NSS Assessing Student Learning for Information and Communication Technology (ICT) Curriculum Series - (2) Assessing Student's Project Work

Summary Report
(on participating teachers' assignments)

The "Assessing Student's Project Work" workshop was held between 3 July 2007 and 25 July 2007.   There were 15 identical workshops participated by 450 secondary school teachers.

The workshop was organized into 3 major parts:
1. Discussion on "Creativity, Practical ICT Skills and Project Management in the NSS ICT curriculum"
2. Practice sessions on "Define Project Objectives, Design Project Description and Scope, Design Assessment Criteria, and Design Performance Descriptors"
3. Sharing session: Participants' Experience Sharing and Facilitator's Experience Sharing

The overall responses from the participating teachers are positive and they have performed well for the three exercises during the workshop under the time constraint. After scrutinizing through the workbooks submitted by the participants, overall comment of each exercise is as follows:

Exercise 1: Define Project Objectives
Participants have been very good in defining learning objectives of a project.   Most of the participants have used the learning objectives from the case example given in the workshop, or extracted the objectives from the Curriculum and Assessment Guide.   The objectives are mainly knowledge-based or skill-based.   Some participants have been able to use project as a learning activity to achieve Presentation skills, Communication skills, Creativity, and Project management skills.

Some of the above objectives are not easy to measure accurately and fairly.   In many cases, participants have to rely on experience and subjective personal judgment in assessing the output of the project.

A common problem of the participants was trying to include too many learning objectives in a project.   If there are too many objectives, students would find it difficult to handle at the same time.   It is suggested that each project should not cover more than 5 learning objectives.   Three objectives for a one-semester project should be managed comfortably by students.

Some samples of project objectives selected from the workshops are:
✓   Defining and analysing problem and choosing appropriate tools/languages to meet the needs
✓   Knowing the importance of good programming skills and styles and, formulating appropriate algorithms in solving problems

- ✓ Knowing the importance of a systematic approach to software development and applying those concepts systematically during development
- ✓ Knowing the concepts and applications related database and the DBMS
- ✓ Knowing the basic concepts of a relational database, and the construction, manipulation and extraction of information from a relational database using SQL
- ✓ Comparing the advantages and disadvantages of different types of multimedia elements
- ✓ Applying different multimedia elements in a database application
- ✓ Using different editing functions of a photo image processing software
- ✓ Demonstrating presentation skills in a multimedia presentation

Exercise 2: Design Project Description and Scope

Participants have not encountered any difficulty in designing project description and scope. Most of the participants have a great interest in multimedia production and web authoring. Majority of the projects have been concentrated on application projects for school, school club, or class club.

Most participants have been able to describe the major elements of project accurately. Scope of the projects have been defined appropriately or omitted on purpose to allow flexibility.

Project descriptions have not been without flaw, nevertheless, the overall outcomes have been adequate and sufficient.

Some sample project titles with good descriptions and scopes selected from the workshops are:
- ✓ Develop multimedia web pages for charity organization.   Information about activities will be displayed and users can make application through the webpage.
- ✓ Develop multimedia web pages for a club house.   Members will be able to use the web pages for newsletter, obtain information about activities and submitting application.
- ✓ Create a e-book system
- ✓ Create a 30-second video clip for advertisement
- ✓ Create a 30-minute video for promoting school public image
- ✓ Simulate a network infrastructure for an e-commerce retailer

Exercise 3: Design assessment criteria

Most participants have been able to design many assessment criteria, but some criteria could have nothing to do with any one of the objectives defined earlier, or could not be matched with any one of the learning objectives defined.   Participants should design their assessment

criteria based on the learning objectives, not the output of the project.

Another common problem identified in the workshop is that participants have been trying to accomplish too many objectives in one project.   The result of this problem would exemplify when there would be too many criteria to assess.

Most of the participants have been doing very good in designing assessment criteria for Practical ICT Skills; while Creativity and Project Management have not been included in the assessment criteria by most participants because most of the projects have not included these two objectives.   Moreover, participants have extracted learning outcomes from the Curriculum & Assessment Guide and adapted them into assessment criteria.

Some sample assessment criteria selected from the workshops are:
- ✓ Assessing the appropriate use of multimedia elements
- ✓ Counting the number of multimedia elements that have been used
- ✓ Completing the project according to time allocation and events sequence illustrated on the Gantt chart
- ✓ Counting the number of functions and features of the photo image processing software being applied in manipulating the image
- ✓ Evaluating the project management skill according to the time allocation, tasks/events completed and quality of work submitted
- ✓ Evaluating creativity according to whether the ideas have been an alternative use of existing technology, new application of existing technology, and create new technology

Exercise 4: Design Performance Descriptors
We could not expect the participants to develop a complete set of performance descriptors within the time limit of a 6-hour workshop.   Most of the participants had failed to design clear and precise performance descriptors.

When too many learning objectives have been included in a project, the result would be too many assessment criteria to measure.   The problem would get worse when it comes to designing performance descriptors for each assessment criteria.   If there are five learning objectives, there might be as many as 12 to 15 assessment criteria, i.e. 2 to 3 assessment criteria for one objective.   The result would be 12 to 15 sets of performance descriptors needed to be designed.   Given the time constraint of the workshop, it would not be possible to complete all the performance descriptors before the end of the workshop.   At the end of the workshop, participants have realized the reasons not to include too many objectives in one project.

Some teachers had tactfully modified the performance descriptors of GCSE or International Baccalaureate to suit their projects.

Some sample performance descriptors selected from the workshops are:

✓ "Practical ICT Skills"

5   Good use of suitable web authoring and animation tools, good use of graphics and animation to draw attention of users, publish the website, good uses of special effects, such as, mouse-over effect, blinking text, changing colors

4.   Use of suitable web authoring and animation tools, use of graphics and animation to attract users, publish the website, use of special effects

3   Ordinary knowledge of web authoring and animation tools, use of graphics and animation but not attract users, publish the website, some uses of special effects

2   Non-familiar with the knowledge web authoring and animation tools, poor use of graphics and animation, not publish the website, poor use of special effects

1   Poor knowledge web authoring and animation tools, not use of graphics and animation, not publish the website, no special effects, ONLY text-based website.

✓ "Project Management"

5   4 + all events/tasks completed with good quality

4   3 + all events/tasks completed within the planned time frame

3   2 +[1] more than half of the events/tasks completed within the planned time frame

2   Able to complete all events/tasks

1   Able to design a schedule of events/tasks with time allocation, personnel arrangement, and hardware & software resources requirements

0   Unable to design a schedule of events/tasks with time allocation, personnel arrangement, and hardware & software resources requirements

<u>Other Comments</u>

The time constraint is a major factor that has prevented the participants from designing a set of detailed assessment criteria and performance descriptors. Expecting participants to complete all the processes of designing a flawless project is not reasonable. Given sufficient time and resources, it is believed that participants should be able to develop a complete project with corresponding assessment criteria and performance descriptors.

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[1] "*n* +" (where *n* is a number) means the performance description defined for level n is included and additional requirements have been specified after the "+" sign. In the level 3 performance description where this footnote lies, it includes the requirements of level 2 and the additional requirement.

Furthermore, it should be emphasized that the defining learning objectives, designing project description and scope, design assessment criteria, and designing performance descriptors is not a one-time process.   Designing a project for learning is an iterative process.   We must keep on revising, refining and modifying before we can finally come up with a perfect project.