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Immersive Anatomy Learning Using My Smart Skeletal (MySS) Applications

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ABSTRACT

Musculoskeletal (MSK) problems are a leading source of pain and disability in our society. Those limitations had been used as indicators of ill health and disability. Basic knowledge of our own skeleton become a need for everyone. Immersive learning is one of the most significant recent breakthroughs in the information system (e-learning). The use of augmented reality (AR) technology in educational settings is now looking promising. This study aims to introduce, access the acceptance and usefulness of MySS applications in Medical Teaching at UPM. We built three mobile AR applications (apps) for the complete human skeletal system (MySS); Skeletal System Mobile AR (skull and thorax), Upperlimbify (upper limb) and AR-LEARN (spine and lower limb) not only for medical and health sciences students but also for school children. We added computed tomography (CT) scan images, videos and AR quizzes to help people better grasp the anatomy of the human skeleton. This e-learning technology, which can be assessed at any time and from any location, is thought to overcome challenges faced by medical and health sciences students during hybrid education. We randomly assigned 50 medical students to these apps and conducted a user acceptance test (UAT). We discovered that every single student strongly recommends the apps. The users enjoy interacting with the mobile applications to have a better understanding and help retain their knowledge of the human skeletal system. This AR approach is one of the promising tools to introduce anatomy knowledge of our body to the public and medical-related students.

Keywords: augmented reality, limb, anatomy, hand, leg, skull.

User Acceptance of 2D Embryology Animation: Early Embryogenesis Made Easy

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ABSTRACT

Medical students are struggling to grasp the concepts and processes involved in embryology teaching and learning since no practical demonstrations are established. Up to 3rd-week intrauterine life development for instance is among the most difficult topic to be understood. A fundamental multimedia approach, such as animation is hoped to assist human embryology learning in Universiti Putra Malaysia which has never been implemented in our country. The purpose of this study is to evaluate user acceptance of 2D embryology animation during the early embryogenesis period, which is taught until 3rd week of the development. Twenty medical students in their second year with allocated gender and races were exposed to the animation via an on-line session, and the user acceptance test was carried out immediately after the session. Five categories were assessed: usability, learnability, memorability, understanding and motivation in the application, using a 5-point Likert scale, 5 is strongly agree. Female and male respondents were 65% and 35%, respectively. Malays accounted for 40% and Chinese and Indians both were 30% of respondents. All categories show an average mean score of more than 4. The motivation in the application scored the highest which was 4.6 whereas the memorability of application demonstrated the least mean score, 4.1. The results indicate that animation is beneficial as supplement material for embryology teaching

and learning to improve medical students' academic performance. Through the production of this animation, traditional embryology teaching and learning are transformed into an interactive way.

Keywords: anatomy, animation, embryogenesis, embryology, medical students

The Effectiveness of Game Based Teaching-Learning Approach in Undergraduate MBBS Course in Comparison with the Conventional Teaching-Learning Approach

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ABSTRACT

For centuries, people have been using various methods of learning and teaching, In the context of medical education, education games are tools that engage students for both education purposes and entertainment. This study aimed to evaluate the effectiveness of game-based learning (GBL) for undergraduate Obstetrics and Gynaecology students in the form of a gamebook. A quasi-experimental study was carried out to compare the outcomes of two different teaching methods, conventional case-based learning CBL and GBL. The study participants were clinical years MBBS students from Taylor's University. The participants were divided into two groups - the control CBL group and the intervention GBL group. The effectiveness of the two teaching methods was measured as per the performance of students assigned to each study group, after intervention. Students' knowledge and understanding of the clinical subject content was assessed seven days after intervention via single best answer multiple-choice questions (MCQs). Students' perception was assessed using a 5-point Likert scale. 128 students participated in the study. Chi-squared tests were used to compare the mean academic performance of the two groups. There was no significant difference in the post intervention MCQ scores between the GBL and CBL groups. However, students in the GBL group found learning to be more enjoyable, felt more confident in managing patients both theoretically and in real-world situations. GBL is comparable to conventional CBL in achieving desired knowledge and understanding of the CBL topics. In addition, students reported a more positive perception towards game-based learning.

Keywords: gamification, innovative learning, students' perception, game-based learning

Mastering Hospital Diet in Dietetics Experiential Learning

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ABSTRACT

Hospital diet wastage is common with 60% of food being wasted due to various reasons such as inaccuracy/wrong diet, patients' illnesses and poor organization system during mealtime; which become a primary contributor to the increment of overall hospital cost. Mastering the hospital diet is one of the skills for Dietetics students. The limitation of the previous learning is there is limited early experiential learning on this to strengthen the knowledge of hospital diet. The objective of this innovation is to enhance the student learning experience on the hospital diet. This innovation involved three stages 1) food testing of the hospital diet, 2) sharing on social media and 3) showing the differences. This fun learning involved various new learning methods as follows learning through experience; self-directed learning; new skills on proper food weighing and food temperature checking for food safety purposes; first time meeting with dietitian to verify the process; use of social media in to empower peer learning and rapid feedback from lecturer; implementation of group reflective learning; and the production of a hospital diet manual e-portfolio as a final output. The student performance is assessed using an assessment rubric. This learning fosters the students' professional behaviour by experiencing the hospital diet themselves, the students can taste the hospital diet and visualize the proper portion and differences of each type of hospital diets and become more empathetic towards the patients. This cost-effective e-portfolio can be a lifelong reference when completing the program and working as a dietitian in the future.

Keywords: dietitian, hospital diet, plate waste, self-directed learning

Use of Peer-Assisted Learning (I-PAL) in Virtual Reality Clinic to Enhance Interprofessional Roles in Obesity Management

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ABSTRACT

Peer-assisted learning (PAL) is an approach which encourages learners to support each other in learning by taking on a teacher-like role. While PAL has been used as a teaching format, there is a lack of application in interprofessional teamwork, especially in managing obesity. Obesity is a complex disease that requires a multidisciplinary approach. Thus, introducing interprofessional education (IPE) for healthcare professional (HCP) students would help improve their understanding of each one's role. IPE is when students from two or more professions learn together at one place. This project combined the concept of IPE using PAL teaching approaches named I-PAL at the virtual clinic among HCP students in enhancing understanding of interprofessional teamwork for obesity management. We used the Interprofessional Socialization and Valuing Scale (ISVS), an 18-item to determine the beliefs, behaviors, and attitudes about IPE socialization. The project began with exploring each HCPs role by a group of Dietetics students who became a project mentor. Then, using the virtual Obesity Clinic at the Second Life™ platform, they invited 24 other peers from various Health Sciences programs, and 18 of them participated in the project. After I-PAL, the average scores of ISVS improved significantly, with 12 individual items markedly increased from before participating in I-PAL. The project suggests that I-PAL offers excellent potential for collaborative learning and transforms the landscape of in-silo education, especially in the context of obesity management.

