PEDAGOGICAL FRAMEWORK ON ACTIVE LEARNING IN ORDINARY CLASSROOM

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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ABSTRACT

Active learning methodology has become a preferred way to change the traditional teacher centered classroom into the newer student centered approach to learning. This paper describe the case study on some program on active learning in various faculty in Higher education in Malaysia. The statement of the problem in the program is how can an active learning methodology be implemented to assure that a student learns through the techniques established in active learning within a new pedagogical framework. This paper aim to present some ideas of how to use active learning techniques in the lectures in ordinary classroom in Malaysia (more than 30 students), and describe how training on active learning is successfully within twelve (12) programs during 201. the participants among engineering, information communication technology, management and entrepreneurship lecturers at Teknikal Universiti Malaysia Melaka, Cosmopoint International College, Polytechnic and Community College. They were more than 30-40 participants every training program. The main idea in the program is to use inductive, active learning, with many small exercises/ group discussions during the training session to show the example of how to apply some techniques in their own classroom. They were ten (10) actives learning frameworks/formats were introduced to the participants. More then 33 lesson plan in active learning develop and ready to use in ordinary classroom. The framework/format of active learning contains some visualize, design, and implement stage from the cooperative learning principle.

KEYWORDS

student centered learning, active learning, , inductive teaching, training, pedagogy

INTRODUCTION

There are many active learning techniques which have been designed to encourage independent learning for the students in the classroom. The notion that the classroom is no longer a teacher centered classroom but a student centered classroom is a significant change in the way knowledge is transferred to the student. Most teachers throw up their hands when they are told to let the students figure out what they are suppose to learn leaving the teacher wondering what they are suppose to teach. It is Malaysia higher education experience, that many lecturers find it difficult to implement active learning in large classes (classes containing more than 30-40 students), Khairiyah MY, Mimi HH and Azila NMA. (2004). This question gets even more complex when evaluation and testing of what the student has learned is initiated, Vos, H. (2009).

CONCEPTS

Pedagogically speaking the teacher in an active learning classroom should have pre-designed steps prepared for the exercises a student will participate in, which in turn will challenge the student to increase their own learning skills. An easy exercise can be followed by a more difficult exercise until the teacher has fulfilled the design criterion for an active learning technique and the student has a working knowledge of the exercise. The following is an example of this pedagogical framework demonstrating active learning techniques.

This case study give a description of how lecturers problem in practicing active learning can be change, and a way to structure the lectures using active learning and inductive teaching. The use of inductive teaching and active learning is of course not new. What we try to convey here is how to use it in lectures for large classes (more than 40 students). We also give a concrete way to structure the lectures, that incorporate both inductive teaching and active learning.

In this section, I describe my ideas. (In this training, lecturers are my students. To be easy, I note them as *participant*). In the first subsection I describe how I get all participants to actively take part in the training program. Table 1 below, show the active learning techniques and its effectiveness in ordinary classroom in Malaysia.

Table 1: Active Learning Techniques and it Meaning in Teaching and Learning Practice

No	**Active Learning Techniques**	**The usefulness in teaching and learning**	**Content Analysis based on their meaning in T&L**
1	Double Entry Journal	The purpose of the double entry journal is to encourage students to build personal meaning by making connections from various sources of information. This form of journal writing helps students develop skills in:	*We used it during tutorial for Community Project-College Community Program*
2	Focused Listing	Focused listing can be used for brainstorming or as a strategy to identify understandings of concepts.	*It easy to manage. I used this techniques at the beginning of the semester-Engineering classroom-Cosmopoint-Sarawak*
3	Group Investigations	In group investigations students collaborate to produce a group product for presentation. This is an open-ended investigation which students may help determine the focus of their investigation. The activity is structured to emphasize higher-order thinking skill	*I used it when come to the topic HoTS, in Creative Thinking and Problem Solving. It works but need close supervision-Politeknik Merlimau*
4	Jigsaw Method	Students work in "expert groups" to study one	*It is not easy,*

