

Incorporation of Transferrable Skills Through the Process of Teaching and Learning

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ABSTRACT

Era globalisasi menyaksikan dunia ini sebagai satu wadah yang amat mencabar bagi universiti dalam memberikan pendidikan kepada generasi pelajar. Pelajar-pelajar prasiswazah seharusnya memiliki keupayaan dan kemahiran dalam memenuhi hasrat negara dan juga tanggungjawab sebagai professional di masa akan datang. Sehubungan dengan itu, maka pendidikan tinggi mesti memastikan pensyarah bukan sahaja menekankan soal akademik apabila mengajar, tetapi juga mengambil kira kemahiran-kemahiran kemanusiaan yang boleh disalurkan kepada pelajar seperti kemahiran berfikir secara kritis dan kreatif, penyelesaian masalah, komunikasi interpersonal, dan sebagainya. Kertas ini menyokong akan penggabungan kemahiran kemanusiaan dikalangan pensyarah pada peringkat universiti. Sehubungan dengan itu, satu penyelidikan telah dijalankan di dua buah universiti: Universiti Kebangsaan Malaysia (UKM) dan Universiti Tenaga Nasional (UNITEN). Penyelidikan ini menggunakan kaedah kuantitatif di mana data dianalisis menggunakan SPSS. Akhirnya adalah diharapkan usaha yang cukup untuk pensyarah memiliki kemahiran kemanusiaan akan memastikan kurikulum universiti yang lebih berkesan selari dengan hasrat pendidikan tinggi.

INTRODUCTION

The university curriculum is designed in such a way that it comprises a diverse set of academic offerings and requirements in the effort to build high quality learning environments both in and outside of the classroom. It includes electives to enhance intellectual capabilities and stimulate intellectual curiosity. This is done in an effort to provide far more than the core information or subject matter to undergraduates. University education is seen as a vehicle by which to convey a set of skills deemed important for the future elite, a set that modern business and government cannot afford to spend time developing in their new recruits (Cowley, C. 2000). With this framework in mind, it is our primary concern that

university environment , be it the academic scenario or campus life, should equip undergraduates with this expectation and how the university can materialize this vision by successfully embedding the change within the curriculum.

LITERATURE REVIEW

Human Skills and the University Curriculum

It is a known fact that “human capital” is one of the most important assets of any society for economic, social and cultural development. Thus, it is only natural for the university which handles a pool of innovative and intellectual humans to prepare them with cognitive development, effective communication as well as problem solving skills (Vaughan – Wrobel et al. 1997). These skills are not only beneficial to work but are also required to deal with the increasingly complex spheres of family, community, and society.

Cowley (2000) refers to these skills as the primary human skills. According to him, there are three primary human skills of interest namely problem solving, analysis (criticism, interpretation, synthesis, extraction of key ideas and arguments) and communication (verbal and written as well as listening, questioning, presentation of ideas, persuasion).

The emphasis of human skills in the university curriculum not only benefits the students during their undergraduate years but also at their work place. As mentioned by Lee (1989), “as the nature of work changes and people live and work longer, the capacities to learn continuously through thinking and reasoning, problem solving, decision making, and interpersonal competence becomes so critical”.

If carried out effectively across the curriculum, the incorporation of human skills like problem solving skills and inquiry can prepare students to function as participating citizens, as flexible thinkers, capable of coping with rapid social change and as independent learners. (Whitehead, G, 1978)

Human Skills and Workplace Expectation

The education cycle for an undergraduate doesn't end with the final year at university. His pursuit of excellence will take him through a vicious journey settling for a commendable job. Due to tough competition to qualify for the job market, the undergraduate has to embody the prospects of workplace expectations and potentials. In other words, he has to possess the ‘real world’ skills such as oral communication, leadership and decision-making.”(Cowley, 2000). This employability scrutiny has been around as early as 1980's when governments began to emphasize on explicit skills or competencies development alongside the traditional focus on subject-specific content.

There have been numerous investigations on the kinds of skills employers seek for. According to Bigelow, (2001), teamwork, self-management and problem solving have gained superiority in the past decade. In fact, skills like communication, teamwork and interpersonal skills have been listed as the essential employability skills in at least ten studies.

