Eyes
On
Learning
Hearts
On
Teaching

Edited by
Nur Azah Hamzaid
Fauza Ab Ghaffar
Published by
Academic Enhancement and Leadership Development Centre (ADEC)

Printed by
University of Malaya Press
University of Malaya
50603 Kuala Lumpur
Malaysia
Table of Contents

PREFACE AND ACKNOWLEDGEMENT .................................................................................. 5

INTRODUCTION .................................................................................................................. 6

Section 1: ......................................................................................................................... 7

LEARNING AND TEACHING ENHANCEMENT ............................................................. 7

Educating Socially Responsible Instructional Designers Using Authentic Service-Learning Approach
  Farrah Dina Yusop3 ............................................................................................................. 8

Enhancing Students’ Engagement during In-Class Learning through implementation of Team-Based
  Learning (TBL) ..................................................................................................................... 14
  Elsa Hanifah Mejia Mohamed2, Naguib Salleh1, Sim Si Mui1, Johari Mohd Ali3 ......................... 14

An Analysis of Learning Needs among Students Learning Burmese, Thai and Russian in University of
  Malaya .................................................................................................................................. 27
  Larisa Nikitina2, Ma Tin Cho Mar1, Raserun Chesol3 ............................................................... 27

Flipping the Learning: An Investigation into the Use of the Flipped Classroom Model in a Traditional
  Science Course .................................................................................................................... 34
  Boon Chin Tan1, Teen Lee Pua1 .......................................................................................... 34

Enhancing Lexicon and Higher Order Thinking Skills through Vocabulary Game
  Sharina Sharatol Ahmad Shah2, Azmawaty Mohamed Nor3, Afni Anida Adnan2 ....................... 42

Problem-based Learning (PBL) in Ethics Course Delivery for Science Undergraduates: Students’
  Achievement and Attitudes ............................................................................................... 51
  Mohd Salim Bin Mohamed1, Siti Nurani Mohd Noor2, Dharini Pathmanathan3 ...................... 51

Determining the Influence of Perceived Clinical Workplace Learning Environment on Learning
  Approaches of Undergraduate Medical Students .................................................................. 64
  Vinod Pallath1, Selvan Segaran1, Chan Choong Foong1, Joong Hiong Sim1, Wei Hen Hong1,  
  Jamuna Vadivelu1 ............................................................................................................. 64

Exploring Active Learning Approach to the Benefits of Quantity Surveying Students through Model-
  Building Activity ................................................................................................................ 74
  Norhanim Zakaria2, Uni Kalsum Zakefi @ Zulkifly1, Imron Arif Yahya1 ................................. 74

The IDEeA Project: Exploring Design Mindset and Toolset of Biomedical Engineering
  Undergraduates .................................................................................................................. 82
  Nur Azeh Hamzaid1, Wan Safwani Wan Kamarul Zaman1, Mas Sahidawaty Mohd Din3, Juliana 
  Usman1, Mohd Yazid Ahmad1 ........................................................................................... 82

Action Research, Feminist Pedagogy and Blended Learning: Towards a Holistic and Practical
  Approach ............................................................................................................................ 89
  Lai Suat Van1, Kuppumary Singaraveloo1, Junedah Sanusi3 .................................................. 89

Socioscientific Inquiry-Based Learning (SSI-BL) For Early Childhood Preservice Teachers .... 101
  Hidayah Mohd Fadzil1 ....................................................................................................... 101

Biomedical Science Programme: A preliminary study on the effectiveness of a self-directed model
  compared to traditional lecture-based teaching methods ..................................................... 109

Academic Enhancement and Leadership Development Centre (ADEC)
Foong Chan Choong*, Nurul Atira Khairul Anhar Holder¹, Nik Nadia Nik Nazri¹ ........................................... 237
The Application of Ta’lim, Tarbiyah and Ta’dib to Tackle Lackadaisicalness among Students ........................................... 245
Azizah Mainal¹* ........................................................................................................................................... 245
Peer Mentoring Pilot Program for Law Students: Addressing the Hidden Curriculum ................................. 254
Zalina Abdul Halin¹*, Simon Wood¹, Siti Zaharah Sulaiman¹ .............................................................................. 254
Lessons Learnt in Involving Students as Research Participants: The Pastoral Project ................................. 253
Siti Rohana Mohd Thani¹*, Kuang Ching Hef .......................................................................................... 263
A Discovery Journey on the Design of Online Learning Programs for Adult Learners ................................. 271
Huey Zher, Ng¹**, Sakina Sofia Baharom² ......................................................................................................... 271
Integration of Simulated Teaching and Learning Approach in Enhancing Building By Laws Approval Knowledge for Building Surveying Undergraduate Students .................................................. 282
Raha Sulaiman¹*, Nur Farhana Azmi², Suzaini Mohamed Zaid³ ................................................................. 282
CONCLUSION ........................................................................................................................................... 291

Academic Enhancement and Leadership Development Centre (ADEC)
Preface and Acknowledgement

Eyes on Learning, Hearts on Teaching is a product by academics in Malaysia who conducted research on improving and enhancing learning and teaching practices in their own classrooms.