		aspect of a topic or concept and then go to cooperative groups to share their expertise with other group members who are experts in other areas. This strategy ensures individual accountability as each student must teach to the other members of the group.	*because student need to be guide to be experts and before convince the content. I used during tutorial- Cosmopoint Pulau Pinang*
5	Roundtable	Roundtable can be used for brainstorming ideas, possible answers to a question or generating a group of questions.	*It quick activities and I applied it during teaching Malaysian Economic and Socio Development. – (UTeM)*
6	Send a Problem	Send-A-Problem can be used to promote discussion and review material, or create possible solutions to content. The problems can be generated by the teacher or by the groups.	*This method applied in POLISAS, Pahang. I took 4 weeks to assess this project. Politeknik*
7	Structured Problem Solving	Structured problem-solving is a strategy which presents a problem for solving but requires each member of the group to be a spokesperson for the group solution. This strategy promotes problem-solving strategies, group interdependence and communication skills.	*This method needs more than 2 hours assignment. I used this in course work for entrepreneurship course. (UTeM)*
8	Thinking Aloud Pair Problem (TAPPS)	A technique of verbalizing problem-solving thinking to a listening partner. Using this strategy, students rehearse the concepts, relate them to existing knowledge, and produce a deeper understanding.	*It applied in my mechanical classroom. I used TAPPS for enhance students to rehearse the concepts such as thermodynamic. (UTeM)*
9	Think Pair Share	Think-pair-share is a simple, low risk cooperative group activity in which students can share and reflect on their ideas or answers with a partner before sharing with the large group. It can be used as a quick assessment tool to determine if students understand the basic concepts before moving on.	*Relevant to my engineering students because they interact with closets' pair, asking each other questions. (UTeM)*
10	Three Step Interview	Three-step interviews can be used as an introductory activity or as a strategy to explore concepts in depth through student roles.	*The steps is good, it make my students really insight the topic and concept. Tutorial should be*

ACTIVE /PARTICIPANTS / STUDENTS

To keep the participants active during training program, they are given small exercises that they can solve either by themselves or together with the students sitting next to them. They are given 15- 20 minutes to solve the exercises, and then their solutions and ideas are discussed in classroom seminar. They also gave Flip Chart Board, *mahjong* white paper and big marker pen to write their ideas. The motivation for this is

• It forces the participants to think and get in touch with the material during the lectures. Forexample, the participants appreciate a solution more if they have tried to solve the problem by themselves first.

• It gives the participants time to get some understanding of the material before they proceed.

• It gives the participants a chance to see what the students find easy/difficult during the lecture,and thereby an opportunity to adjust during the lecture.

• When the participants are allowed to talk to each other and solve the exercises together, they are more inclined to answer/participate in the discussion afterwards (this can otherwise be a big difficulty in large classes). Unless they are allowed to have small group discussion and add another 10 minutes before they could write down their answer on the *mahjung* paper

It is a mix of standard lectures and exercises. The exercises/small group discussions are progressing during the lecture. Starting with small examples and ending with questions that lead to a mathematical proof. In the last exercise (7) the students are given questions in an order that also show how to build up a mathematical proof.

LESSON PLAN FOR ACTIVE LEARNING: (example)
They are 33 lesson plan develop by participants from Jan- November 2011 training program. For example, only three of lesson plan are present.

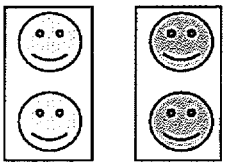
Lesson Plan 1 : **TAPPS-Thinking Aloud Pair Problem-Solving**

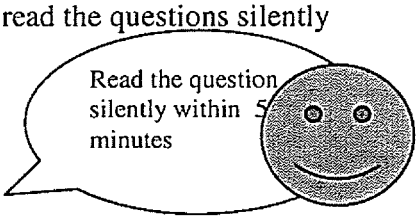
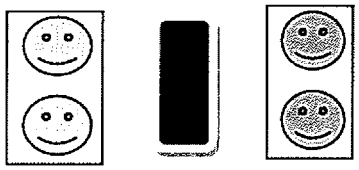
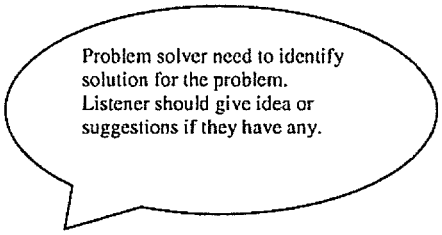
PROGRAM : DIPLOMA IN INFORMATION TECHNOLOGY (SOFTWARE ENGINEERING)
GROUP MEMBERS : **Not real name**

- Hafizah Kamaruddin
- Zuriyanti Zulkilfi
- Yogeswari Suppiah
- Siti Sarah Ithnin

