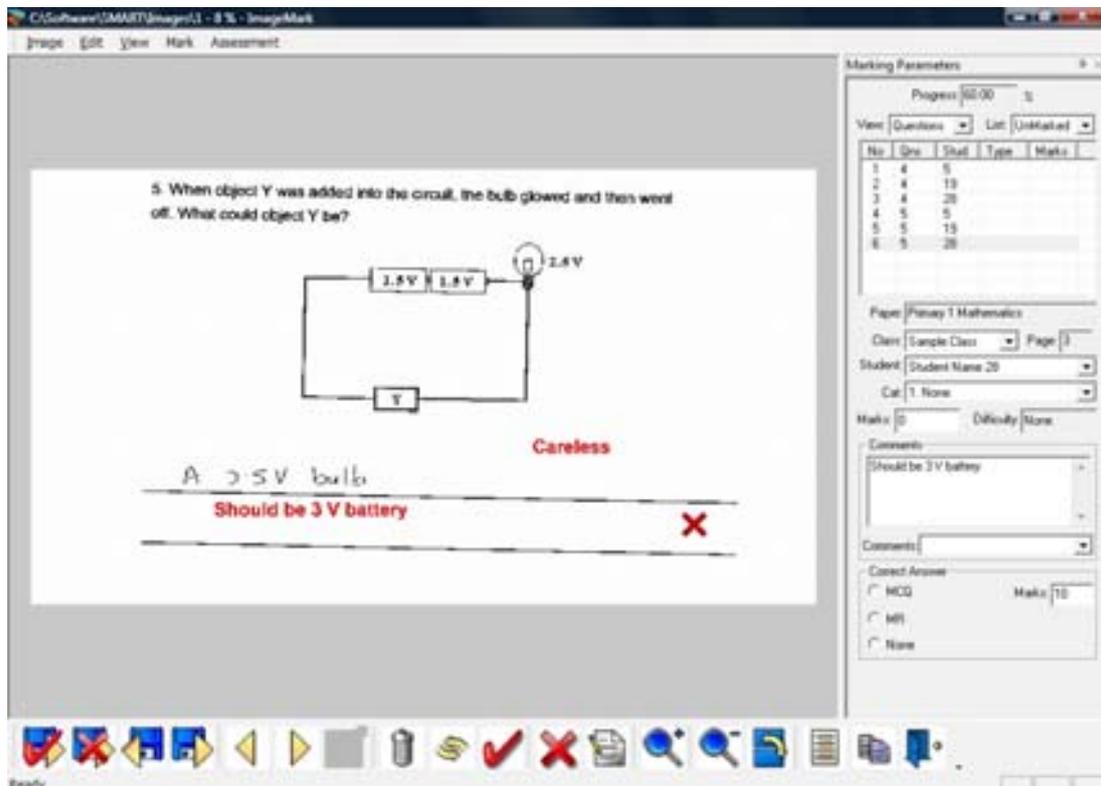


Figure 5.12: User Inserted Comments

Icon	Function	Description
	Correct, Save & Next	Insert tick, Save Data and View Next Question
	Wrong, Save & Next	Insert Cross, Save Data and View Next Question
	Save & Back	Save Data and View Previous Question
	Save & Next	Save Data and View Next Question
	Back	View Previous Question
	Next	View Next Question
	Save	Save Data into Image
	Delete	Delete Image
	Clear	Clear All Data in Image
	Correct	Insert Tick
	Wrong	Insert Cross
	Insert Text	Insert Text into Image
	Zoom In	Zoom In Into Image
	Zoom Out	Zoom Out Into Image
	Rotate 180 degrees	Rotate Image by 180 degrees
	Overview	Pre-assigned Settings and Marking Parameters
	Original Image	View Original Image
	Exit	Exit Marking Module

Table 5.1: Marking Module Icons

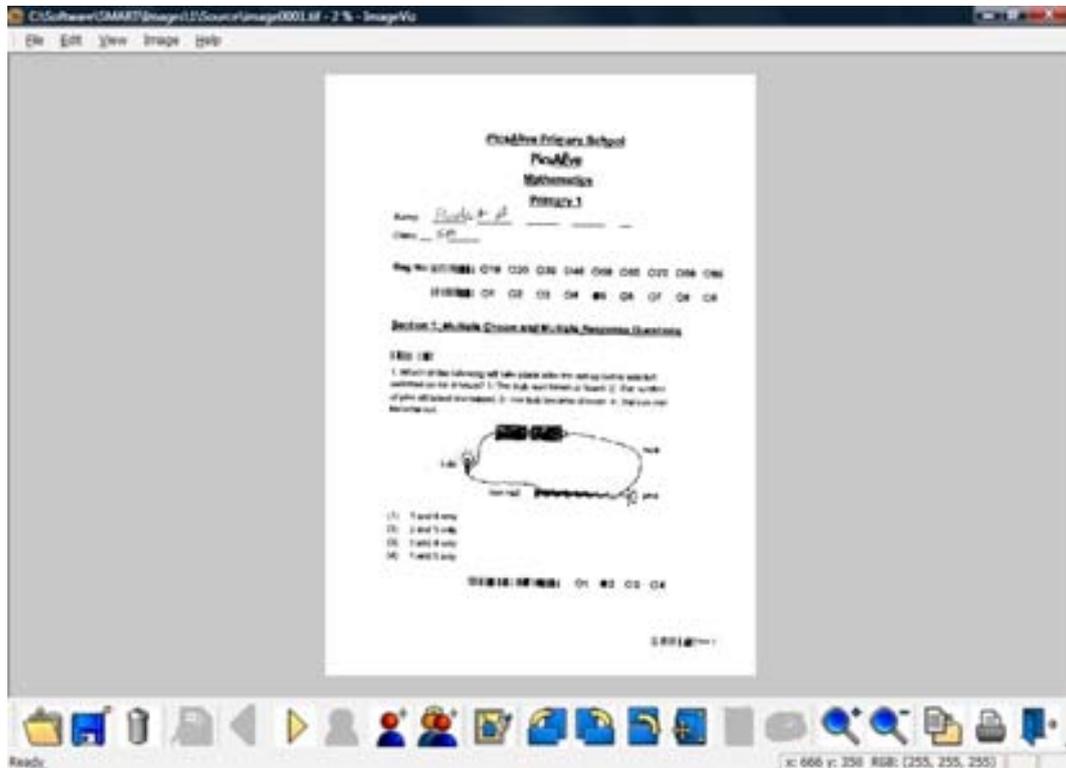


Figure 5.13: Original Image

5.7 Assessment Directory

Assessment can be organised into directories as shown on the left hand side of Figure 5.1. Users can create, edit or delete directories. All directories create in the Assessment Module will also appear in the Report Module. Similarly, the report will also appear in the same directory as the assessment.