He added that there are four skill sets often required by certain kinds of work situations. They are:

1. Discipline-specific skills – these are skills specific to a particular major / career.
2. Human skills – these are skills for handling interpersonal situations in organizations e.g. teamwork, working with a diverse workforce, interpersonal skills and general interaction skills.
3. System-Thinking skills – these are skills for diagnosing the broader impact of actions in organizations.
4. Self management skills – these are skills for managing one’s own personal aspirations in an organizational context e.g. self-managed learning, stress management and organizing skills.

Human Skills as Transferable Skill

More often than not, lecturers are seen as role models to their students not only because of their academic contributions but also the impression they make regarding personality and esteemed characteristics. This happens covertly within as well as outside the classroom. Nevertheless, it’s sad to say that this effect does not reach all the undergraduate population. Efforts have to be made to ensure that this group of aspiring nation builders realizes the values and skills embedded within the classroom, and are particularly being imparted by lecturers. As mentioned by Tama (1986), skills deemed necessary to begin to think about issues and problems do not suddenly appear in our students. As such, it becomes part of a lecturer’s role to incorporate and transfer certain skills during contact with students in class. Unless the students have been prepared for the change in expectations, both the students and the teacher are likely to experience frustration.

Based on researches done on human skills or transferable skills at the university, three essential skills stand prominent and they are often times called primary human skills. They are critical thinking, problem solving and communication skills.

Human Skills as Transferable Skill: Critical Thinking

According to Ennis (1985, 45), “Critical thinking is reflective and reasonable thinking that is focused on deciding what to believe or do. Defined narrowly, it

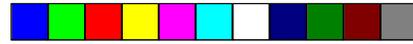
is perceived as a very important element of general cognitive processes, such as problem solving or decision making, but is not synonymous with them. Critical thinking implies curiosity, skepticism, reflection, and rationality. As a critical thinker, one has a propensity to raise and explore questions about beliefs, claims, evidence, definitions, conclusions, and actions. Among the characteristics of critical thinkers are perseverance, flexibility, metacognition, transfer of knowledge, problem orientation, open mindedness, use of quality standards, and independence, a list that resembles many descriptions of the desirable qualities of the future workforce (Lee 1989).

Human Skills as Transferable Skill: Problem Solving

The efficacy of problem solving as a way to learn has been established. It is compatible with frequently stated goals of social studies education (Whitehead, G, 1978). It is essential in preparing students to function as participating citizens, as flexible thinkers, capable of coping with rapid social change and as independent learners entails developing problem solving skills and enquiry. Among the problem solving skills that should be incorporated in the classroom are the problem solving techniques, styles and steps. The most common problem solving step that can be carried out easily within the classroom is: (1) diagnosing the problem and coming to an understanding of the situation, (2) setting goals in order to address problems and/or capitalize on issues identified in the situation, (3) developing alternative solution, (4) assessing the alternatives and making a choice, and (5) implementing the choice and following up on it. One then moves back to the starting pre-situational alertness step. (Bigelow, J.D., 2001)

Human Skills as Transferable Skill: Communication

Many studies have indicated that oral language development or speech that is the important elements of communication has largely been neglected in the classroom (Holbrook, 1983). Speech is not usually simply basic communication – it involves thinking, knowledge and skills. It also requires practice and training (Zhang, Hong-Alex, 1995). In other words, students need to be taught about communication - an interpersonal process of sending and receiving symbols with messages attached to them. This includes knowledge of basic communication concepts: communication models, direct and indirect messages, types and functions of non-verbal communication and perception and attribution. This learning experience gives learners a context and vocabulary that provides a basis for skill-building efforts. This can also be useful in carrying out their day-to-day communication process as an undergraduate: establishing and maintaining interpersonal relationships, listening to others, gaining the



info needed to create an inspirational workplace, handling conflict, negotiating successfully as well as leading successfully.

METHODOLOGY

The study was conducted using a survey-method and 47 lecturers from Universiti Kebangsaan Malaysia (UKM) and Universiti Tenaga Nasional (UNITEN) participated in it. Questionnaires were given to the respondents through snowballing sampling method and collected as soon as they finished answering them.

