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The need for more visibility and expansion of SEARAME

The last decade has witnessed medical education gaining wider recognition and acceptance in the South East Asian Region. In the past, medical education was perceived as a philosophical discipline lacking practical value. Research in medical education was considered superficial and inferior to clinical or laboratory research. Today, most medical schools in the region have established medical education units. Curriculum reforms are taking place in many medical faculties. There is a growing number of academics who choose medical education as a full-time career.

This situation creates a window of opportunity for the South East Asian Regional Association for Medical Education (SEARAME) to improve the standard of medical education in the region. As one of the six regional organizations under the umbrella of the World Federation for Medical Education (WFME) and as an association working very closely with the WHO-South East Asian Regional Office (WHO-SEARO), SEARAME has the mandate to take up a leadership role in improving medical education in the SEA region. Possible approaches for SEARAME include creating a culture conducive to medical education reforms, establishing regional collaborations, promoting medical education research and supporting motivated academics to improve their expertise in medical education in order to act as agents of change.

However, if SEARAME is to emerge as a regional leader in medical education, the visibility and strength of the organisation need to improve. To a certain extent the journal (SEAJME) has improved the visibility of SEARAME, even though many more initiatives need to be taken if we are to be considered regional leaders in medical education. The membership base is the key to the sustainability and the strength of an association. Many years since its revival, the membership base of SEARAME is yet to expand beyond its founder members. Repeated requests to apply for membership receive a very low response. This is an area for concern.

We hope that the readership of SEAJME will show an active interest in joining SEARAME to make the organization viable and stronger.

Indika Karunathilake
Designing an assessment tool for professional attributes of medical graduates from a new medical school in Nepal

J. Huw C. Morgan

Abstract

Introduction: Patan Academy of Health Sciences (PAHS) is a new medical school that specialises in specifically training doctors for service in the rural areas of Nepal. The trainee doctors’ values are consistent with sustainable improvements in the health of poor and marginalized people. This new faculty is engaged in a collaborative exercise to define professional attributes that are required of new graduates and to design a simple assessment tool to measure themselves.

Background: Professionalism is an increasingly important topic in medical education today and a number of studies have described ways of defining and measuring professional attributes in Western medical graduates. No such studies can be found in any Asian medical schools.

Methods: An initial faculty-wide consultation meeting in 2007 produced a list of 29 attributes for PAHS graduates. In 2008, the newly formed Medical Education Unit was given the task of refining them into a workable list that could be realistically assessed. This produced a list of 12 attributes together with their operational definitions.

Results: The definitions of required attributes together with the presence or absence of their corresponding behaviour would be indicated in a simple table that could be used in a wide variety of educational settings.

Discussion: The final assessment document requires only a ‘meets expectations’ or ‘below expectations’ tick from the tutor across 11 attributes. The efficacy and practical value of this tool will only be determined with use, and further research to determine how effective it is.

Introduction

The Patan Academy of Health Sciences is a new medical school in Nepal. Currently, it is in the preparatory phase for the intake of students for 2009. It is based at Patan Hospital, Kathmandu, a 450 bed District hospital. The hospital provides compassionate healthcare to everyone who comes to it regardless of their financial ability to pay. The hospital serves people from every District of Nepal, from the remote villages as well as from the Kathmandu valley.

It is one of the largest hospitals in Nepal and has modern equipment and facilities to provide treatment for almost 320,000 outpatients and 20,000 inpatients every year. The Patan Hospital conducts more than 10,000 surgical operations annually.

The Patan Academy of Health Sciences is dedicated to improve the health of the people of Nepal, especially those who are poor and living in rural areas, through innovation, equality, excellence and compassion in education, service and research. It aims to work in collaboration with the National Health System (NHS) to contribute to the improvement of the health status of the people in Nepal, and proactively encourage the national government in the development of appropriate health policies, programmes and systems to uplift the health of the rural poor. To do this, it plans to enable deserving students from the underprivileged sectors of...
Nepali society to access health science education, starting with medical education, and eventually nursing and other allied health science education.

The goals differ considerably from those of the majority of medical schools in Nepal that tend to focus primarily on clinical competence only. Because of this, the faculty members conducted a collaborative exercise to define all other professional attributes that they wished graduates from PAHS to have at the end of their training. This paper describes the process and outcomes of that exercise and the assessment tool that will be used to determine whether the students are demonstrating the required professional attributes that are consistent with the goals and mission of PAHS.

Background

Professionalism is an important topic in medical education today. While much work has been focused on defining professionalism and teaching medical students the appropriate interpersonal behaviours, relatively little research has looked at meaningful ways of assessing the relevant attributes. Van Zanten et al. (2005) used a standardised patient assessment to explore the attributes of medical graduates in the USA and found it reliable in some domains. Fontaine and Wilkinson (2003) in New Zealand developed an instrument following a survey of professional attributes of concern displayed by medical students. This was followed by development and validation, amongst medical faculty staff and students, of the instrument and its supporting process. Evaluation was by recording participation rates of staff and determining the consistency of the instrument across dimensions and clerkships. The process was able to detect students’ concern and provide effective remediation and ongoing monitoring (Fontaine & Wilkinson, 2003). Clark (1994) conducted a retrospective survey of graduates of Kings College in the UK using a questionnaire designed to assess their perceptions on how well prepared they were in terms of knowledge, skills and professional attributes by their education, and used the results to assist in designing a new curriculum.

Later a postal questionnaire was sent to five cohorts of doctors who had previously qualified from Kings, asking them if they thought they had acquired the defined attributes of doctors that the medical school wished to produce. The results revealed significant gender differences (Clark & Head, 1999). Cruess et al. (2006) in Canada developed a Professionalism Mini-Evaluation Exercise (P-MEX) using the mini-Clinical Examination Exercise (mini-CEX) format. From a set of 142 observable behaviours reflective of professionalism identified at a workshop, 24 were converted into an evaluation instrument modeled on the mini-CEX. This instrument, designed for use in multiple settings, was tested on clinical clerks in medicine, surgery, obstetrics and gynaecology, psychiatry, and paediatrics. This preliminary study suggested that the P-MEX is a feasible format for evaluating professionalism in clinical training. A search of Medline revealed no similar studies from any Asian medical schools.

Methods

In April 2007 a meeting of 20 - 30 prospective faculty members of PAHS was convened in order to define the desirable attributes of PAHS graduates. Brainstorming by this group produced a list of 29 attributes (Table 1) together with their operational definitions (that is, observable behaviours of the presence of the attribute).

Subsequently in September 2008, the newly formed Medical Education Unit of PAHS was given the task of collating these attributes and designing an assessment instrument that could be realistically used by many faculty members in a variety of educational settings to assess the presence or absence of the attributes in students. The twenty-nine attributes were integrated to produce a list of twelve attributes together with their operational definitions (Table 2). The numbers of the original attributes were recorded with the new combined attribute statements. This was conducted by means of a number of small group discussions, the number of people in the Medical Education Unit at the time being six.

Results

The revised attributes were widely circulated among faculty members and international advisors for comments, but other than minor changes of wording no substantive changes were made. Afterwards, the Medical Education Unit designed an assessment tool that could be used in a variety of educational settings by faculty members to record the presence or absence of evidence of the various attributes in students.
Table 1: 29 Attributes of PAHS Graduates (with operational definitions)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of own limitations</td>
<td>Seeking timely help when needed.</td>
</tr>
<tr>
<td>Communication</td>
<td>Ability to listen and explain concepts and situations appropriately.</td>
</tr>
<tr>
<td>Commitment to serve in remote / rural areas</td>
<td>Commitment to go and discharge expected professional responsibilities enthusiastically for a specified period of time in areas with challenging environments.</td>
</tr>
<tr>
<td>Respect for patients’ rights and dignity</td>
<td>Willingness to respect patients’ rights and dignity.</td>
</tr>
<tr>
<td>Commitment to people’s empowerment</td>
<td>Willingness to make people aware of their rights and responsibilities.</td>
</tr>
<tr>
<td>Awareness of social / cultural aspects of patients</td>
<td>Acknowledgement of and respect for different social and cultural backgrounds.</td>
</tr>
<tr>
<td>Awareness of patients’ economic backgrounds</td>
<td>Commitment to use cost-effective approaches in providing health care services.</td>
</tr>
<tr>
<td>Team spirit</td>
<td>Ability to work synergistically to accomplish a common goal.</td>
</tr>
<tr>
<td>Benefit larger community while dealing with individual patients</td>
<td>Taking a broader perspective and understanding the connection to community health while dealing with individual patients.</td>
</tr>
<tr>
<td>Sound knowledge</td>
<td>Core medical knowledge (biomedical + psychosocial) relevant to the practice of medicine in Nepal.</td>
</tr>
<tr>
<td>Up to date with recent advances in the relevant professional field</td>
<td>Ability to apply knowledge appropriately.</td>
</tr>
<tr>
<td>Technical competence</td>
<td>Ability to come up with new, practical ideas to deal with challenges.</td>
</tr>
<tr>
<td>Critical appraisal</td>
<td>Ability and willingness to question dogma, to evaluate the evidence, and act accordingly.</td>
</tr>
<tr>
<td>Good educator</td>
<td>Ability to facilitate learning and personal growth.</td>
</tr>
<tr>
<td>Decision maker</td>
<td>Ability and willingness to make appropriate decisions and act on them.</td>
</tr>
<tr>
<td>Well organized</td>
<td>Ability to use resources (e.g. time, money, equipment, and people) efficiently.</td>
</tr>
<tr>
<td>Leadership</td>
<td>Ability to make a group work together in setting and achieving common goals by effective mobilization of resources.</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Maintaining professional values, and keeping society’s interests above one’s own.</td>
</tr>
<tr>
<td>Compassion</td>
<td>Willingness to help others, out of concern and kindness.</td>
</tr>
<tr>
<td>Empathy</td>
<td>Capacity to feel and act to ease the suffering of others.</td>
</tr>
<tr>
<td>Willingness to serve disadvantaged / underserved populations</td>
<td>Willingness to serve and improve the health and well-being of disadvantaged and underserved populations.</td>
</tr>
<tr>
<td>Social responsibility</td>
<td>Commitment to deal with social determinants of health and well-being.</td>
</tr>
<tr>
<td>Life long learners</td>
<td>Commitment to life long learning.</td>
</tr>
<tr>
<td>Scientific approach</td>
<td>A rational, objective, and evidence-based approach to problems and situations.</td>
</tr>
<tr>
<td>Research oriented</td>
<td>Willingness to go beyond rote learning and engage in research.</td>
</tr>
<tr>
<td>Sensitivity and tact</td>
<td>Capacity to understand people’s feelings and act with consideration.</td>
</tr>
<tr>
<td>Nonjudgmental</td>
<td>Ability to act without prejudice and be impartial.</td>
</tr>
<tr>
<td>Being a good human being</td>
<td>Besides being a good health professional, being a good citizen.</td>
</tr>
</tbody>
</table>
Table 2: Attributes of PAHS graduates (revised) – with operational definitions

The PAHS Graduate will demonstrate all of the following attributes:

1. Compassion and empathy to their patients at all times. (20, 21, 27)
   a. Demonstrates concern for patients and colleagues.

2. Good communication skills – listens, explains concepts clearly. (2)

3. Commitment to serve the disadvantaged, particularly those in remote, rural areas. (3, 22)
   a. Demonstrates enthusiasm for serving in rural areas.
   b. Relates well to local people.

4. Awareness of socio-economic and cultural issues. (6, 7)
   a. Uses cost effective approaches in investigation and management decisions.
   b. Takes into account the patients financial and social issues.
   c. Demonstrates respect for patient’s cultural and religious beliefs.

5. Awareness of community health needs and social determinants of health. (9, 23, 5)
   a. Identifies and explains social determinants of health using a public/community perspective.
   b. Demonstrates active involvement with the local community to help address their own health needs.

6. Professionalism (4, 15, 19, 28, 29)
   a. Respects patients rights and dignity.
   b. Acts without prejudice.
   c. Puts societal/patient needs before one’s own.
   d. Takes responsibility for the education of other health workers.
   e. Takes responsibility for own ongoing education.
   f. Demonstrates meticulous and dedicated approach to work.
   g. Demonstrates integrity.

7. Leadership and team spirit (8, 18)
   a. Works well in a team to accomplish a common goal.
   b. Uses resources (time, money, equipment and people) efficiently.
   c. Able to make appropriate decisions and act on them.

8. Clinically competent (10, 11, 12)
   a. Has sound core medical knowledge.
   b. Up to date with recent advances.
   c. Applies knowledge appropriately.

9. Critical thinking
   a. Asks critical questions.
   b. Evaluates the evidence and acts accordingly.

10. Life long learning (14, 24, 25, 1)
    a. Is aware of own limitations.
    b. Seeks help when needed.
    c. Demonstrates a continuing desire to learn.
    d. Utilizes available learning opportunities.

11. Innovation (13)
    a. Comes up with new, practical ideas.
    b. Meet challenges

12. Commitment to research (26)
    a. Engages actively in research to address healthcare needs of Nepal.
It was considered important that this be short, simple and easy to use. The twelfth attribute on the list (commitment to research) was not included because it was considered it was unlikely to be realistically assessed during the undergraduate training period. The assessment tool is displayed (Table 3). Unfortunately no pre-testing of the reliability and validity of the tool was possible.

**Table 3: Assessment form for PAHS Attributes – for use in clinical attachments, PBL and community placements**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>B – below expectations</th>
<th>M – meets expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attribute 1 – Demonstrates compassion and empathy to their patients at all times</strong></td>
<td>Rude to patients or colleagues. Ignores others contributions. Displays arrogance.</td>
<td>Shows sensitivity and respect for fellow students and patients. Tries to help others. Demonstrates concern.</td>
</tr>
<tr>
<td><strong>Attribute 2 – Good communication skills</strong></td>
<td>Doesn’t listen. Doesn’t explain concepts or general facts clearly. Unwilling or unable to attend to verbal and non-verbal behaviours.</td>
<td>Actively listens to patients and colleagues. Explains concepts clearly. Recognizes and acts upon verbal and non-verbal behaviours. Avoids interrupting others.</td>
</tr>
<tr>
<td><strong>Attribute 4 – Awareness of socio-economic and cultural issues</strong></td>
<td>Shows lack of respect and sensitivity for viewpoints and feelings of others including racial, social and gender issues. Persistently ignores financial constraints of patients.</td>
<td>Uses cost effective approaches in investigation and management decisions, taking into account the patients financial and social issues. Demonstrates respect for patient’s cultural and religious beliefs.</td>
</tr>
<tr>
<td><strong>Attribute 6 – Demonstrates professionalism</strong></td>
<td>Fails to respects patients rights and dignity. Acts with prejudice because of race or gender. Fails to put societal/patient needs before his own (when there is opportunity to serve). Makes no effort to teach others and doesn’t pursue his own ongoing education. Demonstrates a sloppy, lazy attitude to work.</td>
<td>Respects patients rights and dignity. Acts without prejudice. Puts societal/patient needs before one’s own. Takes responsibility for the education of other health workers. Takes responsibility for own ongoing education. Demonstrates meticulous and dedicated approach to work. Demonstrates integrity.</td>
</tr>
<tr>
<td><strong>Attribute 7 – Demonstrates leadership and team spirit</strong></td>
<td>Reluctant to take on work. Doesn’t stimulate group learning and discussion. Doesn’t actively participate in discussion or dominates discussion.</td>
<td>Works well in a team to accomplish a common goal. Contributes to group learning, involving quieter members of the group without dominating discussion. Uses resources (time, money, equipment and people) efficiently. Prepares appropriately and presents effectively. Able to make appropriate decisions and act on them.</td>
</tr>
<tr>
<td><strong>Attribute 8 – Demonstrates clinical competence</strong></td>
<td>Lacks sound basic clinical knowledge and/or skills. Does not make efforts to correct mistakes or improve knowledge and skills. Does not apply knowledge appropriately.</td>
<td>Shows sound core medical knowledge, up to date with recent advances, applies knowledge appropriately.</td>
</tr>
<tr>
<td><strong>Attribute 9 – Demonstrates critical thinking</strong></td>
<td>Consistent difficulty identifying problems or applying knowledge to PBL cases or to patients. Doesn’t critically appraise new knowledge. Conclusions are illogical.</td>
<td>Able to formulate hypotheses, synthesize information and apply to patient problems. Asks critical questions, evaluates the evidence in current literature and uses these skills to guide judgments.</td>
</tr>
<tr>
<td><strong>Attribute 10 – Demonstrates life long learning skills</strong></td>
<td>Has difficulty accepting feedback from peers or mentors. Doesn’t accept responsibility for own learning. Needs to recognize limits of his/her abilities.</td>
<td>Accepts responsibility for own learning. Able to recognize own weaknesses and strengths. Able to accept feedback constructively and responds appropriately to suggestions for improvement.</td>
</tr>
<tr>
<td><strong>Attribute 11 – Demonstrates innovation</strong></td>
<td>Doesn’t generate new ideas. Relies on others to solve problems.</td>
<td>Comes up with new, practical ideas to meet challenges.</td>
</tr>
</tbody>
</table>

Did you observe anything the student did particularly well? Please comment below.

Did you observe anything the student did particularly not well? Please comment below.

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Discussion

The result of this process is a single A4 sheet with clearly defined observable behaviours listed under various categories of professional attributes. It requires tutors to note whether or not the student behaviours were or were not according to each category listed (i.e. a simple pass/fail decision with the desirable behaviours listed to minimise subjectivity). Additional space for optional comments was deliberately kept to a minimum since this tool is intended to be user friendly and to minimise the burden on busy tutors. Its generic nature enables it to be used in a wide variety of educational settings, and the intention is that it can be used in PBL groups, during ward-based teaching and in the community setting, thus gaining a wide picture of each student’s behaviour and attitudes across different domains during their undergraduate training.

The tool has (unsurprisingly) a number of points which overlap with similar instruments used by Western medical schools (Van Zanten et al., 2005; Fontaine & Wilkinson, 2003). The author was unable to find any similar tools developed in an Asian context.

The efficacy and practical value of the tool will become apparent when it is used, and further research conducted. A limitation of this paper is that it is unable to give any evidence of the usefulness of this tool in practice. However, the process of defining desired attributes and designing this tool has been a valuable one for the PAHS faculty members, and is believed to be the first of its kind in a South Asian context. One advantage of this paper is it describes the process and makes the tool available in South Asia.

Conflict of Interest: Dr Morgan was involved in the development of the assessment tool.

Funding: None

Ethical Approval: Not applicable

References


Academic misconduct among medical students

Somchai Tanawattanacharoen¹, Chaichana Nimnuan²

Abstract

Objectives: To explore attitudes and behaviour in medical students to scenarios involving academic misconduct and to determine the association between attitudes and behaviour.

Methods: In August 2008, a cross-sectional survey using an anonymous, self-administered questionnaire was conducted at the Faculty of Medicine, Chulalongkorn University. All first year medical students were subjects. Completed questionnaires were collected and analyzed.