5.7.1 Creating a New Directory

- Enter the name of the new directory in the text box at top left of the Main Assessment Module as shown in Figure 5.1
- Click on the “New” button. An error message will appear if there is another directory with the same name

5.7.2 Deleting a Directory

- Select the directory to be deleted from the left of the Main Assessment Module (see Figure 5.1)
- Ensure that all assessments in the directory is removed.
- Click on the “Delete” button

5.7.3 Renaming a Directory

- Select the directory to be renamed from the left of the Main Assessment Module (see Figure 5.1)
- The name of the directory will appear on the text box. Edit and change the name of the directory
- Click on the “Rename” button

6. Report Module

There are two kinds of reports: Report by Students and Report by Questions. Users can choose to view the report, export the reports to an Adobe PDF document or export to an Excel file for integration with other systems. Figure 6.1 shows the Report Module with a listing of the available reports. Note that the individual images for each question are re-assembled back into an assessment paper. To remove a report, simply click on the “Delete” button in Figure 6.1.

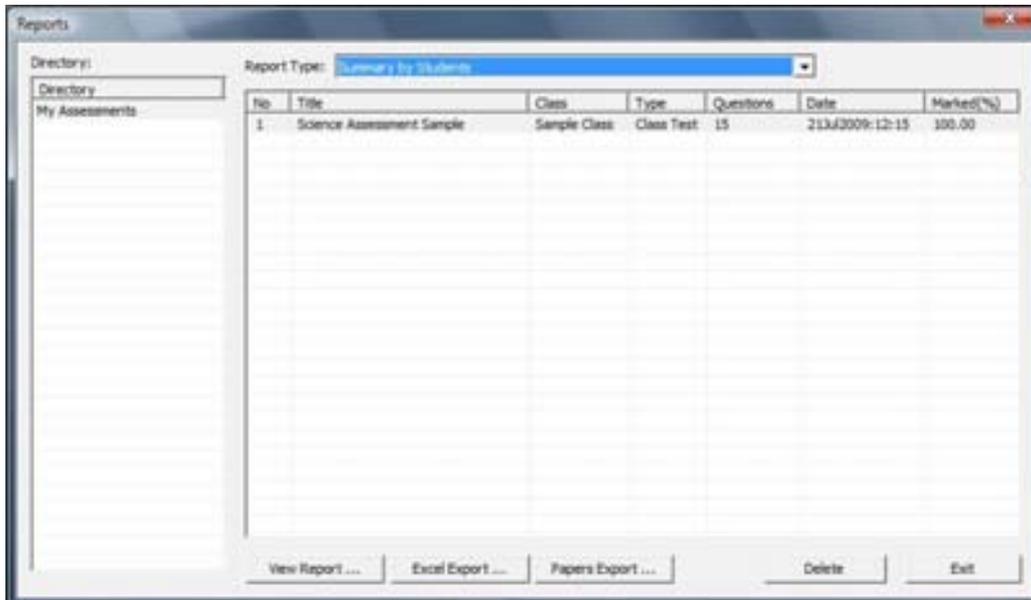


Figure 6.1: Report Module

6.1 Report by Students

6.1.1 Viewing Reports Sorted by Students

- In Report Module (Figure 6.1), select “Summary by Students” from the Report Type drop-down list located at the top
- Click on the “View Report ...” button. A dialog box (Figure 6.2) is displayed
- In the report, the individual student and the average class marks are shown
- To view a detailed report on a student, select the student and click on the “Details ...” button to view the report (Figure 6.3)

