

2007/2008

ACADEMIC QUALITY SYMPOSIUM

TOWARDS A BETTER ACADEMIC QUALITY ASSURANCE

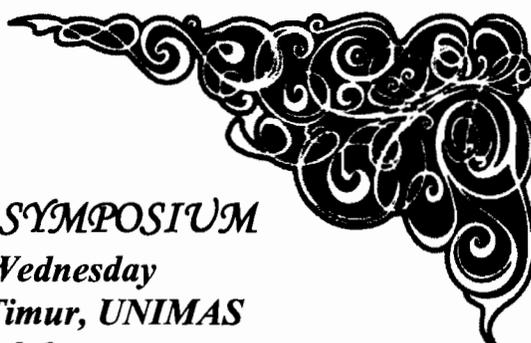
5th December 2007

ORGANISED BY:

**FACULTY OF ENGINEERING
UNIVERSITI MALAYSIA SARAWAK
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ACADEMIC QUALITY SYMPOSIUM

December, 5, 2007 – Wednesday

Dewan Santapan, Kampus Timur, UNIMAS

Symposium Schedule

08:00 – 08:15	REGISTRATION	
08:15 – 08:30	WELCOMING SPEECH FROM THE DEAN OF FACULTY OF ENGINEERING	
08:30 – 10:15	Session I : Enhancing Student Learning Process <i>Chairman : Dr Al-Khalid Hj Osman</i> <i>Reporteur : En. Ron Aldrino Chan</i>	
	Kaedah Mengoptimumkan Potensi Diri Pelajar "Optimizing Students Potential"	Ana Sakura Zainal Abidin
	Enhancing Student Learning Process	Liew Hon Boon
	Studying Experience in Japan : Malaysian Graduate's View	Aidil Azli Alias, Mohd Danial Ibrahim, Noor Hisyam Noor Mohamed, Shafrida Sahrani, Siti Nor Ain Musa
	Silence Students: Asian Culture or Passivity?	Charles Bong Hin Joo, Hollena Nori
	Student Centered Learning – Introducing the OER	Dr Mohd Ibrahim Safawi
	How UNIMAS Life Contributed to Working Life	Jong Fung Swee
	Q & A Session	
10:15 – 10:30	BREAK	

10:30 – 12:00	<u>Session II : Effective Teaching Learning Techniques</u> <i>Chairman : En. Ngu Sze Song</i> <i>Reporteur : Cik Shamsiah Suhaili</i>	
	Teaching Engineering Mathematics – A Case Study	PM Dr. Sinin Hamdan
	Improving Ways of Preparing and Delivering Lectures	M.S. Norazzlina, A.K.A. Razak, J.H. Adam
	Effective Instruction for Large Classroom : Engaging Active Learning Environment	Mohd Raduan Kabit, Norehan Zulkipli, PM Dr. Wan Hashim Wan Ibrahim, Ron Aldrino Chan @ Ron Buning
	New Method of Taking Attendance for Bigger Class : Experience from 1 st Year Subject; Multimedia Technology	Jonathan Sidi
	Case Study of Using “Autorating” Peer Evaluation System as a Cooperative Learning Evaluation Tool	PM Dr. Wan Hashim Wan Ibrahim, Mohamad Raduan Kabit
	Peer Assessments for Groupwork in Civil Engineering Courses	Azida Hj Rashidi, Dr. Mohd Ibrahim Safawi, Dr. Ahmad Lebbe Mauroof
Q & A Session		
12:00 – 13:30	LUNCH	
13:30 – 14:55	<u>Session III : Academic Curriculum and Deliverables</u> <i>Chairman : Ir Dr Andrew Ragai Henry Rigit</i> <i>Reporteur : En. Mohd Saufee Muhammad</i>	
	Philosophical Basis for Course Development	PM Dr Spencer Empading Sanggin
	Creating Engaging Learning with Multimedia : Towards Total Multimedia Learning Environment	Jonathan Sidi, Syahrul Nizam Junaini
	Using Software in the Teaching of Engineering Courses : Benefits and Pitfalls	Dr Ehsan Ahmed, Dr Ahmed Lebbe Mohamed Mauroof
	Supporting Instructional Process with PowerPoint : Experience from Multimedia Technology Subject	Syahrul Nizam Junaini, Jonathan Sidi
	Monitoring The Correlation of Programme Outcomes to Civil engineering Course	Dr. Siti Halipah, Idawati Ismail, Onni Suhaiza Selaman
Q & A Session		
14:55 – 15:15	DISCUSSION SESSION	
15:15 – 16:15	CLOSING CEREMONY	
16:15 – 16:30	REFRESHMENT	

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*ACADEMIC QUALITY SYMPOSIUM
ORGANIZING COMMITTEE*

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Co-Advisor

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DR. MAHBUB HASAN

Reception/Ceremony

LARRY AK SILAS TIRAU

MESSAGE FROM THE DEAN, FACULTY OF ENGINEERING



On behalf of Faculty of Engineering, I would like to express my warmest welcome to all participants of the One Day Academic Symposium 2007 which is organised by our faculty members. I would like to extend my greatest appreciation for their tremendous efforts in organising such an important event for us to share new ideas in teaching and learning.

Concurrent to the aspiration of UNIMAS, the Faculty of Engineering is endeavoured to be one of the leading Engineering Faculties in this country by imparting quality engineering education through quality teaching programmes and research developments. To date, the Faculty of Engineering consists of three engineering departments which are excelling in its own niche areas. Next year, faculty is expected to embark on a new programme under the newly established Department of Chemical Engineering. This new addition of engineering department is aimed to augment the expertise within the faculty which undoubtedly will destine the Faculty of Engineering, UNIMAS, as centre of excellence towards teaching of fundamental engineering programmes and research developments.

In line with the quest, the faculty have taken numerous numbers of far-reaching measures in order to be on track with the ever-changing needs of quality engineering programme. To date, the faculty have vigorously prepared for next year's accreditation exercise for all of its four engineering programmes and have implemented Outcome Based Education (OBE) to all courses offered by the faculty. In addition, the faculty have also congregated a group of dynamics and experienced staffs in order to direct the faculty to the future through our persistent strategic planning exercise.

As such, I hope that this symposium will provide the academicians a place for sharing their invaluable experiences and exchanging of useful information towards a better quality in teaching and learning process.

Thank you.

Dr. Azhaili Baharun
Dean,
Faculty of Engineering,
Universiti Malaysia Sarawak

MESSAGE FROM THE ORGANIZING CHAIRMAN



The organizing of this inaugural Academic Quality Symposium 2007 is part of our efforts to improve the quality of engineering education offered to UNIMAS undergraduates. The Faculty share the vision of becoming an exemplary university of internationally acknowledged stature. A journey of a thousand miles start with the first step.

The objective of this symposium is to get feedback from Faculty members and experts from within UNIMAS on the improvements we can introduce to our delivery system. Two themes of concern are on enhancing student learning process and academic curriculum. All the presentations will be noted by a Reporteur and the General Reporteur will present the outcomes in the plenary session during the closing ceremony. The Faculty is in the midst of establishing and strengthening the existing continual quality improvement (CQI) system on our delivery methods. The spirit of CQI is a fundamental requirement of accreditation by the Engineering Accreditation Council, Malaysia. Our Faculty is applying for the next accreditation in 2008. Hence, this symposium has been timely organized.

The responses from the call for extended abstract has been overwhelmingly encouraging. We are proud to announce that paper submissions come from our alumni and the Student Association Faculty of Engineering or SAFE. CALM has been specially invited to present a paper on education philosophy. Some of the Faculty members, both the senior and new ones, submitted interesting papers based on their experience in the Faculty. The rationale of using the extended abstract format is to serve as a practice for staff to learn writing and submitting to conferences. We hope to motivate and build their confidence to submit to other conferences and journals in future.

Finally, we would like to express our deepest appreciation to Prof Mohd Azib b Salleh, Deputy Vice Chancellor (Academic and Internationalization) and Dr Azhaili b Baharun, our Faculty Dean for their continuous support in organizing this event. Also, to all the organizing Committee members for their trust and hard work in making this symposium a success. We hope everyone will benefit from this Academic Quality Symposium 2007.

Thank you.

Dr Mohd Ibrahim Mohd Zain
Chairman
Academic Quality Symposium 2007



***ENHANCING STUDENT LEARNING
PROCESS***



Enhancing Student Learning Process

Liew Hon Boon

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ABSTRACT The enhancement of student learning process can be carried out in various ways. One of the more prevailing improvement required would be the instigation of the constructivism theory in lecturing. Learning should be centered on the student's effort instead of the lecturer. The delivery system too requires improvement and the most possible candidate of improvement would be to integrate andragogical learning amongst students. This will encourage development of skills and mentality capable of handling the working environment. The student-lecturer interaction of the current system is excellent but may prove counter productive when student number increases. The use of electronic media such as forums, online contents and instant messaging will regain some productivity inefficiency due to large student numbers.

1. INTRODUCTION

The improvement of tertiary education has always been improving the syllabus according to the industry requirements and lacks improvements in the sense of student learning process. This literature focuses on presenting possible solutions to enhancing the student learning process. It will include theoretical learning concepts such as constructivism and andragogy. The efficient use of simple every day computer technology will also contribute to this improvement.

2. CONSTRUCTIVISM FOR BETTER STUDENT UNDERSTANDING

Constructivism is an epistemological view of knowledge acquisition emphasizing knowledge construction rather than knowledge transmission and the recording of information conveyed by others. The students are conceived as one that builds and transforms knowledge.

For the purpose of this literature, the dialectical constructivism was given due focus. It views the origin of knowledge construction as being the social interactions among people that involved sharing, comparing and debating among students and mentors, in this case the students and the lecturers. Through this interactive communication, learning and knowledge is given center stage which enables student to both refine their own knowledge and help others to attain knowledge.

While the faculty is mostly applying lecturer centered learning, the constructivism method on the other hand dramatically changes the learning focus towards putting the students' own effort to understand as the main objective. Generally, all constructivist theory revolves around four major characteristics,

which are:

- I. Learners construct their own learning
- II. The dependence of new learning on students' existing understanding.
- III. The critical role of social interaction.
- IV. The necessity of authentic learning tasks for meaningful learning.

For a traditional learning method, the knowledge is all conveyed by the lecturer with the rest of lecture hall being passive receivers. There was no way of knowing if the correct knowledge or any knowledge at all was conveyed to the audience. The constructivist approach on the other hand challenges students to develop their own understanding of the subject or topic given through discussion among peers and guidance from the lecturer. To avoid misconceptions or misinterpretation of the given tasks or subject, the lecturer will act as the moderator and divert the students back on track with the intended knowledge.

Through constructivist method, the general notation towards a monotonous and quiet lecture can be changed towards a dynamically structured cooperative learning environment which everybody looks forward to attend. Through this method, students are better empowered to inquire about uncertainty in their understanding and also given more opportunity to solve problems. This method also causes students to struggle for better understanding of subject matters in which at the end of the day promote true growth that better prepares them for the working environment.

There are some critics towards this constructivism method that refers to it as not effective and presents flaws of not delivering knowledge as it was intended

by the lecturer. One of the issues would be on the method of creating a focused learning environment. This issue can be tackled by designing a task that is specifically suited to the desired outcome. It however should not predetermine the path towards achieving the outcome. Instead the students should be given freedom to achieve the outcome in what ever way they develop.

Some critic says that this method does not require much planning and coordination than the traditional method. The truth, constructivist method requires the lecturer to do more planning on the task so that the outcome is what it was intended. An improper planning would result in wasted efforts and misguided students. But once the desired outcome is achieved, it means that the students have learned the conveyed knowledge.

Another issue is that some may think this method does not involve the lecturer in delivering the knowledge directly and thus reduces the lecturer's role in the learning process. Contrary to this, the lecturer actually has more responsibility. Instead of just telling or informing, the task changes to guiding students towards genuine understanding of subjects. It is up to the lecturer to decide on when intervention is required or how much intervention is needed.

Constructivist learning is also perceived as lacking of structured learning. With proper planning, students are always guided in achieving the predetermined outcome. The difficulty level will be determined by the lecturer based on the particular batch of students' performance on previous learning. It must be noted that discussion alone is not an indication of learning but a discussion with the lecturer's observation and guidance will indeed promote better understanding.

Lecture notes are then only to be used as supplement to the discussion and reference books as validation to the students' understanding.

3. FACULTY'S DELIVERY SYSTEM

The current delivery system practiced by the Engineering Faculty is mainly focused on the Pedagogical teaching approach. In this approach, students are dependent upon the lecturers for all the learning required from each course or subjects. The lecturer assumes full responsibility for the scope of knowledge taught and the appropriate method which students should obtain this knowledge. At the end of the course, the lecturers are mainly evaluators on the learning achievements of the students.

Students on the other end are expected to attend the courses or lectures with little experience that could be tapped as a resource for learning during the course. In this sense, the lecturer's experience is the predominant factor of teaching throughout the course. It is also a norm that students are always told what must be learned on order to advance to the next level of mastery.

The learning orientation is largely based on the process of acquiring theoretical knowledge of each course and the content units are sequenced in such a

way that it follows the logic of that particular course which is mostly from reference books. The only motivation that drive the students' learning external factors. These external factors consist of external pressures, competition for grades and the consequences of failure.

Instead of relying heavily on Pedagogy approach, the faculty's delivery system should incorporate more of Andragogical approach. Although the Pedagogy approach is somewhat effective in the first two years of the engineering bachelor's degree program, it becomes a problem when students are in the third year right before they go for industrial training. The reliance on lecturers is brought to the working environment where there is no clear guidance given on what to learn or how to learn. Thus large possibility exists that the learning during training is shallow in terms of the quality of the knowledge and experience obtained.

Towards the final year study at the faculty, students should be greatly implanted with Andragogical type of learning so to prepare them for after graduation scenario. Students should be allowed to be self directed, responsible for their own learning and conducts self evaluations. At this stage, the faculty should ensure that the students are capable of assessing the gaps between where they are and where they need to be. The learning urge should come from the student's need of knowledge to perform better in certain aspect of their field of study.

The learning orientation should be shifted towards knowledge gain through the need to perform a task or solve a certain problem. All the learning provided must cater for relevance to the afore-mentioned tasks. The learning should be organized around work situations instead of subject matters from reference books. It is however be mentioned that, for Andragogical method to be effective, students should already be sowed with internal motivators such as recognition from lecturers. Self esteem and self realization too shall be prominent which proves to be a powerful tool in the working environment ahead.

4. STUDENT-LECTURER INTERACTION

The currently implemented student-lecturer interaction in the faculty is of satisfactory level and serves the faculty's community well. This face-to-face interaction among lecturer and student creates an open environment where students can easily approach lecturer for academic related inquiries. But with the recent increase in student intake, this interaction approach is reaching its limits. Lecturers no longer can entertain every student as the numbers are simply too big.

Measures should be taken to tackle this problem immediately before it becomes a barrier to lecturer's productivity and student's academic welfare. A digital approach shall be focused for the purpose of this literature. The digital approach here means a more

comprehensive implementation of digital contents usage. Approaches that should be given due considerations are the use of dedicated forums for each lecturer, better usage of digital content uploading and instant messaging.