Results: Of the 291 medical students, 247 (84.9%) completed the questionnaire. The majority of medical students felt that most scenarios were wrong but admitted to engaging in at least one of the scenarios. In all, 139 (56.7%) students responded that cheating should be reported. Only 22 (9.1%) of the students stated that they had or would consider cheating or had witnessed such events. Fourteen out of 22 items showed significant association between attitudes and behaviours. No scenario demonstrated a negative relationship between attitudes and behaviour.

Conclusion: The proportion of first year medical students engaging in academic misconduct was high, although they considered it wrong. There were associations between students’ attitudes and behaviour in most of the scenarios.

Introduction

Learning to become a physician requires not only the development of medical knowledge and practical skills, but also high ethical and moral standards including academic integrity (Swick, 2000; Berkow, 2002). More attention has been devoted in recent years to the question of professionalism in medical education and practice (Hensel & Dickey, 1998; Wynia et al., 1999). Nevertheless, many medical schools are still confronted with a high level of academic dishonesty: up to 58% of students admitted to cheating at least once during medical school (Sierles et al., 1980).

The prevalence was even higher in some developing countries where 94% of students admitted cheating at least once during their studies (Hrabak et al., 2004). This might be due to multiple factors such as social, cultural and economic factors.

Students who have cheated in elementary school, high school and college are more likely to cheat in professional schools (Baldwin et al., 1996). Likewise, cheating in medical school may be a significant predictor of dishonesty in future medical practice (Sierles, et al., 1980) similar to those in business practice (Sims, 1993). Moreover, dishonesty among medical students may result in lack of knowledge and cause harm to patients (Rozance, 1991; Vengoechea et al., 2008).

Previous studies have shown that most medical students consider academic misconduct to be wrong and would not engage in such activities (Rennie & Crosby, 2001; Elzubeir & Rizk, 2003). Numerous individuals and environmental factors are associated with dishonest behaviour. These include moral development, personality and institutional factors.
Gender difference in cheating is one of the most researched individual factors. The results are not clear, with some studies indicating that males are more likely to cheat (Elzubeir & Rizk, 2003; McCabe et al., 2001) and others indicating no significant difference between genders (Baldwin et al., 1996; Anderson & Obenshain, 1994; Satterwhite et al., 1998; Whitley, 2001). Furthermore, students’ grade and academic year were other factors that have been studied recently and the results were still controversial (Hrabak et al., 2004; McCabe et al., 2001; Satterwhite et al., 1998).

In Chulalongkorn University, the medical curriculum spans 6 years. As students progress through the course of their studies, it is quite possible that they are faced with increasing pressure and stress. Stress has been identified as one of the sources of academic misconduct (Helms & Helms, 1991).

Academic misconduct among medical students is the faculty’s area of concern. Therefore, the faculty has integrated ethical dilemmas as a topic of the curriculum for over six years. The status of undergraduate ethics as a curricular topic has not yet been evaluated. The first year medical students are new members and have not learnt about the medical profession.

The objectives of this study were to determine attitudes and behaviour of medical students to scenarios involving academic misconduct and determine the association between the said attitudes and behaviours. The results may be helpful as baseline data and useful for comparing their attitudes and behaviour to academic misconduct across the years.

**Materials and methods**

All first year medical students of the Faculty of Medicine, Chulalongkorn University, academic year 2008, were recruited as participants. A cross-sectional survey was conducted using an anonymous, self-administered questionnaire. Any student who was absent on the survey day was excluded. Personal data in Part I covered information only on the students’ gender. Part II of the questionnaire consisted of 22 questions which asked the students whether they had engaged in, or would consider engaging in various behaviour involving academic misconduct. There were also 4 items that were either not classified as academic misconduct or were controversial issues (items 18 – 21 in questionnaire part II). This was to prevent students from answering without reading the questions. Part III consisted of 21 scenarios, a mimic to part II, but arranged in a different order. Each scenario portrayed “Somchai”, a fictitious student engaged in academic misconduct described in part II. Students were asked whether they felt Somchai was wrong.

A final question of each part asked students to indicate their attitudes and willingness to inform the faculty of the misconduct of their peers. In contrast to previous studies, we assessed the students’ behaviour prior to assessing their attitudes. Students were thus not compelled to accept that they had performed or considered performing what they have judged as wrong.

Response options used a Likert-type scale point proliferation. The 5-scale point response of each item was then transformed into 2 categories (‘yes’ and ‘no’) to make results easy to interpret and to lessen social desirability bias. The data was analyzed using SPSS software (version 13.0 for Windows; copyright 2004. SPSS Inc, Rainbow Technologies, Chicago, Ill) using percentage frequency responses. Chi-squared and Fisher exact tests were used for categorical variables. A $p$ value of less than 0.05 was considered statistically significant.

**Results**

The survey was conducted in August 2008. Two hundred and forty-seven of 291 medical students (84.9%) completed the questionnaire. There were 102 (42.5%) male and 138 (57.5%) female students. Seven respondents (2.8%) had not indicated their gender.

**Self reported attitudes and behaviour to the scenarios**

The medical students’ attitudes and behaviour on scenarios regarding academic misconduct are shown in Table 1. The majority of medical students felt that most scenarios were wrong.
Table 1: Attitudes and behaviours of medical students on scenarios regarding academic misconduct

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Attitudes§ [ n/N (%) ]</th>
<th>Behaviours* [ n/N (%) ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Forging staff’s signature on a piece of work.</td>
<td>236/246 (95.9)</td>
<td>13/247 (5.3)</td>
</tr>
<tr>
<td>2. Copying answers from friend in an examination.</td>
<td>233/246 (94.7)</td>
<td>82/247 (33.2)</td>
</tr>
<tr>
<td>3. Finding out about test questions file in the computer in the classroom and tells friends.</td>
<td>154/246 (62.6)</td>
<td>43/247 (17.4)</td>
</tr>
<tr>
<td>4. Copying directly from textbooks or published papers without acknowledging the source.</td>
<td>155/245 (63.3)</td>
<td>177/247 (71.7)</td>
</tr>
<tr>
<td>5. Copying friend’s work.</td>
<td>207/246 (84.1)</td>
<td>115/247 (46.6)</td>
</tr>
<tr>
<td>6. Writing a piece of work for friend.</td>
<td>166/244 (68.0)</td>
<td>91/245 (37.1)</td>
</tr>
<tr>
<td>7. Lending friend work to copy.</td>
<td>158/246 (64.2)</td>
<td>170/247 (68.8)</td>
</tr>
<tr>
<td>8. Not attending the class but ask friend to sign a class attendance list.</td>
<td>216/246 (87.8)</td>
<td>102/247 (41.3)</td>
</tr>
<tr>
<td>9. Signing friend’s name in a class attendance list for friend who does not attend the class.</td>
<td>201/245 (82.0)</td>
<td>120/245 (49.0)</td>
</tr>
<tr>
<td>10. Not ready for an examination so asking a doctor who is relatives to write the false sick medical certificate.</td>
<td>219/246 (89.0)</td>
<td>11/247 (4.5)</td>
</tr>
<tr>
<td>11. Presenting the expensive gift to the Head of Department on New Year occasion and asks to take an oral examination with a kind staff.</td>
<td>221/246 (89.8)</td>
<td>7/247 (2.8)</td>
</tr>
<tr>
<td>12. Resubmitting work already submitted for a different course for the present course.</td>
<td>144/246 (58.5)</td>
<td>51/244 (20.9)</td>
</tr>
<tr>
<td>13. Submitting work submitted the previous year by the senior.</td>
<td>205/246 (83.3)</td>
<td>37/244 (15.2)</td>
</tr>
<tr>
<td>14. Modifying friends’ works and submitting it.</td>
<td>145/246 (58.9)</td>
<td>71/242 (29.3)</td>
</tr>
<tr>
<td>15. Submitting the same work with friend.</td>
<td>193/245 (78.8)</td>
<td>15/244 (6.1)</td>
</tr>
<tr>
<td>16. Not attending the class due to friend’s birthday party.</td>
<td>124/246 (50.4)</td>
<td>57/243 (23.5)</td>
</tr>
<tr>
<td>17. Seeing friend copies answers from another student in an examination, but does not inform the examiner.</td>
<td>126/246 (51.2)</td>
<td>180/244 (73.8)</td>
</tr>
<tr>
<td>18. Copying from textbooks or published papers and lists them as references.</td>
<td>54/246 (22.0)</td>
<td>183/242 (75.6)</td>
</tr>
<tr>
<td>19. Lending friend work to look at, and she copies it without telling you.</td>
<td>147/246 (59.8)</td>
<td>140/242 (57.9)</td>
</tr>
<tr>
<td>20. Advising friend how to write a piece of work.</td>
<td>19/245 (7.8)</td>
<td>165/241 (68.5)</td>
</tr>
<tr>
<td>21. Not attending the class due to food poisoning.</td>
<td>18/246 (7.3)</td>
<td>78/243 (32.1)</td>
</tr>
<tr>
<td>22. Informing faculty of another student’s serious academic misconduct?</td>
<td>139/245 (56.7)</td>
<td>22/242 (8.1)</td>
</tr>
</tbody>
</table>

§ Yes = wrong which included the choices: “Absolutely yes: and “Probably yes”
* Yes = had or would consider doing which included the choices: “Often”, “Occasionally”, and “Not sure”
Table 2: Association between attitudes and behaviours of medical students

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Odd ratio (95% CI)</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Forging staff’s signature on a piece of work.</td>
<td>9.7 (2.2, 43.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2. Copying answers from friend in an examination.</td>
<td>3.4 (1.1, 10.9)</td>
<td>0.027</td>
</tr>
<tr>
<td>3. Finding out about test questions file in the computer in the classroom and tells friends</td>
<td>2.5 (1.3, 4.9)</td>
<td>0.006</td>
</tr>
<tr>
<td>4. Copying directly from textbooks or published papers without acknowledging the source.</td>
<td>2.4 (1.3, 4.5)</td>
<td>0.006</td>
</tr>
<tr>
<td>5. Copying friend’s work.</td>
<td>1.6 (0.8, 3.2)</td>
<td>0.187*</td>
</tr>
<tr>
<td>6. Writing a piece of work for friend.</td>
<td>1.1 (0.6, 1.9)</td>
<td>0.845*</td>
</tr>
<tr>
<td>7. Lending friend work to copy.</td>
<td>1.6 (0.9, 2.8)</td>
<td>0.135*</td>
</tr>
<tr>
<td>8. Not attending the class but ask friend to sign a class attendance list.</td>
<td>3.3 (1.5, 7.3)</td>
<td>0.003</td>
</tr>
<tr>
<td>9. Signing friend’s name in a class attendance list for friend who does not attend the class.</td>
<td>1.7 (0.9, 3.4)</td>
<td>0.109*</td>
</tr>
<tr>
<td>10. Not ready for an examination so asking a doctor who is relatives to write the false sick medical certificate.</td>
<td>18.8 (5.1, 69.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>11. Presenting the expensive gift to the Head of Department on New Year occasion and asks to take an oral examination with a kind staff.</td>
<td>13.8 (2.9, 66.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>12. Resubmitting work already submitted for a different course for the present course.</td>
<td>3.5 (1.8, 6.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>13. Submitting work submitted the previous year by the senior.</td>
<td>1.7 (0.8, 4.1)</td>
<td>0.189*</td>
</tr>
<tr>
<td>14. Modifying friends’ works and submitting it.</td>
<td>3.2 (1.8, 5.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>15. Submitting the same work with friend.</td>
<td>3.6 (1.3, 10.6)</td>
<td>0.012</td>
</tr>
<tr>
<td>16. Not attending the class due to friend’s birthday party.</td>
<td>2.3 (1.2, 4.2)</td>
<td>0.008</td>
</tr>
<tr>
<td>17. Seeing friend copies answers from another student in an examination, but does not inform the examiner.</td>
<td>2.4 (1.3, 4.4)</td>
<td>0.004</td>
</tr>
<tr>
<td>18. Copying from textbooks or published papers and lists them as references.</td>
<td>3.4 (1.7, 6.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>19. Lending friend work to look at, and she copies it without telling you.</td>
<td>1.1 (0.6, 1.8)</td>
<td>0.776*</td>
</tr>
<tr>
<td>20. Advising friend how to write a piece of work.</td>
<td>3.0 (1.1, 7.9)</td>
<td>0.022</td>
</tr>
<tr>
<td>21. Not attending the class due to food poisoning.</td>
<td>1.2 (0.4, 3.4)</td>
<td>0.796*</td>
</tr>
<tr>
<td>22. Informing faculty of another student’s serious academic misconduct?</td>
<td>1.4 (0.6, 3.5)</td>
<td>0.464*</td>
</tr>
</tbody>
</table>

* no statistical significance

However, for every scenario, there were students who had engaged in, or would consider engaging in similar behaviour. The two scenarios that most students considered wrong were item 1: forging a staff member’s signature (95.9%) and item 2: copying answers from friends during an examination (94.7%). The scenarios that were not considered academic misconduct or controversial issues were items 18 – 21. Only a few students identified them as academic misconduct except for item 19 (lending a friend work to look at, and she copies it without telling you). The majority of students were uncertain about scenarios 3,12,14,16 and 17 (Table1).

Regarding behaviour of the students, the four most frequent scenarios of academic misconduct were items 4,7,9, and 17. The two scenarios the students seldom reported practicing were item 10, which was not being ready for an examination and asking a doctor who is a relative to write the medical certificate stating an illness to be excused from an examination (4.5%) and item 11: presenting expensive gifts to the Head of Department during New Year’s and asking to take the oral examination with a kind staff member who is very kind (2.8%). In all, 139 (56.7%) respondents answered they should inform the faculty of another student’s academic misconduct. However, only 22 (9.1%) students stated that they had or would consider informing faculty in case they witnessed such an event.
Association between reported attitudes and behaviour

The results show a trend that if the students felt the action was wrong they would not engage in the behaviour described in most of the scenarios of academic misconduct (Table 2). There were strong associations between attitudes and behaviours in the last two scenarios discussed above. Students rarely submitted a fake medical certificate or bribed a teacher (odds ratios = 18.8 and 13.8, respectively).

Even the scenarios where students were uncertain whether they were wrong or not (items 3, 12, 14, 16, and 17), there still were significant associations between attitudes and behaviours. However, after excluding items 18 –21, there were six items (5, 6, 7, 9, 13, and 22) where the relationship between reported attitudes and behaviours did not show statistical significance. No scenario showed a negative relationship between the two.

Discussion

The questionnaire survey reported is part of a larger study of medical students' attitudes and behaviour regarding academic misconduct at the Faculty of Medicine, Chulalongkorn University. This study describes the attitudes and behaviour of first year students who have been attending medical school for only a few months. The results may reflect attitudes and behaviours acquired from their high schools, rather than from medical school.

The response rate in this study was 84.9% which was high. Similar to previous studies (Rennie & Crosby, 2001; Elzubeir & Rizk, 2003), this study revealed that the majority of the first year medical students considered academic misconduct to be wrong and would not engage in it. However, a number of them still reported performing such behaviours. Moreover, many students did not consider some scenarios as academic misconduct. For instance, 49.6% of the students felt that it was alright not to attend class because of a friend's birthday party and 48.8% of them felt it was not wrong if they did not inform the examiner if they witnessed cheating. About 41% considered submitting a piece of work that had been previously submitted was acceptable. This may reflect pitfalls in the education system that failed to encourage appropriate attitudes and behaviour regarding academic integrity.

There was no scenario the students had not conducted or been engaged in. The level of misconduct discussed in the scenarios is not equal in terms of seriousness. The two scenarios reported as being seldom performed were submitting a fake sick medical certificate and bribing a teacher, which are classified as very serious misconduct. On the contrary, many scenarios students admitted to performing were less serious. Some showed concern and loyalty to their friends, such as forging their friend’s name in a class attendance list, or seeing a friend copying answers from another student during an examination, and not informing the examiner. Thus, the faculty may need to take action according to the degrees of academic misconduct. As mentioned, the first year students have started their study in the medical school for only a few months when this survey was conducted and their responses more likely reflect the behaviours carried from their high schools. Baldwin, et al (1996) reported that 82% of students who cheated in medical school admitted to prior cheating. This suggests that the reduction in academic misconduct in medical school may need to be initiated since the admission process. Furthermore, positive attitudes about learning should be instilled among first year medical students.

Behaviour usually, but not always, reflects established beliefs and attitudes. The relationship between attitudes and behaviour has been researched extensively in social science. In this study, 14 out of 22 items showed significant association between attitudes and behaviour. Four out of the six items (6, 7, 9, and 22) that showed no significant association between attitudes and behaviour reflect that students nowadays may feel more loyalty to their friends rather than to the academic integrity and their profession.

Several limitations of the study that should be mentioned are the nature of a self-reported and cross-sectional study. The percentages shown in our study may be incorrect because some students were absent on the day of the survey and some may wish to present themselves in a socially desirable manner. The cross-sectional design itself does not allow us to establish any cause and effect relationship from the survey data. Nevertheless, the study clearly illustrates an alarming prevalence of academic misconduct in our institution. A further study as a longitudinal survey may be useful for detecting more meaningful information. We may be able to discover the cause-effect between various factors and the students’ attitudes and behaviours regarding academic misconduct and
develop a more appropriate environment, curriculum and regulations aimed at minimising academic misconduct.

References


An evaluation of the curriculum of a graduate programme in Clinical Psychology

Sucheera Phattharayuttawat¹, Jariya Chantra¹, Wilasinee Chaiyasit¹, Kirati Barnagulrote¹, Soisuda Imaroonrak³, Thanayot Sumalrot¹, Natchaphon Auampradit¹

Abstract

Introduction: The objective of this study was to evaluate the Masters Degree programme in Clinical Psychology, offered by the Department of Psychiatry, Faculty of Medicine, Siriraj Hospital, Graduate Study, Mahidol University.

Methods: CIPP Model was used to evaluate the programme. The sample consisted of 44 lecturers, 36 current students, 56 graduates and employers of 56 graduates. Data was collected using questionnaires and by an informal interview. Content analysis and descriptive statistics were used for analysis.

Results: The research findings in the context evaluation indicated that the curriculum objectives were clearly stated, practice oriented and corresponded to social needs. The curriculum structure was well designed. The instructional and evaluation activities corresponded to the curriculum objectives.

The input evaluation showed that the students who attended the programme found the selection criteria appropriate. The students’ readiness was found to be high. The results show that the working committee and lecturers could conduct the course successfully. The educational resources were available to serve the teaching and learning process. However, some of the resources were not adequate.

With regard to the process evaluation, the operation instruction and evaluation process were very good. Product evaluation suggests that graduates have achieved the general and specific competencies as mentioned in the programme objectives.

Introduction

The Master of Science programme in Clinical Psychology was established under the approval of the Ministry of University Affairs on June 21st, 1980. The Office of the Civil Service Commission certified the degree on January 20th, 1982. The objective of the programme is to produce Masters graduates in psychology who have the ability to work in the psychology field, to lecture in Clinical Psychology and to scientifically conduct research that would benefit society.

The graduates are now working in psychology fields for both government agencies and in the private sector throughout the country. According to the input data of the last 5 years, students who enrolled in the Clinical Psychology programme had excellent academic records. Their GPAs were higher when compared to those who were enrolled in other programmes. Their entrance examination score in the social sciences field was also higher than that of those who were not enrolled in this programme.