We would like to thank everyone who helped and contributed in making UM-LiTteR project a great success.

Deputy of Vice-Chancellor (Research and Innovation), University of Malaya
Deputy of Vice-Chancellor (Academic and International), University of Malaya
Institute of Research Management & Services (IFPP), University of Malaya

Reviewer Panelists for UM-LiTteR Grant 2017
Assoc. Prof. Dr. Rosmi Din (Universiti Kebangsaan Malaysia)
Dr. Sutieleez Syrene Abdul Rahim (University of Malaya)
Dr. Zuwati Hasim (University of Malaya)
Dr. Leong Kwan Eu (University of Malaya)
Dr. Nurkhamimi Zainuddin (Universiti Sains Islam Malaysia)
Dr. Rafiza Abd. Razak (University of Malaya)
Assoc. Prof. Dr. Ainol Madziah Zubairi (Universiti Islam Antarabangsa Malaysia)

Speakers and Panelists
Prof. Dr. Nor Aziah Alias (Universiti Teknologi MARA)
Prof. Dr. Fauza Abd Ghaffar (University of Malaya)
Prof. Dr. Debra Sim Si Mui (University of Malaya)
Prof. Dato' Dr. Norazah Mohd Nordin (Universiti Kebangsaan Malaysia)
Mr. Adam Wong Abdullah (University of Malaya)
Mr. Zaid Ali Alsagoff (AQI Learning Innovation Consultancy)
Assoc. Prof. Dr. Wan Zuhairis Saad (Universiti Putra Malaysia)
Dr. Aini Marina Maarof (Universiti Putra Malaysia)
Dr. Fariza Khalid (Universiti Kebangsaan Malaysia)
Dr. Nurkhamimi Zainuddin (Universiti Sains Islam Malaysia)

Persatuan Alumni Universiti Malaya (PAUM)

All academics, staff members, and everyone in ADeC involved in LitteR-Conference 2018. Special thanks to Ummu Saadah for the planning and arrangement with all authors of this book. Min Chen for the constant repetitious effort of putting the chapters together – always with a smile. Dr Farrah for the inspiration and indwelling moral support. And last but not least Dr Amira for coining the beautiful title of this book when all idea seemed too dull and too long.
Biomedical Science Programme: A preliminary study on the effectiveness of a self-directed model compared to traditional lecture-based teaching methods

Rozaidi Poh Yuen Ying*, Suzita Mahid. Noor1, Limah Rani Kuppusamy1
1Department of Biomedical Science, Faculty of Medicine, University of Malaya
*Corresponding author: rozaiday@um.edu.my

Students’ Learning Style

We have observed in recent years that new students in the first year of the Biomedical Science Programme were rather passive, probably a result of years of ‘spoon-feeding’ education combined with external factors such as pushing by well-meaning parents and school rankings. These students were accepted into our Biomedical Science Programme based on their seemingly stellar performance on paper (i.e., a string of A’s, high CGPA), following examinations conducted by the respective preparatory institutions. However, results of the first test of the first semester into the program soon indicated that several students were probably experiencing problems, struggling with some of their courses. When they entered university, many of them would have experienced for the first time a different environment, in which they were expected to manage on their own time, while learning was still taking place largely in the traditional face-to-face lecture-based and guided learning mode. Meanwhile, it is universally acknowledged that there has been an explosion in information and knowledge globally. So what would be the coping mechanism to successfully manage all the information on the part of the students and the lecturers?

Aim of Our Study

Biomedical Science Programme has relied on traditional mode of teaching with students expected to meet an extravagant number of study hours per week, which weighed heavily on the average student and dampened their grades. Non-traditional approaches of learning for the current generation of millennials is preferred (Shappel & Ahn, 2016). Thus, the current pilot study aimed at investigating the effectiveness of self-directed learning on students’ performance compared to the traditional lecture-based approach.

Our Intervention

The current study focused on three first-year core courses namely Biochemistry for Biomedical Science (MIC 1001), Fundamental Cell Biology and Genetics (MIC 1002), and Laboratory Mathematics for Biomedical Science (MIC 1003) which were offered in semester 1, 2017/2018. We decided to target first-year students in order to emphasize the importance of self-directed learning right from the start of their university years.

First, the student learning time for these courses was revised to accommodate more hours for self-directed learning prior to the commencement of the upcoming semester. Consequently, more self-directed learning slots were included in the teaching timetable with corresponding reduction in face-to-face hours. The revision in student learning time underwent due process for approval at the faculty.
level. Next, at the beginning of the semester, students were briefed on the principles of self-directed learning. They were given topics to manage independently, they were repeatedly informed that they were expected to proactively identify the resources and implement their learning strategies. Each course engaged in a variety of methods to this end.