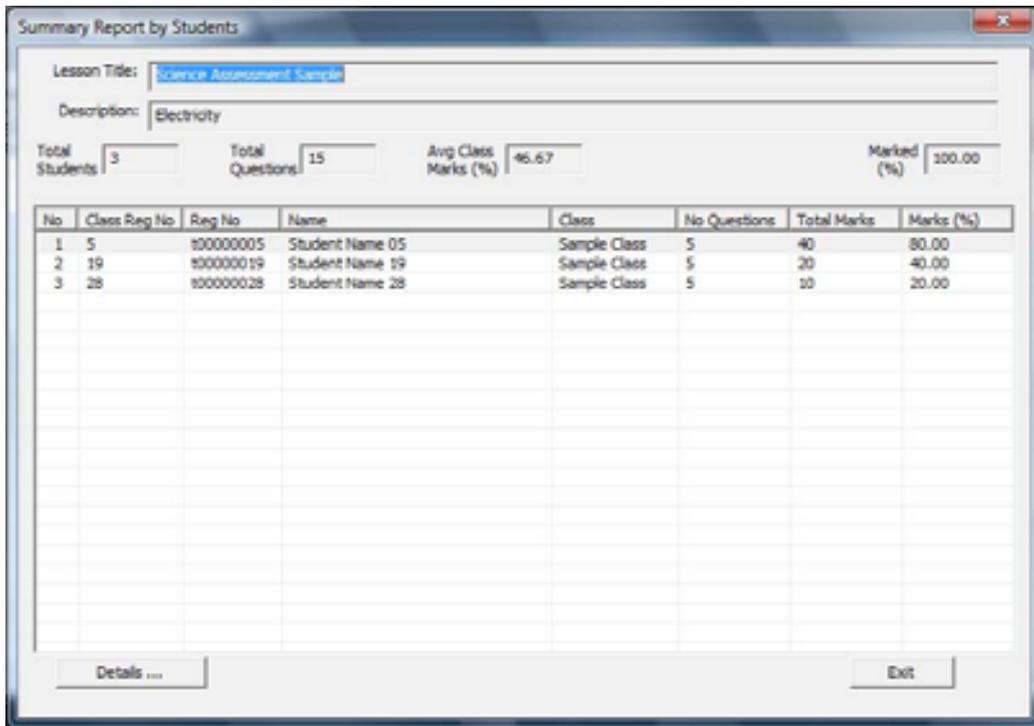


Figure 6.2: Report by Students

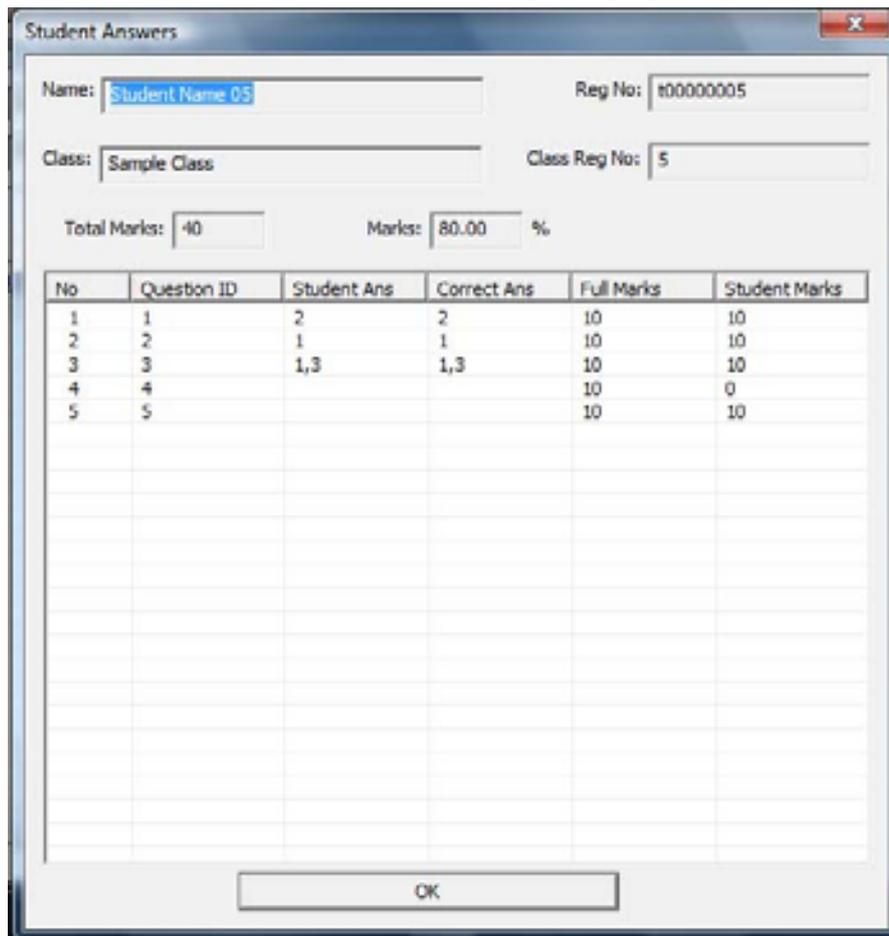


Figure 6.3: Detailed Students Answers

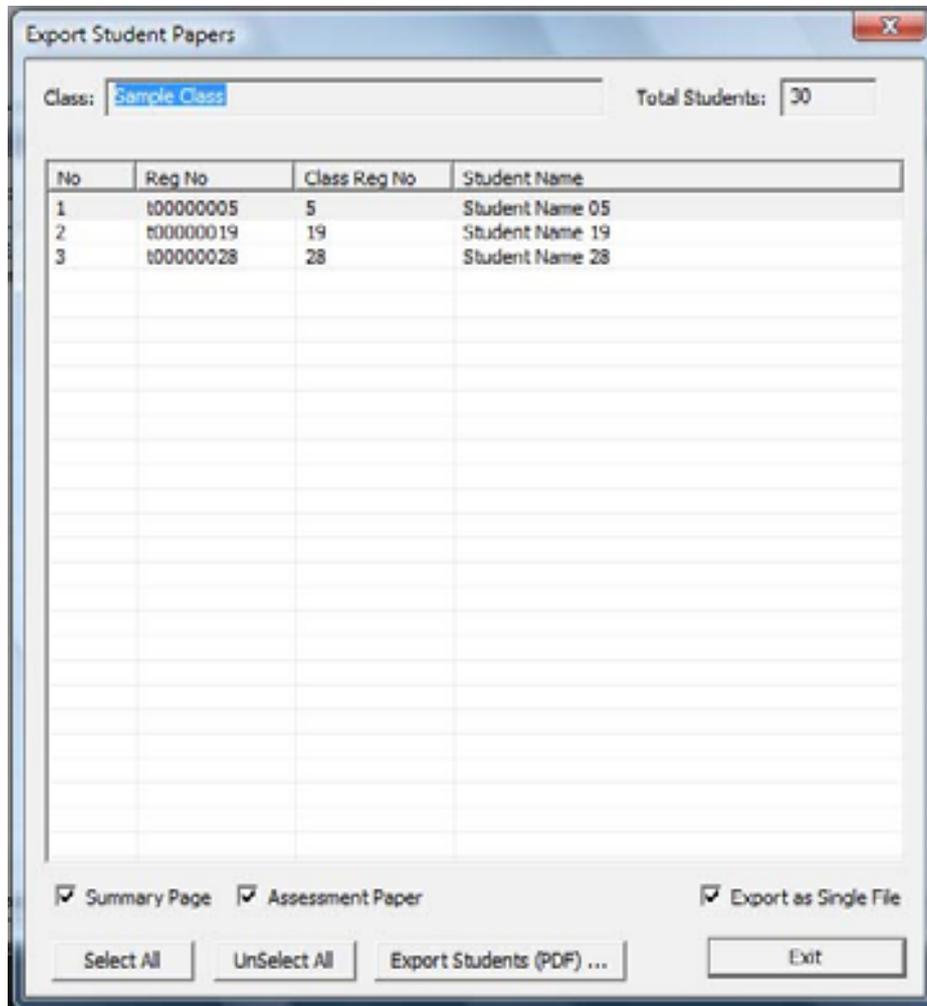


Figure 6.6: Export Students Paper with Summary

Name : Student Name 05

Class : Sample Class

Reg No : 5

No	Your Ans	Correct Ans	Status	Feedback	Score	Avg Marks
1	2	2	Correct		10	6.67
2	1	1	Correct		10	3.33
3	1, 3	1, 3	Correct		10	6.67
4					0	3.33
5					10	3.33
Total Score					40 / 50	

Figure 6.7: Student Report Summary Page

6.3.2 Exporting as Excel File

- a. In Report Module (Figure 6.1), click on the “Excel Export ...” button and Figure 6.8 is displayed
- b. Select the Report Type: “Summary by Students” or “Summary by Questions”
- c. Select the Output Directory by clicking on the “Select Output Directory ...” button
- d. Click on the “Export” button