These data suggest a high level of popularity for the Clinical Psychology programme. The average time to graduate from this programme is three and a half years. Still, there is a need to analyze and identify the problems and hurdles in this programme.

The Clinical Psychology programme has never been evaluated since its establishment. During this study Phi Delta Kappa (the Phi Delta Committee Model), commonly called “CIPP...
Model™: an acronym for context, input, process and product evaluation, was chosen by the research team as the evaluation model. In order to analyze the potential of the programme in the aspect of producing exceptional students, the research team had to study fundamental factors such as lecturers, students, the campus, and the process (programme management, course management, course evaluation including the products of the programme).

The findings of the research would serve as a guideline to discover the effectiveness or weaknesses of the Master of Science in Clinical Psychology programme and can be used for its improvement and development.

**Methods**

**Design**
The study design for this research is based on the CIPP Model. CIPP is a model for programme evaluation which categorises evaluation into four levels (Pithiyanuwat, 2006).

C) **Context Evaluation**: To evaluate the principle, the reason, the necessity of the process, the problems and the suitability of the objectives of the project.

I) **Input Evaluation**: To evaluate the possibility of the project, the suitability, the quantity of resources such as funds, personnel, equipment, time and technology and the project plan.

P) **Process Evaluation**: To find insufficiencies of the project with the intent of developing, resolving and improving. It also observes the activities, the time, the usage of resources and the participation of the project’s members.

P) **Product Evaluation**: To compare the product with the goal of the project or given standard. Also, to contemplate on areas in the project to be cutback, canceled, expanded and modified.

**Figure 1: CIPP Model in this research framework**

- **CONTEXT EVALUATION**
  - Objectives
  - Structures
  - Content of the curriculum

- **INPUT EVALUATION**
  - Lecturers
  - Qualifications
  - Students
  - GPA of undergraduate level
  - Ratio of Applicants: Acceptances
  - Other factors effecting course scheduling includes:
    - Campus
    - Amount of materials provided

- **PROCESS EVALUATION**
  - General Management
  - Course Management
  - Grading

- **PRODUCT EVALUATION**
  - Graduated psychologists
    - Quality
    - Number employed
    - Number of employed psychologists working in the field of study
Subjects
The subjects included:
- 44 full time and external lecturers (academic year 2006)
- 36 current students (academic year 2006)
- 56 graduates (2000 to 2006)
- The employers of 56 graduates (2000 to 2006)

Sample group
- Non randomly selected

Materials
The evaluating format consisted of 4 rating scales and was divided into 4 parts: lecturers, students, graduates and employers of the graduates.

Part 1: Questionnaire for the lecturers comprised of 5 sections:
Section 1. Personal Data
Section 2. Questionnaire for Curriculum Evaluation (on the Objective, Structure, Context)
Section 3. Questionnaire for Input Evaluation
Section 4. Questionnaire for Process Evaluation
Section 5. Questionnaire for Product Evaluation

Part 2: Questionnaire for the current students comprised of 5 sections. The contents of the questionnaire were the same as for the lecturers except the part on administration.

Part 3: Questionnaire for the graduates comprised of 5 sections. Contents of the questionnaire were the same as for the current students but with more information on the applied competency for their job.

Part 4: Questionnaire for the employers of the graduates comprised of 2 sections:
Section 1. Personal Data
Section 2. Questionnaire on the competency of the graduates

Statistical Analysis
Calculation of Percentage, Mean and Standard Deviation
Once the average value was obtained, the standards below were used to make comparisons (Best, 1977).

3.50 – 4.00 indicates Highest
2.50 – 3.49 indicates High
1.50 – 2.49 indicates Low
0.50 – 1.49 indicates Lowest

Results
Part 1: Subjects
1) Lecturers
The majority (85.4%) of the lecturers were aged between 41 to 50 years. 91.3% of the lecturers had a doctorate, and 79.5% of them were working at an administrative level and a service level while 78.3% had teaching experience of 10 to 20 years.

2) Current Students
The average GPA of undergraduates was 3.20. 80.6% were very interested in this profession and 80.6% were already employed. 97.2% chose this programme as their first choice and 97.2% were accepted on their first attempt.

3) Graduates
Most of the graduates (75%) were aged between 23 to 25 years. 61.1% study in this field. All students had chosen this programme because of its reputation.

4) Employers
Most of the employers (74%) were between the ages of 50 to 55 years and had completed their doctorate (95%) with at least 25 years of work experience. Most of the employers worked for hospitals in a supervisory capacity.

Part 2: Context Evaluation
1) Objectives
It was found that the objectives of the programme were aligned with the needs of the society.

2) Structure
The programme structure consists of 42 credits and was divided into mandatory courses (23 credits), selective courses (7 credits) and a thesis (12 credits). Most of the credits granted in each course were found to be appropriate (mean = 3.75, SD = 0.25).

3) Content
The content was found to be in compliance with the students’ needs and updated regularly (mean = 3.57, SD = 1.65). Courses of the programme were appropriate to the line of work, especially the courses which were related to psychological examination. The contents of most courses were satisfactory on evaluation (mean = 3.44, SD = 1.69).
Part 3: Input Evaluation

1) Lecturer evaluation by students and graduates

It was found that the number of lecturers in the courses was well distributed (mean = 3.44, SD = 0.45). Moreover, the lecturers were well qualified and had positive attitudes towards the programme (mean=3.50, SD= 1.33).

2) Student evaluation

The characteristics of students of the programme were found to be appropriate such as the background knowledge from undergraduate level, enthusiasm to learn, relationship within the class and positive attitudes towards the programme (mean = 3.88; SD = 0.15).

3) Course-management supplement evaluation

The availability of most course-management supplements such as documents, textbooks, reference books, visual aids, class materials, classrooms, common room and evaluation facilities was found to be deficient including availability of patients (mean=1.75, SD=1.35).

Part 4: Process Evaluation

1) General management evaluation

The curriculum is especially designed to compliment the programme and the previous results of the course management evaluation were considered with the intent of improving the programme (mean = 3.66, SD = 0.77).

2) Lecturer evaluation

Lecturers were found to be very well educated, able to relate their experiences and be open-minded to students’ questions. The lectures were well prepared. Nevertheless, classes were frequently rescheduled and the delay in concluding the report was due to the delay in confirming appointments between the study-case patients and the lecturers (mean = 3.75, SD = 0.55).

3) Grading evaluation

It was found that most courses had a suitable grading system (mean = 3.49, SD=1.88) except for the Psychotherapy course (mean = 1.45, SD=1.33). In the Psychotherapy course, each student was supervised and graded by different lecturers which meant that the grading was subjective.

Part 5: Product Evaluation

1) Quality evaluation:

Most of the graduates had the general and professional competencies in diagnosing psychological problems, psychological therapy, conducting research in clinical psychology, lecturing in clinical psychology, incorporating research results with clinical psychology, bearing responsibility of self and professional development and the ability to cooperate with other professionals (mean = 3.66, SD=0.66).

2) Profession evaluation

All graduates were employed and 90.3% worked in the field of study.

3) Amount of publishing research

About 95% had research published in journals in clinical psychology.

Discussion

Method and Analysis of Evaluation

CIPP Model was used in order to study the efficiency of the Masters Programme in Clinical Psychology. The factors that were considered included input (such as lecturers, students, campus), process (such as general management, course management, grading) and output (graduate psychologists). There are many models of evaluation which are categorized by the object. Lewy (1997) has categorized the method of evaluation into 3 models, which are: Goal Attainment Model of Objective Base Model, Judgmental Model and Decision Making Model. Of the three models, the Decision Making Model evaluation is the most well known technique. This model evaluates the data, which will assist in decision making.

When a programme evaluation is conducted, the whole process (information storage, information analysis and result presentation) must be performed systematically. CIPP is a programme evaluation system which is categorized as a Decision Making Model. In addition, Stufflebeam has introduced types of decision making which is in accordance with the matter of the evaluation (Tyler, 1990). The 1999 National Education Act took educational-quality assurance as the prime priority and stated the regulations for this particular matter, and plays the institutional role in this mechanism. The purpose of the regulations is to guarantee to the public that each institution is able to produce qualified graduates (The Office for National Education Standards and Quality Assessment, 2003). This was the first time that the Clinical Psychology programme was evaluated in a systematic manner.

Context and Input Evaluation

The purpose of context evaluation is to study the objectives of the programme. All the
subjects met the competency which the programme has offered with ratings of high and extremely high. It showed that the objectives of the programme were useful and that graduates were able to apply them in their operation.

The objective of the programme is to produce psychologists who have the ability and the standard in accordance with the principle: the profession of a psychologist is important to psychological practice, must have the responsibility and involve with people, also create happiness and quality of life for the society (Division of Mental Health, 2000). The dialect which is used in the programme is clear and applicable. It complies with the need of the society and promotes the values of culture and tradition. It also states the uniqueness of the profession and clarifies the personal characters of the students, yet the characters can be adjusted to different circumstances (Galen & William, 1996).

The total of 42 credits of the programme are divided into mandatory courses (23 credits), elective courses (7 credits) and thesis (12 credits). The overall structure as well as the credit granting is suitable in most courses. Even so, the credits granted for some courses that are useful for the career should be increased while some others should be decreased.

The contents of the programme fulfill the needs of the students. Moreover, the content in all the courses were found to be up to date and useful for the career. It was also suitable for educational activities, course management and grading. As Taba (1992) has stated, the content of a course must be precise, important, practical in real situations and suitable for the needs of the society. The content must have the balance of covering both and scope and the depth. The content must be aligned with course objectives and learning needs of the students. The content in most courses of the programme were included based on the practical relevance.

The numbers of lecturers for the courses were found to be adequate. However, there was frequent postponement of classes and class rescheduling due to the workload of lecturers which included administrative functions, hospital service and social service. The particular lecturers who work for the Department of Psychiatry have to supervise many programmes at diploma, undergraduate and postgraduate levels. The department should have an urgent development plan for fulltime lecturers to cope with the course management of each curriculum.

The availability of most course-management supplements such as documents, textbooks, reference books, visual aids, class materials, classrooms, common rooms and evaluation facilities were found to be deficient including the availability of study-case patients. The Faculty of Medicine, Siriraj Hospital has recognized these problems and has come up with a solution by allowing classes to be held at the Adulyadejvikrom Building. However, the building has to be shared by other faculties, which has lead to the difficulty of moving patients into the classes.

Process and Product Evaluation

The content of courses is designed with practical application based on inputs from expert instructors of the Department of Psychiatry and from specialist fields such as the Department of Pediatrics, Department of Pharmacology, Faculty of Science, Faculty of Public Health, Institution of Technology, Research and Development Mahidol University, Educational and Psychological Test Bureau Srinkharinwirot University, and instructors from psychological organizations such as Somdet Chaopraya Institute of Psychiatry, Yuwaprasart Hospital and Institution of Neurology. The programme focuses on hands-on training with real patients under supervision so that students are able to directly gain experience. Moreover, students were trained with real patients under supervision of a psychological instructor in clinical psychotherapy. However there was a shortage in the patients available for operational training in psychotherapy and psychological testing.

There are two practical courses; an internship at the Department of Psychiatry and an off campus internship at a hospital under the jurisdiction of the Ministry of Public Health by rotating the training through the Department of Mental Health and the Department of Psychiatry (Department of Psychiatry, 2006). This builds the experience of being a psychologist at a professional level and integrates learning and operational experience. Besides the specific knowledge in clinical psychology, the training involved areas such as statistics, research and basics in information technology.

There were field trips to observe the psychological operation and mental health. Seminars provided the opportunity for students to practice their skills as academic speakers and psychologists. The aforementioned learning also included group and individual operational skills, focusing on up-to-date information, encouraging new experience input and the quality of work.
The programme also realizes the importance of ethics and proper self-management. Instructors function as role models for psychologists and closely look after the students. It can be said that the learning experience of the programme focused on the competency of students that complied with the objective of the programme. Graduates themselves see the learning experience which the programme has offered as of a high standard. When considering the product of the programme, it was found that the overall competencies of the graduates are at a high level. The programme management has the capacity to produce graduates according to the program's objective.

In general the graduates possess ethical integrity which complies with the recommendations on the role of Thai psychologist, as described by Phattharayuttawat et al. (2003). However, according to the feedback from the service receivers, some graduates practice unethical behaviour. Therefore, the programme should focus on the methods of practicing ethics more correctly and appropriately.

Moreover, it was found that in some areas the competencies of graduates who work as psychologists are at a medium level (neuropsychology, group process, statistics and research, mental health and law, psychopharmacology, public health, drug addiction and English language). As the content necessary to fulfill those competencies span a wide range, the programme may not be able to complement all of them in depth. However, the programme encourages graduates in self-development, as reported in the feedback of students after graduation. Graduates who have registered in short courses gain more knowledge in psychology testing, various techniques in therapy, group process, English language, and statistics and research. Moreover, some graduates take further studies at Doctorate level to gain more knowledge in psychology. Superior officers are satisfied with the competencies of the graduates in all aspects.

Recommendations

Applicable Recommendations

1. There should be an improvement of objective, structure and content of the programme at least every five years according to the development plan of the Commission on Higher Education and the Office of National Education Standards and Quality Assessment. The programme should be given more support on class materials.

2. There should be an improvement in the quantity, quality and convenience of use of the visual aids, course material and class rooms.

3. A closer relationship between lecturers and students should be encouraged.

4. Student activities which widen the students’ social knowledge should be encouraged.

Further research recommendations

1. There should be an analytical research on the programme at least every five years according to the development plan of the Commission on Higher Education and the Office of National Education Standards and Quality Assessment.

2. There should be an evaluation comparing the same programme with those of other exceptional foreign universities.

References


Department of Psychiatry, Faculty of Medicine, Siriraj Hospital (2006) Handbook of the Master of Science Programme in Clinical Psychology.


Community and Family Case Study: a community-based educational strategy to promote Five Star Doctors for the 21st century

Abdus Salam

Abstract

Introduction: Community and Family Case Study (CFCS) is an approach to community-based education (CBE) in the undergraduate medical curriculum in the School of Medical Sciences (SMS), Universiti Sains Malaysia (USM). CBE is a means of achieving educational relevance to community needs and subsequently in implementing a community oriented educational programme. The objective of this paper is to disseminate medical students' perceptions of CFCS as an approach to CBE.

Materials and Methods: a survey on CFCS was carried out in 2003 among 4th year undergraduate medical students of the USM belonging to the academic session 2002-2003. Sample size was 78. Data was collected utilizing a mixed type questionnaire containing different attributes of CFCS as a strategy of CBE and presented as numbers and percentage distribution.

Results: Fifty nine to eighty percent of the respondents perceived that leadership skills, positive attitude towards rural community, team building skills, communication skills and in-depth understanding of the health beliefs of socio-culturally diverse people have developed from the participation in the CFCS.

Conclusion: CFCS is a good approach of CBE, which promotes the development of leadership, team building and communication skills and an in-depth understanding of the socio-culturally diverse population which are the criteria for five star doctors advocated by the World Health Organization (WHO). Curriculum planners should give due importance on CBE and its effective implementation through close collaboration between health and educational administration. This paper offers other medical schools who wish to shift their curricula towards community based education, an opportunity to use the approach.

Introduction

The traditional teaching hospitals, the proverbial “ivory towers” are gradually turning into huge intensive care units and are no longer the only place to train the doctors for the 21st century (Benor, 2002; Lowry, 1992) as they fail to meet all the needs of society. Society expects tomorrow’s doctor to be a good manager, leader, decision maker, care provider and also a good communicator. These characteristics are advocated by World Health Organization (WHO) in the five star doctors (Boulen, 1993).

Much of healthcare is now provided entirely in the community and with emphasis on epidemiology, health promotion and preventive medicine. Maintaining health is as important as treating diseases (Jira, 1994). Evidence-based studies show that a doctor’s interpersonal and communication skills have a significant impact on patient care (Salam et al., 2008; Rider & Keefer, 2006; Nobile & Drotar, 2003; Stewart, 1995).

Patients, public and even colleagues are dissatisfied with medical professionals due more to poor communication than to any other professional deficiency (Salam & Rabeya, 2004). CBE is an important strategy of the WHO in the education of health personnel for achieving the goal of Health for All (WHO, 1987). It happens outside the boundary walls of tertiary care hospitals, which makes health personnel responsive to the needs of the
population they serve. CBE encourages a patient centered attitude (Lowry, 1993; Engle, 1992). Moving undergraduate education away from tertiary care hospitals into the community at large, gives students the advantage of getting real life experience, making them better able to meet the needs of the society.

Community and Family Case Study (CFCS) is a community-based educational (CBE) program conducted in the undergraduate medical education of the School of Medical Sciences (SMS), Universiti Sains Malaysia (USM), since its inception in 1980 (Rogayah & Hashim, 1990). The SMS, USM is the third medical school to be established in Malaysia and is situated in Kelantan, the Northeastern coast of the country. The USM undergraduate medical curriculum comprises of three phases of a total of five years duration leading to a MD. Phase I includes year-1, phase II includes years 2 and 3, and phase III includes years 4 and 5. The CFCS programme is carried out during phase II and phase III. In phase II, small subgroups of students are placed to stay with rural families as a community residency for two periods of 2 weeks each, once during the 2nd year and the other during the 3rd year of the course.

During the first two week community residency, students have to identify the health problems of the family with whom they are staying. They also have to observe the profile of the community and identify health resources available, what resources are utilized by the community and study the knowledge, attitude, practice and probable health and social problems that exist in community. The students carry out interviews with community leaders, traditional healers, midwives, and health personnel. They do health screening, anthropometrical measurement, dietary surveys, and stool and blood examination. The students observe and understand the psychosocial dynamics, communication patterns, pattern of health knowledge, skills and attitudes, and cultural and social patterns. During the second community residency, students plan and implement interventional programmes such as preventive, promotive, social, motivational, and educational health programmes.

Students usually work in groups of around 20 in different villages in an operational area. Each operational area usually has a health center, community clinic, a school, or a community hall. Lecturers supervise the groups and supporting staff such as the public health inspector, public health nurse and medical technologist assist the programme. Students do community diagnosis and provide community treatment through organizing health educational programmes during phase II.

In phase III, students have to choose or adopt one patient, known as an individual case. They have to study this patient regarding his or her problem and provide proper management through relevant organizations or institutions and also provide health education. In addition, students have to choose another patient in a small group, known as a group case and need to follow-up this patient. Students usually choose patients either from the adopted family, an adopted community, a nearby health center, a university hospital or from a general hospital. Cases selected are usually from low socio-economic backgrounds and chronic in nature requiring regular health education, follow-up, rehabilitation or special coping arrangements. The follow-up of patients either individually or by group occurs through several home visits starting from year 4 to the middle of year 5 with a learning contract.

A learning contract is basically a negotiated agreement between students and their group supervisors on learning objectives which they will have to achieve in the CFCS programme. Problems and needs of the patients are to be identified and to be followed up according to learning contract. Hence, phase III programme is named as CFCS and contract learning.

The focus of CFCS in phase II is to identify and help to resolve the health needs of the family and their community whereas in phase III the focus is on the patients and their families. The objective of this paper is to identify students’ perceptions of CFCS as an approach to CBE.