Keywords: obesity, interprofessional education, peer assisted learning, virtual reality

Metacognitive Awareness and Its Relation to Students' Academic Achievement: Time to Ponder Its Implication in Curriculum Delivery

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ABSTRACT

Metacognition skills enable learners to understand and monitor their cognitive process. The objective was to create awareness and measure the metacognition skills and examine its impact on the students' achievement score in the clinical phase of the MBBS programme at our institution. Quantitative experimental (randomized control) cohort study was conducted involving years 3 and 4 of the MBBS programme. The metacognition interventional strategy for the study group comprising of flipped classroom of plenaries lecture and in-depth discussion for students to develop insight and to enhance their learning skills. Metacognition Awareness Inventory (MAI) was used and collected for knowledge of cognitive factor (KCF) and regulation of cognitive factor (RCF). Knowledge monitoring accuracy (KMA) as the difference between students estimated score (SES) versus actual knowledge on tests was also calculated. Pearson correlation coefficient was used for analyses. A negative correlation between MAI and EOSAW (-0.029) and MAI and EOSAC (-0.187), while high correlation between MAI and KCF = 0.808, MAI and RCF (0.920) were found (p<0.001). Correlation between KCF and RCF was moderately high (0.559, p <.001). A negative correlation was also found between KMAW and EOSAW (-0.392). Correlation of EOSA achievement score and KFC and RCF was also negative at -0.002 and -0.100 respectively. A mixed insignificant (p>0.05) correlation was noted among MAI, KMA and SES for individual instruments. And the trend continued to be negative for SES and all

the three individual instruments of OBA, EMQ, and OSCE = -0.165 (0.134), -0.242 (0.027), and -0.024 (9.831) respectively. A poor correlation of metacognitive skills and achievement score indicates students' unrealistic self-evaluation of cognition for knowledge and regulation. This suggests curriculum delivery to incorporate students' awareness about metacognition in their learning process.

Keywords: metacognition, correlation, students' estimated score, cognition, regulation

The BMedSc(Hons) Programme: Preparing Medical Graduates to be Evidence-Based and Research-Skilled Clinicians

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ABSTRACT

The BMedSc (Hons) programme at Monash University Malaysia is an accredited full-time two-semester Honours programme. This programme, initiated in 2012, empowers medical graduates with higher-level research skills and knowledge, which prepares evidence-based and research-skilled clinicians. To provide medical graduates with an opportunity to gain an in-depth understanding of a specific topic in medical science through research. To ensure successful completion of the programme, various strategies were applied- the design and delivery of the curriculum, timing of the intakes, assessments and feedback, multidisciplinary resources and learning support, monitoring of research progress, and programme evaluation. The programme is well structured with two units- Research Skills and Research Project units, which offer medical graduates the opportunity to develop their research skills and experiences in their discipline of interest. It has three intakes, providing flexibility in terms of enrolment. The programme includes value-added workshops on foundation skills, scientific writing, occupational safety, ethics, basic statistics, research methodology, library support, opportunities for good clinical practice workshops, and research conferences. The assessments are kept to a minimum, with a significant focus on the research project dissertation. To date, the programme has achieved successful completion of 74 graduates, with achievements including prizes at national/international conferences, peer-reviewed publications, and positive student feedback such as "…has shaped me to become a confident clinician with a significant emphasis on evidence-based medicine", "… helped improved my capacity for critical thinking". Overall, the BMedSc (Hons) programme provides research knowledge and skillsets that may potentially assist medical graduates in their future career advancements.

Keywords: BMedSc (Hons) program, undergraduate program, medical graduates, research

Variation of Preclinical Medical Students' Academic Performance: The Association with Gender, Ethnicity and Entry Qualification

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ABSTRACT

The Medical School of Universiti Putra Malaysia (UPM) accepts a variety of credentials as entry requirements, including Sijil Tinggi Persekolahan Malaysia (STPM), matriculation, and Asasi Sains Pertanian (ASPER). Our objective is to determine the relationship between the academic performance of preclinical medical students with socio-demographic factors of gender, ethnicity, and entry qualification. A retrospective cohort analysis was conducted using secondary data from the Deputy Dean's Office (Academic of Medicine). Information was gathered on three cohorts of preclinical medical students (n=308), which include gender, ethnicity, entry qualification, and the outcomes of the Professional Examination I and Packages 1 to 9. Their identities and enrolment year were concealed. Data were analysed using the chi-square or Fisher's exact test (significant if $p<0.05$)) IBM Statistical Package for the Social Science (SPSS) v26.0. The academic achievements of the preclinical medical students did not significantly differ based on gender. The Chinese ethnicity was significantly associated with strong academic performance whereas the Malay ethnicity was significantly associated with poor academic performance. Significant associations between STPM intake and good academic performance were observed for Cohort 1 in Package 1 (p=0.007); 2 (p<0.001); 5 (p=0.007); 6 (p=0.012); 7 (p=0.006); 8 (p=0.002) and for Cohort 2 in Package 1 (p=0.049), 6 (p=0.031) and 9 (p=0.049) but no significant association for Cohort 3. In conclusion, Chinese and Malay ethnicities are significantly associated with academic performance. Furthermore, STPM graduates perform academically better than those with other entry requirements in the Medical School of UPM.

Keywords: academic performance, preclinical medical students, entry qualification, socio-demographic factors

Interdependence of Emotional Intelligence on Sociodemographic Characteristics, Life Satisfaction and Academic Achievement Among Medical Students

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ABSTRACT

Emotional intelligence (EI) is a psychological hypothesis and characterized as a cognitive ability involving the processing of emotional information. It integrates emotions and reasoning by facilitating more effective thinking in perceiving, evaluating, and expressing emotions. Healthcare professions in this era become more demanding in EI skills and increasingly mandatory for coping with challenges for succeeding in the medical fields. The objective was to investigate the EI level and correlate with sociodemographic characteristics, satisfaction with life, academic achievement, and commitment to attend the class among medical students. This was a cross sectional study with a purposive sampling of 73 final year medical students from a private medical university. Schutte Self-Report Emotional Intelligence Test to determine EI level, satisfaction with life score, end posting results for academic achievement, and students' attendance for commitment to attend the class were used as instruments. Seventy-three final year medical students aged 24.7 years $\pm$ 1.3 (34 male, 39 female) were included. The mean EI score of the participants was 126.3 $\pm$ 9.2, indicating the average EI score. The participants with a habit of alcohol drinking had lower EI scores than non-drinkers (p=0.003). The participants with high stress level before examination had lower EI scores than those with optimal stress level (p= 0.026). There was no correlation between EI level and satisfaction with life score, and the academic achievement. High EI level is needed to withstand examinations stress and prevent alcohol addiction. EI training courses are mandatory for medical students.

Keywords: emotional intelligence, satisfaction with life, stress level, academic achievement

Flexible Learning Pathway in Health Education

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ABSTRACT

The ambition to have flexible learning pathways is about creating possibilities to improve the content and form of student learning process in the medical education. Flexibility enhances the resilience of medical education system, whether students are getting into, going through and getting out the more flexible the learning pathway the more likely is that systems will be able to adapt the change and new challenges. Medical education must adapt to different health care contexts, including digital systems and a digital generation of students in a hyper-connected world. Flexible learning pathways pose questions above the relationship between medical education and students. Innovative development taking place like blended learning, combing face to face, online learning, cross-disciplinary learning, work-based learning. Medical education transformation has successfully incorporated digital learning into its curriculum with virtual courses, simulation software and teleconferencing. The survey was conducted on the basis of questionnaire about the digital learning and infrastructure among the 50 medical undergraduate students. Questionnaire are based on (i) Efficiency of digital and blended learning, (ii) Practical learning on digital platform, (iii) Digital technology providing flexibility, (iv) Interactive digital learning resources. Majority of students, falls on the category on the blending as off in lecture classes with digital innovation. Based on results, the practical/work-based learning should be in face-to-face interaction to improve their skills. This study highlights blended learning is more efficient as of concern with medical education, digital technologies provided flexibility in learning, and digital infrastructure should be facilitated in view of flexibility learning in medical education.