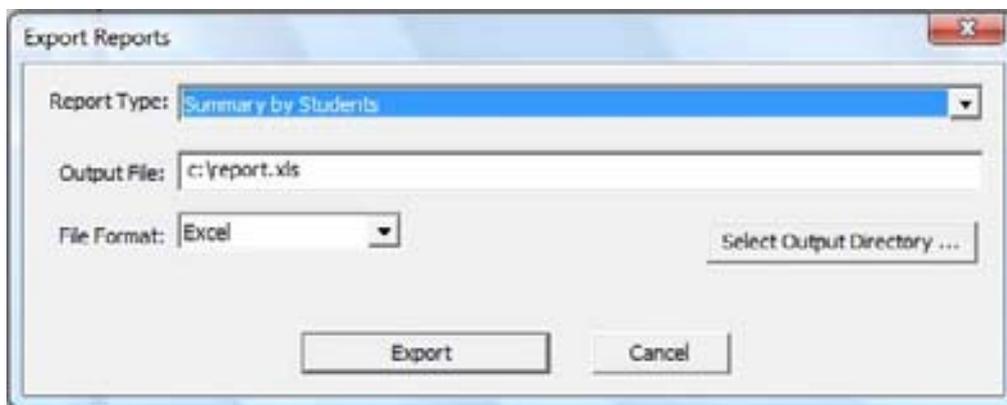


Figure 6.8: Excel Export

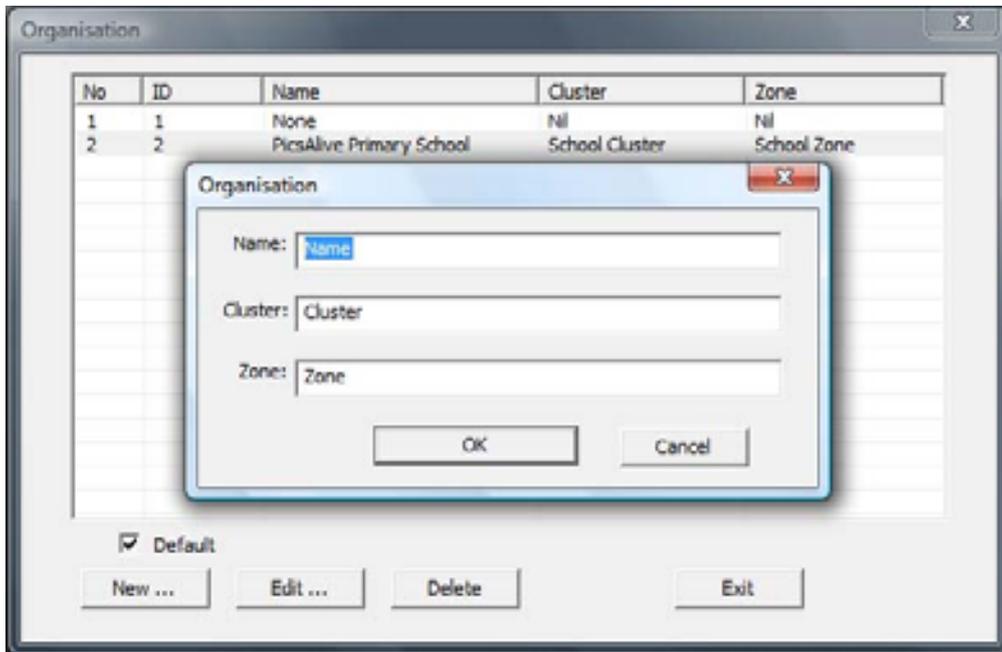


Figure 7.2: Create or Editing Organisation Records

7.1.3 Deleting Organisations

- In the SMART Menu, select “Admin” and “Organisation...”, Figure 7.1 is displayed
- Select the Organisation to be removed from the list in Figure 7.1
- Click on the “Delete”
- Click on the “Exit” button

7.2 Class and Student Administration

7.2.1 Creating New Classes and Students

- In the SMART Menu, select “Admin” and “Class...”, Figure 7.3 is displayed
- Click on the “New ...” button and Figure 7.4 is displayed. Enter Class Name and Description
- To create a new Student Record, click on the “New Student ...” button. Figure 7.5 is displayed. Enter Student details and click on the “OK” button
- To edit Student records, select the Student in Figure 7.4 and click on the “Edit Student ...” button. Figure 7.5 is displayed. Enter Student details and click on the “OK” button
- To remove Student records, select the Student in Figure 7.4 and click on the “Delete Student” button
- To reorder Students’ records, click on the “Up” or “Down” buttons to move the student up or down respectively
- Click on the “Save and Exit” button to update the changes