Materials and Methods

A cross sectional study on CFCS was carried out in 2003 among 4th year USM undergraduate medical students of the academic year 2002-2003. A mixed type instrument containing different attributes of CFCS as a strategy of CBE was used to collect the data. Sample size was 78. Students were asked to rate their response on different CFCS attributes. The rating scale used in this instrument ranged from strongly agree to strongly disagree. Students’ rating of strongly agree and agree were combined together and considered as agreed whereas disagree and strongly disagree were combined together as disagreed. The data was then compiled, analyzed and presented as numbers and percentage distribution.
Results

Out of a total of 78 respondents 62 (80%), 55 (71%), 51 (65%), 49 (63)% and 46 (59)% respondents felt that CFCS provided them an opportunity for in-depth understanding of the rural people, offered them an opportunity to develop communication skills, group management skills, positive attitudes and leadership skills respectively (Table 1).

<table>
<thead>
<tr>
<th>CFCS as an approach to CBE provided an opportunity to</th>
<th>Agree</th>
<th>Unsure</th>
<th>Disagree</th>
<th>No response</th>
<th>Total (n=%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>in-depth understanding of rural people</td>
<td>62 (80)</td>
<td>6 (8)</td>
<td>10 (12)</td>
<td>0 (0)</td>
<td>78 (100)</td>
</tr>
<tr>
<td>develop communication skills</td>
<td>55 (71)</td>
<td>12 (15)</td>
<td>11 (14)</td>
<td>0 (0)</td>
<td>78 (100)</td>
</tr>
<tr>
<td>learn group management skills</td>
<td>51 (65)</td>
<td>11 (14)</td>
<td>15 (19)</td>
<td>1 (2)</td>
<td>78 (100)</td>
</tr>
<tr>
<td>shape positive attitude</td>
<td>49 (63)</td>
<td>13 (17)</td>
<td>14 (19)</td>
<td>2 (3)</td>
<td>78 (100)</td>
</tr>
<tr>
<td>develop leadership skills</td>
<td>46 (59)</td>
<td>18 (23)</td>
<td>12 (15)</td>
<td>2 (3)</td>
<td>78 (100)</td>
</tr>
</tbody>
</table>

Discussion

All medical professionals need to develop generic competencies or transferable personal skills such as management and organization, team work, communication and problem solving (Salam & Rabeya, 2004). To solve a health problem, it is necessary to understand the norms, beliefs, and prejudices of the diverse people of the community and also necessary to be aware of the role of social-cultural factors in the causation of disease. In the present study, 80% of the students felt that CFCS provided them an opportunity to come into close contact with rural people, which helped them to gain an in-depth understanding of the socio-cultural dimensions of the rural people. Once students have a better understanding of the diverse community population, they will be in a better position to handle community problems (Salam & Rabeya, 1997). The World Summit on Medical Education (WSME, 1993) recommended that to achieve community awareness, students need to develop skills in observation, reflection and communication. During the CFCS programme, students were encouraged to develop awareness on sensitive issues and empathic response to the needs and circumstances of people in the community.

The aims of the physicians are to cure sometimes, relieve often, and comfort always (Loid & Bor, 1996; Salam et al., 2008). To comfort always, tomorrow’s doctors have to be skilled communicators. It is now established that patient satisfaction, compliance with medication and disease outcome are all associated with good communication (Ley, 1982; Simpson, et al., 1991; General Medical Council, 1993; Royston, 1997; Salam et al., 2008). Good communication is not an easy job; only a few can master it with special intuition and constant attention. Doctors who are skilled communicators are better able to listen, understand and comfort patients, liaise with the public and colleagues and speak for the community and society. Formal teaching sessions in communication skills in the classroom were not shown to be very effective in learning communication (Royston, 1997). In the present study, the CFCS programme as an approach to CBE, provided students a real exposure where they communicated with patients, families, different health personnel and also personnel from other sectors. Seventy-one percent of the students were of the opinion that the CFCS helped them to develop their communication skills. This finding indirectly supports Royston’s statement where majority of the students learnt the communication skills outside the class room. Communication skills can be learnt and developed by ‘doing’ rather than by teaching or reading books (Loid & Bor, 1996).
Group management or team building and leadership skills are important skills that every future doctor needs to possess. This will enable them to work as a member of a team and to share their knowledge and skills with other members of the team (Jira, 1994). In this CFCS program, students worked in groups and subgroups with different assigned tasks and responsibilities with other healthcare professionals engaged in development activities in the community. This study revealed that as a result of participation in CFCS, 65% developed team building and 59% developed leadership skills, which are important attributes for future doctors to master in order to address community health problems.

Knowledge, skills, and attitudes, the three domains of education and training considered separately, do not exist independently. The affective domain relates to emotions, attitude, appreciation and values. Through close contact with the people of the community the students learn to appreciate their varying socio-cultural norms and beliefs and develop a caring attitude towards the rural community (Stewart, 1984; Royston, 1997). This study indicates that 63% of the students developed positively towards the rural community.

CBE programmes have two pragmatic outcomes. First, students can learn from the community. Second, the community benefits from the services given by the students. This study gives an insight of students’ perceptions. A further triangulated study seeking feedback from adopted patients or patients’ families or from the adopted community is suggested to verify the students’ perception of the attributes required for five star doctors. Implementation of CBE programme requires much effort. Adequate fund allocation, appropriate utilization of funds and integrated policies need to be outlined through close consultation and coordination between the health and educational administration.

**Conclusion**

CFCS is a good approach to CBE. It offers medical schools who wish to shift their curricula towards a community-based approach a window of opportunity. Educational managers should give due importance to CBE. A conscious decision by curriculum planners regarding the organization and effective implementation of CBE through close collaboration between health and educational administration is of utmost importance, in order to produce five star doctors as advocated by the WHO.

**Acknowledgement**

The author would like to thank the group of CFCS phase III students of the academic session 2002-2003 of USM who assisted in data collection. Thanks are also due to the CFCS Chairman who supported this study.

**References**


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World Summit on Medical Education (1993) Recommendation of the world summit on medical education (WSME), Edinburgh, Scotland 8 –12 August 1993, pp. 142-149.
Do medical students who claim to be using deep learning strategies perform better at the Forensic Medicine examination?

Kosala N. Marambe², Deepthi H. Edussuriya¹, P.D. Indika S. Somaratne¹, Chathura Piyaratne¹

Abstract

Literature reveals that frequent use of deep learning strategies and meaning orientation generally relates to academic performance positively, while the reproducing orientation is usually negatively associated with academic performance. The objective of this study was to investigate possible associations between reported learning strategies and performance at different components of the Forensic Medicine examination between two successive batches of medical students at the Faculty of Medicine, University of Peradeniya, Sri Lanka.

Reported learning strategies of two successive groups of medical students were measured using the adapted Sri Lankan version of the Inventory of Learning Styles, the Adyayana Rata Prakasha Malawa (ARPM). The inventory scale scores were computed for each student and entered into a database. The scores for each component of the Forensic Medicine examination namely; essay, multiple choice questions and viva voce and the total score were added to the database. The Spearman rank correlation test was performed to identify possible associations between learning strategy scores and performance at different components of the examination.

The number of respondents was 142 out of 173 of the 2003/2004 (82%) and 107 out of 188 students (57%) of the 2002/2003A batches of fourth year medical students having completed three terms of work in Forensic Medicine. Contrary to expectations, the results failed to show a significant association between academic performance and frequent use of deep processing strategies or self regulation. Since examinations drive the learning process it could be that the assessment demands promote the students to use both surface and deep learning strategies to the same extent.

Keywords: medical students' learning strategies, academic performance

Introduction

Deep and surface learning are two approaches to learning derived from the original empirical research by Marton and Saljo (1997), subsequently elaborated by Ramsden (1992) and Biggs (1993). The use of surface learning strategies such as memorizing and rehearsing subject content and analyzing subject matter in a stepwise manner enables the student to reproduce material without much integration, leading to low quality learning outcomes. Similarly, self regulation is thought to be associated with meaningful learning rather than external regulation. However, the goal of university education, irrespective of the field of study, is to promote knowledge synthesis and better organization of knowledge and self regulation of learning. Therefore, it is expected that university students are motivated to use deep learning strategies and self regulation more often, leading to knowledge construction.

Learning is seen as an active process in which the learner synthesises, modifies and utilises the concepts in a subject domain to interpret situations and act in them. Thus, it is assumed that the quality of the learning activities employed, determines to a large extent the quality of the learning results achieved.

Academic learning outcomes as measured by various examinations have been the focus of extensive research. A number of factors and
variables have been found to influence the achievement outcomes. Results of studies investigating the associations between students’ learning strategies and examination performance indicate that greater use of deep learning strategies is generally positively related to academic performance, while frequent use of surface strategies is mostly negatively associated with academic performance (Arnold & Feighny, 1995; Leiden et al., 1990; Lindblom-Ylänne & Lonka, 1999; Stiernborg & Bandaranayake, 1996).

Many inventories are used to measure learning strategies of university students. The current study uses the adapted Sri Lankan version of the Inventory of Learning Styles (ILS) (Vermunt, 2005), which has inventory items on cognitive processing and regulation strategies (Appendix).

Busato et al. (1998) used the ILS to investigate the correlation between factor scores (learning pattern scores) and study success in terms of a number of study points among Psychology students. They report that undirected learning (a learning pattern which demonstrates incoherent linkages between strategies, conception and orientation) was consistently negatively related to study success. Boyle et al. (2003) reported the same findings with the ILS in a British higher education setting while Meyer (2000) observed that ‘dissonant’ learning patterns (learning patterns defined by incoherent learning strategies, conceptions and orientations) were associated with low exam performance. Recently, Vermunt (2005) analysed the associations between learning patterns derived from the ILS and academic performance of undergraduates from seven academic disciplines, and shown that most elements of meaning directed learning were positively related to academic performance. He also reported that the pattern of relations between the mean examination score and elements of undirected learning remained consistently negative.

In 2005, van Mil revealed that a Chinese student group reported greater use of surface strategies than Dutch students, studying at the same Dutch University, and that the examination performance of the Chinese student group was found to be less satisfactory when compared to the Dutch students. On the other hand, a study conducted at a medical school in Pakistan demonstrated that there was a non-significant relationship between the learning approaches and academic performances and a weak statistical significance between achievement, orientation and performance in certifying examination (Naqvi & Ahmed, 2000).

In summary, although several researchers have shown that students reporting greater use of deep learning strategies perform better at examinations, some others have not been able to demonstrate a similar relationship.

However, students engage in different learning strategies depending on the requirements of the assessment task. The Forensic Medicine examination, which is held at the end of the fourth academic year of the medical course, consists of multiple choice questions, essay and viva voce components. The department staff thought it was apt to investigate these relationships between students’ reported use of learning strategies and their performance at the different components of the examination, in order to identify the types of assessments that are more discriminatory.

It is hypothesized that those who engage in more constructive learning processes such as relating and structuring knowledge, critical processing, concrete processing and self regulation, perform better in the essay and viva voce components of the examination, which require knowledge synthesis compared to other components of the examination. Thus, the current study investigated the possible associations between reported use of different learning strategies by medical students and their performance in Forensic Medicine during the 4th academic year of the MBBS programme.

Research question

The research question of this study was to determine whether there is a correlation between reported learning and regulation strategies of students and their performance in different components of the Forensic Medicine examination.

Materials and Methods

Cognitive processing strategies and regulation strategies (together referred to as learning strategies) used by two successive batches of medical students were measured using the 55 item version of the Adyayana Rata Prakasha Malawa (ARPM). The ARPM (Marambe, 2007) is the validated Sinhala version of the Inventory of Learning styles (ILS), which has been used in many countries to measure aspects of learning. A description of the ILS scales is appended.

The scores of each student for the different components of the Forensic Medicine examination such as the MCQ paper, essay

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paper and viva voce were considered as a measure of student performance. In addition to the total score for the essay paper, the authors specifically considered the scores of individual essay questions, which were selected on the basis of the demand on higher order thinking activities on the part of the student, to write a successful answer.

**Procedure**

Towards the end of the Forensic Medicine program (final week of term 3 of the 4th year) the ARPM was administered to students of the 2002/2003 and 2002/2003A batches respectively. Both groups completed the questionnaire after a scheduled lecture. Students were requested to complete the 55 item ARPM questionnaire during the allocated time. The respondents were instructed to reflect on how they studied Forensic Medicine while responding to the questionnaire and were requested to write the student registration number for correlation purposes. However, student participation was on a voluntary basis.

**Data analysis**

The student responses were entered into a database. A mean score for each learning strategy scale was computed for each student and a database was constructed. Respective examination scores for each student were then entered. Spearman’s correlation test was used in order to identify possible correlations. Data was analysed using SPSS version 10.

**Results**

The percentages of students who participated in the study were; 82% for the 2002/2003 batch and 57% for the 2002/2003A batch.

Tables 1 and 2 depict the results of the Spearman’s correlation test performed for the two batches of fourth year medical students.

**Table 1: Correlations between the learning strategy scale scores and scores of examination components and total examination score of 2002/2003 batch of medical students**

<table>
<thead>
<tr>
<th>n=142</th>
<th>RELA</th>
<th>CRIT</th>
<th>MEMO</th>
<th>ANLY</th>
<th>CONC</th>
<th>SELF</th>
<th>EXTE</th>
<th>LACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY (score of the full paper)</td>
<td>0.07</td>
<td>0.07</td>
<td>0.19</td>
<td>0.14</td>
<td>0.01</td>
<td>0.12</td>
<td>0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>ESSAY (selected question 1)</td>
<td>0.07</td>
<td>0.05</td>
<td>0.13</td>
<td>0.12</td>
<td>0.05</td>
<td>0.06</td>
<td>0.06</td>
<td>0.12</td>
</tr>
<tr>
<td>ESSAY (selected question 2)</td>
<td>0.12</td>
<td>0.12</td>
<td>0.05</td>
<td>0.16</td>
<td>0.07</td>
<td>0.08</td>
<td>0.03</td>
<td>0.06</td>
</tr>
<tr>
<td>VIVA</td>
<td>0.13</td>
<td>0.21</td>
<td>0.06</td>
<td>0.13</td>
<td>0.07</td>
<td>0.17</td>
<td>0.09</td>
<td>0.03</td>
</tr>
<tr>
<td>MCQ</td>
<td>0.12</td>
<td>0.11</td>
<td>0.08</td>
<td>0.04</td>
<td>0.01</td>
<td>0.12</td>
<td>0.07</td>
<td>0.02</td>
</tr>
<tr>
<td>Total</td>
<td>0.20*</td>
<td>0.09</td>
<td>-0.05</td>
<td>0.09</td>
<td>0.03</td>
<td>0.07</td>
<td>0.08</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Note * p < .05
RELA = relating and structuring; CRIT = critically processing; MEMO = Memorizing; ANLY = Analyzing; CONC = Concretizing; SELF = self regulation; EXTE = External regulation; LACK = lack of regulation

**Table 2: Correlations between learning strategy scale scores and scores of examination components and total examination score of 2002/2003A batch of medical students**

<table>
<thead>
<tr>
<th>n=107</th>
<th>RELA</th>
<th>CRIT</th>
<th>MEMO</th>
<th>ANLY</th>
<th>CONC</th>
<th>SELF</th>
<th>EXTE</th>
<th>LACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESSAY (selected question 1)</td>
<td>0.07</td>
<td>0.08</td>
<td>0.11</td>
<td>0.03</td>
<td>0.02</td>
<td>0.08</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>ESSAY (selected question 2)</td>
<td>0.07</td>
<td>0.08</td>
<td>0.06</td>
<td>0.11</td>
<td>0.16</td>
<td>0.05</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>VIVA</td>
<td>0.07</td>
<td>0.08</td>
<td>0.01</td>
<td>0.03</td>
<td>0.04</td>
<td>0.04</td>
<td>0.07</td>
<td>0.08</td>
</tr>
<tr>
<td>MCQ</td>
<td>0.06</td>
<td>0.03</td>
<td>0.01</td>
<td>0.05</td>
<td>0.11</td>
<td>0.06</td>
<td>0.04</td>
<td>0.07</td>
</tr>
<tr>
<td>Total</td>
<td>0.13</td>
<td>0.01</td>
<td>0.02</td>
<td>0.05</td>
<td>0.14</td>
<td>0.04</td>
<td>0.01</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Note * p < .05
RELA = relating and structuring; CRIT = critically processing; MEMO = Memorizing; ANLY = Analyzing; CONC = Concretizing; SELF = self regulation; EXTE = External regulation; LACK = lack of regulation
Discussion

The use of learning activities leads to a change in the individual’s knowledge base or repertory of skills and attitudes (Trigwell & Prosser, 1991; Vanderstoep et al., 1996). Thus, it is expected that the students who engage in deep learning strategies and self regulation perform better than others at summative examinations. This is particularly relevant in the components which require greater understanding of subject content such as essay and viva voce, which are based on clinical scenarios.

However, contrary to expectations a positive correlation between deep processing strategies and performance in selected essay questions and viva voce components was not evident for either batch of medical students (Table 1, 2). Although a weak correlation between frequent use of relating and structuring (a deep learning strategy) and overall performance at the Forensic Medicine summative examination is evident among one group of students, as shown in Table 1, the result is not consistent (Table 2).

The study conducted by Naqvi and Ahmed, (2000) at a medical school in Pakistan could not demonstrate a significant relationship between the learning approaches and academic performance. Similarly, the results of our study when taken as a whole, do not support the argument that the students’ reported use of deep learning strategies and self regulation of learning has a positive effect on their performance at summative examination.

Traditional tests are often used to measure learning outcomes in students (Vermunt, 2005). However, one must bear in mind that exam achievements reflect a small portion of the learning results and that it is not always a true representation of the thinking activities undertaken by the learner. It could also be that a student may score well with memorising and rehearsing strategy alone depending on the way tests are constructed. A matter of concern has been to what extent the exams in the undergraduate courses capitalise on the various learning activities that students employ.

Conclusion

A positive association between frequent use of deep learning strategies and academic performance could not be demonstrated among fourth year medical students, with respect to learning Forensic Medicine.

Acknowledgement

The authors wish to thank the fourth year medical students who participated in the study and Mr. U.S.K. Ekanayake of the Medical Education Unit, for providing technical assistance.

