

# On Emulation of Multimedia Teaching Material Projects

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**Abstract:** The aim of this paper is to present a one-and-half-year program schemed for improvement of making multimedia teaching materials in the area of manufacturing technology of the universities and colleges of Taiwan, R.O.C.. The program was assigned to a non-profit organization, Tze-Chiang Foundation of Science and Technology (TCFST) which was founded by the alumni of National Tsing Hua University (NTHU), to carry out by emulating the made multimedia teaching materials that were conducted by the teachers. The focuses of the program, which are the categories of the program, the scheduling of executive processes, the method of qualifying evaluation, the monitoring of qualified proposal for further execution, and the activities of promotion and awarding. With the emphasis of the task of evolution, the indexes of different steps of evolution are also illustrated. At end of this paper, the performance of the program is discussed and some suggestions derived from the execution are also addressed.

**Keywords:** TCFST, university-industry, multimedia-teaching-materials, emulation,

## 1. Introduction

The interactive teaching method has become one of the most important teaching methods in the educational area of technology. The Advisory Office of the MOE of R.O.C. has been supporting to make internet multimedia teaching materials in the area of manufacturing technology since 1997. Since that time, the process quality control mechanism of making multimedia teaching materials has been established and the evaluation and promotion of excellent works have also been done.

Being a non-profit organization, the Tze-Chiang Foundation of Science and Technology (TCFST) which was established by the alumni of National Tsing-Hua University (NTHU) was assigned to accomplish an integration project in the area of manufacturing technological education. The project is composed of special projects program, technological papers workshop program and making multimedia teaching materials program, three programs. The objectives of the project are to encourage the technological and vocational educational institutes to improve practical teaching, to have positive competition with each other, and to explore self-development capability. The aim of this paper is to present the emulation of making multimedia teaching materials that were conducted by the teachers.

According to the resolution of the Advisory Office of the MOE, the program was organized into two groups, the open group and the integration group. Each group was progressed in relation to the education systems which are universities system and technological and vocational institutes system. The open group and the integration group are classified by the teaching materials that they are specified. Firstly, the teaching materials of the integration group

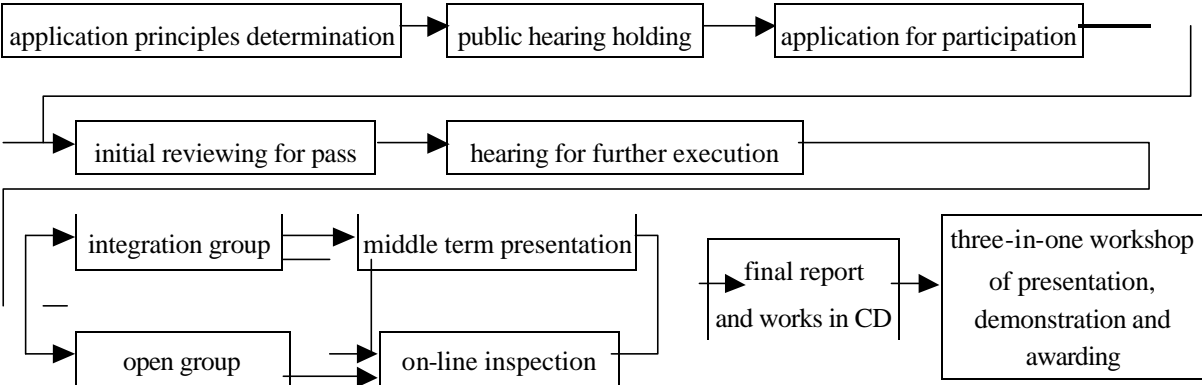
focus in three fields: the precision machine, the design and manufacture of die, and manufacturing automation, but the open group is not limited to special field but centralized within the area of manufacturing technology. The contents of the materials of the open group must be different from that was before. Secondly, the members enrolling the open group are not special limited, but that attending the integration group should be a team grouped by the integration of related professionals of teachers to accomplish a complete materials. Both of these two group also compose of two sub-groups, the universities system and the vocational and technological system respectively, The program was planned to achieve the following objects:

1. to improve the teaching method in the area of manufacturing technology;
2. to strength localization of teaching materials;
3. to combine teaching methods and materials with information technology;
4. to support a inventive, interactive, and learning environment;
5. to share teaching resources by supporting the inventive capability and learning effects of students.