Keyword: learning approaches, digital learning, technology-based learning

Acquisition of Psychomotor Skills in Dentistry and Structured Mentoring – A Qualitative Study

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ABSTRACT

Manual dexterity is an acquired skill which can be improved upon to a certain degree based on exposure to different experiences in an individual's lifetime, through guided instruction, through knowledge acquisition, and through repeated skill practice. The purpose of this research was to explore the experiences of the participating dental undergraduate students and peer mentors (More Knowledgeable Others) subjected to psychomotor skill assessment and structured mentoring, respectively, through qualitative think-aloud interviews. A semi-structured in-depth interview was conducted among 14 beginner (Year 1) dental students and 3 peer mentors (Year 4 dental students). Interview guides were used, consisting of open-ended questions that covered 2 domains: (i) experiences, (ii) barriers. All interviews were audio recorded and transcribed verbatim. Data was analyzed following the six-phase guide of thematic analysis by Braun and Clarke. Five themes were generated from thematic analysis: two of the themes were pertaining to the students' experience, and three of the themes were related to peer mentors' experience. Students who participated in the research gave mixed responses towards exposure to new knowledge and skills and commented on how mentoring guidance influenced them in the acquisition of new skills. In addition, the mentors highlighted the role of sequential phases of mentoring process when advocating personalized scaffolding in mentee's skill acquisition, and expressed their mixed experiences with extended two sub themes comprising 'Beneficial Experiences of Mentoring' and 'Challenges in Mentoring'. Structured mentoring in specific skill acquisition in dentistry has a significant impact on students' journey of skill acquisition and knowledge gaining.

Keywords: dental education, manual dexterity, dental skill acquisition, peer mentoring

Community Engagement Program Involving Individuals with Special Needs – Reflections of Dental Students on Their Learning Experiences

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ABSTRACT

Community-based engagement program is one of the learning opportunities to provide experiential learning for healthcare students. This study explored students' perceptions of their experiences participating in a community-based engagement program involving individuals with special needs (IWSN). All final-year dental students (n=84) participated in a group project where they were assigned to design, develop, and implement an oral health program for a given group of IWSNs in a particular institution. Seven institutions for IWSN were identified, each catering to different age groups (3 children, two adolescents, and two geriatric). Students were supervised by Paediatric and Special Care Dentistry specialists and registrars throughout the planning and development processes. Each group then visits the institution to implement the program by organizing activities involving IWSNs and their caregivers. Students were then asked to write a reflective report on their learning experiences. Qualitative data was analysed via thematic analysis. Students found the programme as "eye opener" to the daily struggles' patients (with or without disabilities) face, which should be considered while creating a treatment plan and providing care. Students learned about disability care and felt more responsible for society. Students reported learning communication, behavioural guidance skills in addition to leadership, organisation, teamwork, and professionalism. Some pupils advised starting such exposure in Year 1 so they can gradually learn and improve. Experiential learning through a community engagement program involving IWSN is beneficial in many aspects of student learning and should be implemented as a formal teaching component in the undergraduate curriculum.

Keywords: community engagement, experiential learning, dental students, special care dentistry

Translating the Instructional Designs into Clinical Teaching for Patient Education: A Lesson Learned

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ABSTRACT

The evidence on the efficacy of patient education is inconclusive, with some studies showing no significance for improving patients' understanding, adherence, and compliance with interventions. Nevertheless, patient education is frequently emphasized by experts and included in clinical guidelines as a standard practice. One reason is the lack of instructional design available to guide an efficient patient education practice. Literature shows that teaching healthcare students using structured instructional designs is effective for clinical and skill training. This article aims to transfer the relevant instructional designs for clinical and practical teaching techniques for healthcare students to be used in patient education. Several instructional designs, such as Halsted's SODOTO (See One, Do One, Teach One), Peyton's 4-Step of Skill Acquisition, and Gagne's Nine Steps of Instructional Design, were taught to nursing undergraduate, and postgraduate public health students. The students needed to plan a brief patient education activity and demonstrate its application in a simulated situation. Each nursing student performed the patient education simulation satisfactorily using the instructional designs between 8 and 10 minutes. In a crossover group activity, the postgraduate public health students constructed a comprehensive public health activity plan within a one-hour class activity. Structured instructional designs for clinical teaching are adaptable to patient education activities. Previously, patient education was segmented, incomplete, and focused only on educational material. The instructional designs offer comprehensive and holistic patient education activity planning, whether for a single patient or a large group, and for brief or extended education activities.

Keyword: client-centered, clinical teaching, instructional design, patient education, simulation

The Development of the Clinical Experiential Learning Assessment Tool for Clinical Placements

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ABSTRACT

Clinical placements serve as workplace-based experiences which is essential for medical students to develop their skills to become a competent doctor. Therefore, students need to identify their own strengths and weaknesses during clinical placements for self-reflection and improvement. This study aims to develop an inventory that evaluates student's experiential learning in clinical placement based on the Kolb experiential learning theory. A scoping review (SR) and focused group discussion (FGD) were applied for the development Undergraduate Clinical Experience Self-Assessment (UCESA) Inventory. Initial pool of 1518 sources was assessed for duplication, and study eligibility was evaluated using inclusion and exclusion criteria. SR data were extracted from 20 original articles for thematic analysis. Online FGD was conducted among final year medical students and were analysed thematically. Nine domains for UCESA which consists of 117 items were derived; (1) Authentic work- process experience, (2) Gaining insights from patient conditions, (3) Contextual feedback, (4) Conceptualised professional attributes, (5) Ideate future career, (6) Enhance self-regulation, (7) Practice communicative approach, (8) Practice collaborative learning and (9) Acquire clinical skills. The UCESA can serve as an experiential learning self-assessment tool which encompasses all four phases in the Kolb experiential learning cycle. It can be used by clinical students to identify their strengths and weaknesses through effective self-reflection. Future research should explore the validity and its effectiveness on students personal and professional development in clinical placements.

Keywords: self-assessment,   experiential   learning,   workplace-based,   clinical placement, medical student

IHLearn-CT: Interactive Hybrid Learning in Clinical Teaching

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ABSTRACT

Interactive Hybrid Learning in Clinical Teaching (IHLearn-CT) involves both face-to-face and non-face-to-face learning. The interactive online elements utilize the Moodle eLearn@USM platform and interactive online application. This method of teaching in Medical Posting (GNT 302) course for a third-year undergraduate dental students in Universiti Sains Malaysia was introduced due to the impact of COVID-19 pandemic. The objectives are to ensure the students can learn about various medical, surgical, and emergency diseases; enhance understanding of the clinical presentation of diseases, plan of investigation, and treatment; and to expose them to various types of practical skills. The activities include online lectures, seminars, case presentations, clinical teaching, and procedures observation. IHLearn-CT transforming some parts of teaching round, clinical teaching, and ward activities into online learning. The bedside clinical teaching, case presentation, and ward round were conducted as a hybrid, either online or face to face. We modified the case scenario to suit the objectives of each learning objective of the case. The contents are created in the Genially, a tool used to teach and learn through interactive learning materials. The interactive elements were then embedded in the Moodle eLearn@USM platform. Their knowledges and skills are assessed through continuous assessment (case report, case presentation, and test) and final exam posting. IHLearn-CT gave a good impact in improving the knowledge compared to skill. Feedback from students also favourable. Medical and dentistry teaching requires exposure and experience in seeing various type of diseases to gain knowledge of the disease; however, some of the diseases are not encountered during the students' attachment period. Having IHLearn-CT also can supplement the discussion of unencountered diseases during the attachment by designing specific virtual learning to highlight those diseases.