References


Appendix

Description of the scales of the Inventory of Learning styles (ILS), including a sample item for each scale (Based on Vermunt, 2005)

<table>
<thead>
<tr>
<th>Parts and scales of the ILS</th>
<th>Description of content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processing strategies</strong></td>
<td></td>
</tr>
<tr>
<td>Deep processing</td>
<td></td>
</tr>
</tbody>
</table>
| Relating & structuring      | Relating elements of the subject matter dealt separately in the course to each other and to prior knowledge, structuring these elements into a whole.  
  ‘I try to relate new subject matter to knowledge I already have about the topic concerned’. |
| Critical processing         | Forming one’s own view on the subjects that are dealt with, drawing one’s own conclusions, and being critical of the conclusions drawn by textbook authors and teachers.  
  ‘I draw my own conclusions on the basis of the data that are presented in a course’. |
| Stepwise processing         | Learning facts, definitions, lists of characteristics by heart by rehearsing them.  
  ‘I make a list of the most important facts and learn them by heart.’ |
| Memorizing & Rehearsing     |                         |
| Analyzing                   | Studying the subject matter in a stepwise fashion, studying the separate elements thoroughly, in detail and one by one.  
  ‘I do not proceed to a subsequent chapter until I have mastered the current chapter in detail’. |
| Concrete processing         | Applying the learnt subject matter by connecting the new knowledge to one’s own experiences and by using in practice what one learns in a course leading to knowledge integration.  
  ‘I use what I learn from a course in my activities outside my studies’. |
| **Regulation strategies**   |                         |
| Self regulation             |                         |
| Learning process and        | Regulating one’s own learning processes through regulation activities like planning learning activities, monitoring progress, diagnosing problems, testing one’s outcomes, adjusting and reflecting.  
  ‘To test my learning progress when I have studied a textbook, I try to formulate the main points in my own words’. |
| Outcomes                    |                         |
| Learning contents           | Taking the initiative to consult literature and sources outside the syllabus.  
  ‘In addition to the syllabus, I study other literature related to the content of the course.’ |
| External regulation         |                         |
| Learning process            | Letting one’s own learning processes be regulated by external sources, such as introductions, learning objectives, directions, questions or assignments of teachers or textbooks authors.  
  ‘I learn everything exactly as I find it in the textbook’. |
| Learning outcomes           | Testing one’s learning results by external means, such as the tests and questions provided by teachers and text books.  
  ‘If I am able to complete all the assignments given in the study materials or by the teacher, I decide that I have a good command of the subject matter.’ |
| Lack of regulation          | Having problems with the regulation of one’s own learning processes  
  ‘I notice that I have trouble processing a large amount of subject matter’. |
Perception of Problem Based Learning by UNIMAS medical undergraduates and graduates

T.S. Tiong¹, P.H. Ong¹

Abstract

The Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), adopts problem-based learning (PBL) and lectures as the hybrid teaching-learning approach in the MD (Doctor of Medicine) programme. There are many batches of graduates now in clinical practice and many undergraduates yet completing their final years. Responses from the graduates of the years 2000, 2001, 2002 and 2003, altogether 113, and the undergraduates (final year students) sitting for the Final Professional Examinations in 2001 to 2006, altogether 314, (total of 427), were studied.

Obtained ratings on three aspects of PBL, namely organization and conduct, triggers, and the overall rating and results were analysed. Significant outcomes were, the comparisons in the ratings between graduates and undergraduates with regards to PBL triggers and the overall PBL rating. Results show that students’ perception of good in earlier years tends towards adequate in recent years, with the reasonably valid concern of very poor and completely inadequate perceptions by a percentage of the 2006 final year students.

Introduction

The Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS) aspires to be an exemplary institution in teaching and training medical students to be efficient, knowledgeable, community-oriented and caring doctors of medicine (MD) (Malik & Malik, 2002). The Faculty has adopted PBL and lectures as the hybrid teaching approach in the MD programme (Faculty of Medicine & Health Sciences, 2003). It would be of interest to ascertain the perceptions of the medical undergraduates and graduates who have been through five years of the MD Programme as their responses would be valuable in assessing the degree of efficacy of PBL.

Material and methods

The data for this article was obtained from two sources, the undergraduates’ study (Tiong & Johnston, 2006) and the graduates’ study (Tiong et al., 2006).

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In the undergraduates’ study, final year medical students were given the “End of MD Programme Questionnaire” concerning many aspects of the medical curriculum strategies including PBL. They rated the various strategies according to a rating scale from 1 for excellent, to 7 for completely inadequate (Table 1). There were 39 students in 2001, 40 in 2002, 29 in 2003, 35 in 2004, 56 in 2005 and 115 in 2006, totaling 314. The questionnaire was completed immediately after their Final Professional Exams. The response rate was 100% for each batch of students.

The graduates’ study included 26 MD graduates in 2000, 39 in 2001, 38 in 2002, and 30 in 2003, totaling 113, and the response rates were 42%, 73%, 92% and 100% respectively. The graduates completed their questionnaire when interviewed in 2004-2005. Both the final year medical students and the MD graduates used the following rating scale to rate the PBL in three aspects, which were: 1. organization and conduct, 2. PBL triggers, and 3. PBL overall. Their rating results were analysed descriptively using the percentage bar charts and statistically using the rating means and t-tests.
Results and discussion

The results are considered in terms of the three PBL aspects.

1. PBL Organization and Conduct.

The findings are shown in Figure 1. Each graph corresponds to the undergraduates or graduates for the particular year or year group and has a peak which is the percentage of maximal number of responses in the rating scale. When the graph is of normal distribution and not skewed, its peak is almost the same as the mean value of rating. When the graph is skewed, its peak is not the same as the mean value. However, its peak approximates the mean with the tendency towards the rating on the skewed side.

The graph for 2001 final year students shows a peak at rating **adequate** with a tendency towards the rating **good** and the graph for 2002 peaks at **good** with a tendency towards **adequate**.

The graphs for 2003 and 2004 final year students peak at **adequate** with no clear tendency. The graphs for 2005 and 2006 both peak at **adequate** with tendency towards **good**.

However, the 2000-2003 MD graduates seem to have responded somewhat better and their rating graph shows a peak at **good**. However, there is a concern in that a few of the 2006 final year students rated PBL organization and conduct as **very poor** and **completely inadequate**.

The statistical analysis based on the comparison of the mean ratings of each year or year group in both final year students and graduates is shown on Table 2 and it shows no significant difference in the comparisons on all the t-tests.

Figure 1: PBL organization and conduct
Table 2: PBL organization and conduct

<table>
<thead>
<tr>
<th>PBL organization and conduct – various groups</th>
<th>Statistical mean based on ratings 1-7</th>
<th>Mean comparison between groups</th>
<th>P value on t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 final year students – U1</td>
<td>3.64</td>
<td>U1 &amp; U2</td>
<td>0.55</td>
</tr>
<tr>
<td>2002 final year students – U2</td>
<td>3.58</td>
<td>U2 &amp; U3</td>
<td>0.17</td>
</tr>
<tr>
<td>2003 final year students – U3</td>
<td>4</td>
<td>U3 &amp; U4</td>
<td>0.98</td>
</tr>
<tr>
<td>2004 final year students – U4</td>
<td>4.06</td>
<td>U4 &amp; U5</td>
<td>0.24</td>
</tr>
<tr>
<td>2005 final year students – U5</td>
<td>3.75</td>
<td>U5 &amp; U6</td>
<td>0.66</td>
</tr>
<tr>
<td>2006 final year students – U6</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 graduates - G0</td>
<td>2.89</td>
<td>G0 &amp; G1</td>
<td>0.08</td>
</tr>
<tr>
<td>2001-graduates - G1</td>
<td>3.66</td>
<td>G1 &amp; G2</td>
<td>0.72</td>
</tr>
<tr>
<td>2002-graduates - G2</td>
<td>3.09</td>
<td>G2 &amp; G3</td>
<td>0.45</td>
</tr>
<tr>
<td>2003-graduates - G3</td>
<td>3.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.3</td>
<td>G &amp; U4</td>
<td>0.83</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.3</td>
<td>G &amp; U5</td>
<td>0.67</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.3</td>
<td>G &amp; U6</td>
<td>0.07</td>
</tr>
<tr>
<td>2001-2006 undergrad - U</td>
<td>3.8</td>
<td>G &amp; U</td>
<td>0.92</td>
</tr>
</tbody>
</table>

2. PBL Triggers

The findings are shown in Figure 2. The graph for 2001 final year students showed a peak at the rating good with a tendency towards the rating adequate, the graph for 2002 a peak at adequate with a heavy tendency towards good and very good, the graph for 2003 a peak at good with a tendency towards adequate, the graph for 2004 peaks at adequate with no clear tendency, and the graph for 2005 peaks at adequate with a tendency towards good, and the graph for 2006 peaks at good with a tendency towards adequate/poor. However, the 2000-2003 MD graduates seem to have responded somewhat better and their rating graph shows a peak at good with little tendency. There is a concern in that a few of the 2006 final year students responded with a completely inadequate rating for PBL triggers.

Figure 2: PBL triggers
The statistical analysis based on rating the mean comparison of each year or year group in both final year students and graduates is shown in Table 2. It shows no significant difference in all the comparisons on the T-tests, except for the 2000-2003 graduates in comparison with 2006 final year students. That is the mean response of 3.07 (almost good) by the graduates as compared with the mean response of 3.83 (relatively nearer to adequate) is significant, indicating that PBL is rather good in the period 2000-2003 than the rating of adequate in recent years by 2006 final year students.

3. PBL Overall

The findings are shown in Figure 3. The graph for 2001 final year students showed a peak at the rating good with a tendency towards the rating adequate, the graph for 2002 peaks at adequate with a heavy tendency towards good and very good, the graph for 2003, peaks at good with a tendency towards adequate, the graph for 2004 peaks at adequate with no clear tendency, and the graph for 2005 peaks at adequate with a tendency towards good, and the graph for 2006 peaks at adequate/good with no clear tendency. The 2000-2003 MD graduates once more seem to have responded somewhat better and their rating graph shows a peak at good, but with a concern of very poor rating by 10% of the graduates. There is also a concern in that a few of the 2006 final year students responded with very poor and completely inadequate to the PBL overall.

The statistical analysis based on the comparison of the mean ratings of each year or year group in both final year students and graduates is depicted in Table 3 and it shows no significant difference in all the comparisons on the t-tests, except for the 2000-2003 graduates in comparison with 2003 final year and 2006 final year students, as well as with 2001 – 2006 all final year students. That is, the mean response of 3.08 (almost good) by the 2000 to 2003 year graduates as compared with the mean responses of 4.1 (near adequate) by 2003 final year students, 3.78 (near adequate) by 2006 final year students and 3.69 (nearer to adequate than good) by 2001 to 2006 all final year students are significant, indicating that PBL is rather good in the period 2000-2003 than adequate in the years 2003 and more recently in 2006. The group comparison between 2000-2003 graduates with 2001-2006 final year students seems to support the perception of adequate still in recent years rather than good in the earlier graduating years (2000-2003).

Figure 3: PBL Overall
Table 3: PBL triggers

<table>
<thead>
<tr>
<th>PBL triggers – various groups</th>
<th>Statistical mean based on ratings 1-7</th>
<th>Mean comparison between groups</th>
<th>P value on t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 final year students – U1</td>
<td>3.54</td>
<td>U1 &amp; U2</td>
<td>0.07</td>
</tr>
<tr>
<td>2002 final year students – U2</td>
<td>3.48</td>
<td>U2 &amp; U3</td>
<td>0.28</td>
</tr>
<tr>
<td>2003 final year students – U3</td>
<td>3.55</td>
<td>U3 &amp; U4</td>
<td>0.41</td>
</tr>
<tr>
<td>2004 final year students – U4</td>
<td>4.06</td>
<td>U4 &amp; U5</td>
<td>0.35</td>
</tr>
<tr>
<td>2005 final year students – U5</td>
<td>3.6</td>
<td>U5 &amp; U6</td>
<td>0.06</td>
</tr>
<tr>
<td>2006 final year students – U6</td>
<td>3.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 graduates - G0</td>
<td>2.78</td>
<td>G0 &amp; G1</td>
<td>0.32</td>
</tr>
<tr>
<td>2001-graduates - G1</td>
<td>3.21</td>
<td>G1 &amp; G2</td>
<td>0.52</td>
</tr>
<tr>
<td>2002-graduates - G2</td>
<td>3</td>
<td>G2 &amp; G3</td>
<td>0.44</td>
</tr>
<tr>
<td>2003-graduates - G3</td>
<td>3.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.07</td>
<td>G &amp; U3</td>
<td>0.46</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.07</td>
<td>G &amp; U4</td>
<td>0.65</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.07</td>
<td>G &amp; U5</td>
<td>0.39</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.07</td>
<td>G &amp; U6</td>
<td>**0.02</td>
</tr>
<tr>
<td>2001-2006 undergrad - U</td>
<td>3.69</td>
<td>G &amp; U</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Table 4: PBL overall

<table>
<thead>
<tr>
<th>PBL overall – various groups</th>
<th>Statistical mean based on ratings 1-7</th>
<th>Mean comparison between groups</th>
<th>P value on t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 final year students – U1</td>
<td>3.59</td>
<td>U1 &amp; U2</td>
<td>0.04</td>
</tr>
<tr>
<td>2002 final year students – U2</td>
<td>3.83</td>
<td>U2 &amp; U3</td>
<td>0.58</td>
</tr>
<tr>
<td>2003 final year students – U3</td>
<td>4.1</td>
<td>U3 &amp; U4</td>
<td>0.34</td>
</tr>
<tr>
<td>2004 final year students – U4</td>
<td>4.11</td>
<td>U4 &amp; U5</td>
<td>0.45</td>
</tr>
<tr>
<td>2005 final year students – U5</td>
<td>3.61</td>
<td>U5 &amp; U6</td>
<td>0.11</td>
</tr>
<tr>
<td>2006 final year students – U6</td>
<td>3.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000 graduates - G0</td>
<td>2.44</td>
<td>G0 &amp; G1</td>
<td>0.18</td>
</tr>
<tr>
<td>2001-graduates - G1</td>
<td>3.52</td>
<td>G1 &amp; G2</td>
<td>0.79</td>
</tr>
<tr>
<td>2002-graduates - G2</td>
<td>2.97</td>
<td>G2 &amp; G3</td>
<td>0.77</td>
</tr>
<tr>
<td>2003-graduates - G3</td>
<td>2.87</td>
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<td></td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.08</td>
<td>G &amp; U3</td>
<td>**0.01</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.08</td>
<td>G &amp; U4</td>
<td>0.68</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.08</td>
<td>G &amp; U5</td>
<td>0.52</td>
</tr>
<tr>
<td>2000-2003 graduates - G</td>
<td>3.08</td>
<td>G &amp; U6</td>
<td>**0.01</td>
</tr>
<tr>
<td>2001-2006 undergrad - U</td>
<td>3.69</td>
<td>G &amp; U</td>
<td>**0.01</td>
</tr>
</tbody>
</table>

The above graphs show that over the years 2000 to 2006, the great majority of undergraduates and graduates score various PBL strategies between good and adequate. Statistically there is no significant difference in the undergraduates’ perception of PBL organization/conduct, triggers, and of PBL overall, over the consecutive years from 2001 to 2006. There is however some significant difference in the way the 2001-2003 graduates have perceived the PBL, being that in PBL triggers were scored good rather than adequate in their comparison to the 2006 final year students. And in the rating if PBL overall, it is again good rather than adequate in their comparison with the 2003 and 2006 final year students. This alerts us that scores for PBL triggers and PBL overall, show a trend from good in earlier years towards adequate in recent years. This trend identified in this review would then substantiate the validity of concern that a few of the 2006 final year students responded with very poor and/or completely inadequate when scoring PBL organization and conduct, triggers and overall.
There are many factors likely to account for the worsening trend. Among these factors might be selection and high enrolment of students, high turn-over rate of academic staff and inadequacy of teaching and learning resources. All the factors would require further evaluation which is not part of this research study.

Conclusion

The perception of PBL by 427 UNIMAS undergraduates and graduates has been presented in terms of their ratings on a scale from excellent to completely inadequate (1 to 7). The findings have been analyzed both descriptively and statistically in three aspects, PBL organization and conduct, PBL triggers and PBL rating overall. Significant outcomes are, with regards to PBL triggers and PBL rating overall, the comparisons in the ratings by graduates with undergraduates show that scores have lessened from a good rating in earlier years towards an adequate rating in recent years, with reasonably valid concern of very poor and completely inadequate perceptions by a few of the 2006 final year students.

Acknowledgement

The author would like to sincerely thank the lecturers and support staff of the Faculty for their kind assistance in the above studies, with special thanks to Prof. Dr. Hashami B. Bohari, and Dr. Low Chong Nguan, who were involved in the Graduate Study.

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Predominant Learning styles adopted by AIMST University students in Malaysia

Latha Rajendra Kumar¹, K.Voralu¹, S.P. Pani¹, K.R. Sethuraman¹

Abstract

Introduction: An assortment of learning styles is adopted by medical students. Some like to learn by seeing, some by hearing and some by demonstration. Understanding their preferred learning styles as visual, auditory, read-write or kinesthetic learners will help improve the teaching methods adopted.

Objective and Goal: role of the educator necessitates making the most of each teaching opportunity by understanding the characteristics of the learning audience and incorporating demonstrated principles of adult educational design, with a focus on collaborative learning and variety in presentation techniques. The goal is to provide student oriented education, producing efficient doctors.

Design and participants: A cross-sectional study among 214 medical students of the AIMST University, conducted in 2008. Main outcome measures were: 1. Learning style (visual (V), auditory (A), read-write (R), kinesthetic (K)) 2. Preferred study practice (alone, in pairs or in groups).

Results and Discussion: Preference for different learning styles were, visual (V) 9%, auditory (A) 28%, reading/writing (R) 38% and kinesthetic (K) 35%. 51.4 % of the total 214 students preferred a single mode of information presentation (either V, A, R, or K). Of the 104 students (48.6 % of the total 214 ) who preferred multiple modes of information presentation, some preferred two modes (bimodal, 25%), some preferred three modes (tri-modal, 12%), and some preferred four modes (quadri-modal, 67%).

Practical implications: With growing interest in learning styles, an awareness of students' preferences will be of particular value in designing course delivery strategies which combine an appropriate mix of lectures, Problem based learning (PBL) sessions and practical hours.

Originality/value: Multiplicity exists in the learning styles of students and the accomplishment of teaching goals is based on the ability to understand the complexity and to use the knowledge of these differences to balance these disparities among the students in a class.

Key words: Study Practice

Introduction

Learning results in gain of knowledge, skills and attitudes. Learning is done using different learning styles. Students are known to have preferences for the modes in which they receive information. There are certain learning/study practices (studying alone, in pairs or in groups) which may affect learning styles.

Learning Strategy is developed using a combination of learning styles and study practices (learning practice).

Learning Styles

Educators need to assist students to know how they learn, to operate in a metacognitive fashion, and to make adjustments to their learning behaviour when necessary. Facilitating a raise in students' awareness of how they learn, through an investigation of learning strategies, the 'critical incidents' in their prior learning, their learning styles, their multiple intelligences and strengths will aid students in becoming more efficient learners. Brunton and Jordan (2004) report that students who focus on their studies are adaptable and flexible in a new situation and...
are self-aware and therefore have a higher chance of success in the college environment. Bertolami (2001) has suggested that one of the focal points of student frustration with the curriculum is the disparity between learning (content) and the delivery of instruction (form).

A substantial number of medical students have a preference for several learning styles, yet medical faculties teach overwhelmingly in a single mode: the lecture. For the students, listening to lectures is essentially a passive learning method that encourages rote memorization and note-taking as the means of assimilating knowledge (Endorf & McNeff, 1991). It is important for medical educators to recognize that students have different learning styles and learning practices to reflect on the effectiveness of their methods of instruction, and to consider accommodating other learning modalities. Adult students are generally aware of their learning strengths and weaknesses, and want relevant, useful information presented in a way that is comfortable, intellectually challenging and time efficient. In addition, they seek a collaborative learning process with their instructors.