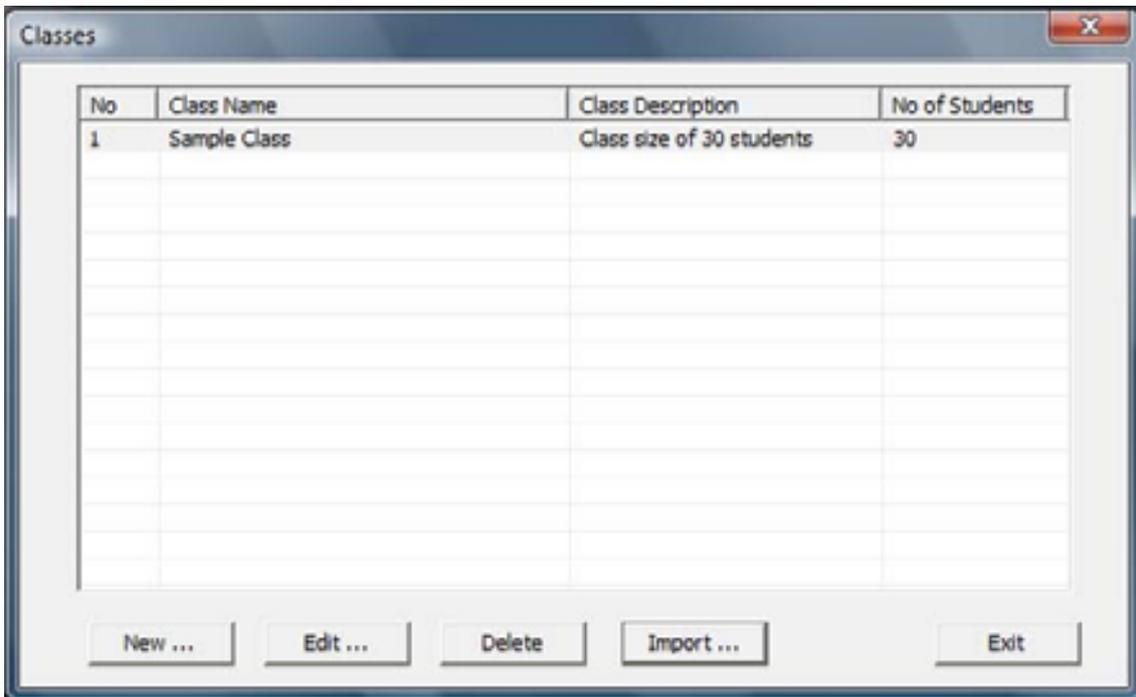


Figure 7.3: Class Administration Module

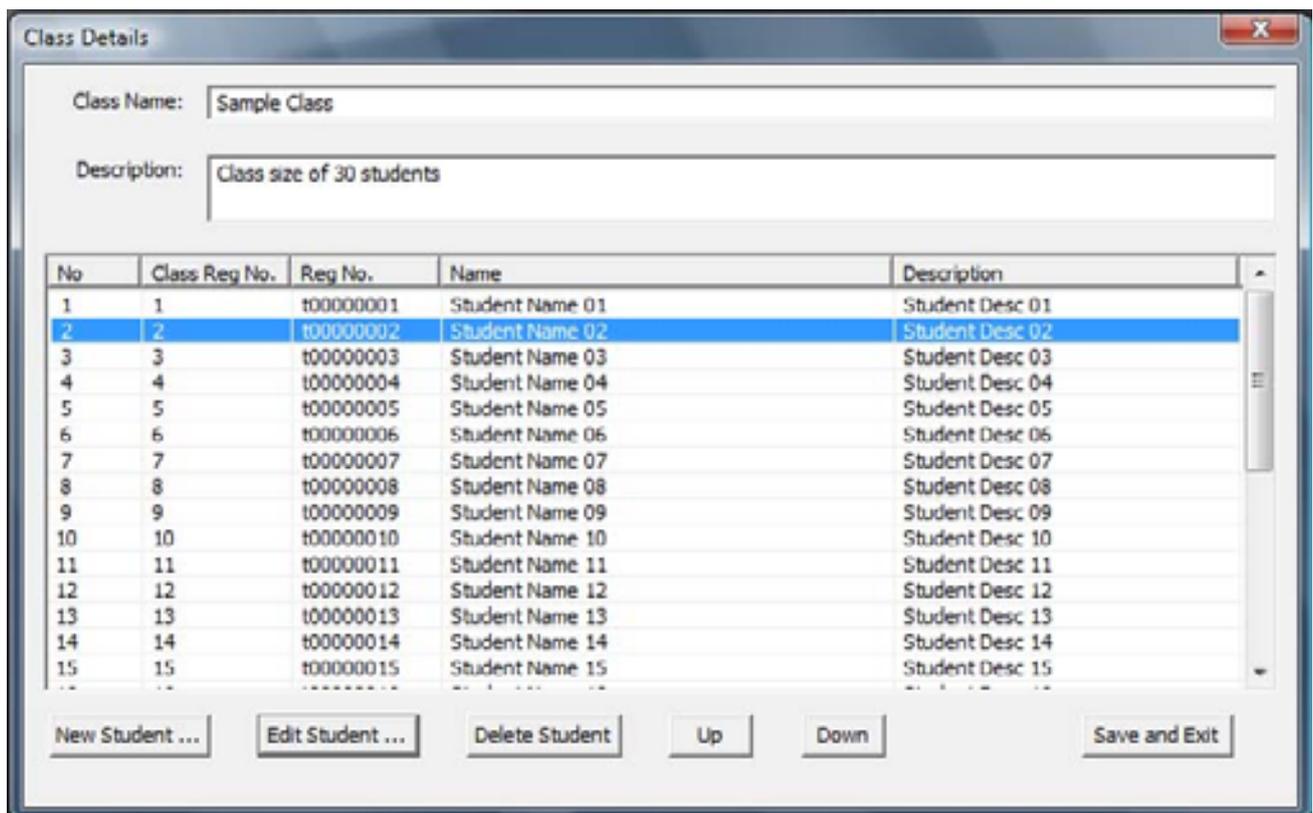


Figure 7.4: Student Administration

7.2.2 Editing Classes and Students

- a. In the SMART Menu, select “Admin” and “Class...”, Figure 7.3 is displayed
- b. Click on the “Edit ...” button and Figure 7.4 is displayed. Edit Class Name and Description
- c. To create a new Student Record, click on the “New Student ...” button. Figure 7.5 is displayed. Enter Student details and click on the “OK” button
- d. To edit Student records, select the Student in Figure 7.4 and click on the “Edit Student ...” button. Figure 7.5 is displayed. Enter Student details and click on the “OK” button
- e. To remove Student records, select the Student in Figure 7.4 and click on the “Delete Student” button
- f. To reorder Students’ records, click on the “Up” or “Down” buttons to move the student up or down respectively
- g. Click on the “Save and Exit” button to update the changes

7.2.3 Deleting Classes and Students

- a. In the SMART Menu, select “Admin” and “Class...”, Figure 7.3 is displayed
- b. Click on the “Delete” button. Note: the Class and all Students in the class will be removed
- c. Click on the “Exit” button