A dedicated forum for each lecturer would enable the students to make academic inquiries of the lecturer's subjects without requiring immediate answer. From the lecturer's stand point, precise answers can be provided for the questions posted as there is ample time to validate their answer. Through forums, all the inquiries can be answered without having twenty or maybe more students in their offices. It also serves as reference for other students with similar enquiries, thus reducing redundant questions.

Although there is some implementation of online digital contents, the implementation is still at its infancy for our faculty. Each lecturer should be given their own online space to upload supplementary contents of the courses that they teach and make it compulsory that the contents are uploaded and updated regularly. The university's upgraded IT infrastructure should be capable of accommodating this with ease and students will not have to pester lecturers for notes.

The implementation of instant messaging will ease the communication between lecturers and students when they are outside the lecture hall. Instant messaging will allow simple questions such as assignment due dates, schedule change etc be answered quickly and productively. Although the university does not allow instant messaging, but it has come along way and most of the industry has accepted it as a communication tool among peers. An adaptation could be done on the instant messaging software to accommodate the university's requirement. Restriction such as internal use only may prove to be a sufficient security measurement.

5. CONCLUSIONS

The student learning process can be enhanced through various improvements in the learning process itself, the faculty delivery system and the student-lecturer interaction. Constructivism theory of learning should be instigated into the learning process as it promotes construction of knowledge instead of replication. The pedagogy type of delivery should be mated with andragogical type of delivery towards the last two years of the program. A better use of IT devices would make student-lecturer interaction easier and more productive even when the student numbers increases greatly.

6. REFERENCES

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Studying Experience in Japan : Malaysian Graduate's View

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ABSTRACT With the implementation of 'Look East Policy' proposed by Tun Mahathir Mohamad, Malaysian government has been sending Malaysian students to further their study there in order to emulate the ways of the developed countries in Japan. The 'Look East Policy' was a framework for learning from successful Japanese, and adapting some of the applicable values into Malaysian needs. The entire long journey for the Japanese to achieve today's success start from the education system. To maintain the quality of education system of higher institute, JABEE had been established. With the establishment JABEE, an outside organization can fairly evaluate whether programs in engineering education conducted by institutions of higher education such as universities reach the levels expected by society and accredit those programs that reach such levels. Nowadays, all the higher institutions of education in Japan are in the process of implementing the educational system proposed by JABEE. This paper will share the moments experienced by Malaysian students studying under the Japan's education system

1. INTRODUCTION

Japan is well-known as a developed country where everything must be in order, following every rule and well disciplined. It is believed that the secret of the Japanese success and its remarkable development lies in its labour ethics, morale, and management capability. In order to maintain the success, Japanese politician and academician think that education system plays the most important role, where the value of moralities can be taught. In order to maintain the success, a nongovernmental organization, the Japan Accreditation Board for Engineering Education (JABEE) had been established on November 19, 1999. This organization examines and accredits programs in engineering education in close cooperation with engineering associations and societies. This body plays the same role as Engineering Accreditation Council (LAN) in Malaysia.

Until November 2007, majorities of the public universities in Japan have been accredited by JABEE. And recently, Japan had been successfully recognized as one of the member of Washington Accord. This success can be achieved in such a short period because of the ethics, morale and the management capability of the students themselves. The first barrier that a foreigner student has to face in Japan is the language, and the second one is the fact that Japan is based on group similarities and homogenous qualities, where it's hard for any foreigner to get equalities in the Japanese community. This paper will explain a brief picture of the university's life in Japan experienced by Malaysian graduates. The first section gives a concise picture of the morale and ethics of Japanese students in university. Second section explains the experiments and practice-

based learning implemented in Japan, and the last section explains the difference between Final Year Project conducted by final year students in Japan and in other countries.

2. JAPANESE STUDENT

2.1 Cliques; circle of trust

One of the factors that can be extremely seen among the Japanese students in most higher education level in Japan is cliques. The cliques form a small exclusive group of friends or associates which resembles a circle of trust among close friends.

They do academic and social activities together, discuss about anything even share secretive information among themselves. It is hard to get into the circle if you are an outsider, especially foreign students. If you come to the class together with another foreigner, the difficulty to join the cliques would be double and more time consuming to cope with the high pace class.

2.2 Study Environments

In most of the universities in Japan, the administration of the institution supports the ISO14001 which holds a motto "Environmentally Friendly". To support this motto, they keep the environment of the university by hiring citizens as cleaners.

Japan is well known as a community which highly respects to their senior citizens because of the strong senior-junior relationship. This keeps the students maintain the university environment clean and well kept.

2.3 Time Management

In terms of time management, most Japanese students are punctual and high disciplined. Time is valuable for them as it can be seen that whenever they make any

appointment or group discussion meetings, they will start and end right on time, regardless of full attendance or not.

In addition to that, deadline for assignments usually are very strict and no compromise. Assignments submitted even one minute late from the deadline will be rejected or get warning from the lecturer.

2.4 After-class Social Activities

Part time works are common for student's life in Japan. Usually they will do their part time work after the class or in the weekends, such as newspaper deliveries, translations, waitress and others. The part time works are actually for the students' pocket money. Usually they spent it for their '*nomikai*'.

'*Nomikai*' is a Japanese culture which gives the chance for the students to gather with their colleagues and seniors after class. The importance of this '*nomikai*' is to maintain the bond inside their unique society.

3. LABORATORY ACTIVITIES AND WORKSHOP

Experiments and practice-based learning is introduced to students in Year 2. This is exceptionally rational because the students need to be exposed to basic educational in the year 1 and concentrate on the subjects. In year 2, students have a certain level of understanding to their respective major, therefore introducing laboratory works or experiments during year 2 will give more understanding for the students to apply the basic knowledge into hands-on practice. Students are to make a report on every experiment and submit the reports 1 or 2 weeks after.

For workshop practice, students are exposed to machine handling and workshop environment in year 2 and year 3. As a normal procedure, students are instructed to wear safety jacket, boots and wear safety equipment during the workshop practice. The technicians are also dedicated to help and assist students at any time when needed. This is crucial to give right handling instructions and to make sure students do not use machines improperly or waste the materials in the workshop.

As students need to concentrate on studies together with lab works and assignments, it is helpful to balance the workload on assignments and lab works. Therefore, the lecturers do not burden students with too many assignments, but instead distribute assignments and lab works equally for students to understand better on their studies and at the same time, be able to focus on lab or workshop works.

4. FINAL YEAR PROJECT

Final year project (FYP) is one of the important courses to the final year student. In the FYP course, students have an opportunity to apply the theoretical knowledge learned from the classroom to the practical activities such as design and fabricate a robot, conduct an experiment based on the selected material, analyze the heat effect and etc. FYP make the student more creative in order to find the references and solutions

based on the selective topics given by the lecturer.

Majorities of the universities around the world are practicing the FYP to the final year student including Japan and Malaysia. However, there are some differences in the implementation. The FYP become main course in the academic curriculum in Japan since research is one of the important activities in the country. Besides that, for the final year student the whole final year is provided to focus on the FYP only without any other courses. Lot of money also given by the Japanese government and the Japanese industries to support research activity in the university. One good thing about FYP in Japan is the university very supportive in funding the FYP student in any areas as long as the student is interested in research. The Japanese will do a research again and again until getting the best result. Try and error is key factor of the research successful in Japan.

4. CONCLUSIONS

Studying in Japan requires an open mind and flexible attitude to previously conceived notions about what learning a foreign language is and how it should be done. Contrary with other country, for instance Malaysia, where student-centered learning being implemented, Japan is a country where lecturer-centered learning is still being implemented widely. Majorities of the lecturers still come to the class and continuously give lecture for an hour and half without considering whether the outcomes of the lecture being achieved or not. Throughout the lecture, half of the class will get sleepy and sleep. However, the strange thing is, even though the delivery method can be considered as outdated and not effective, at the end of the day, the students can understand very well the course. Why? The answer for this goes back to the ethics and morale of the students themselves. How bored the lecture is, they respect their lecturer by not making noise during the lecture, and they will make sure either they copied the lecture notes from their friends or get it from their seniors. They make an effort to study on their own first before they look for the lecturer asking for assistance.

In order to learn and to adapt with the Japanese community and Japanese education system, it is necessary for students to ask questions and to not be afraid of making mistakes. This is all a part of the learning process, and in order to further the experience and knowledge in the engineering fields, it is important for the student to participate actively.

Silence Students: Asian Culture or Passivity?

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ABSTRACT Silent response given by students when being posed questions or asking for their opinion on a subject matter is a situation faced by most lecturers when conducting classes, especially with Asian students. Studies carried on the behaviour of Asian students have shown that these groups have different learning styles and method compared to western students. Unlike the western culture, these Asian students are less active in participation during the learning activities in class. This paper will discuss the background of this issue, factors contributing to this issue and finally proposing some of the methods that could be use by lecturers in encouraging students to speak up in class.

1. INTRODUCTION

Most lecturers encounter the experience of frustration due to lack of response and long silence from students when questions are being posed to them. As a result, the lecturers themselves have to answer their own questions in order to fix the situation. Another scenario is when the lecturers open the floor for question and answer session but no questions were being asked from the students. Some lecturer relates students' silence in class with passivity and lack of cooperation. Is this necessary true? Is it a culture for Asian students to remain silence in class? What other factors that contributes to this issue. What can the lecturers do to encourage students to speak up and ask questions? All of these will be discussed in this paper.

2. BACKGROUND OF THE ISSUE

In a study done among Chinese students, it was found that these students do not tend to ask as many questions as their western counterpart [1]. According to the Chinese culture, questioning during the learning activities may be viewed as representing a challenge and disrespect to the teacher [2]. This opinion is explained by the Chinese Confucion Heritage Culture, where the teacher is regarded as the most respected master who has all the wisdom and it is impolite to interrupt and asked questions. This aspect is called power distance where the teacher is given great respect and authority in the classroom. However, this culture has created a gap and boundary between the teacher and students, and this has caused the teachers become inaccessible to the students.

Having said that, how about other Asian students that are not of Chinese heritage? From Hofstede's model of cultural differences among societies [3], he categorized Asian students as collectivist, which by definition means that these cultures tend to emphasize the needs of society as a whole, identifying individuals through their

membership in a group rather than their position, rank, or personal qualities [4]. When, learning activities are conducted in the classroom, students in collectivistic societies will seldom respond to the lecturers' questions if the questions are directed to the entire class. They will only speak if called personally, however there are hardly any volunteers when answering questions in the class. Furthermore, these students prefer to work in small rather than large groups.

Another contributing factor to this issue is the incompetence of speaking the language of instruction. Asian students may be quiet in class because they are not confident in speaking English language fluently. As a consequence, they may lack self-confidence in expressing themselves and also afraid to 'lose face' by exposing their weaknesses. Other justifications associated with silence are because they are shy, does not understand the subject matter, the fear of being attacked back by the lecturer and afraid of being portrayed by other classmates as asking irrelevant and ridiculous questions.

It is not fair to look into this issue from the student's perspectives only. Sometimes, it is the lecturers teaching style that contribute to silence in class. If the lecturer only focus on the subject matter thoroughly and teach without losing time with not much student interaction, students will tend to perceive that the lecturer are not open to opinion and discussion. Consequently, this will lead to a passive classroom environment where students' creativity and enthusiasm in learning are not manifested.

This classroom environment where exam-oriented is over emphasized will create a situation where students have fear of making mistakes which leads to the feeling of low self esteem, therefore they will only dare to express their ideas if they have something brilliant and positive to contribute. As a result, this will produce students that are only concern about the end product or result, where they are expected to learn how to do and not learn how to learn. This is a total opposite concept

from the western educational theory which favors constructivist approach, where student construct their own knowledge merely facilitated by the teacher [5].

3. RECOMMENDATIONS FOR THE ISSUE

With the factors mentioned earlier that contributed to students' silence, lecturers who face this issue need to identify what are the contributing factors for their class as well as creating a conducive learning environment.

One essential characteristic of effective teaching is to be sensitive to the individual needs of students. Lecturers who alter instruction to accommodate individual differences transmit the message that they want to reach all of their students at the same time. Students are much more likely to participate actively in learning activities when they know that their lecturer has considered their needs.

Lecturers should become more approachable by learning students' names. Calling students by name signifies a positive relationship between lecturers and students. Students who recognize that their lecturers think of them as individuals with individual needs will feel more comfortable in class and be more responsive in discussions.

Lecturers should also promote the concept of student-centred learning where discussions are encouraged. This is to let the students know that at university level, discussions are important in building knowledge and it is acceptable to make mistakes for the sake of learning, thus adopting the constructivist approach.

During lesson, lecturers can pose various questions and challenges and provide opportunities for students to learn and work together in small groups so they can learn from each other, adopting the cooperative learning approach. When students are put in small groups, they will feel less threatened especially if they lack self-confidence.

Lecturers need to create a safe environment for student participation by insuring that they never ridicule a student's questions and opinion. One way to encourage participation is to reinforce appropriate students behaviour both verbally and non-verbally. This can be done by encourage them to really speak up without worrying the consequences of their statement.

It is crucial for the lecturers to emphasize the importance of communications in the class for the purpose of learning by asking questions and giving response.

4. CONCLUSION

Silence students does not necessary mean that they are passive. A lot of factors can be traced that leads into this issue, either from cultural background, language problem or the environment that the lecturer creates in class. To encourage students to speak up, the focus should not only highlight specifically on teaching method into practice but also to enhance students' learning. This can be done by using methods that draw on the cultural dynamics of Asian students and also to

emphasize on student-centred learning instead of teacher-centred.

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Student Centered Learning – Introducing the OER

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ABSTRACT This paper introduces the idea of Open Education Resources to the faculty members. OER are an internet empowered worldwide community effort to create an education commons. A brief introduction of OER is outlined with some examples of how it can be applied. There are several advantages that can be derived by adopting OER into our delivery system. This will theoretically put the learning process centered on the students and make them responsible of their own academic performance. It is concluded that the use of OER will elevate the status of our faculty into the global arena.

1. INTRODUCTION

The issue of students' academic performance has been the major concern of the Deputy Dean's office. There are many reasons that can explain the students' performance. The easiest and simplest reason is that the students do not work hard enough to pass their exams. It is important that we realized students' performance is not the product of their own doings only. There are many other factors that could contribute to students' failure. Figure 1 attempt to categorize a few possibilities.

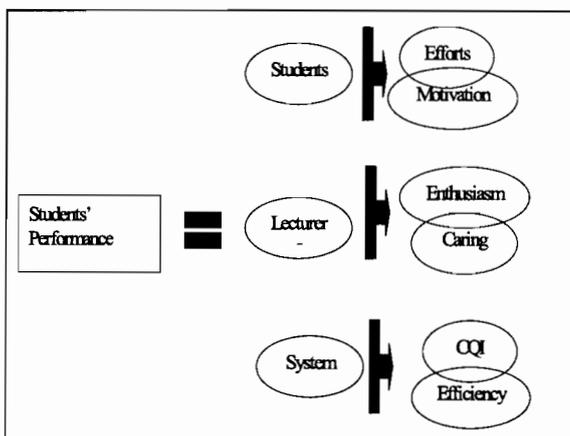


Fig.1 Factors affecting students' performance

There is one simple rule in the above equation and that is, a student will learn when he wants to and choose to learn what he wants. The objective of this paper is to obey that rule by introducing the Open Educational Resources (OER) philosophy. The knowledge of OER was obtained from the recently concluded Global Higher Education Forum 2007, organized by the Ministry of Higher Education on 6 & 7 November 2007 [1].