Keefe (1987) defines learning style as the “composite of characteristic cognitive, affective and physiological characters that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment. Keefe also notes that a better understanding of learning styles by the faculty can help reduce the students’ level of frustration and improve instructional delivery methods. Suskie (2004) suggests that instructors should attempt to alter their methods of teaching to give students with different learning styles an opportunity to learn in an environment more conducive to their preferences.

Bruner and Piaget describe how humans assimilate knowledge about their environment through four sensory modalities: visual (observing pictures, symbols, or diagrams), auditory (listening, discussing instructional material), visual/iconic (reading and writing), and kinesthetic (using tactile sensory abilities such as smell and touch) (Bruner, 1967; Piaget, 1990). Similarly Fleming and Mills (1992) have suggested four categories that seemed to reflect the experiences of their students. The Visual, Aural, Read/Write, and Kinesthetic (VARK) questionnaire which is based on these classifications is a tool that can be employed to assess the learning styles of university students (Fleming, 2004).

Suskie (2004) urges students and educators to be wary of the predictive ability of learning style inventory measurements and cautions that while sensory preferences are useful as a launching point for inquiry, they should not be used as the sole source of information for creating learning improvement.

The purpose of this study is to measure the distribution of the mean scores of learning style preferences of the medical students at AIMST University and note any significant differences among ethnic groups, gender and study practice (as each learning style may be associated with different study practice) in a sample population of 214 participants (medical students). The outcome may offer educators insight into using alternate lecture delivery strategies that may appeal to particular groups or to a wider range of learning preferences and probably augment student contentment with lesson content.

Objectives

To assess the predominant learning styles of medical students using the VARK questionnaire. To assess the predominant study practices (individually, pairs, groups, or combination) of medical students at AIMST University using a general questionnaire.

Data collection and analysis:

Method

The survey was conducted at the AIMST University School of Medicine, Kedah, Malaysia (246 students, mean age 22.5 years) in March 2008.

Instruments

A general questionnaire was used to obtain the name, age and gender of the students. The students were asked whether they preferred to study individually, in pairs or in groups (to determine the study type).

The second questionnaire was the VARK questionnaire to assess the preferred cognitive strategy of the students.

The VARK questionnaire was selected because it is a simple 16-question survey. In addition, this tool offers both students and instructors a method to enhance students’ learning by understanding the preferred modes of information transfer better.
This study was reviewed and approved by the human investigation Committee of the Institutional Review Board (IRB) at AIMST University (project approved in May 2008).

**Participants**

Batches 10 (year 2, term 2), batch 11 (year 2, term 1), batch 12 (year 1, term 2) and batch 13 (year 1, term 1) of the AIMST University School of Medicine took part in the study. All belonged to preclinical years.

The questionnaire included a covering letter explaining the purpose of the survey as well as supplemental reference materials suggesting optimal study strategies based on the learning preference scores. The consent forms and questionnaires were given to students who indicated interest in taking part in the study. Completed questionnaires were collected at subsequent lectures over the following week. Out of 246 questionnaires, 214 (87%) were completed and returned. Student questionnaires were scored and tabulated to determine the distribution of learning styles and practice.

**Statistical analysis and Results**

Data entry and analysis were performed with SPSS (Version 11.0, Chicago, United States of America). Mean and standard deviations were obtained for all the VARK scores. Number of observations and percentages were obtained for gender, ethnicity, and study practice type. Statistically significant differences between the gender (female and male), ethnicity (Indian, Chinese, Malay and others) and study practice (individually, pair, group, multimodal and combination of all) were determined by Chi-Square Test. Chi-Square values ($\chi^2$) and $P$ values were obtained. Comparison of the mean scores with gender was done by Independent $t$-test and comparison of the mean scores with ethnicity and study types were done by ANOVA. Cross tabulations were done with Cramer’s $V$ analysis to determine if there is any association between study practice with gender and study type with ethnicity. Cramer’s $V$ measures were obtained.

In the analysis, the test of assumption for Chi-Square Test, Independent $t$-test, ANOVA, Pearson’s Correlation and Cramer’s $V$ Test have not been violated.

**Results**

The mean and standard deviation for all scores are presented in Table 1, and the number of observations and percentages of gender, ethnicity and study practice are presented in Table 2. The results indicated that there was a significant difference in ethnicity ($p = 0.000$) and study practice ($p = 0.000$) (Table 2). In this study, the number of Indian students (62.62%) and students with independent study practice (70.56%) were significantly more than the other subgroups.

The percentage distribution of single learners was as follows: single visual learner (10%), single auditory learner (27%), single read/write learner (38%) and single kinesthetic learner (35%). The representation of multimodal learners were as follows: Bimodal (25%), Tri-modal (12%) and Quadri-modal (67%).

Taking single and multimodal learners together for consideration as 100%, the results revealed: single visual learner (4.7%), single auditory learner (12.6%), single read/write learner (17.8%), single kinesthetic learner (16.4%), bimodal (11.7%), tri-modal (5.6%) and quadri-modal (31.3%).

**Table 1: Mean and standard deviation of Continuous Assessment marks and VARK scores of 214 students of AIMST University.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (standard deviation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VARK scores</td>
<td></td>
</tr>
<tr>
<td>Visual learners</td>
<td>3.07 (1.92)</td>
</tr>
<tr>
<td>Auditory learners</td>
<td>4.71 (2.15)</td>
</tr>
<tr>
<td>Read/write learners</td>
<td>4.93 (2.15)</td>
</tr>
<tr>
<td>Kinesthetic learners</td>
<td>5.00 (2.32)</td>
</tr>
</tbody>
</table>
Table 2: Characteristics of 214 students of AIMST

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>$\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>119 (55.61)</td>
<td>2.692</td>
<td>0.101</td>
</tr>
<tr>
<td>Male</td>
<td>95 (44.39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indians</td>
<td>134 (62.62)</td>
<td>227.01</td>
<td>0.000</td>
</tr>
<tr>
<td>Chinese</td>
<td>75 (35.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>2 (0.95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>3 (1.40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually</td>
<td>151 (70.56)</td>
<td>237.03</td>
<td>0.000</td>
</tr>
<tr>
<td>Pair</td>
<td>22 (10.28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multimodal</td>
<td>19 (8.87)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination of all</td>
<td>22 (10.28)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cross tabulation indicated a significant association between study practice and gender ($\text{Cramer’s V measure}=10.74$, $p=0.013$) and between gender and ethnicity ($\text{Cramer’s V measure}=12.83$, $p=0.005$). There was no significant association between study practice and learning styles.

In the present study, 71% of the students preferred to study alone, 10% preferred to study in pairs, 9% preferred to study in groups and 10% preferred a combination of study practice (individually/pair/group) (Figure 1).

Figure 1: Study type/Practice of 214 students considered for this study in AIMST
Discussion

Studying alone has its advantages. The student can keep to his/her own pace and there may be some topics the students know better than others which they can skip when studying alone. Studying in pairs or groups may hamper the progression of learning. Concentration may be greater when studying alone. The smaller group (29%) liking to study in pairs or groups may prefer to discuss and get their friends’ advice in difficult lessons. Problem solving and analytical reasoning would be better in study groups. Ultimately this depends on the student’s intellectual capabilities and mind set, the occasion of studying, and the purpose of studying.

The main objective of the 1st year programme is to deliver content in basic medical sciences. This is based on the following two themes: MCBM (Molecular and Cellular Basis of Medicine) and HBM (Human Basis of Medicine). The basics of Anatomy, Physiology, Biochemistry, Microbiology, Pharmacology and Community Medicine are dealt with here. The objective of the 2nd year programme is to ensure the learning of structure and functions of various organ systems.

Clinical skill training includes the recently revised curriculum in the four system courses (cardiovascular system, respiratory system, gastro intestinal, and central nervous system). A 3-week clinical attachment is also included to acquaint the students about communication skills with patients and health care professionals. There are 263 hours of lectures, 120 hours of clinical skills lab postings, 117 hours of PBL sessions, 60 hours of interactive review sessions (tutorials), 28 hours of practicals, 25 hours of dissections and 6 hours of student presentations. Independent, self-directed study practice by 71% of the students may also be to accommodate the AIMST University curricular strategy as a hybrid variety, which accommodates lectures, PBL and self-directed learning.

Knowledge of learning styles may help educators identify and solve learning problems among students, thus helping their students to become more effective learners (Cooper, 2007). Validated inventories that have been reported from previous studies are the learning style inventory of Kolb (Gyeong & Myung, 2008), Vermunt's Inventory of Learning Styles (Van der Veken, et al., 2008), Index of Learning Styles (Zhang & Lambert, 2008), Verbalizer-Visualizer Questionnaire (Kraemer, 2009). The VARK questionnaire was chosen for its simplicity and for its relevance in the determination of learning styles in undergraduate curriculum.

Administration of the VARK questionnaire to pre-clinical medical students to determine their preferred modes of learning styles revealed the following (Figure 2): of 214 respondents, 51.5% preferred a single mode of information presentation (visual, auditory, reading/writing or kinesthetic). Only 10% of the students preferred the visual mode of learning. These students preferred information to arrive in the form of graphs, charts and flow diagrams. They were sensitive to different or changing spatial arrangements and could work easily with symbols. Of the students who preferred a single mode of information presentation, 27% of the students preferred receiving information by speech, which arrives to learners’ ear and is therefore coded as auditory by the questionnaire. Similarly, 36% revealed a preference for accessing information from printed words; these students are coded as reading/writing learners. There were 35% kinesthetic learners. These students prefer concrete, multisensory experiences in their learning. Although learning by doing matches their needs, they can learn easily from conceptual and abstract material provided it arrives with suitable analogies, real-life examples or metaphors (Fleming, 1995).

Multiple modes of information presentation were preferred by 48.6% (Figure 3). These students had a balanced set of preferences, which meant they preferred information to arrive in a variety of modes. Thus, most students may benefit from active learning strategies over the traditional lecture format. Active learning strategies reach all types of learners in the visual, auditory, reading/writing and kinesthetic schemes. In contrast, the traditional lecture format assumes all students are auditory learners, and that all students acquire the same information presented orally at the same pace without dialogue of the presenter.

When analyzing their learning styles, 25% were categorized as bimodal and 12% as tri-modal learners. A majority of AIMST University students preferred a quadri-modal (67%) mode of instruction. Students are able to learn effectively as long as the teacher provides a blend of visual, auditory, reading/writing and kinesthetic activities. However, some students prefer one of the modalities over the other three. They struggle to understand the subject matter unless special care is taken to present it in their preference mode. To meet these needs,
teaching should be multisensory and filled with variety. To achieve this goal, it becomes important to use active learning strategies (Rao & Dicarlo, 2001).

Auditory learning is achieved from discussions during collaborative learning events such as peer learning, debates, games and answering questions (DiCarlo & Collins, 2001). Manipulating models (Chan, et al., 1991) and role playing (Kuipers & Clemens, 1998) satisfies kinesthetic and tactile learners. Cooperative learning exercises, role playing, simulations, models, debates and games are active learning strategies that can be used effectively in large classrooms. These activities also promote working in groups and generate high levels of motivation and enthusiasm. Furthermore, investigators have reported an increase in students’ achievement with the use of simulations and games, and students usually express positive feelings from their experiences (Lujan & Dicarlo, 2006). For all these reasons, active learning strategies may be superior to the traditional lecture format in promoting thinking, reasoning, problem-solving and decision-making skills.

Tierney and Brunton (2005) reported that science and engineering students were kinesthetic learners while business students were predominantly read/write learners when cognitive modalities were examined. Baykan and Naçar (2007) have reported that 23.3% of 155 first year medical students were kinesthetic learners. The knowledge of students’ preferred learning styles is vital if educators are to provide tailored strategies for individual students (Armstrong & Parsa-Parsi, 2005). It also helps to overcome the predisposition of many educators to treat all students in a similar way as well as to motivate teachers to move from their preferred mode(s) to using others. In so doing, they can reach more students because of the better match between teacher and learner styles (Bergman & Fors, 2005).

In some cases, it may be difficult to tailor coursework to the individual learning style of each student. However, in these situations, by being aware of their learning styles, students may contribute to their academic success by promoting self-awareness and their use of learning strategies that work for their learning style (Tanner & Allen, 2004). The key to retaining a broad group students interested in science is a differentiated instruction, a teaching style that derives from multiple pedagogical approaches and not a singular approach. Not all educators agree that matching teaching methods to a preference or style improves learning.

The mean average scores of kinesthetic and read/write students were more than auditory and visual learners (Figure 4). Most of the students preferred learning by using all their senses, including touch, hearing, smell, taste and sight. These students prefer information to arrive in a variety of modes and they do not learn by simply sitting in a classroom listening to the educator or memorizing assignments. To achieve meaningful learning, these students must talk about what they are learning, write about it, relate it to past experiences and knowledge, and apply it to their daily lives (Lujan & Dicarlo, 2006).

Figure 2: Breakdown of students (n=110) preferring a single mode of information presentation (either V, A, R, or K)
In a passive lecture format, the method generally used in our faculty, all students are assumed to be auditory learners, although in the present study all our students did not employ this method. It is important to emphasize that students will only remember 20% of what they read, 30% of what they hear, 40% of what they see, 50% of what they say, and 60% of what they do.

Gender differences were as follows: 56% of the study population was female. Importantly, more female students preferred to study individually or independently. (In this study sample there are significantly more female Indian students (Figure 5). In contrast to females, the majority of males preferred to study in pairs or groups or both. It has been reported that males have a preference for rational evaluation and logic; but females use "elaborative" processing in which they tend to seek personal relevance or individual connections with the material being taught (Lie et al., 2004). In addition, males tend to be more achievement oriented; however, females are more socially and performance oriented (Chang, 2004). The genders also differ in their beliefs about what is most important to student learning. Females rank social interaction with other students and self-confidence higher than males (Brassard, 2004). Furthermore, males are likely to attribute their success in the classroom to external causes, such as teaching; while females generally see their success is being directly related to their efforts in the classroom (Grollinio & Velayo, 1996). This suggests that males tend to be more externally focused, but females tend to be more introspective and self-critical.
Table 3: Comparison of the means of read/write learner’s score and kinesthetic learner’s score with ethnicity and study practice

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Mean (SD)</th>
<th>F statistics (DF)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Read/Write learner’s score</td>
<td>2.959 (3)</td>
<td>0.033</td>
</tr>
<tr>
<td>Study type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually</td>
<td>151</td>
<td>4.86 (2.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair</td>
<td>22</td>
<td>4.27 (2.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multimodal</td>
<td>19</td>
<td>4.84 (1.46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination of all</td>
<td>22</td>
<td>6.09 (2.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnic group</td>
<td></td>
<td>Kinesthetic learner’s score</td>
<td>2.655 (3)</td>
<td>0.050</td>
</tr>
<tr>
<td>Indian</td>
<td>134</td>
<td>5.00 (2.35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese</td>
<td>75</td>
<td>4.88 (2.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>2</td>
<td>4.50 (2.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>8.67 (3.22)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Limitations and strengths of VARK

The VARK questionnaire has not been statistically validated and that represents a limitation to this study. Educational investigators have been attempting to find a way to validate VARK. Despite this limitation, there is substantial evidence for the existence of modality-specific strengths and weaknesses (for example, in visual, auditory or kinesthetic processing) in people with various types of learning difficulty. Importantly, a number of strengths emerge from the VARK analysis. For example, it offers a positive, inclusive affirmation of the learning potential of all students. The VARK philosophy encourages the belief that everyone can learn if their preferences are addressed. This view of learning encourages teachers to ask themselves an insightful and critical question, namely: how can we teach our students if we do not know how they learn? (Dunn & Griggs, 2003).

Future directions

The rationale for this descriptive study was to help us design a lesson plan that addresses all students and to identify areas for further research. With regard to future research, several questions regarding learning styles emerged from this study. For example: (1) how do grades correlate with learning styles for specific classes, e.g., do kinesthetic learners perform better in laboratory classes and do aural learners perform better in lecture classes? (2) do students in preclinical years use different learning styles compared to students of clinical years. (3) do pre-university students have different learning styles? (4) how does the professor accommodate those who prefer only one style and those who prefer many? The administration of VARK at the beginning of the course has recommended teaching to be modulated according to the needs of the students especially during self-directed learning hours.
Conclusion

A majority of AIMST University students preferred a quadrimodal learning style among the multimodal learners. Among unimodal learners, the highest preference of learning styles were read/write and kinesthetic. The study practice depicted a high trend towards independent learning strategies. Mentors should be attentive of these differences in order to accommodate or at least investigate the prospective of enhancing opportunities for read/write and kinesthetic learners. The fact that a student may have a favored mode does not mean he/she cannot function successfully in another.

Acknowledgement

The students of the University for participating in this study; Leong Ai Leng and her friends (10th batch) and Priyadarshini and her friends (14th batch) for helping in the data entry; Neil Fleming for permission to use the VARK questionnaire.

References


Learning across boundaries

Endaryanto¹, Hendri Susanto¹, Goeno Subagyo¹, Mora Claramita²

Abstract

This study aims to compare the learning process and achievement of the third year students who have undergone the old style curriculum and the fourth year students had undergone the Student Centered Learning approach for the past year. These two different groups were mixed for tutorial discussions. The tutorial sessions were provided with one scenario - the subject of Oral Medicine III: the compromised-patient. We focused on comparing the results of both groups on the process of learning and the block test.

The eight mixed tutorial groups comprised of 16-20 students (half from the old style curriculum and half from the student-centered approach group) each. They were assessed by two tutors on the learning process: the time schedule, activity during discussion and relevance of questions asked. Furthermore, the study compared the results of the block test on 5 multiple choice questions (MCQs) on the compromised-patient among 100 MCQs at the final examination. There was no significant difference between the two groups for the process of learning and the result of the block test. This study challenges the belief that new concepts or knowledge require prior knowledge; is known as learning across boundaries.

Keywords: prior knowledge, PBL, Oral Medicine

Introduction

Problem Based Learning (PBL) has been widely used in many medical institutions. It can indicate who the motivated students are and therefore better achievement is accomplished. Through careful selection of problems the process awareness has constructed the smallest unit of learning (Snellen-Ballendong & Dolmans, 2000). Students are facilitated to learn certain subjects when directed by teachers. The Faculty of Dentistry, Gadjah Mada University, has not applied the Problem Based Learning (PBL) method to its students but the faculty has implemented part of the Student-Centered Learning (SCL) strategy (Harsono, 2003).

The Oral Medicine Department has been given opportunities to develop the SCL in Oral Medicine subjects.

Researchers were curious and challenged to discover if the third year students were at the same academic level as the fourth year students. Students of both years were mixed for tutorial discussions. As a matter of fact, the third year students were studying under the old curriculum. In contrast, the fourth year students had been using the SCL approach for one year in the Oral Medicine II. The researchers’ curiosity arose several years ago because a third year student passed the Oral Medicine III examination without taking Oral Medicine II, a pre-requisite subject. This case promoted the researchers to test whether pre-requisite subjects were no longer appropriate.