Keywords: online learning, interactive, hybrid teaching, clinical teaching, medical, dentistry

Perception of and Behavioural Intentions of Medical Students Towards Learning Artificial Intelligence (AI): A Cross-Sectional Study in Medical Faculty in Sabah

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ABSTRACT

Artificial intelligence (AI) is playing an important role in healthcare and has immense potential to shape the future of medicine. However, there is scanty research among future doctors in this regard. The aim of this study was to determine medical students' behavioural intentions toward learning AI. An online cross-sectional study was conducted among medical students in Universiti Malaysia Sabah, Sabah from Nov to Dec 2022. The questionnaire had items about the socio- demographic and 23 items five point Likerts scale questions which measured the six constructs of perception of and behavioural intentions namely, (1) personal relevance (PR) of medical AI, (2) subjective norm (SN) related to learning medical AI, (3) perceived self-efficacy (PSE) of learning medical AI, (4) basic knowledge (BKn) of medical AI, (5) behavioural intention (BI) toward learning medical AI and (6) actual learning (AL) of medical AI. Pearson correlation was applied to analyse the correlation between each construct. Of the total of 232 medical students participated in his study, 70.3% (n=163) were females and 52.2% (n=121) were in clinical years. Five constructs except PR showed significant strong positive correlation with other constructs, specifically (a) SN with SE (r=0.66), BKn (r=0.61) and AI (r=0.66); (b) SE with BKn (r=0.78), BI (r=0.69), AI (r=0.63); and (c) BK with BI (r=0.73), AI (r=0.63). The result of this study highlights the perception of and behavioural intentions in learning AI among UMS medical students. This suggests the need of developing AI-based competency curricula when reforming medical education.

Keywords: artificial intelligent (AI), correlation, behavioural intention, medical students

Blending Technology in Dissection Classroom in the Undergraduate Medical Education

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ABSTRACT

Fundamental knowledge of human anatomy is an essential part of medicine to understand the disease process, perform physical examinations, describe radiological investigations, and operate in surgical procedures. However, with a variety of tools and techniques employed to teach anatomy, there is uncertainty on delivering in teaching to achieve better learning. Different literature clearly stated the benefit of the use of blended learning environments using 2D and 3D images, videos of the anatomy along with the didactic class. This study was conducted to evaluate the impact of the use of the 3D platform in anatomy dissection class. A study was conducted on 122 MBBS and BDS students at Manipal University College Malaysia. Each dissection class of 30 students was conducted using 3D anatomy platformed Anatomage Table and Complete anatomy along with the structural identification from cadaveric in sequential steps. After each class, the learning of students has been tested by electronically provided digital quiz. The total score was 25 and it was compared with the scores of previous non-technology-assisted dissection class. In the dissection class without the use of the 3D anatomy platform: 47%, 29%, and 21%, of students scored 10, 15, and 5 respectively. In the dissection class using the 3D anatomy platform: 52% 30%, and 10% of students got 20, 25, and 15 respectively. The use of the 3D anatomy platform along with the cadaveric dissection offers effective learning.

Keywords: 3D, anatomy platform, blended learning, anatomy dissection.

Integration of Clinical Scenarios of Anemias Using Free Access Online Learning Resources

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ABSTRACT

Medical schools across the world aim to achieve integration of subject contents to enhance the understanding and learning among students. This study aims to promote integration of knowledge acquired through lectures in preclinical subjects among first year medical students (MBBS) by using free access online educational resources in a digital class room. The study was designed to integrate the knowledge on anemia attained through Physiology and Biochemistry lectures, to give a broader perspective for medical undergraduates. Ninety-five students of MBBS year 1 at Melaka Manipal Medical College were enrolled for this study. Students attended didactic lectures on anemia under 'Blood system'. Following this, students viewed freely available YouTube videos that were trimmed to suit their learning objectives with case studies on the types, causes and laboratory investigations of anemia. Students accessed the videos in their individual desktops in digital lab in the presence of subject tutors and answered an MCQ based post activity test. Feedback was obtained regarding their perception about its effectiveness on a 5-point Likert scale. Students enjoyed this learning session with 83% gave opinion that it promoted integration of preclinical subjects & 76% felt that it provided good summary on various aspects of anemia. Majority of students scored between 50 to 74% in the post activity test with 6% attaining distinction grade. The effectiveness of free online learning resources to reinforce integration of clinical topics delivered in lectures has a strong potential to lay a good foundation of preclinical studies for MBBS undergraduates.

Keywords: integration, medical students, free online videos, digital classroom

The Association Between Medical Graduates' Clinical Experience and Readiness to Work Among UPM Medical Graduates (2021 & 2022)

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ABSTRACT

Readiness to work plays an important role in medical graduates' preparation to become good house officers. As an institution that trains medical students, factors increasing work- readiness should be investigated. To determine the association between UPM medical graduates' clinical experience with readiness to work. This was part of the "Medical Graduates' Level of Readiness to Work, and its Associated Factors: A Cross-sectional Study" done among all UPM medical graduates from 2021 till 2022 (universal sampling). The Confidence and Readiness to Work as a HO Questionnaire was used. Level of readiness was in Likert scale of 1 to 5, while clinical experience was categorical answers according to the number of times they were done, observed, or assisted during the undergraduate years; which were "none", 1-5 times, 5-10 times, 10-20 times, and more than 20 times. Most procedures were done, assisted, or observed between "1 to 5 times". The highest percentage of 76.10% was "Scrubbing up and basic aseptic techniques" done "1 to 5 times". We report 72.30% had never inserted a nasogastric tube. Procedures performed having significant association with readiness to work were; (i) interpreting ECG (p=0.006), (ii) inserting urinary catheters (p=0.030), (iii) scrubbing up and basic aseptic techniques (p=0.019), (iv) glucometer in neonates (p=0.036), and (v) nebulisation in paediatrics (p=0.023). The greater number of procedures done were significantly associated with readiness to work as a HO. These were interpreting

ECG, inserting urinary catheters, scrubbing up and basic aseptic techniques, glucometer in neonates and nebulisation in paediatrics.

Keywords: house officer, work readiness, medical graduates, medical education

Important Elements in Training Doctor-Patient Communication for Medical Students

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ABSTRACT

Communication is one of the most crucial skills in the healthcare system. Majority of Malaysian medical schools have emphasised the value of teaching both verbal and non-verbal communication skills such as greeting, eye contact, handshakes, and an approachable posture. The only way to ensure that doctors can communicate effectively with their patients is to include this training in medical curricula. This study explores critical components in doctor-patient communication training for medical students. Fifteen doctors and 17 medical students from the Universiti Putra Malaysia Teaching Hospital (HPUPM) and Faculty of Medicine and Health Sciences (FMHS), UPM enrolled in the focus group discussions (FGDs), whereas five patients and six relatives from government and private hospitals or clinics took part in the in-depth interviews (IDIs). A protocol was developed based on the literatures. FGDs and IDIs were audio-recorded, transcribed verbatim and the thematic analysis was generated using Atlas.ti software. Patients and relatives highlighted the importance of doctors smile and showing empathy to patients in order to build a harmonious relationship and avoid them from neglecting required treatments. Additionally, they suggested that doctors could address elderly patients informally as "aunty" and "uncle", while addressing younger patients professionally as "Miss" and "Mr." This would help patients have more trust in their doctors. Medical schools must emphasise empathy in doctor-patient communication in training medical students because it is currently challenging for doctors to be empathetic. Students should practise smiling at their patients as well as addressing them appropriately as required.