PEO : To produce software engineers who can apply their skills, knowledge and engineering principles to meet the industrial needs.
SUBJECT : OBJECT ORIENTED PROGRAMMING 1(JAVA)
SUBTOPIC : GUI (PART 1)
LEARNING OUTCOME: 2 hours
At the end of the lesson, student should be able to:
1. Choose an appropriate controls to design a graphic user interface through pair discussion.(C3/P1/A1)
2. Construct JAVA coding for the chosen controls manually through pair assignment. (C3/P5/A2)
3. Develop a simple application program to generate output by using appropriate software through group work. (C5/P5/A5)

TECHNIQUE : TAPPS-Thinking Aloud Pair Problem-Solving
Learning Outcome : To make students improve their skills and understanding by focusing on the learning aspect in which they share knowledge, experience and responsibility .
STEPS :

LECTURER	STUDENT	DURATION
1. Lecturer assign students in a group of four	1. Students move into their groups 	2 minutes

2. Lecturer distribute questions to students, and give time for them to read the questions silently 	2. Students read the question paper silently. **Using your creativity, you are required to design a GUI of a simple calculator by including these operators:** • **addition** • **subtraction** • **multiplication** • division	5 minutes
3. Instruct students to choose roles: • 2 students as problem solver • 2 students as listeners	3. Students choose roles. Problem solver Listener 	2 minutes
4. Lecturer gives briefing on the assignment given. 	4. Q & A session. 	3 minutes
5. Lecturer monitor the class	5. Discuss the questions: • planning • analysis • design	10 minutes
6. Lecturer give comments on students' work	6. Present manual sketch	5 minutes
7. Lecturer guide students	7. Develop the program in group • implementation • testing 	15 minutes
8. Lecturer gives marks based on the outcome:	8. Present the output. • simple calculator program • Success or not? • conclude the question	10 minutes
Total Duration		50 minutes

Lesson Plan 2 : **Jigsaw Method**

Program Diploma in Multimedia Application

Group members

1. Intan Mahfuzah
2. Cik.Nurul Bahiyah
3. PN.Muniamah

PEO : To produce a creative and innovative multimedia developer who are skillful and compatible to meet industrial needs.

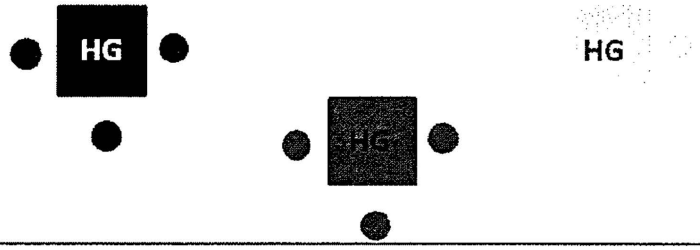
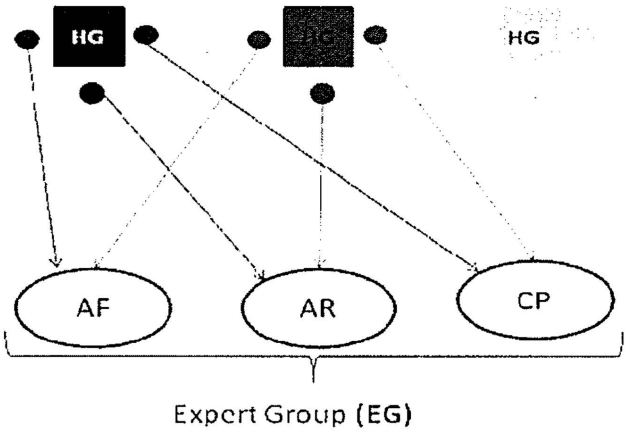
Subject : 2D Animation
Sub Topic : Audio Recording
Learning Outcome :
At the end of the lesson, students should be able to -:

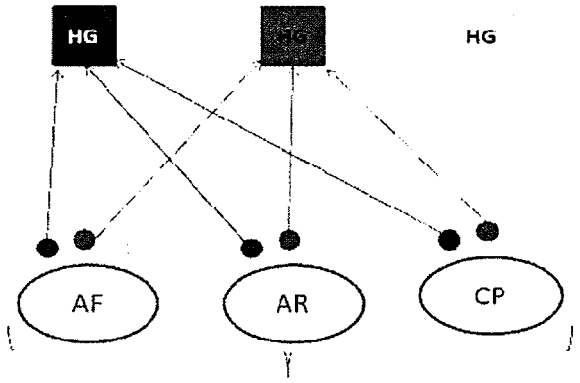
1. Identify audio format for animation through group discussion. (C1,P1,A1)
2. Compose sound effect for video animation by using Sound Forge software in a group project. (C5/P3/A4)
3. Relate audio effect with 2D video animation to synchronize by practicing group audio recording. (C6/P5/A4)