2. INTRODUCING OER

In 2002, UNESCO coined the term, Open Educational Resources (OER). OER refers to the "open provision of

education resources enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes". If content and software can be obtained openly and freely, then educators and learners worldwide will benefit. Educators can review, adapt and translate content for their own teaching and institutional setting. Learners can access materials for independent study [2]. The term was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries funded by the William and Flora Hewlett Foundation. OER educational resources include *learning content, tools (softwares) and implementation resources*. The website that hosted the reflection and discussion of OER and Free and Open Source Software (FOSS) belongs to the International Institute for Education Planning (IIEP).

This is an interesting concept that challenges the traditional theory of a teacher and student relationship in a classroom set up. OER promotes sharing of resources that are openly and freely available on the web for use, re-use, adaptation, translation, and localization.

Take for example, in the study of civil engineering materials. Course notes from the University Of California Berkeley, Massachusetts Institute of Technology and Arizona State University can be easily downloaded and used for teaching purposes. Their web addresses are <http://www.ce.berkeley.edu/courses>, http://ocw.mit.edu/OcwWeb/civil_and_env/~lectureNotes and <http://www4.eas.asu.edu/concrete> respectively. Of course, there will be a need to modify the course notes to suit our own syllabus in UNIMAS. On the part of the learners, if we duly informed them that these study materials can also be obtained from such websites and relevant to their courses, then the onus will be on them to study at their own time and pace. Chances will be high that they could understand better and more using various notes from other universities than that of our own. Recommendation and acknowledgment of these websites by course lecturers is necessary in this process.

Another example is in the teaching of mathematics. Virginia Tech has abundant topics especially for

mathematics teachers and students. Browsing their web at <http://www.math.vt.edu/people/~sitesforTs.html>, revealed interesting topics related to the subject. There are not less than 70 links to explore including one section especially for kids.

The above two examples are sufficient to prove that teaching-learning process has changed from the ordinary classrooms to laptops and desktops. The use of OER has a community of 500 members from 90 countries [3]. Educators are allowed to download, re-use, and modify the course contents without any copyright infringement. The materials are categorized under Creative Commons (CC) License Deed. This means, you are free to copy, distribute, display, and perform the work and to make derivative works. These are allowed under the conditions that you must give the original author credit, the works is not used for commercial purposes and if you alter, transform, or build upon this work, you distribute the resulting work only under a license identical to this one. The OER and CC log are given in Figure 2.



Fig.2 OER and Creative Commons logos

3. ADVANTAGES

There are many advantages that can be derived by embracing the OER philosophy.

They are;-

1. Faculty members can benchmark the depth of teaching with that of other countries
2. Students are allowed to browse extra materials for their revision or references other than that of course lecturer only
3. The gap between the different teaching and learning styles can be reduced
4. The learning process will be done at the students' own pace and time
5. The use of such technology concurs well with the present computer savvy generations.
6. The faculty members will join the rank of global educators by engaging themselves in OER

It is vital that we keep an open mind and make ourselves ready to embrace new strategies. Being too conservative and keeping ourselves within our own domain will be akin to the Malay proverb of "*katak dibawah tempurung*", which infer a frog living under a coconut shell and not knowing what happens outside.

4. CONCLUSION

As a conclusion, it is hoped that faculty members try out the OER in their teaching. Instead of distributing bundles of paper notes, it might do good to distribute websites that the lecturer consider applicable for the course. Students are thus given more resources and can study at their own pace and according to their own learning styles. Also, faculty members can register themselves in OER forums and keep abreast of development on this aspect, at the same time, contributing towards its accessibility. At the Faculty level, it will be interesting to study the impact of using OER on our students' performance. This will reduce the blame on students' failure due to non-enthusiastic lecturers.

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How UNIMAS Life Contributed To Working Life?

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ABSTRACT Gaining entrance to public university in Malaysia is an honour. Due to the limited number of students that each university can accept, especially in fields such as engineering and medicine, only the elite students are able to gain entry. University is the place for acquire and learning knowledge and skills at the same time campus life provide platform and opportunity to start the real social life in society. The facilities and subject provided in university, attitude and behaviour of learning styles and method will build the character of graduate and how it can contribute to real working life.

1. INTRODUCTION

Thank you for the great honour of giving the opportunity as Engineering Alumni to share the experience on my title: How UNIMAS Life Contributed To Working Life? Universiti Malaysia Sarawak was established in 24 December 1992. The Faculty of Engineering was formed in 1993 and the pioneer batch of I am enrolled as second batch student of Program Mechanical Engineering and Manufacturing System, Faculty of Engineering, UNIMAS in May 1997. After completed the course in October 1999, I have served as Mechanical Engineer for two employers, they are KTA (Sarawak) Sdn Bhd (December 1999 -Mac 2001) and JKR Sarawak (April 2001 – currently). The facilities and subject provided in university, attitude and behaviour of learning styles and method will build the character of graduate and contribute to real working life. How much of learning process in UNIMAS is used during working life? What aspect of your student life has most impact on working life? How does study in UNIMAS help to motivate in long life learning? All of these will be discussed in this paper.

2. UNIMAS LIFE AND WORKING LIFE

In UNIMAS students are require to take the generic course and minor courses beside core course. These types of course design create golden opportunities to learn and think outside of the box. The core subject learned during university contributed a lot in my working life. For example the subject of Energy for Manufacturing readies me to design renewable energy concept for Bario Green Clinic Project using solar hybrid system. Our Department was set up the Research and Development Unit (RDU) in December 2003. RDU are venturing into Renewable energy project such as solar power or photovoltaic system, hydro power and hybrid system. The other subject such as Design, Design/Material Selection, and Engineering Management able me to perform the mechanical services design for building project. Nowadays firms or departments has embarked on a number of significant initiatives to ensure that it continues to play its role and

deliver the products and services of high quality, increased productivity and speedily as Total Quality Management, 5S, or ISO Quality Management. Those quality concepts had learned in university and able to adapt to working environment. Generic course like Self Management Skills, Public Speaking and Communication Skills able me to present ability and valuable to potential employer during recruitment stages. Stress management, public speaking and communication skills are major skills apply in daily working life. Meeting with internal or external client department or public to explain the design concept and implementation of government policies involving application of the knowledge and skills acquire in generic course.



Figure 1: Applying Generic Skills

Think out of box and creative solutions are essential skills to increase the performance index. Taken complimentary course in Faculty Applied and Creative Arts allow me to open my mind and express the unlimited potential and creativity. The knowledge, effort, idea, creative, potential, skills and technology all are requested to produce a vase from clay. Learning about ceramic has train me on dare to fail and use the creative

solution to solve the problem. Campus life has had the most impact on my working life. Fortunately, the old campus of UNIMAS is small and provides closer relationship to each other either from same faculty or other faculty. The orientation activities are one of the important key to learn to develop a network of friends and acquaintance on campus. Team work such as develop a group of people with whom I can discuss lectures and assignment, collaborate on difficult tutorial problem, share references or borrow or swap notes if member miss a class. Multi races in the campus and stay together with different ethnics able to study their behaviour, backgrounds and culture. Such environment encourage me to study on how to adapting myself in different living behaviour. This allows me to gained precious keys to unlocking some of richest treasuries of communication knowledge.



Figure 2: Adapting To Local Culture

Long life learning are key for continuous improvement and develop on skills and knowledge. However to practice the long life learning need the motivation and encouragement. A scenario of lot of mature age students returning to learning in UNIMAS is help to motivate me continue the learning process. I always taken part to attend the seminar or course provided by employer. Beside that I also invest my money to attend some short courses related to financial, management and self motivation.

3. RECOMMENDATIONS

Although the knowledge and skills acquire during university life are useful and applicable in working life its still have a lot of room to offer better skills coming graduate. The emphasize on Project Management and application on the project software such as Primavera or Microsoft Project are needed. The exchange program with other university within nation or oversea shall be involve majority students. Faculty should have contributed more extra activities such as seminar, site visits, expo etc. to alert student with latest technology and future development. The leadership skills,

management skills and personal financial management skills are essential to graduate. To encourage long life learning university should provide seminar, short course, or platform for alumni to attend or present the latest development on technology, skills or practices.

4. CONCLUSION

Core subject are fundamental for graduate to perform the task assigned. However the generic course and complimentary course are major factor for graduate success in career and society. Active in campus life can polish the generic skill which bring great impact on network develop and working life. Only through continuous development program can sustain the motivation on long life learning.



***EFFECTIVE TEACHING LEARNING
TECHNIQUES***



Teaching Engineering Mathematics -a case study

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ABSTRACT This paper present the finding from the final exam of 89 students (60 mechanical and 29 electronic). From the finding the author posed the critical question: Why compensate between quality and quantity- (meaning less fail but with no quality)? and Do we need to fail them and let them learn by giving more time and effort to gain more knowledge and experience- or is it consider as Taboo? and the most important question raised: can the principle of marking scheme based on real judgment or merely based on sympathy.

1. INTRODUCTION

Whatever you judge as pass is relevant because you know personally the student you are handling in the class. When the passing rate is instructed to be change to please the top management then we are no more than just pleasing people rather than doing the right things right.

2. RESULTS

The respondents are from 89 students, 60 are mechanical students and 29 electronic students. Lack of knowledge in simple geometry such as: $\sin \pi = 0$, $\cos \pi = -1$, $\sin \pi/2 = 1$, $\cos \pi/2 = 0$. instead they have $\sin \pi = 1$, $\cos \pi = 0$, $\sin \pi/2 = 0$, $\cos \pi/2 = 1$ and $d(\cos\theta)/d\theta = -\sin\theta$ but instead $d(\sin\theta)/d\theta = -\cos\theta$. In the spherical coordinate $x = r\sin\phi\cos\theta$, $y = r\sin\phi\sin\theta$ and $z = r\cos\phi$ instead they write $x = r\cos\phi\sin\theta$, $y = r\sin\phi\cos\theta$ and $z = r\cos\phi$. The question is: if they know z why they are confuse for x and y . They are also confuse in applying the formula; given: $d(\arctan\theta)/d\theta = 1/(\theta^2 + 1)$ but in application: $d[2\arctan(y/x)]/dx = 2[1/\{(1/x)^2 + 1\}](-y/x^2)$. What is missing in the answer? Divergence of a vector is scalar. Majority students gave answer as a vector! Using curl for divergence and vice versa i.e. using divergence for curl. Can we give zero mark for very purposely wrong question being solves. Confuse in coordinate system, mixed up of polar, cylindrical and spherical coordinate. Giving 2 answers and not defining which one as the correct answer. Changing the original question is i.e. $F(x,y,z) = 3zi - 4j + yk$ but change to $F(x,y,z) = 3xz i - 4yj + zyk$. Why change the question?

3. CONCLUSIONS

Although 27 students fail i.e. gaining less than 40/80 the rate of student scoring more than 60/80 is significantly high i.e. 19/89 students gain between (60-70)/80 and 10/89 students (70-80)/80. Based on these two ranges the author conclude that the level of difficulty in the exam is quiet low and the rate of failure is basically due to the initial weakness of the students in their background knowledge.

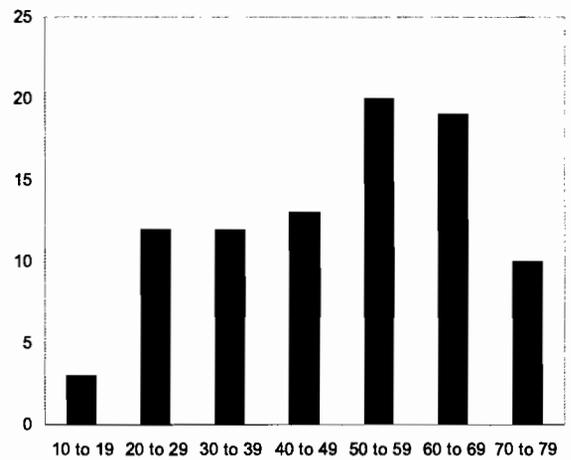


Figure 1 Histogram of result obtained from the final exam (full mark is 80%)

4. APPENDIX

The exam questions;

- 1) (a) Expand the determinant

$$|A| = \begin{vmatrix} 1 & 2 & 3 & 4 \\ 4 & 3 & 2 & 1 \\ 0 & -1 & 2 & 3 \\ 1 & 6 & 4 & -2 \end{vmatrix}$$

- 1) (b) Apply the Gauss reduction to the system to solve X_1, X_2 and X_3

$$X_1 + 3X_2 + X_3 = 2$$

$$2X_1 + 3X_2 - 4X_3 = 7$$

$$-2X_1 - X_2 + 8X_3 = -9$$

$$3X_1 + 7X_2 - X_3 = 8$$

- 2) Find the Eigen values and eigenvectors of

$$A = \begin{pmatrix} 1 & 2 & 1 \\ 6 & -1 & 0 \\ -1 & -2 & -1 \end{pmatrix}$$

(Hint: use the cofactors of the second row to obtain the characteristic equation)

- 3) (a) Evaluate $\iint_S F \cdot dS$ using Divergence

Theorem) where

$$F(x, y, z) = 4xzi - y^2j + yzk$$

and the volume is a cube with surface bounded by $x=0$, $x=1$, $y=0$, $y=1$, $z=0$, and $z=1$.

- 3) (b) Find the flux from F through the surface S by using Stoke's Theorem

where $F(x, y, z) = 3zi - 4j + yk$
and S is the part of the plane $x + y + z = 1$ in the first octant with upwardly pointing unit normal.

- 4) (a) Use polar co-ordinates to evaluate

$$\iint_R (y^2 - 2x) dA$$

Where

$$R = \{(x, y) \in \mathbb{R}^2 \mid x^2 + y^2 \leq 9, y > 0\}$$

- 4) (b) Use Green's Theorem to evaluate

$$\oint_C (3xy - x^3 e^x) dx + (\cos y + \sqrt{y}) dy$$

Where C is the triangle with vertices $(-1, 0)$, $(0, 0)$ and $(0, 1)$ taken once, anticlockwise.

- 4) (c) Evaluate $\iint_S (3x^2 + 3y^2 + 3z^2) dS$

where S is the surface of the sphere

$$x^2 + y^2 + z^2 = 4$$

Improving Ways of Preparing and Delivering Lectures

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ABSTRACT This paper presents the problems that occurred based on our teaching experiences in university. It might happen to newcomers as an academician in university's education life. Further, the paper also proposed some suggestions to improve the ways of preparing and delivering lectures.

1. INTRODUCTION

Lecturing is a must for every lecturer in any universities. It is essentially a form of public communication or speech. The ability to lecture well, like speaking well, is an acquired skill.

Lecturing is not the only way to teach, but it can be very effective if it is used with appropriate goals in mind [1]. One of the things we're trying to do in a lecture is touch our audience emotionally, not just logically because that's when they remember, that's when they are fascinated by it, that's when they want to study it more [2]. Many effective teachers try to foster active involvement, participation and interaction of students in classes, and to communicate their openness to and respect for alternative and challenging point of view [3].

The following section will enumerate briefly some problems occur in lecturing and suggestions to improve it.