Keywords: medical students, essential components of communication, communication skills, medical curriculum, doctor-patient relationship

Essential Domains and Needs for Implementing Entrustable Professional Activities in Undergraduate Medical Program: A Systematic Review

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ABSTRACT

Entrustable Professional Activities (EPA) showed beneficiaries for implementing Outcome/Competency-based curriculum in post-graduate medical education. However, there was no guidance for implementing it in the undergraduate. This study aimed to identify essential domains and needs for implementing EPA in undergraduate medical education. This systematic review employed three databases (WoS, Scopus, and EBSCOhost) in November 2022. Publications between 2005 and 2022 were included if those reported a focus on EPA implementation in undergraduate medical education and were written in English. After duplication removal, 595 articles were screened by three reviewers from the titles, abstracts, and keywords. Exclusions were made for reviews, unable to access, only focused on the impact of EPA, and not focused on the implementation findings. There were 28 articles extracted based on the full articles and eligible for analysis. Four essential domains for EPA implementation, namely EPA development (n=6;28%), EPA application (n=23;82%), entrustment (n=5;18%), and change management (n=6;28%) were identified. The needs for EPA development were reference frameworks, panels, and methods for defining EPA. Students' and teachers' characteristics, feedback provision, curriculum characteristics, facilities and environment, teaching-learning method, and assessment are crucial needs for EPA application. Entrustment decision entails raters' cognition, competencies committee, and awarding process. Change management needs leadership and commitment, a task force, resources, supportive stakeholders, and a faculty development program. In conclusion, the essential domains and needs above should be evaluated to prepare EPA implementation. A structural groundwork for the result can direct the strategy to obtain smooth change and optimum implementation.

Keywords: entrustable professional activities, entrustment, undergraduate medical education, needs, implementation

Nursing Informatics Competency Among Nurses in Teaching Hospital, Malaysia

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ABSTRACT

Nursing informatics (NI) merges nursing science with information and analytical sciences to identify, describe, manage, and disseminate nursing data, information, knowledge, and wisdom. Identifying nurses' informatics competency will help improve Information technology (IT) utilisation in clinical practice. The aim of this study was to assess basic competency in nursing informatics and related factors influencing nurses in working in university teaching hospital. A cross-sectional study was conducted. A stratified random sampling was carried out and sample size of 316 nurses participated in this study. The data was collected using a self-reported questionnaire utilizing the Nursing Informatics Competency Assessment Tool (NICAT) reaching the targeted sample. The results of this study showed that 85% (269) nurses were competent in NI competency. There was a relationship between basic nursing informatics competency and significantly with sociodemographic of age (t=4.194, p =0.000), gender (t= -2.558, p =0.011) and educational level (F (2,313) = 5.094, p = 0.007) and working discipline (F (6,309) = 8.309, p = 0.000). There was also relationship between basic nursing informatics competency and significantly with related factors for working experience with (r = –0.231, n = 316, p = 0.000). Overall, the findings indicate the need for improvement in nursing informatics by exposure or awareness for potential age group and particular clinical setting for training and educational of NI.

Keywords: nursing informatics competency, computer literacy, informatics competency, informatics skills, nurses

The Validity of Multiple-True-False and One-Best-Answer in the Final Professional Undergraduate Examination

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ABSTRACT

Multiple-True-False (MTF) and One-Best-Answer (OBA) are highly used to access cognitive components in the higher education profession whereas MTF and OBA are frequently used to evaluate factual knowledge. However, a well-written OBA question can promote problem-solving and require students to apply their knowledge to clinical case scenarios. This study aims to evaluate the convergent and predictive validity of MTF and OBA in relation to other assessment components of final-year medical undergraduates. This cross-sectional study design is based on the archival records of 143 students sitting for the 2022 final professional undergraduate medical examination. Data were analyzed in SPSS version 24.0. Pearson's correlation test was used to determine the convergent validity of MTF and OBA. The linear regression test was used to evaluate the predictive validity of MTF and OBA. Pearson's correlation test showed a moderate correlation coefficient level (r=0.25 to 0.6) of convergent validity of MTF and OBA towards other assessment methods. OBA (β=0.40, ρ<0.01) predicted better in another theory assessment (key features questions, KFQ) than the MTF (β=0.26, ρ<0.01). In contrast, the MTF (β=0.43, ρ<0.01) was one of the impactful examination tools that predicted the clinical components (manned OSCE, unmanned OSCE, and modified long case) compared to OBA (β=0.28, ρ<0.01). The result is coherent with the literature that OBA can determine knows how level compares to MTF. However, a quality improvement exercise has to be conducted that focuses on the assessment process of each assessment method, including the assessment blueprint, question structure, examiner calibration, and question vetting.

Keywords: multiple-true-false, one-best-answer, assessment, validity, Malaysia.

Tuning Methodology: The Development of Wound Medicine Competency Taxonomy

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ABSTRACT

Despite the paucity of research addressing the significance of wound care teaching and education for medical undergraduates, no studies have been conducted to develop a proper competency profile for wound medicine across all disciplines. The majority of wound care research has focused on specific medical disciplines, and this segregation complicates the outcome skills needed in the workplace. To develop a taxonomy of wound medicine competencies for medical undergraduates using Tuning Methodology. The Tuning Methodology entails eight essential steps to establish learning outcomes and competencies in the degree profile. This study translated the Tuning parent model into six phases to adapt its parent skeleton, namely consulting, profiling, designing, implementing, evaluating, and enhancing. The wound medicine competency taxonomy has emerged as a result of qualitative strategy involving scoping review, focus group discussion, and global document analysis. These studies conducted thematic analysis using Atlas.ti. Five up-funneling levels of wound medicine competency taxonomy domain were determined based on three attributes (knowledge, practical, and attitudinal). The first level describes wound healing fundamentals, followed by wound semiology, wound management, wound prevention, and aesthetic contribution. Each domain contains sub-domain-specific topics and is transferable into learning outcomes. This study described a new competency taxonomy of wound healing educational objectives created to meet current demand based on a description of knowledge, skill, and attitude-related characteristics. This taxonomy will be applied to the analysis and design of wound healing curricula, which will contribute to the implications for learning experiences and evaluation of wound medicine for future physicians.

Keywords: curriculum, wound healing, medical undergraduates, competency, tuning methodology

Are We There Yet? Using Modified e-Delphi for Achieving Consensus for Components of Online Learning Environments in Medical Education

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ABSTRACT

An online learning environment is considered as a milieu for students to learn and interact with faculty, staff, and peers which covers physical, social, and psychological contexts. It is imperative to identify the components of online learning environments to evaluate learning experience of students learning in virtual settings. The objective of this modified e-Delphi study was to achieve consensus on components of online learning environments in medical education. This modified e-Delphi study was conducted from May 2022 to November 2022. Fifteen purposively sampled experts with extensive experience in online medical education participated in modified e-Delphi study via google forms. Results of first e-Delphi were shared with all participants as a part of exploratory phase followed by consensus phase in the second round. After two rounds, experts developed a consensus on nine main components determining online learning environments in medical education. These included cognitive enhancement, content curation, cybergogical practices, learner characteristics, digital capability, platform usability, facilitation dynamics, social representation, and institutional support. Out of these, learner characteristics and digital capability were ranked the top two components for online learning environments. The list of components provides a framework for evaluating the online learning environments in undergraduate medical education and their ranking enables the educators/instructional designers to prioritize them in evaluation of learning environments.