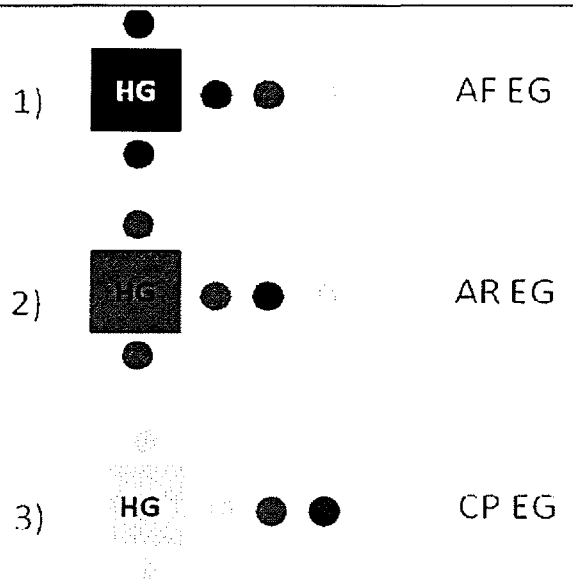
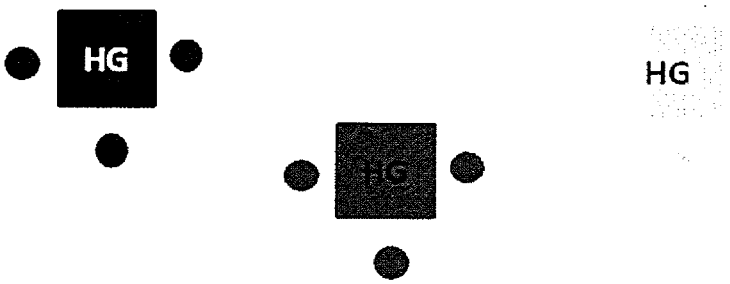
Technique : Jigsaw Method
Purpose : To ensures individual accountability as each student must teach to the other members of the group.

Steps :

LECTURE	STUDENTS	TIME FRAME
Induction- Lecture preview an animation (Tom & Jerry) to student. Lecturer ask the students to list how many types of sound effects that has used in the previewed animation.	Students watch the animation Students list out few types of sound effect.	3 min

Lecturer introduces the topic to the students.	Students listen and concentrate to the lecturer's explaination.	5 min
Lecturer gives task to the students to be practice in a group.	Task : Students are require to produce sound effect that can be used in video animation.	2min
Lecturer gives instruction to the students to form Cooperative Group, 3 students in each group.	Students starts to form Cooperative Group (Home Group - **HG**) 	3 min
Lecturer gives instruction to form a temporary expert group (EG).	Student from each group come together to form a temporary expert group (EG). • Audio Format (AF) • Audio Recording (AR) • Compositing (CP) 	2 min

Lecturer gives task to each EG.	Each EG assign to the below task :- 1. Students are required to choose the suitable audio format for the video animation. (AF) 2. Students are requested to record an audio. (AR) 3. Students are required to edit and compose the audio. (CP)	10 min
Lecturer instructs the students to return to their HG.	Each member from EG return to HG.  Expert Group (EG)	5 min
Lecturer monitoring the students	• Each expert teaches their topic to the other HG members followed by their support groups (EG). • The experts give information and ask questions to ensure group members understand the topic.	10 min

		
Lecturer monitoring the students.	Each HG discusses about the overall topic and practices the given task by using the software. 	10 min

Lesson Plan 3 : **ROUNDTABLE**

PROGRAM :DIPLOMA IN E-BUSI

Group member :

1. Teh Koon Ching
2. Umi Hidayah Omar
3. Mariam bt Hamidon
4. Norhafizah bt Yunus

PEO : To produce professionals business graduates who have the ability to adapt to the challenging business environment and contribute to the well-being of the community.