During of one and half years the program focuses on four parts, the scheduling of executive processes, the method of qualifying evaluation, the monitoring of qualified proposal for further execution, and the activities of promotion and awarding. The pre-processes included the public hearing and call for the project proposals. The qualifying evaluation was executed with two steps: the initial reviewing for pass and final reviewing for pass. The qualified proposals may get some budget support from the MOE for further execution and were monitored either by on-line or presentation regularly asked by the program committee during the execution. The activities for promotion and awarding were organized and performed in the workshops held for the promotion at the end of the program with presentation and demonstration collaborating with other two programs. Several fine teaching materials were awarded publicly after a series of strict evaluation for encouragement of participation. All the competitors were invited to present and demonstrate their projects.

**2. Executing Processes**

TCFST executed the program by organizing a committee. The program was accomplished to the following procedures:



- (1)The preliminary planning, especially the application methods, the principles of subsidization from MOE, the schedule of the program, the evaluation methods and the categories of the program;
- (2)Holding two public hearing to call for project proposals, which were held both at south and north Taiwan, by

means of gathering the higher education institutes around the island to announce the methods, the schedule of the emulation, and to invite questions to be discussed for the project promotion;

- (3) Inviting experts from academics and research institutes constituting a evaluative committee;
- (4) Qualifying evaluation phases, three steps are carried out: the initial reviewing for pass, on-line or presentation regularly asked by the program committee monitoring and final reviewing for pass;
- (5) Organizing the activities for promotion and awarding, the workshop held at the end of the program with other two programs and with presentation and demonstration of the qualified projects;
- (6) Writing final report of the program.

### 3. Evaluation

The emulation composes three steps: the initial reviewing for pass, on-line or presentation regularly asked by the program committee monitoring and final reviewing for pass.

#### 3.1 The principles of subsidization

The subsidization from MOE is only given to the participants that are recommended from initial reviewing for pass. The quantity of the subsidization is dependent on the cost that participants applied and the evaluation of the MOE. For open group, the outscored participants would get 20% of whole subsidization at this stage. The last 80% of the subsidization will be given if they could pass from each on-line inspection and final reviewing. So as to the integration group, not only they have to pass every on-line inspection and final reviewing, but also they have to pass one middle term presentation evaluation. The subsidization is given three times separately, i.e. after they pass the initial reviewing for pass, the middle term evaluation and the final reviewing. At the first time, they would get 20% of the whole subsidization, and the other two times are depended on the schedule they indicated.

#### 3.2 Initial reviewing for pass

All the participants have to finish the application form and proposal in advance before reviewing. They can choose the fields that they are interested and the group that they are satisfied according to the classification of the committee. The evaluation committee of each field is grouped with specified members. They are professional in the areas of manufacturing technology, the information technology, or multimedia applications. Each project is reviewed, at least, by three of the evaluation committee members. The number of the members decided depends on the number of the participants, in this case, for open group, twelve members are chosen both for the precision mechanical filed and the automatic manufacturing field, and five members are chosen for the filed of aeronautic and space technologies. One of them is selected as the chief of the committee. Table 1 shows some of the projects.

During the phase of initial reviewing for pass, the committee focuses on the screen of the proposals and that of prototype of the participant. The results of the initial reviewing are gained by the processes of screen, assessment, on-line evaluation of prototype works, and discussion. The qualified proposals may get some budget support from the MOE for further execution and were monitored either by on-line or presentation regularly asked by the program committee during the execution. In this case, there is less than 50% of the works being outscored. Table2 shows the assessment index.