Keywords: online learning environments, learning atmosphere, medical education, undergraduate

Development of MOOC Module on Risk Communication in Global Health Emergencies for Nurses

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ABSTRACT

Effective risk communication is needed to convey information and promote public risk perception in any emergency response. Although communication skills are a core competency skill of nurses, they only learn during their study time, and they often lack risk communication skills, especially in global health emergencies. MOOC-based modules can improve critical thinking, problem-solving, and interpersonal skills. However, research has shown that the MOOC module on risk communication has not been developed for nurses in recent years. This study aimed to develop a module on risk communication in global health emergencies based on the (MOOC) framework. A MOOC module was designed and developed adapting S. Thiagarajan and Semmel's (1974) 4D model. However, the researcher modifies the process into three stages: define, design, and develop due to time and financial constraints. A MOOC module was designed, developed and evaluated for validity using expert analysis. Six subject matter experts evaluated this module using evaluation checklists and then the scores were analyzed using two methods: the percentage calculation method (PCM) and content validity index (CVI). The PCM scores for module content and xMOOC course design were 85.4% and 95.83%, respectively, and the content validity index (CVI) for module content was 0.95 and for xMOOC course design was 0.92. Both types of content validity tests showed that this MOOC module had excellent content validity and could be used in future nursing educational programs to improve risk communication knowledge and skills. As a result, this MOOC module has made the continuing nursing education program more attractive and meaningful.

Keywords: MOOC module, risk communication, global health emergencies, nurses

'My Anatomy Class (MAC)' of Gather.Town in Faculty of Medicine, Universiti Sultan Zainal Abidin

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ABSTRACT

Knowledge of human anatomy is required in the practise of medicine. Traditionally, lectures and dissection-based practical sessions have been used to teach anatomy. Nevertheless, the growing number of medical students and resource constraints, such as the scarcity of cadavers and COVID-19 pandemic have prompted many medical schools to look for new and creative teaching methods. New apps for virtual meetings keep emerging, one of which being Gather.Town, a virtual meeting platform with a video game-like aesthetic. We evaluate the practicality and feasibility of using My Anatomy Class in Gather.Town as a virtual practical teaching in Faculty of Medicine, Universiti Sultan Zainal Abidin. We invented My Anatomy Class (MAC) in Gather.Town, an online anatomy practical platform that offer proximity chat meeting platform. The space in MAC is laid out similarly to school environment with a teacher's desk, 6 cubicles with whiteboards, and 24 students' desk. We exposed MAC to 20 medical students and evaluation was done using User Acceptance Test. Due to the classroom environment's emphasis on peer interaction, easily accessible and practicable with feeling of engagement, students really preferred MAC in Gather.Town. My Anatomy Class (MAC) is a new approach of having virtual anatomy practical class using Gather.Town, a virtual proximity-based video-meeting platform that provide special opportunity to interact with teachers and peers at their own pace in order to customise the learning experience and build these connections in a distance e-learning setting.

Keywords: Gather.Town, anatomy education, game platform, virtual classroom

Developing a Multimodality Interpersonal Skills Module for Medical Personnel

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ABSTRACT

Soft skills such as interpersonal or communication skills improves a medical personnel's effectiveness and performance in work. The ability to effectively communicate with patients, their family members, and medical colleagues is a fundamental skill in being an outstanding medical professional in any medical practice setting. Research among newly recruited medical interns showed that preparedness for practice in the interpersonal skills is one of the significant factors affecting satisfactory work performance during the internship. As there is a lack of proper module on interpersonal skills in medical personnel, especially with a creative way in teaching and learning, our objective was to develop a practical module for interpersonal skills; 'I-Persona', presented in an interesting way for teaching and learning interpersonal skills via a multimodality e-book. Based on important interpersonal skills for medical personnel, common interpersonal and communication conundrums are described in the form of e-book, followed by description and demonstration to handle the situations and the theories behind the responses. The usefulness and practicality are enhanced by the videos and podcasts embedded in the e-book. The user simply scans the QR code, or clicks the links, to access the videos and podcasts. The module was tested in a pilot study in medical students and interns, resulting in a significant increase in overall score of preparedness of practice in interpersonal skills, and a significant difference in scores in a communication skills test, pre- and post-exposure to the module. 'I-Persona' is an effective and practical multimodality module to increase interpersonal skills in medical personnel.

Keywords: interpersonal skills; module; medical interns; medical personnel

Can We Predict Which Medical Housemen Will Fail A Clinical Posting Later During Training?

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ABSTRACT

Policymakers, clinicians, and educators are facing serious challenges to address the issue of housemen who fail a clinical posting during training. This study aims to predict early on which housemen will fail a clinical posting later during training. This prospective study surveyed 496 newly enrolled medical housemen from 26 hospitals in Malaysia in January 2020 to retrieve sociodemographic profiles and validated measures of preparedness, resilience, coping styles, emotional intelligence, and religiosity. We followed them up after one year to determine who had failed a clinical posting. The supervised machine learning linear discriminant analysis (LDA) was applied. A total of 33 (6.7%) housemen had failed a clinical posting after one year of practice. Place of study, place of training, practicing avoidant coping style, good information technology skills, poor interpersonal skills, being married, and commencing housemanship earlier after graduation emerged as significant predictors. Prediction on the training dataset, cross-validation, and validation dataset achieved sensitivity of 100.0%, 92.0%, and 75.0%, the specificity of 85.7%, 82.9%, and 81.0%, with overall accuracy of 86.7%, 87.4%, and 80.7%, respectively. The area under the curve (AUC) was 0.969, indicating an excellent prediction model. Housemen failing a clinical posting can be significantly predicted by where they do an internship and where they graduated from, signifying mandates on stronger policy commitments for quality assurance and quality improvements. Additionally, improving interpersonal skills, addressing avoidant coping style, and future studies to investigate the interconnections among significant predictors may prove valuable for housemen's clinical performance.

Keywords: competency, clinical performance, linear discriminant analysis, machine learning, medical intern

Evaluation of "Program Penempatan Wajib" for Assistant Medical Officers of the Ministry of Health Malaysia Using "The New World Kirkpatrick Model"

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ABSTRACT

Program Penempatan Wajib (PPW) is a compulsory program for all newly appointed Assistant Medical Officers (PPP) in the Ministry of Health Malaysia. Since its implementation in 2008, a comprehensive evaluation of the program has not been conducted. The objective was to evaluate the implementation of the PPW program using The New World Kirkpatrick Model. A quantitative non-experimental study using a questionnaire adapted from Alsalamah et al. 2021. A total of 365 PPW alumni participated in this study. A pilot correlation study was conducted in which the Cronbach Alpha reliability values obtained were 0.953. The online questionnaire was distributed. Statistical descriptive methods were used. There was a total of 365 respondents. The findings showed that PPP is satisfied with the implementation of this PPW training program with a high mean score (M) for each aspect which are a reaction to the Local Preceptor (M=4.19), reaction to the training content (M=4.33), learning experience (M=4.44) and behavior change (M=4.35). This PPW program needs to be continued in the future to produce newly appointed PPPs who are knowledgeable and clinically skilled. In addition, the findings of this study can help the Assistant Medical Officer Services Branch (CPPPP) improve the PPW training program to produce successful and caliber Assistant Medical Officers.

Keywords: effectiveness of training program, evaluation, Kirkpatrick model, reaction, learning, behavior

Pharmacotherapy to Clinical Therapeutics: Preparation for Clinical Clerkship

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ABSTRACT

Pharmacy students in RCMP learned Pharmacotherapy (PT) and Clinical Therapeutics (CTs). PT is the treatment of health conditions using medications, and CTs is about medicines used to identify, prevent and treat diseases/disorders, similar to PT but is taught as case-based learning (CBL). The aim is to prepare the students with applied clinical cases prior to clinical clerkship in Year 4. PT is divided into six courses and lessons start from Year 2 onwards. Topics comprise of GIT- respiratory, endocrine-ENT, infectious diseases (ID), nervous systems, cardiovascular-renal, and cancer treatment. CTs is divided into 2 courses; CT1 and CT2. Students must learn PT prior to CTs, to ensure they can apply the CBL clinical cases in CTs. Cases in CTs comprise of CVS-Renal, endocrine, haematology, psychiatric, GIT-respiratory, ID and other related conditions. CBL-cases are developed based on hospital real cases; hence students apply the knowledge of PT to CTs to solve problems. We found that students performed well in the CBL discussions in CTs and were able to apply the PT knowledge to the courses. It was also found that students are more prepared and able to identify problems in clinical clerkship using the case-structure forms according to CBL. PT subjects and CTs are both vital to prepare students prior to clinical clerkship, but CTs provided a more in-depth understanding of clinical pharmacy based on CBL activities.