Subject : Contemporary Business

Sub topic Management

Learning Outcome :

At the end of the lesson, students should be able to:

1. Organize the Human Resource Management task in order to carry out a well-planned projects through journal case study by group activity. **C5, P4, A4**
2. Analyze the level of staff performance to effectively correct the quality of work through roundtable discussion. **C4, P1, A3**
3. Present the findings from the case study to briefly explain the importance of management organizing through group presentation. **C5, P4, A2**

Lesson Plan

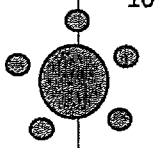
Technique : Roundtable

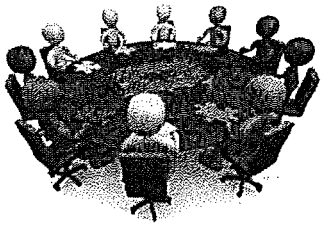
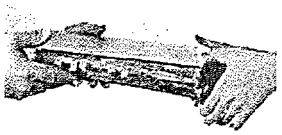
Purpose : 1. Generate as many solutions to solve the case study.

2. Stimulate students to response fast and accurate by using analytical thinking.

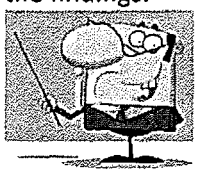
Steps :

General subject : 30 students

Lecturer	Students	Duration
Step 1 Arrange the students into the smaller groups Lect : 'Good Morning students, today I would like to put you into 6 small group and each group	**Step 1** Student appoint 6 groups 	10 min

have 5 members'.		
Step 2 Pose the case study to each group  Lecturer : CASE STUDY : Company ABC is facing a lot of problems recently. The construction projects are delayed. Company has received a lot of complaints from project managers regarding the mismatch of skills and job assignments. Some projects progress very fast but some other project progress are far behind the schedule. At the same time, staff are complaining about the job performance evaluation. Staff generally feel that they are not being evaluated properly. Please help the Managing Director to solve this problems. **Step 3** Explain to the students how to conduct the roundtable discussion and choose a	**Step 2** Students read the journal case study silently in group.  **Step 3** In small groups, students take turns adding their ideas and the first students write down an ideas and sharing it to the group members. (the turns will start from left to right / anti clockwise)   **Example of Roundtable discussion.** Group 1 : *Student 1st* : Problem identification : 1.	20 min

leader for their groups. - Variation :Parallel roundtable can be practiced in a large group of students. (more than 30 students)	ismatch of skills and job delegation. Reason is the staff that being assign to the task, does not have the appropriate skills to carry out the task as required. *Student 2nd* : I think another problem is job performance evaluation method that are using by the company. Reason : the company is using wrong method to evaluate the staff performance. *Student 3rd* : How about the solution ? (*sometimes certain student no ideas to share in and , they would say 'Pass'.) **Other group member can continue to the discussion** *Student 4th* : for the first problem : in my opinion , company should identify the skills and knowledge required to complete a project effectively. For example : communication skills, technical skills, leadership skills and etc. *Student 5th* : for me, the company should also categorizes all the staff according to their strengths In terms of the skills and knowledge. **The discussion can be done more than one round until they find the best findings.** *Student 1st* : they need assign manpower to each project by choosing staffs from different categories of skills and knowledge . for example : company should choose 2 staff from operation , 2	

	staff from marketing and sales , and also 2 staff from technical department. By this way each project will get a balance manpower in terms of skills and knowledge. *1st* : solution for problem 2. I think, staff should be evaluated according to their specific tasks for the project not evaluated base on general criteria. *3rd* : company need to set up a performance evaluation grievances committee to hear the complaint form the staff. *4th* : in my opinion , company should evaluate staff quarterly not yearly as now. Staff will get feedback faster and have chances to improve their performances	
Step 4 Allocate the time duration for discussion.	**Step 4** Group stops when time is called, and each group organize and prepare for the presentation.	20 min
Step 5 Instruct the leader for each group to present the findings.  Lect : student needs to present all the findings and summarize the case study .	**Step 5** Leader will present the findings of the journal case study.	15 min/group (15 min x 6 group = 90 minute)

Step 6 Give comments to the students' presentation. Comments on : - Team work - Cooperation - Eager to learn		5 min

CONCLUSION

The active learning pedagogy cycle is a way by which to visualize the many parts that need to be considered when designing a lesson for the student. Even though there are only six stages in the model each one requires thoughtful consideration to address the learning environment the student is placed in. The teacher is responsible for creating the activities the student will be exposed to and it is up to the teacher to monitor and evaluate the student's progress in every technique that is being used in the classroom. If all the stages are addressed simultaneously in The New-Generation of Teachers Project (Saengpassa 2009), then the ease to manage each stage will be made easier. The tools being developed are changing rapidly and knowledge accumulation is growing exponentially.

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Promoting Active Learning in Universiti Teknologi Malaysia: A Bottom-up, Top-down Approach

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