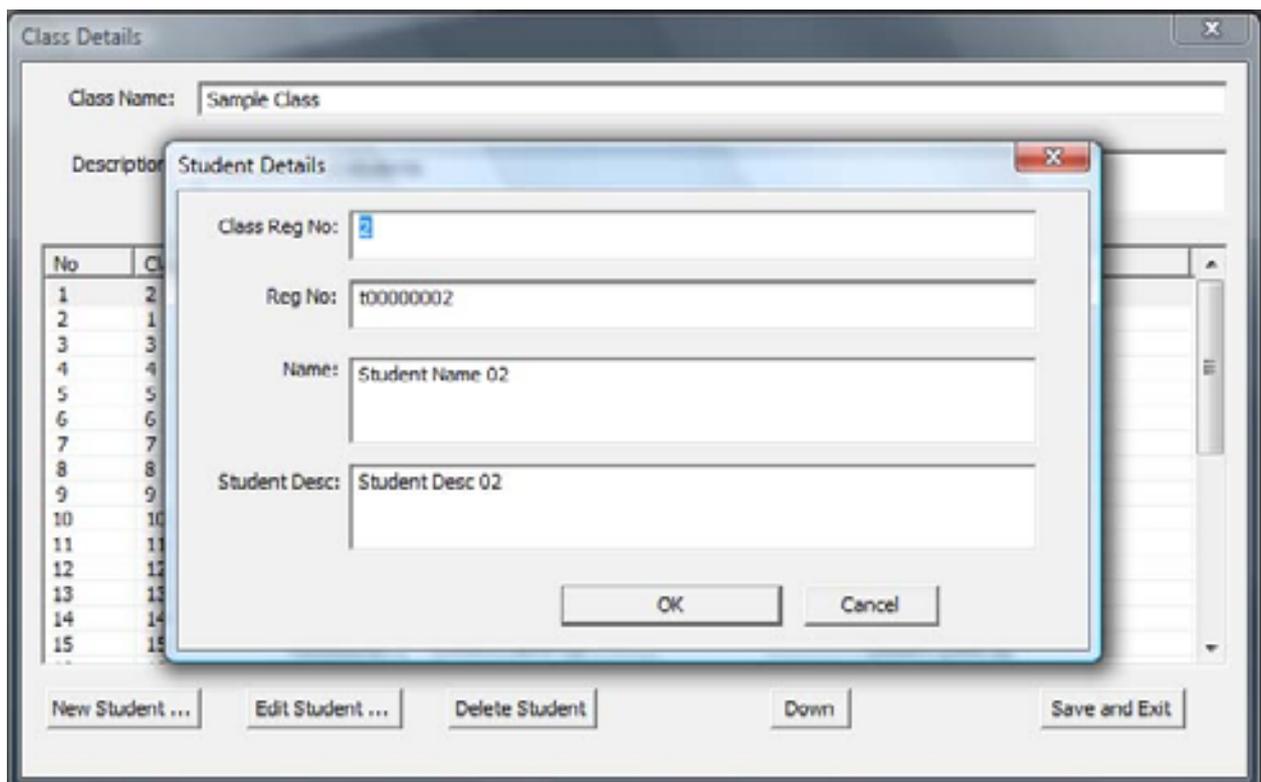


Figure 7.5: Creating or Editing Student Record

7.2.4 Mass Import of Classes and Students

- In the SMART Menu, select “Admin” and “Class...”, Figure 7.3 is displayed
- Click on the “Import ...” button and Figure 7.6 is displayed
- To get sample of the Excel file import format, click on the “Get Sample Excel ...” button. A dialog box to select directory to save the file “students.xls” appears. Select the directory and click on the “Save” button. A sample of the import Excel file format is shown in Figure 7.7
- To import Excel file for mass import, click to “Browse” button to select file. The Students are immediately imported and listed.
- Enter Class Name and Description
- Click on the “Import Class” button. Note: A new class will be created

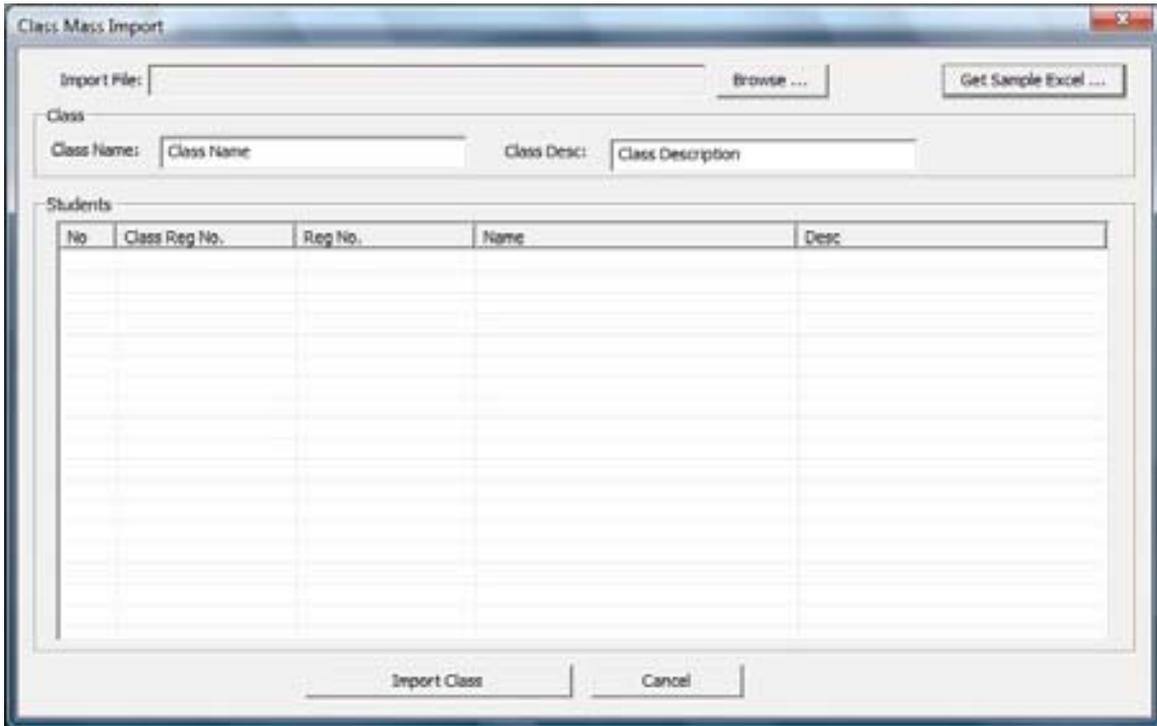


Figure 7.6: Mass Student Import

	A	B	C	D
1	Student_ClassNo	Student_RegNo	Student_Name	Student_Desc
2	1	t00000001	Student Name 01	Student Desc 01
3	2	t00000002	Student Name 02	Student Desc 02
4	3	t00000003	Student Name 03	Student Desc 03
5	4	t00000004	Student Name 04	Student Desc 04
6	5	t00000005	Student Name 05	Student Desc 05
7	6	t00000006	Student Name 06	Student Desc 06
8	7	t00000007	Student Name 07	Student Desc 07
9	8	t00000008	Student Name 08	Student Desc 08
10	9	t00000009	Student Name 09	Student Desc 09
11	10	t00000010	Student Name 10	Student Desc 10
12	11	t00000011	Student Name 11	Student Desc 11
13	12	t00000012	Student Name 12	Student Desc 12
14	13	t00000013	Student Name 13	Student Desc 13
15	14	t00000014	Student Name 14	Student Desc 14
16	15	t00000015	Student Name 15	Student Desc 15
17	16	t00000016	Student Name 16	Student Desc 16
18	17	t00000017	Student Name 17	Student Desc 17
19	18	t00000018	Student Name 18	Student Desc 18
20	19	t00000019	Student Name 19	Student Desc 19
21	20	t00000020	Student Name 20	Student Desc 20
22	21	t00000021	Student Name 21	Student Desc 21
23	22	t00000022	Student Name 22	Student Desc 22
24	23	t00000023	Student Name 23	Student Desc 23
25	24	t00000024	Student Name 24	Student Desc 24
26	25	t00000025	Student Name 25	Student Desc 25
27	26	t00000026	Student Name 26	Student Desc 26
28	27	t00000027	Student Name 27	Student Desc 27
29	28	t00000028	Student Name 28	Student Desc 28
30	29	t00000029	Student Name 29	Student Desc 29
31	30	t00000030	Student Name 30	Student Desc 30

Figure 7.7: Excel Mass Student Import File Format

7.3 Subject Administration

7.3.1 Creating New Subjects

- In the SMART Menu, select “Admin” and “Subject...”, Figure 7.8 is displayed
- Click on the “New ...” button and Figure 7.9 is displayed
- Enter new Subject Name and Description
- Click on the “OK” button
- Click on the “Exit” button in Figure 7.8