In particular, MIC 1001 engaged in group role-playing on biochemistry of diseases that the students selected themselves. They were also given assignments on various biochemistry topics that emphasized key concepts.

MIC 1002 had group presentations on cell structures and the students also worked in groups to create videos on genetic diseases of their own selection. Lesson activities on the SPeCTRUM platform were provided to guide their learning experience. The topics covered in this course are crucial to the students’ understanding of how living things develop and function, and how inheritance works, and so the students can relate to upcoming topics on pathologies and abnormalities. The fundamental nature of the course however, also means that the students would have learned some of the topics during their matriculation or for STPM. Capturing and retaining the Year 1 students’ attention by way of lectures was thus a significant challenge.

Stepping away from having the students passively receive knowledge was deemed a real necessity. By incorporating self-directed learning into the course, we ensured that students would actively revise the topics familiar to them while incorporating newly found knowledge. Students were given self-directed lesson activities on SPeCTRUM. Each activity included content pages of information with links to verified webpages for them to follow through on more reading. Every few pages, a question page was set for the student to immediately assess their level of knowledge. Final scores were provided at the end of the activity. A progress bar was inserted into the lesson activity so that students can pace themselves and know how much more there is to do. Although the lesson activities were meant to be undertaken during the self-directed learning time slots indicated in the course teaching schedule, the duration of each lesson activity was fairly flexible, and no deadline was enforced. However, some activities directly led to an assessment for which marks were taken into account for the student's continuous assessment. The intention was to provide the students with the learning material needed, as well as a way to self-monitor their understanding.

In the past, MIC 1003 was taught at a more relaxed pace, peppered by impromptu mini-tests in which any student could be called upon to attempt a simple question during the lecture itself. For the 0217/2018 cohort, the students were taught in a more brisk manner, with lectures being condensed. The students were then required to sit through self-paced lesson activities for the remaining lecture hours to reinforce their calculation skills in laboratory reagent preparations and principles in chemical pathology and haematology that involved calculation such as renal function and osmolality. The lesson activities included videos on key concepts of laboratory mathematics, interspersed with question pages for student self-assessment and confidence boosting. The students were allowed to attempt the questions repeatedly, without being penalized for failed attempts. The students should therefore consistently obtain full marks once they have mastered the topic, as evidenced by the grades obtained. The highest grade obtained during the lesson activities would be considered in the overall final grades, rather than a mean value of all attempts. In addition, they were very much encouraged to visit structured websites such as Khan Academy (https://www.khanacademy.org) to strengthen their grasp of laboratory mathematics.
The next step was to gauge whether course outcomes were grasped, via assessments which were performed by the respective lecturer, in addition to the continuous assessment tests and final examination. This was imperative so that all students, be they proactive or reactive in nature, were provided with timely feedback. Assignments were assessed and graded based on a well-defined rubric comprising a set of criteria tailored for each course. Two sets of rubrics were used in MIC 1002: the lecturer’s and student’s versions. An example of the lecturer’s rubrics that was used is shown in Figure 1. Both sets of rubrics were considered in the final summary of marks.

Finally, in order to quantitatively determine the effectiveness of the self-directed learning approach compared with the traditional lecture-based approach, the results of three main components of assessments, i.e. continuous assessment 1, continuous assessment 2 and final examination were compared between the 2016/2017 cohort comprising 43 students and the 2017/2018 cohort comprising 44 students by using independent samples t-test (IBM SPSS Statistics software v.20).

Outcomes of the Study

Overall, the 2017/2018 cohort scored higher marks compared to the 2016/2017 cohort (independent samples t-test, $p < 0.001$). At a cursory level, it could be said that implementation of self-directed learning in conjunction with lectures was more effective compared to the traditional approach of heavily relying on lectures (Table 1).

Upon further scrutiny, with the MIC 1001 course, the results indeed showed significant improvement in favour of self-directed learning for each of the three components ($p < 0.001$). The lecturer who conducted the course was the same for the two cohorts. She used questions which were similar in terms of level of difficulty. The difference between the two cohorts was that she piloted the 2017/2018 cohort with additional tasks, for example assignments on integration of metabolism, which required the students to actively study to complete those tasks. She then discussed the topic with the students and gave timely feedback. In this way, key concepts in biochemistry were better understood in ample time prior to the examinations, as manifested in the improved grades in the 2017/2018 cohort. In addition, with the emphasis on self-directed learning, it was observed that the students were successful in producing interesting and therefore engaging sketches during role-play to explain the biochemistry of diseases such as porphyria, compared to their immediate predecessors. They utilized several techniques within the single role-play presentation, such as video cameras and voice recorders interspersed with the usual physical acting. The flexibility and adaptability demonstrated by the students contrasted with the previous cohort, which used less creative techniques during their role-play presentation.