2. PLIGHT IN LECTURING

Students' perception simply conclude that a poor lecture originate by poor lecturer. The poor lecturers are basically referred to instructor who read scripted note without looking to the audience, teacher who spoke to white board or slide presentation, and lecturer who spoke too soft which could neither be heard nor understood. But, all these examples are too common and even good lecturers make mistakes. Some particular problem areas involve in lecturing are:

a) *Cover too much material*

It is simply impossible to deliver everything during the two hours per class in 14 weeks of the semester. It is true; however, many lecturers deny it because they felt that the course is very complex and specific which require thorough explanation. Thus, the lecturers may fall behind or too fast to be in schedule which leads to difficulty for students to appreciate and understand the course contents.

b) *Fail to prepare adequately*

Being an expert on the subject matter does not assure efficiency in lecturing. Even most of the professors are dedicated their lives to learning, thinking and doing research but they might turn to be miserable lecturers. However, the importance of the knowledge as a foundation for effective lecturing is not to be argued but preparation before lecture is necessary.

c) *Disorganize materials*

The material prepared might be considered as rationally organized by the lecturers but if the students fail to understand, they tend to perceive lecturers as disorganized because (i) they cannot spot the key ideas; (ii) no summaries provided; and (iii) organizational outline is too intricate to track.

d) *Ignoring student response*

The ignorance of the students' reaction during the lecture may cause by the rigidity of the lecturers to cover their lecture notes ("cover the book" syndrome) without welcoming any questions from the students or requests for slowing down the way of delivering their lecture. Normally, students' problems such as confusion or frustration to understand the content are shown by non-verbal communication or facial expression of boredom.

e) *Distracting or Poor Delivery*

Tendency of the lecturers to say words such as "alright" or "ok" or "you know" repeatedly may lead to distract students' attention to learn the content being addressed. The students, who realize this, will start counting the number of times their instructors used the words rather than focusing on the subject matter. Besides, poor delivery qualities include speaking monotonously, talking too rapidly, failing to use reinforcing gestures, and playing with objects (pencils, or ruler) which could be the source of distraction.

3. IMPROVING OUR LECTURING

As a lecturer, we capable to improve extensively our lecture if we are willing to spend the time and effort required. In order to formulate improvement on lecturing, some essential measurements need to be considered such as:

a) *Dealing with nervousness*

Communication apprehension is a natural reaction when delivering lecture. But it tends to reduce over time. New lecturers are more likely to be anxious than experienced lecturer. However, by no means we will be ineffective in lecturing, if we experiencing speech anxiety. This is because we in fact attain some extra energy from adrenalin that produced by communication apprehension. That energy essentially can be utilized to diverse our lecture which than create enthusiasm for the subject.

b) *Care deeply about the students*

Demonstrating your concern on the students through the way of interacting with them (inside and outside the lecture time), by learning their names, and do so early in the term. Do show that you are caring enough on their academic performance.

c) *Organizing and prioritizing the materials for lectures*

Normally, the lecture should consists of an introduction to draw attention among the students, a content to cover the important information of the subject matter with proper arrangement and a conclusion to highlight the main ideas to get them appreciate for the subject of the day. Remember that we cannot cover everything on the syllabus, so carefully prioritize the major issues by giving conceptual framework and factual information that you believe the most important to deliver.

d) *Be open-minded to receive questions and respect students' opinion*

Do not so fixed with your schedule, be ready to adjust it and not to be so defensive when responding to student questions (humor might be useful to avoid being so defensive). Respect student opinions by encouraging them to ask questions whenever they are puzzled, looking for their reactions towards the material presented, listening to their comments, and acknowledging their contributions.

e) *Do not afraid to tell the students that you do not know everything*

Be frank to our students that not all questions ask spontaneously by them can be answered directly. Just inform them that we will search and provide the answer at a later time.

4. CONCLUSIONS

There is no specific formula in delivering effective lecturing in university but the ideas presented might help you to better achieve and vary your teaching style. The beneficial experience in teaching is also important for us to analyze and appreciate. But, further reading on

books and journals about teaching and discussions with colleagues are essential to improve our teaching techniques.

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Effective instruction for large classroom: *engaging active learning environment*

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ABSTRACT This paper discusses active learning and the role it plays in creating an effective teaching and learning environment. A plethora of past studies have shown that active learning is an effective teaching technique that allows students to engage in a better, more meaningful and fun learning process. As compared to conventional teaching approach such as giving purely lecture with very little to no interaction takes place between the teacher and students, active learning technique places the responsibility of learning on learners whilst teacher only acts as a facilitator who guides the students in their learning process. This means in active learning process, teachers do more of the “observing” job, while students do more of the “doing” job. Active learning is always assumed to only exist in small classes. Though this is commonly the ideal case for active learning to happen, instructors should not restrict themselves to this assumption, as active learning indeed could also be created in a large class where the ratio between teachers to students is inappropriate as far as the lecturer’s effectiveness and efficiency in managing the classroom are considered. With respect to the classroom size against the effectiveness of teaching, a past study revealed that 80% of the respondents felt that the instructor’s effectiveness affected the quality of students’ performance more than did the class size although other study indicated that smaller classes have been found more effective when instructional goals involved higher level cognitive skills including application, analysis and synthesis. However, in terms of learning goals that involve factual information and comprehending that information, another study found that large classes were as effective as small classes and, when traditional achievement tests were used to measure learning, large classes compare well with smaller classes. In this paper, some face-to-face active learning strategies as well as the use of online learning tool to create interactive teaching and learning environment will also be discussed.

1. INTRODUCTION

To create an effective university’s teaching and learning environment, large class size¹ often become a major constraint. Does the class size really affect the quality of teaching and lecturer’s effectiveness? Generally, smaller classes provide students with greater opportunities for interaction about the subject matter. However, teaching a large class might be inevitable due to unavailability of teaching staff, especially the specialized one. Whenever dealing with a large class size, level of interaction between the lecturer and students often less than everyone’s expectations. Consequently, learning might not be meaningful and significant and the lecturer’s effectiveness might be doubted. In overcoming such drawback, active learning strategy has often been discussed and suggested.

2. WHAT IS ACTIVE LEARNING?

The successful of teaching large classes depends primarily on the significant level of interaction and students’ active interest in the subject taught. In active learning, students must do more than just listen: They

must read, write, discuss, or be engaged in solving problems. Most important, to be actively involved, students must engage in higher-order thinking tasks such as analyzing, synthesizing, and evaluating. Within this context, it is proposed that strategies promoting active learning be defined as instructional activities involving students in doing things and thinking about what they are doing. The students become involved in acquiring information and interpreting or transforming it. [1]

3. COMPARISON OF TEACHING EFFECTIVENESS

With respect to the teaching quality, a survey conducted by UCSB in 1992 revealed that 80% of students felt that the instructor affected the quality of classes more than did class size. Surprisingly the survey also found that classes rated best by students tended to be a little larger than the worst rated classes. In the same survey, the finding also suggests that an important factor in student learning is the quality of teaching where students often discriminate between best and worst classes on the basis of instructor’s effectiveness and the instructor’s ability to make material interesting.

¹ A large class is defined as over 100 [2]

Course relevance also contributes to student satisfaction [3]. Earlier study revealed that large classes were as effective as small classes when learning goals emphasize more on knowledge and comprehension. Large classes compare well with smaller classes when traditional achievement tests were used to measure learning. Conversely, when instructional goals involved higher level cognitive skills smaller classes were more effective compared with large classes. Also, smaller classes affect student attitudes better than large ones [4]. It appears that when instructional goals involve higher order of cognitive skills, conventional teaching is not effective in achieving those goals which requires modifications to the teaching strategies when dealing with large classes.

4. ENGAGING ACTIVE LEARNING IN LARGE CLASSES

Complexity of teaching large classes may vary according to the discipline, where the level of success is primarily influenced by the instructor effectiveness in implementing good teaching, sound classroom planning and management as well as effective assessment tools used. When instructors have fully equipped themselves with mastery of knowledge in the subject matter and good practices associated with student-centered-learning activities, active learning can be a powerful strategy in teaching large classes. Outlined below are few strategies that suggested by UCSB [5] which can be used in teaching large classes effectively:

Personalize, Personalize, Personalize : Learn and use the names of students, even in a large class (using a seating charts, requiring students to attend office hours in small groups, taking pictures of the class (with student permission), arriving to class early and greeting students as they enter, and conversing with students over e-mail.

Active Learning Strategies: By using 2 minutes discussion groups, think/pair/share, formalizing study groups, giving group assignments, using peer feedback groups or computer software that allows for anonymous peer review of papers, having a fishbowl discussion group at the beginning of each class, asking students to write answers to discussion questions before class begins, requiring small group office hours, or asking for one-minute papers at the end of class.

Give feedback early and often: Inform students about their progress and performance. Use short, ungraded quizzes during that "dead time" as students are getting seated or at the beginning of class while you're dealing with the tedious but often necessary administrative activity. Give short essay questions at the beginning or end of class, and then begin the next class by reading one or two exemplary answers; this primes the class, gives feedback, and prepares students for taking exams. Require outlines and drafts of term papers well before the final due date. After every fifteen minutes of lecturing, ask students to discuss a thought question with the person next to them and have two or three

students tell their response to the whole class. After lecturing for half the class, ask students to write the most important themes you've mentioned; write your answers on the overhead and let them compare their lists with yours.

Integration with online learning: Online environment can be incorporated in teaching and learning activity to promote and support active learning activity for large classes. Examples of online activities that can be used are online tests/quizzes, writing reflections, group-project, discussion forum and etc.

On the other hand, assessment challenges (avoiding assessment that encourages shallow learning, providing high quality, individual feedback, fairly assessing a diverse mix of students, managing the volume of marking and coordinating the staff involved in marking and minimising plagiarism) have often become a big issue in teaching large classes [6]. However these challenges can be solved by employing well-structured assessment system (moderation, clear guidance for marking criterion, online assessment tools, plagiarism detection software and etc.)

5. CONCLUSION

Despite the fact that new teaching methods can be uncomfortable and challenging especially at the inception, lecturers who are adopting active learning in their large classes will eventually find that it makes a big different and, satisfy with it in delivering effective teaching and creating an ideal learning environment for large classes.

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New Method of Taking Attendance for Bigger Class: Experience from 1st Year Subject; Multimedia Technology

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ABSTRACT Taking attendance during the class session can make some problematic task especially if the amounts of students are more than 150 students. Based on survey, students required 10-15 second to identify and relocate their name and write down their signature on the attendance sheet, and this task was not completed even the class ended. Thus this scenario can disturb and reduce the concentration of students in class. This paper will present a new method that effectively reduces the time for taking attendance task. This paper will explain how effective the sorting method such as for name, matrix number, faculty; beneficial of reallocation seating position and the effectiveness of using different color for attendance sheet. The result shows that this new method can reduce the time to 3-7 second for each student to identify and relocate their name. In conclusion, reducing the task for attendance can give more time for students to concentrate in class, hence increased the effectiveness of teaching and learning process.

1. INTRODUCTION

In UNIMAS, task of taking attendance during the class session can make some problematic task especially if the amounts of students are more than 150 students[1]. Based on survey, students required 10-15 second to identify and relocate their name and write down their signature on the attendance sheet, and this task was not completed even the class ended [2]. Thus this scenario can disturb and reduce the concentration of students in class [3]. On the other hand, students may use this weakness as their opportunity to cheat about their present in the class since they can sign-in after the class. In addition, as normal practice in UNIMAS where by, any low percentages (less than 80%) of attendance may caused any students prohibited to seat for their final exam.

This paper is organized as follows. Section 2 describes the two methods consists of sorting method and parallel method. Section 3 displayed the sample of attendance sheet. The results will be discussed further in section 4. Some issues and future works are listed in section 5.

2. METHODS

There are two methods that had been implementation for this attendance purpose. There are sorting method and parallel method.

Sorting Method.

In this method, students name list are sorted based on their faculty; and their matrix number either in ascending or descending order.

Parallel Method

The main idea is to separate the large number into small group and executed them in parallel. Each attendance

consists of maximum 50 names. Then, used sorting method for each attendance sheet. Remark each attendance sheet with their faculty's name and list the range of the matrix number involved. After that, it is better to print each of the attendance sheets in different color. Lastly, reallocated their position based on the attendance sheet and remain those location until semester end. However, students are still allowed to seat anywhere; once they had write-in their attendance. But the location for attendance sheet is permanent.

3. FIGURES

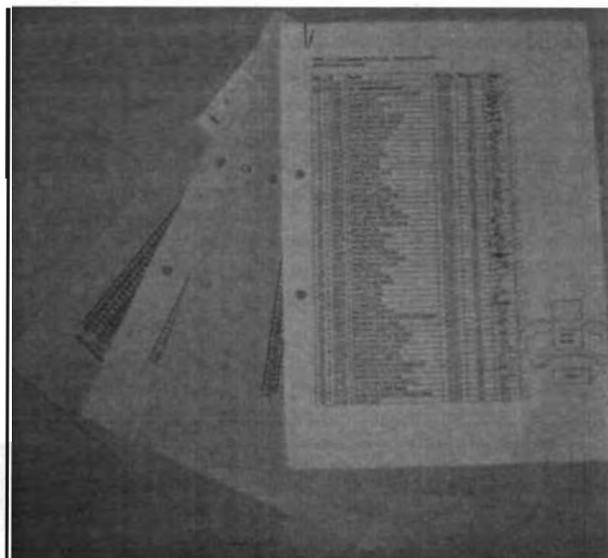


Photo 1 : Sample of attendance sheets in different colors

4. RESULTS

Based on our survey, before those methods implemented each student required average 10 seconds to find and write-in their attendance. Thus within two hours only 80% of the attendance sheet had been sign-in. After those methods had been implemented, 100% of the attendance sheets had been sign-in and each attendance sheet only required twenty-one minutes for fifty students to complete.

5. CONCLUSION

This paper shows that sorting method and parallel method has shorten the time for taking the attendance for twenty-one minutes for fifty students per sheet. It mean that this method can cater for any classes or tutorial slot without fear with the students' amount as long those session run more than twenty-five minutes.

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Case Study of Using “Autorating” Peer Evaluation System as a Cooperative Learning Evaluation Tool

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ABSTRACT An “autorating” (peer rating) system is designed to account for individual performance in team projects in cooperative learning teams. In Traffic Engineering class, group of students are given a traffic engineering project and they have to submit the project according to the allocated group. After the project was submitted, team members confidentially rated how well each of their teammates fulfilled their responsibilities. The ratings were converted to individual weighting factors, and individual project grades were computed as the product of the team project grade and the weighting factor. The result of using “autorating” system is presented in this paper. The benefits of using the “autorating” system and the relatively infrequent problems that may occur in its use are discussed.

1. INTRODUCTION

An “autorating” (peer rating) system is used to rate an individual effort for a group project in Traffic Engineering class. The “autorating” system is designed to account for individual performance in team projects in cooperative learning teams. The ‘autorating’ system is used in order to achieve one of the program objectives in Civil Engineering Department i.e. PO (d) Ability to function as a member or a team leader at a multidisciplinary team

The rating system is converted into its numerical equivalent, with “Excellent”=100, “Very Good”=87.5, and so on in 12.5-point decrements down to “No Show”=0. The ratings were then entered on a spreadsheet and computed a weighing factor for each student as the student’s individual average rating divided by the team average. The student’s final project grade was determined as the product of the weighting factor and the team average project grade. An illustrative of the peer rating form is as shown in Figure 1.