Keywords: pharmacy students, pharmacotherapy, clinical, therapeutics, clerkship

Postgraduate Online Study in Clinical Education – A Personal Experience

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ABSTRACT

Clinical lecturers have the task of dividing their time between teaching, research, clinical medicine and updating their own knowledge. Motivated by these factors, the author enrolled in the online MSc in Clinical Education. The benefits and disadvantages of e-learning have previously been highlighted. The objective here is to explore the availability of online postgraduate courses in Malaysia, specifically in healthcare. The accessibility to the course, cost and the programme are compared with the author's current enrolled course. In Malaysia, few universities offer online postgraduate courses for medicine, which is in contrast with countries like the United Kingdom where some universities offer more than 70 online postgraduate programmes. Four public universities are chosen which are Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Teknologi Mara and Universiti Putra Malaysia. A search of the online courses offered related to the medical field is done, and compared with where author is studying. A report by Docebo in 2014 suggested that Malaysia is in the top 5 of countries with the highest growth rates of e-learning. Despite this, none of the universities chosen offered a fully online postgraduate course related to medicine. However, most of these universities offer free open-access lectures in clinical medicine. The essay highlights the need for more online postgraduate programmes especially in Malaysia to allow its practitioners obtain knowledge as well as the accreditation they require.

Keywords:　postgraduate, online, clinical education

Medical School Student Selection Process and the Correlations Between Each Component

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ABSTRACT

To survive in medical school, one needs to have good attitudes and behavior on top of excellent academic background to enable coping with the challenges. To determine the performance of each component of the student selection process implemented for Universiti Putra Malaysia medical school intake and the correlation between the components. The study involved 241 candidates that attended the selection process completely. The process was divided into two phases, the first phase consisted of an assessment on Situational Judgement Test (SJT), GRIT and essay writing. The second phase was called Multiple Mini Interviews (MMI) with six stations that assessed six different domains separately. Information on socio-demographic was obtained prior to the process. Data was analysed using SPSS 27 involving three levels of analysis (descriptive, t-test/ one-way ANOVA and multiple linear regression). Pearson correlation test was used to assess the correlation between SJT, GRIT and MMI. The mean scores for SJT, GRIT and MMI were 77.76, 4.34, and 149.38 respectively. Majority were female (72.2%), Malay (48.1%), from M40 background (41.4%) and from matriculation/ STPM level academic background (72.6%). Among the three assessments, only SJT score was found to be significantly correlated with total MMI scores (r=0.169, p=0.009). The higher the SJT scores, the higher the candidates scored in total MMI. The SJT score is significantly correlated with their MMI performance. Further evaluation needs to be done to relook at the selection process and structure to select the best possible candidates for the UPM medical program.

Keywords: students' selection, medical school, multiple mini-interviews, medical degree, medical students

Acceptability of Multiple Mini Interviews (MMI) for Selection Process in Undergraduate Medical Programme

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ABSTRACT

In the Faculty of Medicine and Health Sciences, UPM, semi-structured admission interviews for undergraduate medical programme have been replaced by multiple mini-interviews (MMI) since 2017. To evaluate acceptability of MMI by applicants and interviewers. The MMI consisted of 6 stations with each station addressing one domain. Domains involved were proficiency in English, ethics, critical thinking, empathy, proficiency in Bahasa Melayu and resilience. A survey form was distributed to applicants and interviewers after they completed the MMI. A total of 241 applicants and 23 interviewers completed the survey. Majority of the applicants were from matriculation (65.8%), Asasi Pertanian UPM (27.4%), and Asasi UiTM (12.4%). Most applicants (31.5%) reported the MMI station on proficiency in Bahasa Melayu was easiest and 39.4% felt that the MMI station on proficiency in English was the hardest. Both applicants and interviewers felt that the MMI was conducted fairly, with appropriate duration for each station and instructions were clear. Among the interviewers, 26.1% felt there were weaknesses in MMI which included too easy questions in some stations, too many questions to ask at certain stations and inadequacy of scenarios to assess communication skills. MMI conducted in UPM was acceptable to both applicants and interviewers. However, it needs regular reviewing to ensure its validity and reliability.

Keywords: multiple mini-interviews, medical program, acceptability, interviewers, applicants

Correlation Analysis Between Multiple Mini-Interviews in Student Selection and Academic Performance

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ABSTRACT

Multiple mini-interviews (MMI) have been used as a tool in medical school student selection process, globally. It evaluates interpersonal and intrapersonal attributes which are deemed essential for future medical practitioners. It is suggested that rigorous evaluation in MMI may predict academic performance during medical training. To determine the relationship between total and respective MMI station scores and subsequent academic performance at the end of preclinical phase. MMI scores for academic session 2019/2020 intake in Universiti Putra Malaysia were gathered. The dependent variables were the students' academic performance at the end of preclinical phase Professional Examination and Professionalism and Personal Development (PPD) course. All data was analysed using Pearson correlation analysis. There was no significant correlation between total MMI and Professional Examination scores. In contrast, there was a significant correlation between total MMI and PPD scores (r = 0.23, p<0.05). MMI empathy station scores had weak relationship with PPD scores (r = 0.25, p<0.05) and performance in objective structured clinical examination (r = 0.24, p<0.05). The results showed that the conducted MMI had poor predictive relationship with cognitive skills. However, it may predict future clinical performance and level of professionalism. An integrated approach of admission tools warrants better selection process and predictor for both cognitive and non-cognitive performances.

Keywords: multiple mini-interviews, student selection, academic performance, professionalism

Utilizing Thinglink in Creating a Blended Learning Environment to Improve Understanding of Brain Blood Supply

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ABSTRACT

Cerebral circulation brings the oxygen and nutrients required for healthy brain function to the brain. If this circulation is impaired, neurological dysfunction and brain injury result. Understanding the brain arterial anatomical system is crucial knowledge for medical and healthcare personnel to better comprehend the physiopathology of cerebral arterial dysfunction. However, it can be challenging to memorize each blood vessel, territorial area, and clinical importance. In order to develop student-centered resources for usage in an online and blended learning environment, it is crucial to evaluate the potential use of flexible, digital, and asynchronous platforms. A resource was created allowing digital exploration of the brain blood supply. They may be viewed on a tablet or smartphone. The resource was disseminated to a population of learners, who provided responses to a questionnaire. Feedback was highly favourable indicating considerable interest from the students. Many students expressed enthusiasm about the accessibility and diversity implications as well as the option to engage asynchronously. Critical concern was the time required to create materials, lack of internet connection and hardware are highlighted. This study emphasises the value and necessity of interactive learning tools for medical and health education. This innovation is immensely beneficial as it can be used whenever, wherever and with just a mobile device by undergraduate medical and health sciences students. Such resources may prove to be valuable when remote learning is unavoidable and/or hybrid, blended learning settings are being used.