7.3.2 Editing Subjects

- In the SMART Menu, select “Admin” and “Subject...”, Figure 7.8 is displayed
- Select the Subject to be edited
- Click on the “Edit ...” button and Figure 7.9 is displayed
- Edit Subject Name and Description
- Click on the “OK” button
- Click on the “Exit” button in Figure 7.8

7.3.2 Deleting Subjects

- In the SMART Menu, select “Admin” and “Subject...”, Figure 7.8 is displayed
- Select the Subject to be removed
- Click on the “Delete” button
- Click on the “Exit” button in Figure 7.8

Appendix A : Sample Assessment Paper

A.1 Sample English Paper

PicsAlive Primary School

PicsAl!ve

Primary 2 English

Name: _____

Class: _____

Reg No: ||||| ||||| O10 O20 O30 O40 O50 O60 O70 O80 O90

|| ||||| ||||| O1 O2 O3 O4 O5 O6 O7 O8 O9

Section 1: Multiple Choice Questions

Choose the correct answer for each blank and then shade the answer

|| ||||| |||||

1. Dogs are _____ animals and they are man's best friends.

- (1) fierce (2) proud
(3) humble (4) faithful

||||| ||||| ||||| ||||| ||||| ||||| O1 O2 O3 O4

|| ||||| |||||

2. Grandmother uses the _____ to scoop out the soup in the pot.

- (1) fork (2) ladle
(3) tongs (4) spatula

||||| ||||| ||||| ||||| ||||| ||||| O1 O2 O3 O4

|| ||||| |||||

3. The mouse _____ round the storeroom looking for food.

- (1) struts (2) sprints
(3) slithers (4) scampers

||||| ||||| ||||| ||||| ||||| ||||| O1 O2 O3 O4

|| ||||| ||||| Page 1



4. Leila _____ her hand while she was stirring the hot soup.

- (1) scald
- (2) scalds
- (3) scalded
- (4) has scalded



Section 2: Fill In the Blanks

Write the answers in the boxes or blanks provided



Fill in each blank with the correct word from the box. Use each word only ONCE

web	dog	field	basket	put
sty	hutch	stable	coop	kennels

5. It was feeding time. Farmer Joe put lots of hay in the horses' _____
. The chickens in the _____ started to make a lot of noise when they
saw Farmer Joe.

"Oink! Oink!" the pigs in the _____ grunted loudly when they saw
Farmer Joe coming towards them. Even the dogs in the _____
wagged their tails happily. The rabbits came out from their _____ and
ran towards Farmer Joe.

The animals were happy to see Farmer Joe.



Fill in each blank with the suitable form of the word in the brackets

6. It was raining _____ (heavy). My mother closed the windows _____ (hurried). She then drove _____ (careful) to school to fetch my brother home.



Section 3: Comprehension Passage

Read the passage carefully and answer all the questions

Spot lived with Mr and Mrs Wu. He had an unusual habit which always got him into trouble. He loved to dig and crawl out through holes he made in backyards. Flower beds and bushes were destroyed because of him.

Neighbours would complain about Spot's visits. At times, Mr Wu would lock Spot up in his kennel. He would yelp for hours. Mrs Wu would then feel sorry for him and release him. Spot never learnt his lesson and would return to his old ways almost immediately. It was only yesterday that he dug under the fence that went around Mr Wu's backyard. The carpet grass was destroyed.

One afternoon Mrs Wu planted some daisies in a big flower pot. Spot watched Mrs Wu while she busied herself in the garden, clearing the mess made by her puppy. The next morning, it was a mess again.

Both Mr and Mrs Wu knew that Spot would grow out of these bad habits only when he was fully grown.



7. Why were the neighbours unhappy with Spot's visits?



8. How was Spot punished ?



9. What would Spot do to get out of the kennel ?



10. When would Mr Wu stop getting complaints about Spot ?



A.2 Sample Mathematics Paper

PicsAlive Primary School

PicsAl|ve
Mathematics
Primary 2

Name: _____

Class: _____

Reg No: |||| | |||| ■ | ○10 ○20 ○30 ○40 ○50 ○60 ○70 ○80 ○90

|| | |||| ■ | ○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9

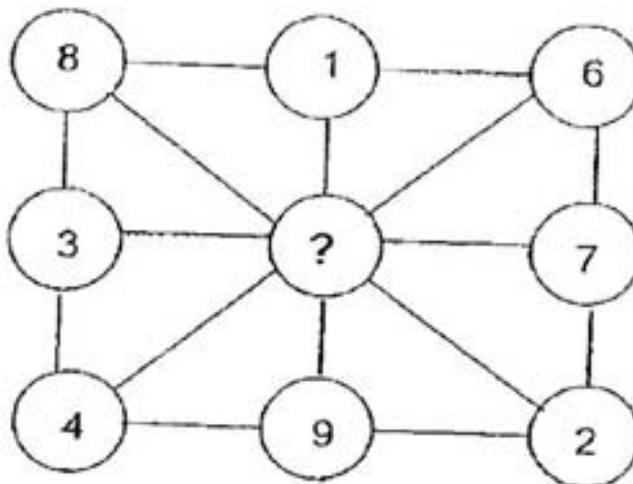
Section 1 Multiple Choice Questions

Choose and shade the correct answer

|| |||| | || |

1. The numbers in the diagram form a pattern. The number ? at the centre is

_____.



(1) 15

(2) 14

(3) 10

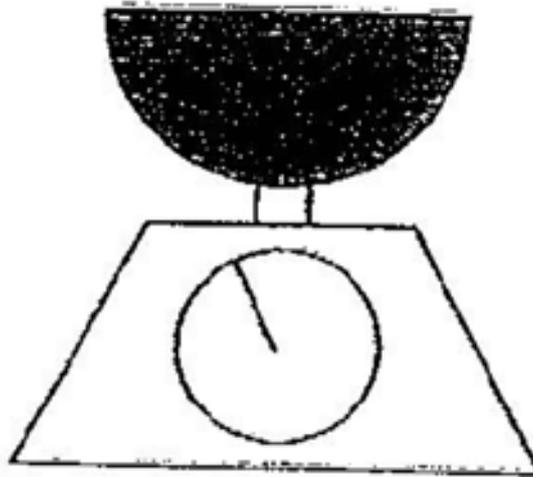
(4) 5

|||| | |||| ■ | |||| ■ | |||| ○1 ○2 ○3 ○4

|| |||| | || | Page 1



2. Name the shaded shape.



- (1) circle
- (2) square
- (3) triangle
- (4) semicircle

 O1 O2 O3 O4



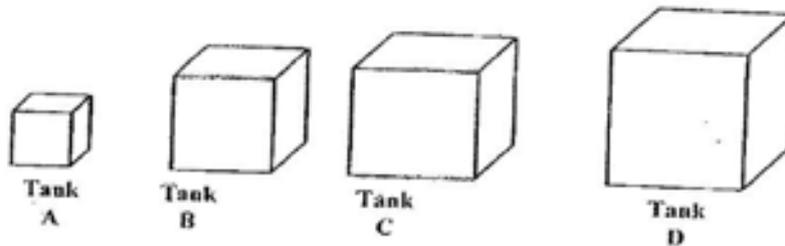
3. Sandra shared 24 stickers equally with three of her friends, Ann, Ali and Mei.
Which number sentence shows correctly the number of stickers Ali received ?