2. IMPLEMENTATION OF COOPERATIVE GROUP PROJECT

Students are divided into several groups. The group size should be a maximum of five members and each group has to appoint a group leader. They will work in their group to complete the project that has been assigned to them. Upon submission of the group project, they have to fill in a peer questionnaire. It is important that a special session is allocated at the end of a class for them to fill in the peer evaluation report in order to ensure that all of the group members feel that the evaluation results is considered as being confidential.

It is important to inform the student that they should give their honest evaluation about their peer and they will not know how much they have been rated by their peer. However, they will know their own marks for the project.

Through the use of this approach, incidences of “hitchhikers” (students whose performance was

considered less than satisfactory by their teammates) and “tutors” (students who received top ratings from all of their teammates) were also determined. As shown in Table 1, group members rate highly one of their members where everybody rate him as excellent and this shows that group member with a leadership quality will obviously be rewarded by their peer. Thus, using this evaluation method will give an incentive to students to work hard in their respective group in order to complete the project.

However, there are also several shortcomings of the evaluation method where in a group students tend to rate highly of their peers. It is reasonable for them to rate highly of their peers given that all of the group members has performing quite well. Problem occurs when almost all of the group members give excellent results for their own peers and this seem to be not right. In this case study, such incidences cause all of the group member being penalized by deducting several points from their individual marks and it is important that it has been announced earlier in the class about the consequences of doing so.

PEER RATING OF TEAM MEMBERS	
Name _____	Team # _____
Please write the names of all of your team members, INCLUDING YOURSELF, and rate the degree to which each member fulfilled his/her responsibilities in completing the homework assignments. The possible ratings are as follows:	
Excellent	Consistently went above and beyond—outperformed teammates, carried more than his/her fair share of the load
Very good	Consistently did what he/she was supposed to do, very well prepared and cooperative
Satisfactory	Usually did what he/she was supposed to do, acceptably prepared and cooperative
Ordinary	Often did what he/she was supposed to do, minimally prepared and cooperative
Marginal	Sometimes failed to show up or complete assignments, rarely prepared
Deficient	Often failed to show up or complete assignments, rarely prepared
Unsatisfactory	Consistently failed to show up or complete assignments, unprepared
Superficial	Practically no participation
No show	No participation at all
<i>These ratings should reflect each individual's level of participation and effort and sense of responsibility, not his or her academic ability.</i>	
<u>Name of team member</u>	<u>Rating</u>
_____	_____
_____	_____
_____	_____
_____	_____
Your signature _____	
©E.M. Felder, 1997	

Figure 1. Peer rating form

Table 1: Illustrative Peer Rating Analysis

	Vote 1	Vote 2	Vote 3	Vote 4	Vote 5
A1		100	100	100	100
B1	100		87.5	100	87.5
C1	100	100		100	100
D1	87.5	87.5	87.5		87.5
E1	87.5	87.5	75	100	
Individual Average	93.8	93.8	87.5	100	93.8
Adjustment Factor	1.00	1.00	0.93	1.07	1.00
Individual Grade	77.0	77.0	71.9	82.1	77.0

Group Grade = 77%

Team Average = 93.8

3. CONCLUSIONS

An “autorating” system is a good system to evaluate the individual effort in a group project. The system is a good system for the implementation of cooperative learning environment in a class. Using such a system will enable the achievement of one of the Civil Engineering program objective of emphasizing the ability to function as a member of as a team leader in a group.

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Peer Assessments for Groupwork in Civil Engineering courses

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ABSTRACT Group assignments are essential elements in engineering courses and are expected to be introduced to more courses due to changes in teaching methods such as Problem Based Learning. One of the most difficult and challenging tasks about assessing the groupwork is determining individual marks from the work products by the group. In courses conducted by the Civil Engineering Department, UNIMAS, peer rating or peer assessment approach has been adopted to derive a so-called 'peer factors' which later be multiplied to the group project marks to give individual marks for the group members. Results from three civil engineering courses in using the peer rating assessment are compared and discussed. Based on these results and the experience of using this method, some recommendations are made to improve the future assessments for individual marks of a group project.

1. INTRODUCTION

Working in groups or groupwork is one of the cooperative learning tools and becoming as a popular teaching method. However assigning individual marks for group work is a challenging task. Giving every individual the same grade for a team assignment contradicts the concept of recognizing individual contributions. This may even encourage 'hitchhiking' by team members. One approach to obtain the degree of individual contributions that may be helpful in determining individual grades is through *peer assessment*.

Peer assessment is a process in which the contribution of individual members is assessed through data collected by asking team members to evaluate one another. Peer assessment has been adopted in several courses in the Civil Engineering Department, UNIMAS, in recent years. The study on the application, effectiveness and fairness of this approach is crucial as more courses (e.g. the Integrated Design Project) will be adopting the group work as one of the delivery methods in the coming semesters. In this paper, results from three courses namely; KNS1043 Civil Engineering Materials, KNS4213 Structural Steel Design and KNS2153 Fluid Laboratory are used for discussion and comparison.

2. PEER ASSESSMENT RESULTS

KNS1043 Civil Engineering Materials is a 1st year course consisting of 140 students. The group work mark contributes 30% of which 10% for presentation, 5% Project Based Learning report and 15% Site Visit report. The groups were formed by selecting 5 to 10

Table 1 Typical Peer Assessment Results

Total Group marks 26				
Names	Individual Average	Adjustment Factors	Imposed Limits	Individual marks
Fong	17.0	0.91	0.91	23.6
Kiu	18.3	0.98	0.98	25.5
Lau	19.3	1.03	1.03	26.9
Lai	19.7	1.05	1.05	27.3

members formed by the students themselves. Group reports are assessed and multiplied by peer factors to get individual marks. Table 1 shows a typical peer assessment result.

KNS4213: Structural Steel Design course is a 4th year design course. For 2007, 46 students took the course. The groupwork mark contributes 50% of the total mark consisting of 5% group presentation and 45% Design report. The projects given are from real on-going/completed building projects. Eight groups, comprising of 5 good and average students per group, were formed by the course lecturer. Group reports are evaluated and multiplied by peer factor to get individual marks.

KNS2153 Hydraulic Laboratory is a 2nd year course consisting of 102 students. The groupwork mark contributes 40% to the total course mark. The groups formed have 7 to 9 members and have to be multiracial and of mix gender. Selection is done by the lecturer. Laboratory work is done in a group but each student produce their own individual report. Peer assessment is taken for the group activities and the peer factor is multiplied by the individual laboratory report marks.

3. OBSERVATIONS

The following trends are observed for KNS1043. Groups with multiracial students gave equal and high rating for group members. This may be an indication of good shared work. All girls group tend to be more judgmental in their peer assessment reflecting large variation in peer factors. Most of all boys groups (irrespective of races) prefer to evaluate each other equally and not critical about their marks. The difference between the peer factors among the groups range from 9% to 60%. Groups with 10 members have peer factor difference as big as 60% among members, which may indicate some members not fairly taking part in the group work.

Results from KNS2153 show an effective result of peer assessment. Except for one group, generally all other 13 groups from KNS2153 are observed to assess their group members almost equally. Group peer factor difference ranged from 3% to 5% only.

For KNS4213, 5 out of 8 groups were judgmental in their assessments, irrespective of multiracial, all girls or all boys. The groups peer factor difference range from 4% to 14%. Some of the members in the group are concerned on who are in their groups and consult the lecturer for advice. For all three courses above the peer evaluation is carried out only once; that is, towards the end of the semester.

4. DISCUSSIONS

The number of members per group, the year of study and the nature/type of course are seen as contributing to the peer factor differences. The use of peer factor is sufficient for Year 1 and Year 2 courses but not for higher level courses. For a design course, student may get good grades for their design work but individual exam result (especially Final Exam) reveal otherwise. Simply applying one tool of assessment in higher level courses is not sufficient and reflective of the student abilities.

In KNS1043, with big group, the peer factors differ as large as 60%. However, the average value is from 9% to 14%. Groups having 60% peer factor difference can be interpreted as one or two members cannot work in the group or do not contribute significantly in the work. Therefore, the number of students in a workgroup can ideally to be 5 to 6 students to get a reasonable assessment. However, if the course is of laboratory in nature, then generally a big number of members do not affect the peer assessment factor.

As for the Final Year students as in KNS4213, the students are more judgmental towards their group members. The members become aware and critical on who perform or contribute what task to the group report.

The individual marks from the peer factor are not sufficient to show that the students have gained understanding or ability as required in the Learning outcomes. The students' understanding should also be gauged from their results in their exams, especially their Final Exam results.

5. RECOMMENDATIONS AND CONCLUSIONS

Based on the observations made on peer assessment, course evaluation and discussion with students the following recommendations are made.

1. For courses similar to KNS1043, where most PBL work is carried out outside the supervision of the lecturer, it is very essential to have peer assessment component. However group sizes should be made as small as possible where 5 to 6 students are considered ideal.

2. For laboratory courses like KNS2153, the lab supervision and the individual reports ensure the evaluation of each students and individual contributions. A small range of peer factor can be used to encourage students for active participation in laboratory activities.

3. For courses similar to KNS4213, where the PBL component contributes to the large portion of final marks and written examination examines the lessons learnt from the PBL work, the peer assessment method alone is inadequate to reflect individual contributions. More rational assessment methods involving the examination marks and other assessment tools such as signature blocks, workload/Percent-effort tables, Peer evaluations and Bonus points can be combined to the peer assessment factor to derive to a comprehensive multiplication factor for the PBL report.

4. For courses similar to KNS4213, to avoid passing students who failed individual tests (esp. Final Exam), announcement must be made on Day 1 that group marks will only count for students whose average grade on the individual tests is at or above the passing level. Students who fail the tests fail the course, even if their homework grade is 100%

5. When peer assessment is part of a course evaluation, students must be made aware about the assessment process on Day 1 of the course. Assessments must be carried out multiple times, especially during the peak activity of the PBL.

5. ACKNOWLEDGEMENT

The Peer Assessment Results from lecturers for KNS1043, KNS2153 and KNS4213 are much appreciated.

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***ACADEMIC CURRICULUM AND
DELIVERABLES***



Philosophical Basis for Course Development

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ABSTRACT Course or program development is a task as much as it is a process. It is a task since it involves planning and designing a course. It is also a process because the course designer will have to go through the various stages of tasks that need to be performed before coming up with a course which can be offered when needed. The initiative to develop a course must, however, be based on the assumption that a particular course has goals and objectives to be achieved. In other words, there must be a philosophical basis for developing a course. The underlying philosophy or beliefs, principles, or aims of course development must very clear. Such philosophical underpinning should justify our action, i.e. either developing a new course or changing and restructuring existing ones. According to R. W. Tyler, a well known leader in curriculum development of most parts of the past century in America, philosophies can help suggest the purpose in education, clarify objectives and learning activities, define the roles of person working in educational institutions, and in the selection of learning strategies.

PHILOSOPHICAL BASIS FOR COURSE DEVELOPMENT

A Course or program can and will become obsolete or, at best, less effective as time goes by. In order to provide quality and relevant education (and training) it is crucial for universities, as institutions of higher learning, to continuously review and revise their curriculum. Clients or students are getting smarter and will be looking for institutions where they can get the kind of training that they desire for. As such, old (existing) courses need to be revised and reviewed from time to time. If the courses are irrelevant, then new courses ought to be in place to cater for the needs of the students. That's the only way that university can remain relevant to the society's needs. Such a situation is even more critical given the fact that there are a lot of universities from which students can choose from. Universities which can provide the best training will ensure students enrollment and, subsequently, their survival.

Changing a curriculum or developing a new course is, more often than not, a necessity. It is not a matter of whether a university wants to change, but because it has to. The changes in the environment, needs, and expectations of the clientele groups require a university to remain relevant and up-to-date. The ability of a university to attract students, to a large extent, depends on the reputation of the university. Besides having teams of excellent instructors who can guide students in their learning, universities must also be excellent in research and other related activities. Both teaching (and learning) and research are important criteria for judging the quality of university's delivery system. Industries are looking for institutions which can provide the best training for their future workers. With the number of universities available in the country and with all the possible choices that they can pick and choose from, it

is necessary for a university to select and develop courses which will be marketable and relevant to the needs of the public and industries.

Hence, the rationale for developing a new course or program is simple. First there is a belief that there is a demand for a new course or program and that it should serve a purpose. Secondly, the existing programs or courses are insufficient to meet the emerging market needs. As such, a new program is planned and developed to cater for those emerging needs. Thirdly, similar program may have been offered by other institutions but could not cater for the demand from the growing market. So the proposed new program by the institution is an alternative for other qualified candidates who, otherwise, could not get a place at the existing institutions offering similar program.

Before a good program could be designed and developed there are various tasks that need to be performed. First and foremost is the identification and analysis of needs. Essentially the process of developing courses should be based on the needs of the relevant parties (individuals, government, Public and industries). Some of the key questions to consider include: Is there a need for the new program? What kind of training is desired? Is the kind of program you intend to develop going to meet the needs of the prospective learners? Who and how many are those people who have the desire to pursue their training and studies in the proposed program? Will the program offered help the potential graduates to meet the demand of the market? In most instances industries as well as the private sectors can and should provide clues as to what is needed. They should be able to reveal what is lacking in, or competencies needed by, the present and future workforce. The kind of expertise needed by industries would indicate, to some extent, the desired educational curriculum. Such information will be useful for

curriculum planners to formulate the educational goals and objectives. These goals and objectives must clearly state as to what the course or program wants to be able to achieve.

Once objectives are clearly specified, the next step is then to determine the content of the program or course. Determining what should be included in a course is a very critical task because it has to take into account what students should be learning in order to accomplish the goals. The content of the program should be germane and contemporary in nature so as to be able to provide the best possible knowledge and experience that will later be useful for the learners once they embark on their jobs or other future undertakings.

Again, industries and prospective employers should be able to provide hints as to what is relevant for the job market (i.e., if the goal of university training is to equip student with the knowledge and skills to enable them to perform the tasks expected of them in the workplace). However, a good content doesn't necessarily translate directly into a good program. It needs to be matched with the relevant learning strategies and experiences in order for effective learning to occur. Those planned learning strategies and experiences must be linked with the goals and objectives of the course or program.

At the same time, quality teaching and learning at a university education cannot occur without substance and supporting facilities. That substance comes from a good program which has been carefully planned and developed. However, a well-planned program is not sufficient without the necessary expertise and supporting facilities provided for by the university's administration. It is, therefore, necessary for the institution concern, when designing an educational program, to look into the implications in terms of program delivery. A planned program is useless if it cannot be translated into meaningful actions to meet the desired goals.

Once a course is developed, and assuming that it has been well planned, the next critical task is to find people who can deliver or teach the course effectively. Does the faculty or department have the manpower to facilitate the conduct of the course? If there is none then the department will have to recruit or retrain their existing staff so that the course could be offered once developed and ready to be offered. Thus, developing a course is only one part of the bigger process of the overall program development.