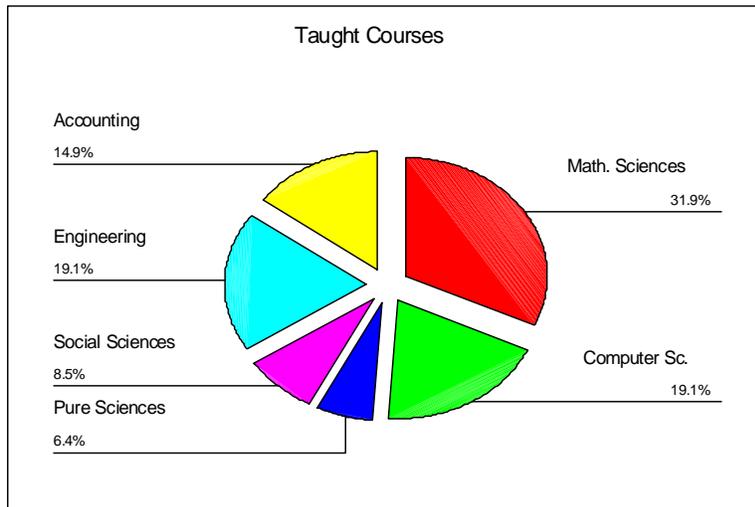
DATA ANALYSIS AND DISCUSSION

Data on 47 lecturers teaching content courses were collected from two universities – 25 respondents were from UKM and the other 22 were UNITEN staffs. The distributions of our respondents' demographic background are as shown in tables 1 – 3.

From the 47 respondents, 91.5% teach Pure/Applied Sciences courses such as Mathematics, Statistics, Computer Science, Engineering or other pure sciences courses like Chemistry or Physics. In specific, lecturers of Mathematical Sciences make up the 31.9%; Engineering and Computer Sciences lecturers each contribute some 19.1% from the total respondents, while 14.9% and 6.4% of the respondents are respective lecturers teaching Accounting and Pure Science subjects. The other 8.5% teach Social Sciences courses like Psychology and Human Resource.

Respondents Faculty

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Pure/Applied Sciences	43	91.5	91.5	91.5
Social Science	4	8.5	8.5	100
Total	47	100	100	



Respondents' Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	13	27.7	27.7	27.7
	Female	34	72.3	72.3	100.0
	Total	47	100.0	100.0	

Respondents' Ethnic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	44	93.6	93.6	93.6
	Chinese	2	4.3	4.3	97.9
	Indian	1	2.1	2.1	100.0
	Total	47	100.0	100.0	

Table 3: Ethnic of Respondents

Reliability tests were then conducted on our survey instruments on three aspects of human skills that are communication skills, critical thinking skills and problem solving skills by using the reliability coefficient of Cronbach alpha. The initial reliability coefficients on all items were high. After removing three items, which correlated poorly with the other items, the overall reliability increased slightly. The 19 questions on communication skills gave a high reliability with Cronbach $\alpha = 0.8541$, 18 questions on critical thinking skills and some other 19 questions on problem solving skills also provided high reliability (each Cronbach α gives value of 0.8421 and 0.8647 respectively). In addition to that, the overall reliability on all the 56 survey instruments indicated very high reliability with Cronbach alpha of 0.9365.

Our analyses are extended to test these hypotheses:

1. Human skills in lecturers are the same for different ethnics.
2. Human skills in lecturers are the same for different gender.
3. *Human skills in lecturer are the same for different courses taught.*

For each hypothesis above, tests are conducted for each aspect of human skills i.e. communication, critical thinking and problem solving. Comparison tests using the t-test and analysis of variance (ANOVA) are carried out.

The sample size is not so large to use normal approximation for comparison tests purposes. Nevertheless, after several tests on normality assumption on our data using box plots and Q-Q probability, our data is rather normally distributed.

Results of analyses indicate that there are no significant differences in usage of human skills while teaching content courses for different ethnics, gender and specializations. However, analyzing the demographic factors in different aspects, we obtained significant results when comparing the use communication skills in teaching between Malay and non-Malay lecturers at 0.01 significance level and critical thinking skills at 0.01 significance level and problem solving skills at 0.10 significance level between sciences and non-sciences courses.

More specifically, our results show that the *p*-value of testing communication skills incorporated while teaching content courses between Malay and non-Malay lecturers to be 0.004. In general, the non-Malay lecturers incorporate more of the communication skills when teaching compared to the Malay lecturers. This is shown by the negative values in Mean difference (i.e. -0.4952).