- (1) $24 / 4 = 6$
- (2) $24 / 3 = 8$
- (3) $24 - 4 = 20$
- (4) $24 + 3 = 27$

 O1 O2 O3 O4



4. Look at the four tanks below. Choose the sentence that is correct.

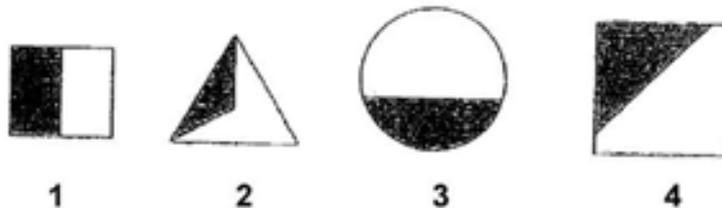


- (1) The volume of Tank A is more than the volume of Tank B
- (2) The volume of Tank B is more than the volume of Tank C
- (3) The volume of Tank C is more than the volume of Tank D
- (4) The volume of Tank D is more than the volume of Tank A

O1
O2
O3
O4



5. Which of the following has $\frac{1}{2}$ of its shape shaded ?



- | | |
|-------|-------|
| (1) 1 | (2) 2 |
| (3) 3 | (4) 4 |

O1
O2
O3
O4



Section 2: Fill In The Blanks

Work out these questions carefully and write their answers in the boxes or blanks provided.



6.

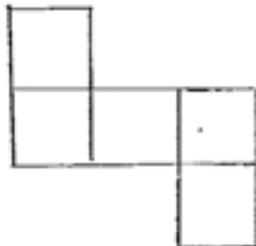
$$314 + \underline{\hspace{2cm}} = 300 + 139$$



7. It is now ten minutes past 2 in the afternoon. What was the time 25 minutes ago ? (Write in a.m. or p.m.)



8. What fraction of the shape below is not shaded ?





9. Write the missing number in the box.

$$\underline{\hspace{2cm}} \div 10 = 10 \div 2$$



10. Study the objects below carefully.



teapot



ball



packet of
milk

Which of the above objects has only flat surfaces?

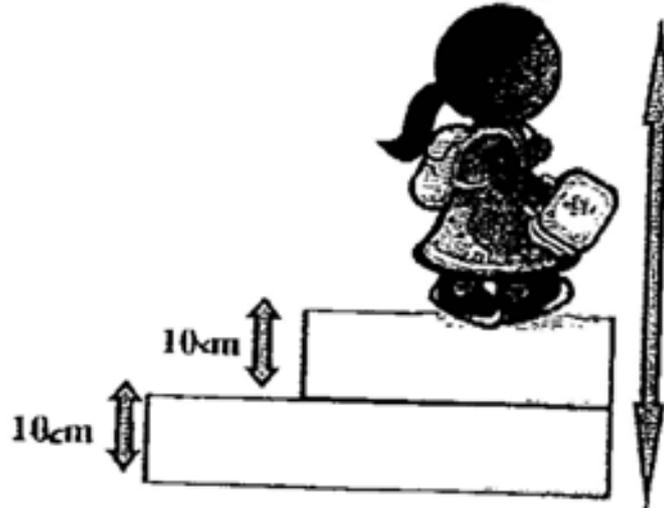


Section 3: Problems

Show all number sentences and working clearly in the spaces provided.



The height of a step is 10 cm. Lily is 123 cm tall. How far is the top of Lily's head from the ground if she is standing on the second step ?



11.

The top of Lily's head would be _____ from the ground.



12. Mrs Tan cut a cake into 10 equal pieces. She kept half for herself and gave two pieces to Mary and the rest to John. What fraction of the cake did John receive ?

John received _____ of the cake.



Appendix B : Answer Form Print Format

B.1 Sample English Answer Format

PicsAlive Primary School



Primary 2 English

Name: _____

Class: _____

Reg No: || ||| |||| ■■■ | O10 O20 O30 O40 O50 O60 O70 O80 O90

|| ||| |||| ■■■ | O1 O2 O3 O4 O5 O6 O7 O8 O9

Section 1: Multiple Choice Questions

1. || ||| | || ■■■ | || | ■■■ | || || | O1 O2 O3 O4

2. || ||| ■ | || ■■■ | | ■■■ | || || | ■■■ | || || | O1 O2 O3 O4

3. || ||| ■ | ■■■ | || ■■■ | || | ■■■ | || || | O1 O2 O3 O4

4. || ||| | || ■■■ | | ■■■ | || || | ■■■ | || || | O1 O2 O3 O4

Section 2: Fill In the Blanks

5. || ||| | ■■■ |

6. || ||| ■ | ■■■ |

Section 3: Comprehension Passage

7. || ||| | ■■■ |

8. 

9. 

10. 

B.2 Sample Mathematics Answer Format

PicsAlive Primary School

PicsAl!ve
Mathematics
Primary 2

Name: _____

Class: _____

Reg No: |||| ||||| ■ | ○10 ○20 ○30 ○40 ○50 ○60 ○70 ○80 ○90

|| ||||| ■ | ○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9

Section 1 Multiple Choice Questions

1. || |||| | || ||||| ■ | ■ ||||| ■ ■ | ○1 ○2 ○3 ○4

2. || |||| ■ || || ||||| ■ | ■ ||||| ■ ■ | ○1 ○2 ○3 ○4

3. || |||| | ■ || ||||| ■ | ■ ||||| ■ ■ | ○1 ○2 ○3 ○4

4. || |||| | || || ||||| ■ | ■ ||||| ■ ■ | ○1 ○2 ○3 ○4

5. || |||| | || || |||| | || || ||||| ■ ■ | ○1 ○2 ○3 ○4

Section 2: Fill In The Blanks

6. || |||| | ■ |

7. || |||| | ■ |

8. || ||||| ■ |

9. 

10. 

Section 3: Problems

11. 

12. 