Creating Engaging Learning with Multimedia: Towards Total Multimedia Learning Environment

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ABSTRACT Recently a range of teaching methods aimed at actively involving student in the lecture hall settings have emerged [1]. A design study, which explores how best to involve students in the learning process, is presented. Consideration is given to how multimedia can be used to best effect and engage students in their learning session. Our paper present the answer for the question of how effective and efficient is the use of multimedia for learning? Also, methods for designing multimedia for learning are then examined. Lessons learnt from this review of current practice are to be discussed in this paper. In this paper we will highlight how multimedia elements can help to gain students attention in their face-to-face session. Usage of appropriate multimedia elements such as video, audio and photo that are relevant to the topic is examined. How real life experience or example can improve student understanding is also discussed. This paper will examine how appropriate combination of multimedia elements such as video, audio and graphics can enhance the teaching and learning process. We present a theoretical framework in which we explain the concepts of multimedia for learning and their application to the university classroom setting. Aimed to complement and supplement the university teaching process and leaning materials, this paper intend to spearhead the initiative towards total multimedia learning environment in UNIMAS.

1. INTRODUCTION

The application of multimedia in the classroom is believed to contribute to innovative teaching and learning environments [2]. Effective instructional support has a crucial impact on learning process especially on the students' cognitive effect.

There is a rich collection of research and knowledge about how to use media for instruction effectively. Some aspects of teaching with media seem to be governed by common sense, while other aspects of using media in instruction are far more subtle and gained through experience and experimentation. "Visual literacy is an acquired competency in visual expression and communication that involves insights and skills no less disciplined than those required for proficiency in engineering and construction" [2].

This paper is organized as follows. Section 2 describes important consideration in choosing the right media as an instructional tool. Section 3, 4 and 5 describes in details some tips to maximize the impact using such media. We conclude with some issue and future works in section 6.

2. CHOOSING MEDIA AS INSTRUCTIONAL TOOL

Some media formats show off particular types of content better than others. Making a thoughtful decision on which media type is most appropriate for the content is a good first step to using media successfully. Consider supplementing instruction with technology where a subject is widely taught, and widely acknowledged to

present difficulties for students to get the best response for your efforts [3]. PowerPoint can be used to show low resolution color images, graphics, and video that cannot be reproduced in printed handouts [4]. Animation is appropriate when video may overburden with too much detail, or when users must focus on specific details [5]. Use video where the content requires movement to clearly illustrate a point [6].

3. GRAPHICS

Irrelevant graphics/clipart can harm learning [7]. To use graphics well, use text in your graphics. Mix in text frames with visual cues, graphics with an equal amount of text, and graphics with some text cues [8]. Keep the level of detail in a graphic appropriate to the learning objective [7]. Use relevant images, and if possible attached the real life photos.

4. AUDIO

- Limit audio to what is relevant and use the active voice. Use short sentences. Write the script for the ear [6].
- If the message is too long, break it into chunks [6].
- Watch out for acronyms, technical jargon, and unfamiliar terms [6].
- Avoid long pauses in visuals while waiting for extended narration to finish [6].
- Alternate male and female voices to provide variety [6].
- When possible provide a corresponding visual for the narration [5].

5. VIDEO

- Carefully balance the level of detail with the pace of the video [7].
- Present all information in three shot sequences, long, medium and close-up. Use close up shots to grab the student's attention and imply that something is important. Use long shots to establish frames of reference [6].
- When showing something new focus on the subject long enough for the audience to register what is being shown [6].
- Keep the main subject well lit and watch for possible background distractions [6].
- The eye focuses on lighted instead of dark areas and movement instead of static images [6].
- Use audio and video to reinforce each other [6].
- Present a series of visuals before or at the end of instruction to stimulate recall of prerequisites [6].
- Use still frames. Video has lower resolution than graphics. Use graphics to reduce irrelevant details and highlight key information.[6]
- Use a tripod. The movie will compress to a smaller file.
- Audio is half of video.
- Keep video to 3 to 5 minutes.

6. CONCLUSIONS

This paper shows that an appropriate combination of multimedia elements such as video, audio and graphics can enhance the teaching and learning process. A real life experience or example can improve student understanding because this can fill-in the knowledge-gap.

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Using Software in the Teaching of Engineering Courses: Benefits and Pitfalls

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ABSTRACT In the last two decades, the use of computer and particularly the personal computers has brought revolution in the teaching of Engineering courses. Computer-aided design and sophisticated analysis packages have changed the engineering curriculum, making it possible for students to analyze and design at a level of precision impossible to accomplish with hand calculations alone. Much of this improvement, however, occurs at the upper-end of the engineering curriculum. At the introductory level, the impact of computer software on the teaching of fundamental concepts has been less successful. However, in USA and some other developed countries, the use of computer analysis package is also encouraged at the introductory level. This paper will critically examine the impact of computer software/analysis packages on the students' learning with reference to structural engineering course. It will also highlight the bridging gained and pitfalls observed from this recent changed in the engineering curriculum.

1. INTRODUCTION

In Civil Engineering, to teach the structural engineering subjects the use of software has brought a revolution in learning and accordingly, it has established its role in the engineering curriculum. However, much of this improvement is observed at the upper end of the curriculum, mainly with the courses in the third and fourth year level. With reference to structural engineering, the introductory level where the 'Engineering mechanics' and 'strength of materials' are taught, the use of computer analysis/ computer packages has found less successful. However, recent development in engineering curriculum shows that in many countries, computer analysis packages are being used in the teaching of the fundamental concept. Also some basic classical analytical methods have been removed from the curriculum. This has raised the issue that these recent development in curriculum are giving beneficial effect to the engineering learning or bringing negative impact to the engineering intuition.

In this paper, the impact of the above-mentioned curriculum changes will be discussed in light of the levels described in bloom taxonomy.

2. BLOOM TAXONOMY

In the field of education, Benjamin S. Bloom proposed a developmental sequence for learning, commonly called the Bloom Taxonomy [1]. This taxonomy is comprised of six levels, starting with the least level of sophistication. The original Bloom taxonomy, followed by typical examples pertaining to the structural engineering subject can be described as follows:-

Level 1 KNOWLEDGE. The student is able to remember by either recognition or recall information, terminology, phenomena, etc. Example: Define the term elastic limit.

Level 2 COMPREHENSION. The student is able to

correctly demonstrate its use when specifically asked to do so. Example: Compute the normal stress in a rod given the load and cross sectional area.

Level 3 APPLICATION. The student is able to apply the appropriate abstraction without having to be prompted as to which abstraction is correct or to be shown how to use it in that situation. Example: Determine the elastic modulus given load-deflection data.

Level 4 ANALYSIS. The student is able to break down the problem into its constituent parts and to detect relationships among the parts and the way they are organized. Example: Determine the maximum load that a structure can support given limits on both stress and deformation.

Level 5 SYNTHESIS. The student is able to put together elements and parts to form a complete solution. Relates concepts and processes. Able to adapt knowledge from various sources to solve problems. Creative expression with ideas being learned and with ideas already known. Example: Use concepts of statics, shear/moment/deflections diagrams, normal and shear stresses, and combined stress analysis to design a beam.

Level 6 EVALUATION. The student is able to apply standards and determine levels of quality. Example: Design concrete beams to best satisfy several considerations.

3. ENGINEERING LEARNING PROCESS

Developing a student intuition, feeling, common sense and other forms of pre-rational mechanisms for a particular aspect of engineering design requires the student to identify various intricate interconnections between parameters. Traditionally, this was achieved by solving several sample

problems spending considerable time using various solution techniques. This give the student the opportunity of learning the insight of the problem. Thus, with the process the students undergo the development sequences underlined in the *Bloom taxonomy*.

The effect of using computer software [2, 3] for teaching has several advantages. Exposure to computers as problem solving tool in engineering practice has reduced time for problem solving and gives flexibility in terms of availability. In addition, graphical display of the details of a problem and solution and repetitive use with less effort can be cited as major advantages.

However, the development sequences of learning as demonstrated by the *Bloom taxonomy* cannot be achieved by the commonly available software, as most of the learning sequences are performed by the in-built ability of these powerful software. Therefore, students using these types of software are liable to be lacking in engineering common sense and intuition. This lack of engineering common sense may not be apparent as most engineering solutions are based on existing solutions. However, when innovative new solutions are needed this lack of intuitions may lead to catastrophic mistakes. Some recent failures in structural engineering and construction may be attributed to this kind of lacking engineering intuition and common sense. Fig.1 and 2 show such two recent failures of engineering structures.



Photo 1 Collapse of a bridge in Pakistan



Photo 2 Failure of a bridge in Vietnam

Therefore, designing of engineering teaching software needs to address the above pitfalls. Software used for teaching should have several special features than the software used for real application. Some of these expected features can be summarized as follows:-

- Software should be developed targeting each of the levels of the sequences mentioned in Bloom taxonomy separately rather than as an integrated tool.
- Choosing of options at various stages of problem solving should be left to the user rather than to have in-built capacity
- Software should provide intermediate solutions that can be used to confirm the calculations along the way. These intermediate results can be helpful in tracking down faults in the problem-solving approach.
- In-built examples with graphical and animation outputs to facilitate the general behavior of structures. Visualization of the material's behavior in response to the loads acting on it can help the student to understand the relevant theory and to develop *engineering intuition*.
- Multiple-choice problems targeting at improving qualitative analysis of structures

4. CONCLUSION

This paper has discussed the impact of using engineering software on the learning process. The benefits and pitfalls are highlighted with reference to the structural engineering course. Based on several years of teaching experiences, some recommendations are tabulated which are considered to be effective in developing the intuitions of engineering students.

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Supporting Instructional Process with PowerPoint: Experience from Multimedia Technology Subject

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ABSTRACT Effective instructional support has a crucial impact on learning process especially on the students' cognitive effect. In this case PowerPoint is a unique teaching tool that has been widely used on and off the campus. The advancement in software development has made electronic presentation using PowerPoint as the norm in the university setting. As a university lecturer, mastering how to prepare effective PowerPoint presentation contents has become crucial. This paper will examine the teaching and learning process from information architecture and visualization perspective. It discusses how to apply these theories to develop the PowerPoint presentations that effectively support the instructional process. The discussion focuses on the aspect of visual design, textual communication and multimedia design. This paper examines how to prepare a highly usable and student-centered PowerPoint slides. The case study part presents our experience in preparation and innovation of the slides for Multimedia Technology Subject since the last five years. Example slides highlighting important instructional tips and tricks of using PowerPoint will also be presented.

1. INTRODUCTION

The application of Information and Communication Technology (ICT) in the classroom is believed to contribute to innovative teaching and learning environments. Effective instructional support has a crucial impact on learning process especially on the students' cognitive effect. In this case PowerPoint is a unique teaching tool that has been widely used on and off the campus. The advancement in software development has made electronic presentation using PowerPoint as the norm in the university setting.

Ten years or so ago, it was very rare to see PowerPoint slides being presented with LCD projector in lecture halls and classes. However, recent advancement of ICT has made electronic presentations using PowerPoint become so popular and as a standard in the university environment [3]. As a result, most lecturers have embraced excitedly this technology. Some of them have developed greater amount of PowerPoint expertise. As a university lecturer, PowerPoint presentations have become an essential part of teaching and learning activity. Mastering how to prepare effective PowerPoint presentation contents has become crucial.

However, the true 'power' of PowerPoint has not much been explored to improve the teaching process. While PowerPoint has become a standard in many classrooms for creating presentations, it is often difficult to realize whether the content and design of your slide really has assisted the teaching process. The purpose of this paper is to share some tips to powering up your PowerPoint lecture presentation.

This paper is organized as follows. Section 2 describes important consideration in designing PowerPoint Slide.

Section 3 lists out several tips based on visual design, textual communication and multimedia design. We conclude with some issue and future works in Section 4.

2. POWERPOINT AS INSTRUCTIONAL TOOL

PowerPoint is extensively used software that allows the integration of multimedia such as sounds movies, etc. [6]. Studies have continuously point out that students in general believed that the use of PowerPoint assists their learning. For instance, Craig and Amernic [4] indicate that students like to be taught using PowerPoint because they think that it enhance clarity, and aid recall of subject matter. The students responded more favorably toward the classes taught with the use of PowerPoint [1][7].

However, PowerPoint is not a totally effective instructional apparatus. It works best and most valued when used as a stimulus for explanation and elaboration, as well as discussion in classrooms. The students have slight preference for graphical elements such as pictures, charts, and graphs over text. The lesser the text you have on your screen, the easier for you to organize your material. It will make easier for them to spot the lecture's key points and comprehend the material [8].

We have been teaching TMP1613 Multimedia Technology since 2002. Along the way, the visual content of the slides has been revamped to suits student learning and cognitive process.

Your students appreciate the use of graphs, charts, pictures and clips, compared to bulky chunks of paragraphs. The multimedia element such as graphics and background has its own cue for learning. For example Graphics improve student recall [2], hence use

it sparingly.

If your lecture entirely depends on your slide that means that your session is teacher-centered. Now, put your student in the center of the action. Involve them in your explanation. Ask them from time to time to assess their understanding and concentration.

If you want your student to focus their gaze just on you during your explanation, just press 'B' on the keyboard or 'W' for white background. It turns the screen blank. In the slide show mode, find pointer option menu and choose pen. Use this interactive tool to draw around the slide while explaining your points.

Your slides should contain some questions to serve as a review of previously learned material. Make sure that you do not provide the answer directly under the question. If you do so, you cannot check their concentration and understanding on material in your slide presentation. To stimulate discussion animate the answer. Show the question and answer separately using custom animation menu.

Also do not move too quickly through your slides. Ask your students before you proceed to the next slide, if possible. This is important to allow them to process the information first or to write sufficient notes for review. PowerPoint is so easy to be inappropriately used [5].

3. DO'S AND DON'TS

Visual Design

- Do not cram everything on a slide.
- Divide some amount of text from one slide into several slides.
- The students tend to find that too a large amount of information on a screen is a disruption for them [6].
- Use color to group, show hierarchy, and compare information.
- Use highlighting to gain attention.
- Have enough white (or empty) space to separate group of information.

Textual Communication

- Use simple phrase that does not exceed one line, if possible.
- Do not read aloud word by word without discussion or elaboration.
- Never put too much text on each slide.
- Do not to copy the text directly out of your textbook.
- Limit number of lines per screen and number of words per line.

Multimedia Design

- Graphics and images should be properly sized and placed.
- Crop and resize your images properly.
- Images must not too adjacent to the text and properly highlight the subject.
- Include image that really needed to support the text, avoid unrelated clip art.

4. CONCLUSIONS

In conclusion, your effort to harness your PowerPoint presentation skills for your lecture hall presentation is vital. The next time you have your lecture session, ask yourself two overlapping issues. First, what impact has my PowerPoint presentation had on my student? Second, has my PowerPoint presentation led to more effective learning?

Future works could further investigate the specific effect on the student performance using different slide backgrounds, sounds and animations. As the students are visual learners, what is their learning style? How could I tailor my slides to suit their needs?

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MONITORING THE CORRELATION OF PROGRAMME OUTCOMES TO CIVIL ENGINEERING COURSES

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ABSTRACT The Civil Engineering Programme Outcomes (POs) have been designed to fulfill the EAC and ABET Criteria that describe what students should know and be able to perform upon graduation. Eleven Programme Outcomes had been identified to be taught and delivered to the undergraduates. Each Programme Outcome must be fulfilled by the students upon graduation. However, to design such correlation between courses and Programme Outcomes is a scrutinizing task. This paper provides a guideline on how the Department of Civil Engineering, UNIMAS monitors the correlation of each Programme Outcome to the related courses. Each Programme Outcome is also identified with related course year and key indication which weight the delivery and assessment method.