Material and Methods

Subjects

Third and fourth year students (2006 and 2007) were the subjects. The researchers organized 8 mixed tutorial group classes, each with 16-20 students from the classes of both 2006 and 2007 (Figure 1). Both groups had mastered the pre-clinical science courses such as pathology, pharmacology and microbiology, a pre-requisite to the Oral Medicine classes. The performance at...
the pre-clinical subjects showed no significant difference between the classes of 2005 and 2007 (Table 1). Due to the policy of the pre-clinical departments, exact scores were not made available for this study.

**Figure 1:** Model of mutually synergy performed by different competencies and lecturing between two groups for the solution the same problem.

![Diagram showing the model of mutually synergy performed by different competencies and lecturing between two groups for the solution the same problem.]

**Table 1:** Pre-clinical sciences subjects’ of class 2007 and class 2005 prior to this study

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Score and percentage</th>
<th>Class 2007 (PBL)</th>
<th>Class 2005 (Non PBL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N = 108</td>
<td>N = 78</td>
</tr>
<tr>
<td></td>
<td>A (%)</td>
<td>B (%)</td>
<td>C (%)</td>
</tr>
<tr>
<td>Pathology</td>
<td>6.5</td>
<td>39.2</td>
<td>33.6</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>4.2</td>
<td>53.1</td>
<td>29.7</td>
</tr>
<tr>
<td>Microbiology</td>
<td>3.5</td>
<td>44.3</td>
<td>19.2</td>
</tr>
</tbody>
</table>

**Instrument and Procedure**

The participants of the mixed tutorial group were senior students, who were studying Oral Medicine for the third time (Oral Medicine III), and junior students studying Oral Medicine for the first time (Oral Medicine I). There were two tutors for each group. The process of learning in tutorial discussions was assessed by the tutors in three aspects: 1. on time arrival, 2. discussion activities, 3. specific and relevant questions asked. Each aspect was scored on a scale of 1-3. One indicated the best performance and three was for the worst. At the end of the block, the result of the block test was obtained through the five questions among 100 multiple choice questions (MCQs).

**The case of compromised-patient:**

The compromised-patient is a patient who is medically weakened by certain causes and cannot be accepted for ideal treatment (Little et al., 2002). It is necessary to understand philosophically that dentistry is similar to one of the varied specialties of medicine. Consequently, it is imperative that dentists understand the medical background of their patients before beginning dental therapy, which might fail because of the patient’s compromised medical status (Lynch, 1984). The learning process of compromised patients (CP) includes diagnosis and treatment of oral problems that might reflect either localized oral diseases or the oral manifestation of systemic problems. This is a good example to stimulate students to learn...
about the relationship between local oral disease and general health problems. The CP scenario is designed for two aspects of learning; the first is the diagnostic method and the second for patient management.

The design of the block test
Final examination questions were designed according to the grid of each curriculum. There were 5 cases that should be referred, to be able to answer the 100 MCQs. Four of the cases were different for the class of 2006 and the class of 2007 according to the different subjects they followed, which were Oral Medicine III and Oral Medicine I. However, both classes received one case on the same compromised-patient. There was a direction for students to look at which scenario chosen out of five scenarios to be able to understand and answer the 100 questions of MCQ. This model of assessment was referred from Azer (2003). The total assessment time was 100 minutes.

Analysis
Our objective was to see the difference in the process of learning and the results of examination between the 2007 class and the 2006 class. Our hypothesis was that the senior students would be better in the process of learning as well as the result of the block test compared to the junior class. We assumed that the junior students would only reach the understanding of the diagnostic aspect of learning, and abandon the understanding of the patient management aspect of learning. The results of both classes on the process of learning and block test were compared through t-test independent sample.

Results
Table 2 shows the result and the statistical analysis for both groups for the three processes of learning. For “on time arrival”, “discussion activity” and “relevant questions asked” the mean score for 2007 class was 5.06 while for 2006 class was 6.48 on a 10 point scale. No significant difference was found between the scores of the 2007 class and 2006 class for the three processes of learning (p> 0.05).

Table 3 shows the results and the statistical analysis for both groups for the block test. The average results of the two classes did not show any statistically significant difference (p> 0.05). Our hypothesis that the senior students would be better in the process of learning as well as the result of examination was not proven.

Discussion
Process of learning
No significant difference was found between the two groups. Assessment of the process of learning aimed to monitor students for their curiosity in learning the compromised-patient scenario. Psychologically, if someone is presented with something new they will stop to think for a minute about the sequence of events described. If they know the explanation and they fully understand about the things explained, they will be satisfied to follow the next event or, they may think in the contrary by rejecting it (Dolmans & Snellen-Balendong, 2000; Westberg & Jason, 2004). Consequently, the discussion would be limited and the objectives of the tutorial will not be achieved.

However, the implementation of compromised-patient scenario applied for the Class of 2007, which in fact had never undergone any prior
SCL approach, showed that these students followed the first consideration. The performance of the two groups of different years with different levels of competencies as well as different models of learning revealed that the two groups were able to work in a team to solve a problem according to their capacity without any difficulties. Under the circumstances, clear explanation about the implementation of the new method before the learning process began was the key. Another reason was that the new group might have heard about the innovation implemented in the senior group and this had perhaps motivated them to join the SCL learning approach. Increasing motivation to learn is indeed one of positive effect of PBL program (Moust et al., 2001). When students were confronted with a problem in the tutorial group, any prior knowledge relevant to the problem would be activated. Although the two groups were actually different in only one year's academic experience and they both already had prior knowledge of Dentistry, they were totally different in their curriculum approach.

Using the compromised-patient’s problem as a starting point to learn, students generated possible explanations for each aspect according to their competencies and prior knowledge. The students formulated learning issues by themselves and determined what was relevant to study. Tutors encouraged them to direct their own learning process, which increased their motivation and made them more actively involved in the discussion. Depending on the preparation and the complexity of the problem, integration of knowledge from various competencies and disciplines would take place more or less automatically. The problem of the compromised-patient encouraged the students to gather knowledge that helped them in understanding the scenario. This kind of experience transcends the boundaries between disciplines and prior knowledge.

**The block test**

Two groups showed no difference in the results of the block test for compromised-patient scenario assessment. The junior group seemed to be ‘fresher’ in prior knowledge to answer the 5 MCQs and it might be contributed mostly in this process. The learning climate of SCL was another possibility. Psychologically, it would bring them into a better academic atmosphere that they had not experienced before. This would motivate them to develop self directed learning so that they could overcome the anxiety of obtaining low scores. The junior students’ score was actually better than that of the senior class, although it was not statistically significant (Table 2). Therefore, it may be interpreted that since there was no significant difference between the two groups, the boundaries caused by the different instructional patterns were blurred. Our hypothesis that the junior class would only understand the diagnostic process of the compromised-patient case was not proven; they also managed to understand the concepts of patient management.

Because the compromised patient scenario only accommodated 5 multiple choice questions among 100 MCQs of the block test, the result of the 5 items could be biased by choice. However, the 5 items had been constructed randomly within the 100 MCQs. To answer those 5 questions, the student had to have followed the compromised-patient scenario. Therefore, it limited the chance if random guessing.

**Conclusion**

Students demonstrated that they could learn Oral Medicine without any pre-requisite subject knowledge. Whether this can also be demonstrated in other subjects in Dentistry should be further studied. This study indicates that new concepts or knowledge can be learnt by any student from any academic year, with any level of prior knowledge, but only if they learn it through an effective teaching-learning process. This can be termed as learning across boundaries.

**Acknowledgement**

We acknowledge students and teachers who were eager to participate in this study. We are also thankful for the Gadjah Mada University which provided us with the opportunity to develop better teaching and learning processes through the Teaching Grant DUE-LIKE Project 2007.

**Conflicts of interest:** no conflict of interest declared

**Ethics committee approval:** The ethical clearance was provided through the Teaching Grant of DUE-LIKE project of the Gadjah Mada University.

**References**


Students’ self-directed learning readiness, perception toward student-centered learning and predisposition towards student-centered behaviour

Endang Lestari1, Djauhari Widjajakusumah2

Abstract

Background: Sultan Agung Islamic Medical School implements a student-centered learning strategy for all its learning activities, as a consequence of applying a student-centered, problem-based, integrated, community-based, early clinical exposure/elective, and systematic (SPICES) approach since the year 2005. As student-centered learning is a new culture for most students, a study was conducted to explore factors which may influence student-centered behaviour.

Method: Study population consisted of 205 students from the 2005 and 2006 academic years. Students’ perception toward student-centered learning and reported behaviour were identified using questionnaires which was based on the Principles of Adult Learning questionnaire. Self-directed learning readiness scores were calculated. Relative Risks (RR) were calculated using Cox regression analysis in order to identify the factors predisposing towards student-centered behaviour.

Results: The results indicate that 123 (60%) subjects practise student-centered behaviour. The students’ self-directed learning readiness score (RR adjusted (RRa)=1.76, CI=1.39–2.22), positive perception toward student-centered learning (RRa=1.51, CI=1.26–1.82) together with students’ area of residence (RRa=5.96, CI=1.75–2.22) are dominant factors which influence the student-centered behaviour. Gender, age and year of entry do not seem to affect the student-centered behaviour.

Conclusion: In order to improve the practice of student-centered behaviour, self-directed learning readiness and a positive perception toward student-centered learning should encouraged. Students from outside Java Island should be given major attention and guidance to go through student-centered learning atmosphere.

Key words: SPICES

Introduction

Medical schools in Indonesia have been experiencing significant changes since 2005, especially in the area of curriculum development. This change started with the Ministerial Decree No. 045/2002 which states that the curriculum is the responsibility of each institute of education. According to the decree, there is no longer a ‘national curriculum’, but instead, core competencies for each study programme should be decided and agreed on nationally. Educational Standards have also been produced by the Indonesian Medical Council, and applied to all medical schools from 2006. One such standard is that in applying the curriculum, the schools should make use of the SPICES (student-centered, problem-based, integrated, community-based, early clinical exposure/elective, and systematic) approach. Due to this paradigm shift, the Sultan Agung Islamic Medical School applied a competence-based curriculum and student-centered approach since 2005. It is well known that a student-centered approach gives students opportunities to improve their analytical skills, problem solving skills, as well as skills in deep learning, lifelong learning, self-directed learning.
and reflective learning (Amin & Khoo, 2003; Billings & Kowalski, 2005). This approach also motivates students to take responsibility for and to control their learning. The fast change in medical science also motivates schools to apply this approach; therefore, lectures are not considered sufficient to transfer knowledge from teachers to students. Students have to motivate themselves to explore the needed knowledge in self-directed learning activities, the core type of activity in the student centered approach.

As student-centered learning is a novel educational culture for most Indonesian students, factors which may influence the student-centered approach should be identified. This study aims to identify factors that predict a student-centered approach.

Methods

This study was approved by the Ethical Committee of the Faculty of Medicine, University of Indonesia. The students of the Sultan Agung Medical School of the 2005 and 2006 entry years were the subjects of this study.

Questionnaires were used to collect data of student-centered behaviour, self-directed learning readiness, students’ perception toward the student-centered approach, and demographic information of the respondents.

Student-centered behaviour was assessed using a questionnaire based on Liu’s (2005) Adapted Principles of Adult Learning (APAL). Validity and reliability testing revealed that all questions were valid and had a reliability score of 0.880. Self-directed learning readiness scores were calculated using a self-directed learning readiness scale which was based on Fishers’ (2001) self-directed learning readiness scale. Statistical analysis indicated that the questions were valid and had a reliability score of 0.898. Students’ perceptions toward student-centered learning were gathered using the original APAL (Liu, 2005). The questions were found to be valid and had a reliability score of 0.853. The author guided students through the questionnaire and was available to explain and provide some additional information.

Verbal or written informed consent was obtained from all respondents. Statistical analysis was done using STATA 9 software. Relative risks (RR) were calculated to identify the factors predisposing to student-centered behavior using Cox regression analysis (Barros & Hirakata, 2003).

Results

A total of 283 students participated in this study. Of these, 78 students who submitted incomplete questionnaires were excluded. Table 1 indicates that the number of girls is three times higher than boys and the number of students from Java 9 times that of students from outside Java Island. The study identified 123 (60%) subjects with good student-centered behaviour, whilst the rest were found to practise behaviour which could be categorized as teacher-centered.

<table>
<thead>
<tr>
<th>Table1: Some demographic characteristics of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student-centered behaviour</strong></td>
</tr>
<tr>
<td>Not Student-centered (N=85)</td>
</tr>
<tr>
<td>Student-centered (N=123)</td>
</tr>
<tr>
<td>n</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>16 – 17</td>
</tr>
<tr>
<td>18 - 20</td>
</tr>
<tr>
<td>21 – 26</td>
</tr>
<tr>
<td>Year of entry</td>
</tr>
<tr>
<td>2005</td>
</tr>
<tr>
<td>2006</td>
</tr>
</tbody>
</table>
Students who obtained high scores of self-directed learning readiness were more likely to have good student-centered behaviour and have a 51% opportunity to have good student-centered behaviour compared to those who have negative perceptions.

Students from Java Island were significantly more likely to have good student centered behaviour when compared to those from outside Java Island.

Table 2: Relationship between self-directed learning readiness, students’ perception, students’ area of residence and predisposition towards student-centered behaviour

<table>
<thead>
<tr>
<th></th>
<th>Student-centered behaviour</th>
<th>Adjusted Relative Risk*</th>
<th>95% Confidence Interval</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not Student-centered (n=82)</td>
<td>Student-centered (n=123)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-directed learning readiness score</td>
<td>Low to moderate</td>
<td>60</td>
<td>43</td>
<td>1,00 Reference</td>
</tr>
<tr>
<td></td>
<td>High (ready)</td>
<td>22</td>
<td>80</td>
<td>1,76 1,39–2,22 0,000</td>
</tr>
<tr>
<td>Perception toward student-centered</td>
<td>Not supportive</td>
<td>69</td>
<td>68</td>
<td>1,00 Reference</td>
</tr>
<tr>
<td></td>
<td>Supportive</td>
<td>13</td>
<td>55</td>
<td>1,51 1,26–1,82 0,000</td>
</tr>
<tr>
<td>Students’ area of residence</td>
<td>Outside of Java</td>
<td>18</td>
<td>2</td>
<td>1,00 Reference</td>
</tr>
<tr>
<td></td>
<td>Inside Java</td>
<td>64</td>
<td>121</td>
<td>5,96 1,75–2,22 0,004</td>
</tr>
</tbody>
</table>

* Adjusted for variables listed on this table

Discussion

There are several limitations that should be considered in this study. The data on behaviour would be more reliable if obtained using observational methods rather than questionnaires.

However, the questionnaires used in this study meet all the requirements needed as instruments used to collect data; the questionnaires were found to be valid and reliable. The author was available for any clarifications regarding the questionnaire, with further explanations given when needed. The problem of boredom may have occurred during filling of the questionnaires as there were four questionnaires to be completed. To solve this problem, only one questionnaire was delivered on each day with four days needed to gather data.

The results indicate that approximately 40% of the students did not practise good student-centered behaviour. However, it is lower than the result of a study conducted by Spoon & Schell (1998) who reported that 57.57% of the subjects of their study used a learning approach which was in continuum with the teacher-centered approach. Other studies have also reported that students tend to choose a teacher-centered approach as their learning style rather than a student-centered one (Foglesong, 2002; Allesio, 2004).

Since our findings and other studies show a tendency that a sizable proportion of students practice a teacher-centered approach, efforts should be made to guide them to be more student-centered. Medical students should be encouraged to understand the benefits of and have a positive perception towards a student-centered approach.
Our findings indicate that 50% of the students had low to moderate scores for self-directed learning readiness. This number is higher than the result of a study conducted by Shokar et al. (2002), which reported that only 11% of students obtained self-directed learning readiness scores below the American standard score. Other studies also reported that students who encompass high scores for self-directed learning readiness have a higher tendency to use a student-centered learning approach than those who obtain low scores (O’Kell, 1998; Kukkamalla & Shobha, 2006).

Our study indicates that there were 137 (66.8%) students who had a negative perception towards student-centered learning. A study conducted by McCollin (2000) reported similar results, but Wang’s (2004) study indicated that adult learners tend to have a positive perception towards student-centered learning.

The result of our study shows that students who have a positive perception toward student-centered learning had a better tendency to practise good student-centered behaviour. This indicates that the better their perception is, the better their student-centered behaviour will be.

Analysis of students’ demographic factors indicates that gender, age, and students’ academic year were not predictive of student-centered learning behaviour. However, McCollin (2000) reported that gender and age are factors that affect student-centered behaviour. This variation indicates that the demographic factors may have different effects in diverse situations.

Students’ area of residence was the strongest predicting factor of student-centered behaviour. Students from Java Island showed a higher tendency towards student-centered behaviour when compared to those from outside Java Island. This finding indicates that culture might impinge on student learning skills and preferences (Gulid, 1994; Gutierrez, 2003). Consequently, in a multicultural school such as the Sultan Agung Islamic Medical School, which caters to students from different ethnicities and cultural backgrounds, teachers have to explore the students’ learning styles in order to adopt compatible teaching styles. (Hmiesleski et al., 2003). These findings also suggest that the school should give more attention to students from outside Java Island in order to make them better prepared for the student-centered learning atmosphere.

Conclusion

Self-directed learning readiness and a positive perception towards student-centered learning are dominant factors that positively affect student-centered behaviour. Students from outside Java Island should be given more guidance to better adapt to the student-centered learning atmosphere.

Acknowledgement

We would like to express our gratitude to students of the Sultan Agung Islamic Medical School who took part in this study. Our gratitude goes to the Dean of the Sultan Agung Medical School, the Family Planning Module Team and the Gastro-intestinal Module Team, who permitted collection of data from students when the modules were in progress.

References


Graphical representation of assessments in a medical curriculum

Lap Ki Chan¹, Nivritti Patil¹

Abstract
The graphical representation of the assessments in a medical curriculum is useful to all the stakeholders of the curriculum. The graph can be constructed using the academic years as the horizontal axis and the percentage of the maximum final score for each academic year as the vertical axis. Punctuated and continuous summative assessments are shown as vertical and slanting segments on the graph respectively. Horizontal segments indicate no summative assessment. Dotted whiskers represent either formative assessments or summative assessments that do not contribute to the yearly final score. Such a graph provides a visual overview of all the assessments in a curriculum. The MBBS curriculum at the University of Hong Kong is used as an example to illustrate the construction of the graph.

Introduction
An overview of assessments in a curriculum would be useful to the different stakeholders, such as the students, who will know when and how they will be assessed; the teachers, who will know their individual contribution to the overall assessment; and the public, who will know that the quality of the program's graduates is ensured through appropriate assessments. While a curriculum map can provide an overview of a curriculum (Harden, 2001), there has been no satisfactory method to give an overview of the assessments in a curriculum.

In this paper, we report a method of representing the assessments in a medical curriculum on a graph, so as to provide a visual overview of their temporal arrangement and relative contributions. The Bachelor of Medicine and Bachelor of Surgery (MBBS) curriculum at the University of Hong Kong (HKU) will be used as an example (Figure 1).

Method of construction of the graph
A. Axes
The curriculum is five years long and is summarized in the lower part of Figure 1. The blocks in junior, senior, and specialty clerkships are shown in an order that only some students will go through. The other students will complete the same blocks but not in the depicted order.