Group	Title of the project	University/college
Integration	Teaching materials of Creative Engineering Design	National Central University
Open	PLC practical System	Da-Hua Institute of Technology
Open	Introduction to Micro-Mechantronic	National Cheng Kung University
Open	Self-learning teaching materials of maintenance technique for IC package equipment	Southern Taiwan University of Technology

Table 1 lists of some of the projects

### 3.3 Monitoring for further execution

The technical specifications are defined by the discussion of the program committee and the participants, which are used either for the multimedia teaching materials accomplishment or for the access from every terminate of the member of the inspection committee. Only the works that are qualified in the phase of initial reviewing for pass are able to further execution. In order to ensure the quality of all the passed works and that each work has been done on schedule, it is important to monitor those works during execution. Prior tasks including, the participants must give their Web-sites to the program committee before the inspection held, and all the technical specifications are discussed and announced to all the participants and evaluation committee in advance. The on-line inspection of each work bimonthly is carried out at this phase both for open group and integration group, but the works of open group which are not well performed may be asked to present by the program committee. Hereof, the integration group is asked to present regularly. Table 3 shows the on-line inspection index. A meeting was held to discuss the results of each inspection, respectively. On-site review may be held for the visit to the not well performed participants that are suggested by the inspection committee. The participants would concern with the suggestions derived from the inspection committee.

#### Index of Initial Review for Pass

code : \_\_\_\_\_

signature of reviewer : \_\_\_\_\_

title : \_\_\_\_\_

1.proposal		excellent		acceptable .		Weights
Items	Clear and complete description					25%
	Improvement of teaching materials					
	Potential for continuing execution					Score
Comments						
2.design of contents		high		ordinary		Weights
Items	Expression of user definition					25%
	Edition tools selected to design					
	Unifying visual performance					
	Degree of complete self-made(localization)					Score
Comments						
3.planning of teaching method		completely		acceptable		Weights
Items	Utilization of developed static technology					25%
	Utilization of developed dynamic technology					
	Performance of information dissemination					Score
Comments;						
4.providing teaching environments		very match		acceptable.		Weights
Items	To prompt mental development					25%
	To interact learning method of communication					
	To support bilateral communication					Score
Comments;						
General comments;						
Total score _____						
Strong recommend	Recommend	Reluctance		Failure		
>85	84-75	74-65		<65		

Table 2 index of initial reviewing for pass

**3.4 Final reviewing for pass**

The final evaluation is carried out two steps: the initial screen of final report, i.e. the written form, and evaluation of presentation and demonstration. All of the participants are asked to give presentation and demonstration of their results at the end of the project. The projects that could pass the reviewing would get the rest of the subsidization and some of the excellent works would be awarded in the three-in-one workshop.

**4. Activity of Promotion and Awarding**

The three-in-one workshop for presentation , demonstration and awarding would be held on 29<sup>th</sup> June, 2000. The execution of multimedia teaching materials is one of the programs. Twelve participants are asked to present and to demonstrate their results during the workshop. Up to the publish of this paper, MOE has not decided the number of good works awarded, but it is known that all of the members that have taken part in the project that is awarded would given a certificate for encouragement.

**5. Conclusion**

With the fast progressing of the information technology, the teaching methods have been changed to improve with these applications. The wide application of internet technology also has increased the user , because of the short of distance, the non-difference of time, and the ease of access. It is known that the application of information technology to teaching materials would promote the teaching quality, and the function of internet would increase the service and the share of resources. The program performs well especially on the interconnection of all the participants by the establishment of a Web-site. All the participants can get and require information by through the Web-site.

All the participants have finished their projects on schedule and none of the projects is rejected during on-line and middle term inspection. This could thanks to the principle of subsidization and the methods of regular inspection during execution. Different from the used policy, the subsidization is given separately and depends on the schedule they planning and whether they could pass all of the inspection. According to the final reviewing dated on 29<sup>th</sup> May, all the projects perform good results and can get the rest of the subsidization.

At the end, for the finished works, the MOE has rights to ask the executive organizations to give their achievement publicly for the utilities of academic and education promotion.

**Index of On-line Inspection**

University/College \_\_\_\_\_ WebSite \_\_\_\_\_

Title; \_\_\_\_\_

Signature of the reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

Total: _____					
1. Scheduling		A	B	C	D
	(1)schedule matches to initial planning				
	(2)contents match to original design				
2. Performance of the work		A	B	C	D
	(1) Performance of interaction				
	(2) Satisfy to specification				
	(3) Assistant to teaching action				
3. Potential to continue execution		A	B	C	D
	(1)encourage user to learn				

	(2) worth to develop				
Comments:					

Table 3 The Index of On-line Inspection

## 6. References

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