Independent Samples Test										
		Levene's Test for Equality of Variances			t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
comm skill	Equal variances assumed	4.143	.048	-1.988	45	.053	-.4952	.24908	-.99689	00646
	Equal variances not assumed			-4.813	.266	.004	-.4952	.10289	.75574	23469
crit skill	Equal variances assumed	.004	.949	-.445	45	.659	-.0961	.21617	.53150	33926
	Equal variances not assumed			-.440	.275	.698	-.0961	.21837	.93481	74257
prob-solv sk	Equal variances assumed	.007	.934	-1.659	45	.104	-.3900	.23505	.86336	08346
	Equal variances not assumed			-1.465	.211	.269	-.3900	.26624	1.4367	65679

Table 4: t-test on use of human skills in teaching between Malay lecturers and non-Malay lecturers

With respect to course contents, the *p*-values from the comparison tests between sciences and non-sciences courses are 0.019 and 0.056 for critical thinking skills and problem solving skills respectively. In both tests, non-science lecturers incorporate more of the human skills compared to the science lecturers (i.e. mean difference = -4342 and -0.399). This raises concern to the researchers, particularly in the aspect of human skill across discipline.

Independent Samples Test

		Levene's Test for equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
comm skill	Equal varian assumed	.336	.565	-1.711	45	.094	-.3773	.22053	-.82146	.06687
	Equal varian not assumec			-1.236	3.263	.298	-.3773	.30515	1.30557	.55098
crit skill	Equal varian assumed	1.884	.177	-2.434	45	.019	-4.342	.17840	-.79355	-.07490
	Equal varian not assumec			-4.429	5.998	.004	-4.342	.09804	-.67414	-.19432
prob-solv s	Equal varian assumed	1.674	.202	-1.960	45	.056	-.3990	.20360	-.80910	.01106
	Equal varian not assumec			-2.901	4.605	.037	-.3990	.13753	-.76188	-.03616

Table 5: t-test on use of human skills in teaching sciences and non-sciences courses

We reconducted the tests using nonparametric analyses and the results were very similar with earlier analyses.

Further analyses were carried out using factor analysis to identify aspects of human skills that are commonly integrated by the lecturers while delivering knowledge on the course contents. Results list paying attention or listening to others, conveying message, audiences' aspects or background, accepting others' opinion and expressing oneself as skills in communication that are incorporated. In the critical thinking skills, lecturers include aspects on asking questions and synthesizing, using facts when discussing or debating, and evaluating ideas or simply being critical.

On the aspects of problem solving, skills that are transmitted directly or indirectly by the lecturers are the importance of skills for academic achievements as well as for success in life, identifying problems and steps or ways to problem-solving and thinking also about the alternatives. Among the three aspects of human skills, problem-solving skills are integrated the most (with mean 4.5 of 5 scales), followed by critical thinking skills (with mean 4.21 from scale of 5), and lastly the communication skills (with mean 4.09).

SUGGESTIONS & IMPLICATIONS

In ensuring the effectiveness of a classroom, lecturers should not only concentrate on the content matters of the core courses but need to consider transferable skills to produce more 'real world' skills among undergraduates (Cowley, C. 2000). Among the three primary skills as discussed in this paper are problem solving, critical thinking and communication skills.

Based on our findings, there are still lecturers who don't fully incorporate the primary skills in their teaching. This can be due to several reasons. Firstly, the nature of certain courses might not allow much creativity, communication or discussion. For instance, a lecturer teaching advanced mathematics might see less opportunity to incorporate human skills as compared to another teaching the subject of study skills.

In some cases, the lecturer's choice of teaching methodology and pedagogical approach does not support the incorporation of human skills. In cases like this, it is advised for lecturers to make room for changes and select from a range of teaching approaches and media that are more communicative and learner-centered.

Other reasons include the lecturer's lack of interpersonal skills and confidence in handling class. Low self-esteem and communication incompetence might hinder the effort to impart the human skills among students. This problem becomes more serious with bigger classes which entail classroom management dilemmas. In order to best handle this issue, lecturers should be provided with courses and training sessions that not only convince them about the importance of imparting human skills in their classrooms, but also raise their level of confidence and awareness.