1.0 INTRODUCTION

In the process of programme accreditation, the Engineering Accreditation Council of Malaysia (EAC) requires that graduates are adequately prepared to practice engineering. Thus, it is important that the education process adopted in the Department of Civil Engineering, Faculty of Engineering ensures that the students are well equipped with eleven (11) main attributes which are called as Programme Outcomes (POs). The correlation between the POs needs to be well monitored together with the courses offered in the department.

The objective of this paper is to suggest method to monitor the correlation of POs to Civil Engineering courses.

2.0 THE PROCESS

Civil Engineering Department has an Accreditations and Curriculum Review committee members who are responsible of the curriculum development of the department. The committee had held a number of meetings to:

- (a) address the POs in a consistent manner,
- (b) identify the most appropriate time to address the POs in the Course.(i.e. in what year of study).
- (c) identify and design a sets of courses in the curriculum to address certain POs (top down approach)
- (d) keep track on the correlation of POs to Civil Engineering Courses.

3.0 METHOD OF MONITORING

As to comply with our Programme Educational Objectives (PEOs), Civil Engineering Department has formulated eleven POs that encompass certain specified outcomes. The eleven formulated POs are as follows:

- a) Ability to acquire and apply knowledge of mathematics and sciences related to civil engineering fundamental.
- b) Acquire in-depth technical competence in Civil Engineering discipline.
- c) Ability to identify, formulate and solve civil engineering problems.
- d) Ability to utilize systems approach to design and evaluate operational performance.
- e) Understanding of the principles of sustainable development for civil engineering design.
- f) Understanding and committed to the professional and ethical responsibilities.
- g) Ability to communicate effectively with engineers and community at large.
- h) Ability to function effectively as a member or a team leader in a group.
- i) Understanding of social, cultural, global and environmental responsibilities of a professional engineer.
- j) Recognizing the need to undertake life-long learning for individual capacity development.
- k) Ability to use the techniques, skills and modern engineering tools necessary for Civil Engineering practice.

After the process of POs formulation, the committee decided to run through the process of identifying the most suitable period to address the POs to the students. The Bloom's Taxonomy had been referred as a guideline. In the Bloom's Taxonomy, there are six educational objectives namely: knowledge, comprehension, application, analysis, synthesis and evaluation.

The committee had decided that for the 1st and 2nd Year students, more emphasis will be given on POs which carries knowledge and comprehension attribute. The application, analysis, synthesis and evaluation attributes are to be stressed to the 3rd and 4th Year students. Table 3.1 shows the proposed POs according to the year of study.

Table 3.1 PO according to Course Year

PO's	Course Year
a	1,2,3 and 4
b	3 and 4
c	3 and 4
d	3 and 4
e	1,2,3 and 4
f	1,2,3 and 4
g	3 and 4
h	1,2,3 and 4
i	1,2,3 and 4
j	4
k	1 to 4

The committee had also managed to define and gives values to the attributes in the POs. Table 3.2 shows summary of the POs legend and its level of emphasis according to year of study.

Table 3.2 PO according to Course Year

Legend	Emphasis Level
3	Strong Emphasis (we address and we strongly assess it in the course)
2	Moderate Emphasis (we address it and we do assess it in the course)
1	Very Little Emphasis (we address it but we do not assess it in the course)
-	No Emphasis (we do not address it at all in the course)

The next process is to identify the set of courses in the curriculum that could address the attributes. Summary of the results are as shown in **Appendix A**.

4. CONCLUSIONS

This exercise is part of the process of structuring our course syllabi, learning outcomes and teaching and assessment methods to address the program outcomes as decided earlier. By addressing a particular courses related to POs, the process of monitoring and keeping track of curriculum development will be fulfill thoroughly. This method helps to produce PO matrix and monitor courses for each PO. At the same time it helps to distribute the entire PO evenly for all the students.

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APPENDIX A

CODE	COURSES	Program Outcomes										
		a	b	c	d	e	f	g	h	i	j	k
KNS 1022	Engineering Drawing	2					1		2			3
KNF 1023	Engineering Mathematics II	3		2					2			
KNS 1042	Civil Engineering Materials	3				1	1		2	1		
KNS 1063	Strength of Materials	3					1		2			
KNS 1073	Engineering Survey	3					2		3	1	1	3
KNS 1451	Civil Engineering Laboratory 1	3		1			2		3			2
KNS 1461	Civil Engineering Laboratory 2	3		1			2		3			2
KNF 2033	Engineering Mathematics III	3		2					1			
KNF 2053	Numerical Method & Statistics	3		2			1		1			1
KNS 2093	Theory of Structures	3	2	2			1		1			2
KNS 2113	Fluid Mechanics	3	2	2			1		1			
KNS 2133	Structural Analysis	3	2	2			1		1			2
KNS 2153	Hydraulics	3	2	2		2	1		1	1		1
KNS 2163	Geotechnical Engineering	3	2	2		2	1		1			1
KNS 2591	Civil Engineering Laboratory 3	3	2	1			2		3		1	2
KNS 2601	Civil Engineering Laboratory 4	3	2	1			2		3		1	2
KNF 3066	Industrial Training	3	3	3		1	1	3	3	1	1	1
KNS 3143	Engineering Hydrology	3	3	3	2	2	1	2	2	1		1
KNS 3243	Foundation Engineering	3	3	3		1	1	2	2			1
KNS 3493	Highway Engineering	3	3	3		3	1	2	2	3		1
KNS 3611	Civil Engineering Laboratory 5	3	3	3			2		3		1	2
KNS 3643	Reinforced Concrete Structure Design	3	3	3			1		2	1		1
KNS 4193	Water Resources Engineering	3	3	3	3	3	1	2	2	2	1	2
KNS 4213	Structural Steel Design	3	3	3	2	1	1	1	3	1	1	1
KNS 4222	Final Year Project 1	3	3	3	1	1	3	3	1	1	3	1
KNS 4233	Water and Waste Water Engineering	3	3	3	2	2	1	1	1	3	1	1
KNS 4433	Traffic Engineering	3	3	3	2	2	1	2	2	3	1	1
KNS 4444	Integrated Design Project	3	3	3	3	3	3	3	3	3	3	3
KNS 4333	Construction Technology	2	3	3	2	2	2	2	2	1	1	1
KNS 4621	Civil Engineering Laboratory 6	3	3	3			1	2	3		1	2
KNS 4653	Pollution Control and Waste Management	3	3	3	2	3	1	2	2	3	1	1
KNS 4283	Rock Mechanics	3	3	3		1	1		2	1	1	1
KNS 4293	Advanced Structural Analysis	3	3	3	2		1		2		1	2
KNS 4313	Bridge Engineering	3	3	3		1	1	2	2	1	1	1
KNS 4323	Advance Project Management	2	3	3	2	1	3	2	2	2	1	2
KNS 4343	Engineering Economy	3	3	3	3	1	2	1	2	2	1	1
KNS 4393	Hydraulic Structures	3	3	3		2	1	1	2	1	1	3
KNS 4403	River and Coastal Engineering	3	3	3	1	2	1	1	2	2	1	3
KNS 4503	Housing Technology	1	3	3	3	2	1	2	2	2	1	
KNS 4513	Building Aeration System	3	3	3	3	1	1		2	1	1	1
KNS 4523	Energy Management	2	3	3	1	3	1		2	2	1	1
KNS 4533	Concrete Technology	3	3	3	2	2	1		2	1	1	2
KNS 4543	Geotechnical Environmental Engineering	3	3	3		3	1	1	2	3	1	1
KNS 4553	Soil Dynamics	3	3	3		2	1		2	1	1	
KNS 4563	Air Pollution Control Engineering	3	3	3	2	3	1	1	2	3	1	2
KNS 4573	Urban Transport System and Planning	3	3	3	3	2	1	2	2	2	1	1
KNS 4583	Prestressed Concrete Design	3	3	3		1	1	1	2	1	1	1

3 Strong Emphasis
 2 Moderate Emphasis
 1 Little Emphasis
 No Emphasis

Kaedah Mengoptimumkan Potensi Diri Pelajar

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ABSTRACT Setiap pelajar yang layak ke IPTA adalah diyakini berkualiti, berjaya dengan keputusan yang cemerlang dalam peperiksaan Sijil Pelajaran Malaysia. Apabila berada di universiti dan mengambil jurusan kejuruteraan keputusan yang diperolehi adalah sebaliknya. Persoalan yang timbul di mana silapnya? Adakah program yang diikuti bukan pilihan, terlalu mencabar, tidak menarik atau leka dengan kebebasan hidup tanpa pengawasan ibu-bapa. Justeru itu satu kajian telah dibuat untuk mengenal pasti punca sebenar masalah pelajar Kejuruteraan Mekanikal dan Pembuatan, UNIMAS. Seterusnya kaedah-kaedah yang praktikal dicadangkan berdasarkan idea, pengalaman, pengamatan dan perbincangan dengan rakan-rakan setugas. Kaedah yang dicadangkan adalah khusus untuk pelajar Islam dan keseluruhan pelajar kejuruteraan umumnya. Secara ringkasnya kaedah yang dicadangkan boleh dibahagikan kepada dua; elemen luaran dan elemen dalaman. Elemen luaran merupakan tindakan yang boleh dibuat oleh pensyarah dan fakulti. Manakala elemen dalaman memerlukan usaha pelajar sendiri untuk melakukannya. Walau bagaimanapun pensyarah dan pihak fakulti masih berperanan secara tidak langsung dalam membina kekuatan dalaman pelajar. Berdasarkan kaedah yang dicadangkan diharap dapat diimplemenkan dan seterusnya potensi diri pelajar dapat dioptimumkan. Hasilnya dapat dinilai dengan pencapaian akademik dan sikap yang ditunjukkan oleh pelajar.

1. PENDAHULUAN

Bermula di bangku sekolah, tumpuan sepenuhnya dihadapkan pada sistem peperiksaan. Pelajar berlumba-lumba untuk mendapat markah tinggi dalam peperiksaan. Justeru itu ibu bapa akan memastikan anak-anak dihantar ke pusat tuisyen yang terbaik. Di pusat tuisyen pelajar diajar bagaimana kaedah untuk menjawab soalan peperiksaan. Ditambah pula dengan latihan tubi soalan-soalan peperiksaan tahun-tahun sebelumnya, menjadikan pelajar lebih cekap dalam menjawab soalan peperiksaan. Tiba di dewan peperiksaan pelajar memuntahkan semula segala apa yang telah dihafal sebelum ini.

Apabila tiba di IPTA mereka belajar hidup berdikari. Tiada warden atau ibu bapa yang dapat memantau tindak tanduk mereka. Pelajar beroleh kunci kebebasan sehinggakan ada pelajar yang mengalami kejutan budaya. Hilang fokus untuk belajar dan banyak masa dihabiskan dengan aktiviti senggang. Tanpa tuisyen menjadikan pelajar terkapai-kapai mencari kaedah belajar yang sesuai. Mungkinkah ini yang menjadi punca kepada masalah.

2. KAJIAN SOAL SELIDIK

Responden adalah merupakan 28 pelajar beragama Islam dari program Kejuruteraan Mekanikal dan Pembuatan serta mengambil kursus Statik (KNJ 1013). Sebahagian besar adalah pelajar tahun satu dan ada juga segelintir pelajar tahun dua yang mengulang kursus. Borang soal selidik diedarkan sebaik sahaja pelajar selesai menjawab soalan peperiksaan akhir kursus statik. Rasionalnya; dalam kepenatan dan masa yang terhad responden akan menjawab tanpa berfikir. Sebaliknya jawapan yang diberi adalah berdasarkan amalan

kebiasan mereka. Berdasarkan maklumat yang diberikan; kumpulan terbesar responden seramai 17 orang adalah remaja lepasan pusat matrikulasi yang berusia 18-19 tahun. Baki 11 orang adalah pelajar tahun dua (ulang kursus) atau lepasan diploma politeknik. Didapati 75% responden adalah orang tempatan, manakala bakinya adalah dari taburan negeri-negeri di Malaysia Barat. Dengan latar belakang responden yang pelbagai ini akan memberikan variasi dalam keputusan soal selidik ini.

Dalam kajian soal selidik yang dibuat responden dikehendaki menyatakan keputusan peperiksaan SPM masing-masing. Berdasarkan keputusan yang diperolehi dalam peperiksaan SPM. Didapati sebahagian besar pelajar mendapat keputusan yang cemerlang dalam subjek bahasa dan matematik, termasuk matematik tambahan. Manakala pencapaian dalam subjek fizik adalah baik. Keseluruhannya, responden mempunyai potensi yang meyakinkan untuk berjaya dalam program yang diikuti. Berdasarkan asas matematik dan fizik yang dianggap kukuh ini, seharusnya responden tidak menghadapi masalah dalam mengikuti program dan kursus ini. Tambahan pula 75% memilih program ini kerana minat. Mereka juga sememangnya suka dengan kursus statik yang diikuti ini.

Walaupun bagaimanapun keputusan yang diperolehi adalah amat memeranjatkan. Didapati 36% daripada 36 pelajar Islam dalam kursus ini telah gagal dan hanya seorang pelajar yang mendapat gred A dan A-. Sebahagian besar pelajar hanya mendapat sekitar 50 ke 60 markah. Keputusan ini tidak seharusnya berlaku.

Menerusi kajian ini dapat dikenal pasti punca sebenar yang menghalang pelajar untuk berjaya dengan cemerlang di peringkat universiti. Berikut adalah disenaraikan faktor-faktor yang menjadi punca atau

mengganggu tumpuan pelajar Islam di Jabatan Kejuruteraan Mekanikal dan Pembuatan, UNIMAS. Antaranya ialah; kaedah belajar, kejutan budaya, pengurusan masa dan tiada motivasi.

Responden masih terikut-ikut dengan kaedah belajar semasa di sekolah. Didapati 50% responden masih suka belajar bersendirian dan hampir 30% lebih gemar belajar dengan membuat latihan-tubi soalan-soalan lepas. Terdapat juga sebilangan kecil responden yang langsung tidak belajar. Kejutan budaya berkait rapat dengan latar belakang responden. Dimana pelajar yang sebelum ini tinggal di asrama penuh atau dengan keluarga berasa bebas apabila masuk ke UNIMAS. Kebebasan ini menjadikan responden hilang tumpuan pada akademik dan banyak masa di habiskan dengan aktiviti tidak berfaedah. Kenyataan ini adalah berdasarkan keputusan soal selidik, dimana 70% responden melakukan aktiviti yang tidak berfaedah diluar masa kuliah. Seterusnya responden menjadi leka sehingga ada yang sanggup meluangkan masa selama 7jam dalam sehari untuk perkara tersebut. Berbanding dengan masa yang diperuntukkan untuk membuat ulang kaji; 43% responden hanya belajar bila hampir dengan tarikh ujian. Kegagalan responden untuk menguruskan masa dengan baik turut menyumbang kepada gejala ponteng kelas. Adalah sesuatu yang membimbangkan apabila didapati 64% responden (majoriti pelajar tahun satu) sudah mula ponteng kelas bagi semester pertama pengajian. Alasan utama untuk tidak hadir ialah bangun lewat, sedangkan kursus statik hanya bermula pada jam 9:00 dan 10:00 pagi. Responden seolah-olah tiada motivasi untuk belajar. Motivasi untuk belajar pula berkait rapat dengan matlamat hidup dan perancangan untuk mencapainya. Didapati 32% masih tidak jelas dengan apa yang akan dilakukan dalam 10 tahun akan datang. Kekaburan ini menjadi lebih nyata apabila ditanya tentang sumbangan reponden pada peringkat yang lebih tinggi; 28.5% responden menjawab tidak tahu. Faktor-faktor ini lazimnya saling berkait dan akan menjadi lebih serius jika tidak dikawal dari awal.