The horizontal axis is the time axis, measured in academic year. The MBBS curriculum at HKU can thus be represented by five equal intervals on the horizontal axis (Figure 1). The MBBS curriculum at HKU can thus be represented by five equal intervals on the horizontal axis (Figure 1). The vertical axis is the percentage of the maximum yearly final score for each academic year (Figure 1), which is set at one hundred percent per year. This one hundred percent results from all the summative assessments that take place within that year and by definition, does not include formative assessments.

In the MBBS curriculum at HKU (Figure 1), the first hundred percent on the vertical axis results from all the summative assessments in the first year, the second hundred percent from those in the second year, and the third hundred percent from those in the third year. However, there is no yearly final score for the fourth year, since the specialty clerkship spans the fourth and fifth years. The maximum final score at the end of the fourth and fifth years is thus two hundred percent.
**B. Segments**

The graph consists of solid segments, which form the body of the graph, and dotted whiskers, which branch out from the body (Figure 1). The graph shows how different assessments are temporally arranged to give rise to the maximum final score (one hundred percent) for each academic year. The graph represents the temporal pattern and relative contribution of all the assessments in the medical curriculum.

A horizontal segment (e.g., segments 1.1, 3.1, and 5.6 in Figure 1) on the graph represents a part of the curriculum without summative assessments. Such a period makes no contribution to the yearly final score (no summative assessments).

A slanting segment represents a continuous summative assessment that contributes to the yearly final score. The horizontal extent of such a segment is the period covered by the continuous assessment. The vertical extent is the percentage contribution of that continuous assessment to the yearly final score. For example, during the three system blocks in the later part of the first year of the MBBS curriculum at HKU, the students are being continuously assessed in all PBL sessions. This continuous assessment constitutes 35% of the yearly final score for the first year. Therefore, segment 1.2 for this period of the curriculum is a slanting segment, with a horizontal extent equal to the time of the three system blocks, and a vertical extent of 35% on the vertical axis.

A vertical segment can be considered as a slanting segment with a negligible horizontal component, i.e., an assessment that takes place within a very short time of, say, a few hours to a few days. The height of the segment is equal to the percentage contribution of that assessment to the yearly final score. Such an assessment is called a punctuated assessment here, as it takes place at a particular point in time, instead of over a period of time as in continuous assessment. For example, at the end of the first year in the MBBS curriculum, there is an assessment that takes place within a few days and constitutes 65% of the yearly final score of the first year. Therefore, segment 1.3 is a vertical segment at the end of the first year, with a height of 65% on the vertical axis. Some vertical segments, such as segment 3.3 (not labeled in Figure 1, between segments 3.2 and 3.4), are very short because of the very small contribution they make to the yearly final score.

**C. Whiskers**

Assessments that do not contribute to the yearly final scores are indicated on the graph by dotted whiskers, i.e., branches from the body of the graph (Figure 1). Some assessments are formative and do not affect the promotion or graduation of the students. However others are summative in nature as students need to pass them to be promoted to the next year or to graduate, even if they do not contribute to the yearly final score.

Vertical whiskers represent punctuated assessments that do not contribute to the yearly final score. Their height is arbitrary and bears no relationship to the yearly final scores. For example, whisker 1.1 (Figure 1) is a formative assessment that takes place after the Introduction to Health and Disease Block in the first year. This assessment does not count towards the first year final score and a student’s performance, in that it does not affect his or her promotion through the curriculum. Whisker 4.2, representing the assessment at the end of the Multi-disciplinary Block in senior clerkship, is a punctuated assessment. Although it does not contribute to the yearly final score, each student has to pass it in order to move on to the next block. This assessment is thus still summative in nature.

Slanting whiskers represent continuous assessments that do not contribute to the yearly final score. Strictly speaking, this kind of assessment should be represented by horizontal whiskers (no vertical components), but horizontal whiskers are very difficult to show on the graph because they may overlap with other segments. Thus slanting whiskers are used. The horizontal extent is the period covered by that continuous assessment. The vertical component is arbitrary and bears no relationship to the yearly final score. For example, whisker 4.1 represents the continuous assessment during the Multidisciplinary Block of the senior clerkship. Its horizontal extent is the length of that block, but its height is arbitrary. Although this assessment does not contribute to the yearly final score, students must pass it in order to move on to the next part of the curriculum. It is thus summative in nature. Whisker 5.1 is another similar example.

**References**

Figure 1: Assessment graph for the MBBS curriculum at the University of Hong Kong

- Not all segments are labeled. In each segment label, the number before the full stop indicates the academic year, while the number after the full stop indicates the position of the assessment in that year. Whiskers are labeled with numbers preceded by the letter 'W.'
Appreciative Inquiry: a discovery tool to facilitate change

Thomas V Chacko

Background and need for the innovation

A Fellow of the PSG-FAIMER Regional Institute Coimbatore, India, an ardent mid-level faculty member in a medical school in the Asia region who was interested in improving the quality of medical education in her country, lamented that she was finding it tough to convince the Deans of the medical schools of the practicability of using WFME Standards to improve the quality of medical education. This was in spite of the fact that the national language version of the WFME Global Standards for Basic Medical Education was already available on the WFME website.

Perhaps she was considered “junior” to them and so hierarchy came in the way of accepting her in facilitating change. Another factor that could have hindered acceptance of WFME standards was the perception that “Global” Standards were being imposed on their country. The PSG-FAIMER Regional Institute was requested by her to design and organize a workshop for the Deans and academic leaders in the country to make them receptive to the idea and move forward using their academic leadership skills.

The innovation

Among the many ways of curriculum planning and change management learned at the FAIMER Institute in Philadelphia, we recognized the value of Appreciative Inquiry which draws on discovery of past experiences of good practices that have already worked in similar settings. Hence we designed a workshop that involved a high engagement interactive exercise drawing on the participants’ experiences in their respective medical schools. Ice-breaking was achieved by seating the participants in a circle and priming them about the power of telling stories in the “learning circle” exercise in which the participants read out moving stories from a handout.

The participants who were Deans and senior academic leaders of the country were then taken through the discovery phase of an “Appreciative Inquiry exercise” in dyads (pairs) in which they shared their “stories” of the good practices in specific areas of quality improvement (using the WFME nine-area framework) that they had observed as working well in their own medical schools where they were Deans, or which they observed being practiced by Deans when they were faculty members or students. They then shared their experience in small groups which helped them to list the do-able practices that emerged through group-work. This list was consolidated further when the small groups reported out to the larger group and the larger group voted for the “Top ideas” which were do-able in their medical schools.

This was then followed by a group-work session in nine groups, each of which deliberated on one of the nine WFME area-wise standards. Presentation by each of the nine groups of their area-wise action plans to the larger audience resulted in their receiving collective inputs and ratification from the larger group thereby making the resulting output a consensus document of Recommendations/Action Plan for implementation of Quality Improvement Standards in their country for all the nine WFME areas of standards for quality improvement.

Outcome of the innovation

By the end of the workshop, the participants experienced the power of appreciative inquiry as an academic leadership tool for discovering what was already working in their country and were able to prepare a document titled “Recommendations by Deans /Academic Leaders for implementing Quality Improvement Standards in the country” using the nine areas of WFME standards as a framework for guidance. These good practices were already being followed in the country but were not yet identified by a critical mass of policy-makers and change managers such as the Deans.
When they were taken through a structured discovery process as part of the appreciative inquiry exercise, they realized that these good practices for quality improvement as suggested in the WFME standards were already being practiced in their own country. They also realized that these good practices were do-able and had evolved indigenously despite usual constraints of faculty time and resources.

Hence, it was felt that the document which has emerged was less likely to face resistance in accepting WFME standards on the basis of it being an “outside imposition” arising from the “evil forces of globalization”. Thus it came as no surprise when the feedback received from the participants indicated that they “strongly agree” that the workshop content was applicable and practical.

Further Reading


Multiple choice questions as a ranking tool: a friend or foe?

C.A.H. Liyanage¹, M.H.J. Ariyaratne², D.H.C.H.P. Dankanda², K.I. Deen ³

Introduction

Traditionally, Multiple Choice Questions (MCQs) are used to assess knowledge in Medicine (Jeffrey & John, 2001). In Sri Lanka, a common MCQ assessment was recently introduced to evaluate medical students of all faculties of medicine and to tabulate a ranking system. The employment of medical graduates in the state health sector was initially based on a ranking system in the order of merit statistically calculated from a random choice of theory and clinical assessment marks at the final MBBS examination. This required comparison among 6 medical faculties which had non identical syllabuses and their own assessment systems for their graduates. In addition, the exams are usually held at different times of the year as the commencement and conclusion of the medical courses in different faculties vary.

This system of assessment appeared to be non transparent and was felt to be unfair by the students as well as the administrators. A need arose to decide on an unbiased method to develop a ranking system to fill the training posts in government hospitals. As a homegrown solution to this, a common MCQ paper was proposed. An appointed panel from each faculty formed a MCQ bank which was to be used for this evaluation exam. As the timing of the exams in the different faculties was different, each faculty received a different assortment of questions from the question bank.

Whenever universities could time the exams together, they received identical papers. However a section of students and staff felt that unless all universities use the same question paper there would still be a degree of bias.

It was important to ascertain the perception of the candidates, as they were the most affected by this change.

This study was thus designed to ascertain the perception of new graduates of the University of Kelaniya, Sri Lanka on the common MCQ as a tool of ranking.

Objectives

The common MCQ for ranking medical graduates at the final MBBS exam was accepted with mixed feelings. Some voiced concerns that a MCQ ranking was not appropriate in deciding the fate of their medical career. The objective of our study was to ascertain the perception of new graduates regarding the common MCQ as a tool of ranking.

Methods

A questionnaire was administered to recent graduates of the Faculty of Medicine, University of Kelaniya. The graduates were requested to voice their opinion on various aspects of the common MCQ, student opinions on the use of one paper for all of the faculties, the use of other components such as structured essay questions and clinical assessments and the proportion of marks that should be allocated for MCQs were analyzed.

Results

The majority of the recent graduates, 96/120 (80%) responded to the questionnaire. A significant number either disagreed or strongly disagreed (n=22; 22.9%) that a common MCQ examination was a suitable tool to determine the order of merit (Table 1). Seventy three (76%) either strongly agreed (n=37; 38.5%) or agreed (n=36; 37.5%) that the common MCQ should be replaced with a structured essay question (SEQ). Fifty six participants (58%) were of the opinion that 40% or less than 40% of the total assessment mark should be allocated for the common MCQ and the rest to be constituted by other forms of assessment such as SEQs and...
clinical components. Twenty one graduates (22%) thought that MCQs should carry 50% of the total assessment marks. The majority either strongly agreed (n=76; 79%) or agreed (n=12; 12.5%) that all faculties should receive the same question paper. They remarked this was the only rational way to alleviate bias from such a process of assessment. Over one half were of the opinion that a common MCQ alone was not a fair assessor, chiefly because of non uniformity of the “common MCQ” paper.

Discussion

MCQs have been used extensively in all kinds of examinations. It is a time tested method of assessment of knowledge in both undergraduate and postgraduate medical education (Jeffrey & John, 2001; Schuwirth et al., 1996).

Tabulating a common ranking order of merit of the newly qualified doctors has been a controversial issue for a significant period of time. The current practice is to use the marks of MCQs at the final MBBS exam to formulate the order of merit. The opinions of the medical students differ regarding the way they are being tested.

It is interesting to note that a significant proportion of participants felt that this was not the best form of assessment. They believed that other types of formal testing would result in a better chance to display their knowledge. In support of this argument it is understood that according to the assessment matrix MCQs test only recall and problem solving and hardly test the clinical attributes (Table 2).

MCQs sometimes have inherent flaws such as frequent lack of content validity, cueing effect of the options and encouragement of guessing. The low taxonomy level of the items would also have serious implications in examinations of clinical competence. However, it was argued that it is the best way to objectively test a student (Newbie & Elmslie, 1979; Bloom, 1956; Premadasa, 1993). This is mainly because there is no examiner bias in the assessment. Although students wish for incorporation of other methods like SEQs and clinical assessment, these methods may be flawed by examiner and institutional bias (Abdel-Hameed et al., 2005).

A common MCQ paper for all the faculties would be the best benchmark where no student could complain of discrimination. However, there will be many obstacles in bringing all universities under one fold of assessment.

It is worthwhile to ascertain if the students on their part would agree to wait if required, so that all can sit for an identical exam or whether all would want to beat the other to finish the MBBS race.

Table 1: Perception of new graduates on the role of MCQ as a ranking tool

<table>
<thead>
<tr>
<th>Perception of new graduates on the role of MCQ as a ranking tool</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCQ as a suitable tool</td>
<td>74</td>
<td>71%</td>
</tr>
<tr>
<td>MCQ , SEQ and Clinical</td>
<td>56</td>
<td>58%</td>
</tr>
<tr>
<td>Uniform MCQ for all the faculties</td>
<td>76</td>
<td>79%</td>
</tr>
</tbody>
</table>

Table 2: Assessment matrix for assessment of clinical streams

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Assessment technique</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Multiple choice questions</td>
</tr>
<tr>
<td>Recall of facts</td>
<td>+++</td>
</tr>
<tr>
<td>Problem solving</td>
<td>+</td>
</tr>
<tr>
<td>Communication skills</td>
<td>++</td>
</tr>
<tr>
<td>Manual skills</td>
<td>+</td>
</tr>
<tr>
<td>Ethics</td>
<td>+</td>
</tr>
</tbody>
</table>
Conclusion

It is now “agreed” that a common MCQ paper is the “best way” of objectively testing a medical student for the purpose of ranking in the order of merit in the current Sri Lankan context. While respecting the opinion of these graduates on their views on this crucial matter, it appears fair that their plea for all medical schools to be tested by a single exam be considered by an independent authority.

References


Unraveling the secrets of high performance to help low performers

K.M. Padmavathy¹, Sapna Patil¹, S.P. Pani²

Need for the study

Identifying predictors of performance in medical graduates is important to ensure a supportive learning environment in an institution. This study was conducted to identify the characteristics that contribute to the high and low achievement among first year medical undergraduates in AIMST University, Malaysia. Student mentors can help the low performers adopt the identified characteristics so that they can then be on par with other students.

Objectives

To generate evidence about factors in the institution and among students that already contribute to success among the high performers in order to apply them to students with low performance.

Methodology

After obtaining the ethical approval from the ethics committee of AIMST University, Malaysia, the performance data of 44 first year medical undergraduate students was collected. The top one third who were high performers and the bottom one third who were low performers were separately subjected to a focus group discussion (FGD) to have a better understanding of the factors contributing to their high or low performance. In addition to the FGD, all students were encouraged to write their views on the specific factors which may have influenced their performance. These specific factors such as self-perception of their performance, attitude, expected goals, learning styles etc were identified through literature review and from the faculty who were teaching them.

Results

Quantitative analysis using SPSS v.11.8 revealed significant differences (p<0.05) in preferred place of study, peer support and extracurricular activities between high and low performers. There was no statistical difference between the two groups for factors such as study style, contribution of lecturers, teaching style, attitude towards peers and lecturers, influence of peer achievement, time management, assessment and self esteem. The study styles which were assessed included preferred time of study, duration, scheduling, daily reading, favourable environment, individual or group study and frequency of revision.

The qualitative analysis revealed some of the modifiable internal and external factors which may influence or affect their concentration in the classroom and during examinations. Among high performers, the internal factors that influenced classroom concentration were interest in the subject or the concerned topic as well as their mood and self-interest. The internal factors which influenced them in their examinations were the extent of self-study, self-motivation and previous achievement in the examination. Among high performers, the external factors which hampered their classroom concentration were tiredness due lack of adequate sleep, hunger, emotions and distraction by peers. The external factors which affected their examination performance were stress and emotions, inadequate time to answer during examination, too much extracurricular...
activities at the time of examination, computer games and the internet.

Among low performers the internal factors which affected classroom concentration were their power of concentration and poor health condition. The internal factors which affected their examination performance were the level of understanding of the subject, inadequate revision, inadequate sleep, health status and irregular meal patterns. Among low performers, the external factors which affected their classroom concentration were noise made by their peers in the classroom, break time between the classes and adverse classroom set up such as dull projectors and uncomfortable chairs etc. The time and place of examination also affected their performance in the examination.

Certain factors which were found to commonly affect classroom concentration and performance in examination were the noise and cold temperature of the examination hall, family problems and peer problems.

This study thus identifies three factors (place of study, peer support and extra-curricular activities) that significantly influence student performance and so can be used by faculty mentors to counsel and motivate poor performers to improve their performance early in their medical student days. Many modifiable factors which influence or/and affect classroom concentration and performance at examinations were also identified. These can be used to create a positive learning environment in the institution by the academic leaders and administrators of the institution. This study also demonstrates that by identifying factors contributing to high performance, we can find solutions to help the low performers.

**Contribution by authors**

All three authors contributed to design and conduct of the study. The first author wrote the draft and analyzed the data, the second author analyzed the data and reviewed the draft while the third author provided guidance on study methods and critically revised the manuscript.

**Conflict of interest**

Authors declare no conflict of interest.

**Acknowledgement**

1. FAIMER Institute for refining the project idea, periodic feedback and extended advice by PSG-FAIMER Regional Institute faculty peers as well as senior fellows.

2. Dean, AIMST University for the support and guidance to conduct the study.
Medical students’ response to request for identifiers on a research questionnaire

R. Mahendran

We came across an interesting finding in a recent study amongst third year medical students at the National University of Singapore. The study which had ethical approval, was to determine medical students’ attitudes to psychiatry and mental illness. It involved completing 2 self-reported questionnaires, the ATP-30 (the Attitudes Toward Psychiatry – 30 items) and the AMI (Attitudes towards Mental Illness) at the start and at the end of a 4 week psychiatry posting.

Students were allowed to use their own identifiers if they did not wish to use their university matriculation numbers on the questionnaire. The identifiers were needed for the pre- and post- comparison analysis. The exercise turned out to be interesting and amusing given the wide selection of identifiers used. Forty-two percent chose not to use their matriculation numbers. Instead they used a wide variety of words, numbers and drawings as identifiers. These ranged from the identifiers such as ‘Britney Rocks’, ‘coffee drinker’, ‘Gladiator’ to a name followed by the phrase ‘This is not my name’. Prosaic ones such as ‘12345’ and ‘xyz’ surprisingly proved to be one of a kind identifiers. Equally in keeping with their medical studies, there was an identifier which had a drawing of the ‘pqrs’ interval of the ECG and another of a heart. Other interesting ones included small drawings of a crocodile, one of a fish with a fishing line dangling in front of it and another of a waxing and waning series of moons.

Every one of the 42 (of 100 respondents) had different identifiers which not only proved their ingenuity and uniqueness but raised the possibility that self-selected identifiers could work for selected study populations.

The major concerns in using students as research participants includes, among other issues, coercion and confidentiality from the standpoint of ethical standards and regulatory compliance (Tickle & Heatherton, 2006). Forester et al in a study on medical students perceptions of medical education research and their roles as participants found that 89% were not concerned with their confidentiality as study participants (Forester & McWhorter, 2005). Our incidental finding was otherwise – they were reluctant to use their matriculation number and could be inventive with regards to maintaining confidentiality.

References


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