Researchers on human skills have indeed advocated several ways to successfully teach and incorporate human skills in the classroom. Lecturers facing the abovementioned problem need to observe the experts' opinions on lecturer's characteristics and behaviors that are suitable to promote human skills in his teaching process.

Problem solving as a skill is important skills that should be to help undergraduates to function as participating citizens as well as flexible thinkers. Evidence also suggests that with appropriate teacher direction and involvement, problem solving can both engage students' interest and stimulate them to higher levels of intellectual endeavor (Whitehead, 1978).

In line with this, Whitehead (2001) has suggested some lecturer's behaviors that can facilitate students' problem-solving performance:

- Firstly, teacher should identify and make accessible to students the background knowledge required to think meaningfully about the problem;

- Secondly, teacher should present students with functional problem-solving models, explaining why each is appropriate to specific tasks;
- Thirdly, teacher should monitor the students' understanding of the interrelationship of the steps in the model; and
- Lastly, teacher should identify skills needed for a problem-solving task and explicitly teach students how to perform these operations. Such instruction should include application of the skill to uncomplicated cases in preparation for applying the skill to the problem-solving task, which is the focus of learning.

Another important human skill that should be taught to the students is critical thinking skill. Even though the urgent need to teach thinking skills at all levels of education continues, we should not rely on special courses to do the job. Instead, every lecturer whether they are teaching content courses or vice versa should create an atmosphere where students are encouraged to read deeply, question, engage in divergent thinking, look for relations among ideas, and grapple with real life issues.

According to Carr (1990), there are various types of thinking skills activities applied to content areas: critical reading or reaction paper, writing to learn and classification games.

Critical reading or reaction paper has been defined as learning to evaluate, draw inferences, and arrive at conclusions based on the evidence (Zintz and Maggart, 1984). One method that promotes critical thinking skill involves the use of news media in class. On top of that, newspapers, magazines, television, and radio can also be used to motivate students in developing critical listening and reading skills.

In keeping with the current emphasis on writing across the curriculum, composition and rhetoric scholars stress the teaching of thinking thru writing. Elbow (1983) has presented a two-step writing process called first-order and second-order thinking. For first-order thinking, he recommends free writing that is an unplanned, free-association type of heuristic writing designed to help students discover what they think about a topic. Free writing technique produces conceptual insights. Elbow cautions that the reflective scrutiny of second-order thinking is a necessary follow-up of free writing. In this stage, the writer examines inferences and prejudices and strives for logic and control.

Classification games play a significant role in the development of logical thinking and abstract concepts from early childhood and adulthood. All classification tasks require the identification of attributes and sorting into categories according to some rules (Furth and Wachs, 1974). What may not be obvious are the application of classifications to reading in the content-fields and the retention of information read. Schema theory holds that information, if

it is to be retained, must be categorized with something already stored in memory (Tonjes and Zintz, 1987). Besides that brainstorming techniques that aid comprehension are recommended to help access their prior knowledge about a topic to be read, and thus classify and retain the new information.

The communication skill is indeed the type of human skill which has been neglected in the classroom (Holbrook, 1983). This is reflected in our findings regarding communication practice in the classroom. It is interesting to note the differences among lecturers between ethnic groups as well as areas of specialization with regard to this matter.

To bring this gap closer, lecturers might want to consider suggestions and recommendations made by Kurtz et. al. (1999) for teaching communication skills. The suggestions are:

- dissemination of knowledge about communication.
- demonstration of communication skills.
- practice of specific skills.
- observation with feedback and self-assessment.
- repeated practice with feedback and self reflection.
- supportive and reinforcing role models.
- continuing development and advanced skills integrated with curriculum.
- evaluation of communication skills.

CONCLUSION

For effective learning to happen, lecturing does require the observation of the overall behavior of how students learn in the classroom. Above all, the student should be informed of the skills that are thereby to be imparted, that he might reflect on the process of learning itself, and become co-responsible for the outcome. More generally, this is one of the key aspects of active learning of both of the subject matter and the skills (Cowley, 2000).

In short, lecturers should not only concentrate on the content matters of the core courses but also they must take account of transferable skills of liberal courses such as problem solving, critical thinking and communication. Lastly, it is hoped that more effort is made to equip lecturers with human skills to enhance the effectiveness of university education curriculum in keeping abreast with educational expectations.

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