3. KAEDAH MENGOPTIMUMKAN POTENSI DIRI PELAJAR

Berikut adalah dicadangkan kaedah-kaedah yang dapat mengoptimumkan potensi diri pelajar meliputi;

Jadual waktu; Seharusnya jadual yang disediakan mengambil kira waktu rehat pelajar terutamanya masa makan tengah hari agar tidak diganggu dengan kelas. Perlu mengambil kira kesesuaian masa belajar, elakkan kelas pada lewat petang kerana tidak efektif. Meskipun ia merupakan kursus matematik, tetapi kaedah pembelajarannya tetap sama. Sehubungan dengan itu adalah lebih baik jika waktu petang ini digantikan dengan kursus praktis woksyop atau studio kerana ia lebih melibatkan elemen *psychomotor*.

Kaedah pengajaran dan pembelajaran; Sebahagian besar pelajar meminati sesuatu kursus itu adalah disebabkan oleh kaedah yang digunakan oleh pensyarah. Kaedah pengajaran *Cooperative Learning (CL)* adalah

amat bertepatan, menjadikan pelajar tidak bosan dan lebih mudah untuk memahami satu-satu topik. Pensyarah juga dapat menilai secara langsung tahap pemahaman pelajar semasa aktiviti CL dibuat. Pensyarah membayangkan contoh-contoh hidup dan semasa dapat menarik minat pelajar. Terdapat kaedah "*Pembelajaran Suggestopedia*", diasaskan oleh Dr. Georgi Lozanov dari Bulgaria. Asas kepada kaedah ini ialah ketenangan. Ketenangan dapat mempengaruhi daya ingatan dan kecerdasan fikiran seseorang. Semasa senggang, denyutan jantung berkurang 5 - 10 denyutan, tekanan darah dan gelombang beta menurun, ketegangan berkurang, tubuh badan serta emosi, pernafasan semakin perlahan dapat meningkatkan daya konsentrasi seterusnya mengoptimumkan kecerdasan dan ingatan. Eksperimen telah dibuat ke atas pengajian bahasa asing, didapati ia menjadikan pembelajaran tiga ke lima kali ganda lebih cepat.

Kaedah pembelajaran yang sistematis dapat membantu keberkesanan proses pembelajaran. Masih ramai responden yang tidak tahu kaedah belajar secara berkesan. Dicapadangkan fakulti untuk menganjurkan kursus kaedah pembelajaran berkesan kepada semua pelajar baru. Ini meliputi; persediaan sebelum kelas, semasa dan selepas kelas, serta kaedah ulangkaji yang efektif dan persediaan menjelang peperiksaan.

Motivasi pelajar; Saranan kepada semua pensyarah agar mengambil satu minit pertama sebelum memulakan kelas untuk memberikan kata-kata perangsang yang dapat meningkatkan motivasi diri pelajar. Rangsangan berupa kata-kata dari orang yang telah berjaya atau sekadar mengingatkan akan tujuan mereka untuk belajar. Pelajar menjadi lebih fokus dan bersemangat dalam keadaan bermotivasi. Dicapadangkan kepada kumpulan pelajar yang bermasalah ini agar diberikan ceramah atau kursus motivasi secara berkala semasa diawal dan dipertengahan semester serta sebelum peperiksaan.

Penghayatan agama; Menurut Prof. Madya Dr. Zulkiple Abd. Ghani (2006) penghayatan agama atau *al-tadayyun* lazimnya dirujuk sebagai pelaksanaan dalam bentuk pengamalan agama oleh seseorang muslim dalam kehidupannya. Dimana lingkungan pengaruh amalan seseorang muslim itu kepada diri individu itu sendiri berupa akidah, ibadah dan akhlak. Manakala pengaruh luarnya berupa pelaksanaan syariah yang melibatkan individu lain, keluarga, masyarakat dan Negara.

Di sini penghayatan agama akan dilihat secara menyeluruh melangkaui kerangka ritual semata-mata. Menurut Mohd. Kamal Hassan (1985), penghayatan agama di negara ini belum mencapai tahap maksimum sebagai satu cara hidup. Kenyataan ini adalah bertepatan dengan hasil kajian soal selidik yang telah dibuat. Berdasarkan keputusan yang diperolehi, kebanyakan responden melakukan ibadah solat secara sambil lewa. Sebahagian besar tidak cukup bilangan waktu solat dan ada juga segelintir responden terus terang menyatakan hanya solat bila perlu.

Kajian ini hanya berkisar tentang solat, belum lagi melibatkan ibadat-ibadat khusus yang lain.

Perbincangan penghayatan agama hanya menyentuh ibadah solat sahaja. Diyakini, solat memberi kesan besar kepada kesejahteraan hidup seseorang kerana ia merupakan jalan utama untuk mendekati diri kepadaNya. Ini terhasil dengan solat yang bernyawa dan hidup batinnya dengan adanya khushyuk, niat, kehadiran hati dan ikhlas. Inilah solat yang dimaksudkan dalam al-Quran, dapat mencegah seseorang dari perbuatan keji dan mungkar, seterusnya dapat memacu manusia kearah kecemerlangan.

Hikmah mendirikan solat yang berkualiti dalam konteks seorang pelajar adalah amat besar, antaranya ialah; motivasi diri, pengurusan masa, kerehatan dan ketenangan.

Katakanlah (wahai Muhammad): " Sesungguhnya solatku dan ibadahnya, hidupku dan matiku, hanyalah untuk Allah, Tuhan yang memelihara dan mentadbir sekalian alam." (Al-Quran, Al-An'am ayat 162)

Menurut ayat ini, solat merupakan ikrar bagi setiap muslim untuk menyerahkan seluruh dirinya kepada Allah. Setiap pekerjaan baik, buruk atau sia-sia yang dilakukan akan dihisab. Ini mengingatkan seseorang muslim itu untuk kembali mengingati tujuan hidup masing-masing. Justeru itu, seorang pelajar akan kembali bermuhasabah tentang peranan dan tanggungjawab dirinya sebagai pelajar. Pada masa yang sama solat juga menjadikan seseorang pelajar lebih berdisiplin dan bertanggungjawab. Ketentuan lima waktu solat dapat dijadikan asas kepada pengurusan masa yang berkesan. Bermula dengan waktu Subuh diawal pagi membangunkan pelajar dari tidur. Usai solat pelajar menjadi segar dan dapat mengulangkaji dengan baik kerana ia merupakan masa yang paling produktif. Seterusnya pergi ke kelas dalam keadaan segar dan bersedia. Hati yang tenang dapat memudahkan proses pembelajaran.

Solat Zohor dan Asar, dapat memberi kerehatan dan tenaga kepada rohani dan jasmani. Menurut seorang doktor neurologi, terdapat urat saraf dalam otak manusia yang tidak dimasuki darah melainkan ketika seseorang itu sujud semasa mengerjakan solat. Darah secara biologinya membawa gas oksigen dan nutrien yang diperlukan oleh otak untuk bekerja. Dalam kesibukan, seorang pelajar hanya memerlukan masa sekitar 10 minit sahaja untuk solat tapi membawa impak yang besar. Manakala waktu Maghrib mengingatkan pelajar yang leka dengan aktiviti senggang untuk kembali mempersiapkan diri. Selesai Isyak, kembali ke bilik untuk mengulangkaji pelajaran. Pelajar akan tidur lebih awal agar mudah untuk bangun awal keesokan harinya. Rutin ini jika diamalkan secara konsisten, mampu menjadikan pelajar lebih teratur dan dapat belajar dengan lebih berkesan.

Orang yang menghayati agama dikaitkan sebagai manusia yang memiliki ketenangan zahir dan batin (H. Ibrahim Lubis, 1982). Ini kerana minda berada pada tahap mak simum apabila berada dalam keadaan tenang

dan bebas dari ketegangan. Gelombang otak bergerak dalam kadar pusingan yang rendah. Pada tempo ini, prestasi kerja otak adalah cemerlang. Sangat mudah mengingati sesuatu, berfikir dengan cekap dan pantas manakala idea-idea kreatif mengalir mencurah-curah. Ini adalah bertepatan dengan teori Dr. Lozanov. Oleh itu, penghayatan agama tidak sekadar berfungsi untuk mencorakkan kerohanian sahaja, sebaliknya turut mencorakkan seluruh kehidupannya sehari-hari (H. M. Arifin, 1977).

4. KESIMPULAN

Secara keseluruhannya punca permasalahan pelajar dapat dikenal pasti dan kaedah bagi meningkatkan potensi diri pelajar yang bersesuaian dengan punca masalah juga telah dicadangkan. Walau bagaimanapun, penyelesaian kepada semua masalah tersebut yang paling tepat adalah kembali kepada penghayatan agama. Ini kerana agama adalah merangkumi semua aspek kehidupan dan mempunyai peranan penting dalam mengoptimumkan potensi diri manusia dari segi spiritual, intelektual, emosi dan fizikal mengikut sistem yang ditentukan Allah. Ini adalah bertepatan dengan kehendak Falsafah Pendidikan Negara yang tidak hanya tertumpu kepada pembangunan intelek sahaja, bahkan meliputi aspek jasmani, emosi dan rohani.

What Should be done to Avoid Plagiarism among University Students?

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ABSTRACT Plagiarism has become a serious concern for university administrator, lecturer, and course coordinator. With rapid development of the Web, more opportunities are presented for the student to commit such infringements. This widespread situation poses variety of threats especially for the academic institutions. This paper investigates this issue and proposes a holistic mean of addressing this concern. As a university lecturer, knowing how to educate your student to stop plagiarism from the start is crucial. This paper examines how to fight plagiarism of written assignment among university students.

1. INTRODUCTION

Plagiarism (Latin: Plagiarius) is a major challenge that is epidemic among many institutions in recent years [6]. Overall trend of published academic papers on plagiarism start by mentioning that this issue is serious, rising, prevalent and chronic [2]. The availability of enormous quantity of electronic text existing on the Internet has made plagiarism much easier for the students.

Recently, university authorities have become gradually more responsive to the matter of plagiarism and other forms of misconduct and unethical academic behaviors. However, identifying plagiarism is a tedious and demanding task for university lecturers and instructors.

Briefly, plagiarism is defined as the act of taking another person's ideas and then using them as one's own. For instance, plagiarism of text is an act of copying some portion of text from the source without giving due credit to the original author. The definition may vary but, at the very least, includes the stealing or unethical use of other's published work without the appropriate credit or acknowledgement of resource. It is a form of cheating by stealing another person's ideas.

Ronald Boisvert and Mary Irwin from the Publication Board of Association for Computing Machinery's (ACM) defined plagiarism as "the verbatim copying, near-verbatim copying, or purposely paraphrasing portions of another author's paper" [1]. Plagiarism practice can happen purposely or unconsciously.

Most institutions have a guiding principle declaring that plagiarism among students is improper. For example, School of Computer Science and Information Technology, Royal Melbourne Institute of Technology (RMIT) University Australia is well known as taking this issue really serious [3].

This paper is organized as follows. Section 2 describes the issue on fighting plagiarism among university students. Section 3 lists out several tips and techniques on how to stop this issue from prevailing. We conclude with some discussion and future works in section 4.

2. FIGHTING PLAGIARISM

As the nature of educational system is evaluative (with written assignments etc.), academic dishonesty such as plagiarism or cheating has become a problematic issue. A student, if not highly self-disciplined, may be easily tempted to plagiarize in their assignment and other learning tasks.

Principally, the most effective tool to prevent plagiarism is to educate students about the consequences of plagiarism. The students themselves should have the awareness on this issue. Hence immediate action should be taken to detect, deterring and reducing plagiarism. Moreover, some of the students are dare enough to outsource their task by hiring the third party such as from their senior colleagues [4] or 'ghostwriter'. They could also easily purchase or download related term papers and sample assignments from web sites such as www.cheathouse.com.

At the university setting, plagiarism has become the primary ethical concerns and the well-known problem. A literature reports that on average at least 10% of college students had experienced plagiarizing [7]. Another case shows that 70% of students disclose that they commit serious plagiarism to some extent [5]. As the statistics are mixed and elevating, the problem needs urgent tangible resolution. Besides the term paper and essay, Computer Science and IT students involved in source code plagiarism. The plagiarism of computer programs such as C++ or Java programming or lab assignments can become fairly common especially in the large (more than 100) undergraduate classes.

However, concrete enforcement is more important. Hence the deans, course coordinators, lecturers and tutors have a duty to stop plagiarism by setting up an integrated and applicable university's policy on academic dishonesty. This policy document should be specific, straightforward, and process-oriented. Moreover, the printed document should be published widely and distributed digitally on the university web.

Therefore, the student must firmly understand that plagiarism is a serious form of ethical misconduct, wrong and a sin. Should the student comply with this guiding policy, lecturers should not worry about their ability to detect the plagiarism among their students. The student must understand that committing plagiarism is really immoral and dangerous. However, in dealing with alleged cases of plagiarism, wrong accusation should be avoided.

Various plagiarism detection program systems have already been developed. Even though that many institutions use electronic tools for this purpose, they still should also apply some of the traditional methods to pick up instances of plagiarism that might not be able to be detected by the software. Although existing plagiarism-uncovering tools seem to be adequate for finding fake programming code submitted by student, they are nonetheless have several shortcomings. Some of them are not robust and sturdy enough to combat serious plagiarists. To detect chunk texts from the Web manually is a tough and time consuming task. This is due to the vast size and enormous nature the Web. Also there exist many copyright reserved texts that cannot be simply accessed.

3. WHAT SHOULD YOU DO?

- Remind your students on how serious this issue is in every first lecture for every semester.
- Each group of student should be asked to develop different type (but with similar nature) of written assignment or project.
- Be very careful while choosing the assignment or course work. Have more open ended question.
- Ask the student to submit their work individually. Interview them face to face.
- Ask them to explain and demonstrate what they have done.
- Determine the uniqueness of the expression and explanation written by their student.
- Make your students work available online for public, immediately. They can have peer-evaluation to detect any attempt to plagiarize.
- To avoid cross-term or cross-semester plagiarism, the assignment question and tasks should be changed often (every semester).
- Authenticate the competence of your students by measuring the quality of their student written assignment in terms of its academic contributions.
- Assign unique and highly original topic for your student or ask them to propose the original one. Compare it among the entire proposals of the class.
- Demand for a complete bibliography or reference list from your student.
- Teach them to be familiar with ACM or IEEE referencing and citation format (for Computer Science or Engineering students).

4. CONCLUSIONS

This paper highlights the issue of plagiarism as a serious problem in most academic communities. Plagiarism cases usually involve copying or using others' materials without proper permission or acknowledgement. In this paper we have listed a number of techniques and methods for you to help your students to avoid plagiarism. In conclusion, your effort to fight plagiarism among your student is vital. As avoiding being caught is the objective of the plagiarizer, future works could find ways on how to build a detecting system that is robust from this type of attack. We will conduct more studies to discover the extent of plagiarism, as well as to learn the reason behind that. In terms of plagiarism detection tools, future work should assess their quality and reliability.

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