Keywords: brain arteries, thinglink, e-learning tool, anatomy education

Impact of ResVAR (Respiratory Ventilatory Augmented Reality) on Medical Students

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ABSTRACT

Studying the respiratory module, particularly in relation to the ventilatory cycle, can be challenging. An application called ResVAR (Respiratory Ventilatory Augmented Reality) is utilised to aid medical students in their study. They can view an augmented reality of the lungs, a 2D animation of the ventilatory cycle graph, a movie explaining inspiration and expiration, and a quiz with 5 multiple-choice questions thanks to the application. Studying how the application affected the medical student's comprehension of the respiratory system and assessing the application's usability were the goals. A simple questionnaire regarding the application was done with 174 participants which were medical students from Universiti Putra Malaysia. Data was analysed using a frequency table with a Likert scale ranging from 1 to 3. Ninety five percent of the medical students regarded using the ResVAR application to be simple. The medical students claimed that the contents were simple to understand in about 91% of cases. The app's most important feature is that 93% of medical students find it helpful for learning about the respiratory system, and 92% of those students found that it helped them concentrate more on the subject, which enhanced their comprehension and ability to visualise the respiratory system. It is envisaged that the inclusion of this software in the medical curriculum will make learning about the respiratory system very helpful, based on the research findings for the ResVAR app. Future evaluations of the software can ensure and give better instruction to medical students.

Keywords: augmented reality, respiratory system, tool for education.

Virtual Reality in Health Professions Education

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ABSTRACT

Virtual Reality (VR) allows users to manipulate computer-generated three-dimensional (3D) multimedia sensory environments in real time. Integrating VR into health professions education increased students' confidence by overcoming psychological barriers, enhanced knowledge, and promoted reasoning skills. Furthermore, VR encourages students' engagement and fun learning. Advances in information technology have reshaped students' learning styles in higher education. The objective of integrating a VR Laboratory & VR Basic Life Support into the simulation- based curricula at International Medical University (IMU) is to offer a risk-free environment and enhance the students' learning experience by incorporating a virtual environment. The ultimate outcome aims to produce competent doctors to uphold patient care and patient safety in healthcare. An anonymised survey was conducted to evaluate the student's experience using the VR facilities at IMU. It was the first VR experience for almost all students. 90% of the students expressed interest in VR, 78% feel learning is more engaging with the new learning VR tool. However, some students prefer the conventional teaching method rather than using VR alone for learning. Several students reported discomfort experiences with dizziness or disorientation during or immediately after using the VR headset. The survey shows that students find using VR as a learning tool interesting and engaging. Further improvement on the VR equipment is needed to cater to the student's learning needs.

Keywords: virtual reality, VR laboratory, VR basic life support, health professions education

AR2ENAL: A Supplementary Tool in Learning the Human Urinary System

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ABSTRACT

Augmented reality (AR) is an interactive three-dimension (3D) experience that uses computers to overlay virtual information in the real world. The AR2ENAL is an android application that aims to facilitate students in understanding the human urinary system (US) by implementing AR. It is an original work of 3D models, diagrams, pictures, notes, self-recording videos, quizzes and a manual. As a supplementary aid in the teaching and learning process of the human US either via online or conventional teaching methods especially for undergraduate medical students. The AR features will increase the learning efficacy and attention span thus understanding the basic anatomical, physiology and US common human diseases. Students can access learning materials and use AR tools in learning kidney anatomy on a phone/tablet. They can visibly observe the kidney and its anatomical position through a detailed 3D kidney model instead of 3D on paper. As compared to conventional lectures, AR2ENAL enables them to augment the learning process due to its accessibility. The user acceptance testing (UAT) (n= 10) revealed that this was their first interaction with AR (60%), strongly agreed that AR2ENAL is functioning smoothly (60%) and strongly agreed on its easiness to use (50%). Most respondents have a higher acceptance of AR2ENAL and suggested complementing more quizzes, games, activities, colours and additional functions to the 3D model for more interactivity. In conclusion, most respondents were satisfied with AR2ENAL, thus, AR2ENAL has the potential to be used as a supplemental tool in learning the human US.

Keywords: augmented reality, AR2ENAL, android application, human urinary system, supplemental tool

Managing Patients with Disability – Perceptions of Clinical Health Care Students at Universiti Teknologi MARA

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ABSTRACT

Comprehensive management of patients with disabilities (PWD) involves input from the multidisciplinary healthcare team, where each member is equipped with sound knowledge, skills and attitudes in providing care. This study aims to determine perceptions of PWD, as well as educational experience and comfort in managing these patients, among clinical healthcare students at Universiti Teknologi MARA. The final year medical, dental, pharmacy, physiotherapy, occupational therapy, nursing, medical lab technology, medical imaging, optometry and nutrition/dietetics students respectively were invited to participate in an online survey, utilising a self-administered, content- and face-validated questionnaire adopted from previous studies. Quantitative data was analysed via ANOVA, Chi-Square and Fischer's exact tests (significance value $p<0.05$). Majority of students of all programs had experience in managing patients with physical (n=445,66.0%), intellectual (n=388,57.6%) and psychological/mental (n=391,58.0%) disabilities, but not those with visual (n=288,42.8%) and hearing (n=326,48.4%) impairments. There was an insignificant difference in contact and attitude towards PWD among students of different courses. There was a significant difference among students of the various programs in managing patients with physical, intellectual, visual and hearing disabilities, as well as their comfort level in managing patients with physical intellectual and psychological/mental disabilities (all $p\text{-value}<0.05$). Most dental, physiotherapy, occupational therapy and nursing students felt that they received adequate training in managing PWD, but not those from medical, pharmacy, medical lab technology, medical imaging, optometry and nutrition/dietetics (p-value=0.000). This study indicates the requirements for curriculum providers of all clinical healthcare programs to adequately prepare their students in managing PWD in a competent manner.

Keywords:　disabilities, perceptions, attitude, knowledge, contact

Exploring the Perception of Reflective Practice Among Preclinical Medical Students in a Malaysian Medical School

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ABSTRACT

Reflective practice is encouraged in health professions education to provide an opportunity for the students to learn from their accomplishments, mistakes, worries and challenges. It is crucial as a continuous learning process to improve clinical skills and enhance efficiency. To explore the student's perception on the implementation of reflective practice in the preclinical phase of a medical programme. Method: Focus group discussions (FGD) were conducted with 21 preclinical medical students in Universiti Putra Malaysia. The participants were asked about the effects of reflective practice on the development of clinical skills, self-awareness and empathy. They were probed to share challenges they faced and suggestions that they thought could be done to improve the reflective practice implementation. All discussions were audio-recorded, transcribed verbatim and analysed thematically. Seven themes emerged from the FGD. The themes were (i) effects on clinical skills development, (ii) effects on self-awareness, (iii) effects on empathy, (iv) impact on learning process, (v) appropriateness of reflective writing, (vi) challenges on reflective practice and (vii) suggestions for improvement. Reflective practice is an influential approach to integrate theoretical knowledge and clinical experience. It is acknowledged to be beneficial to develop their self-awareness and may facilitate the students' clinical skills and empathy development at the early stage of medical training. However, there are some areas of improvement to ensure that its effectiveness can be fully maximised.

Keywords: reflective practice, undergraduate medical students, clinical skills, empathy, self-awareness

Perception of Medical Undergraduates on Aspects of Knowledge, Skills, and Attitude Towards Basic Simulation Laboratory

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ABSTRACT

Basic Simulation Laboratory (BSL) at Faculty of Medicine Universiti Kebangsaan Malaysia (UKM) was established under the SIM@UKM Programme: Learning Transformation in the Education 4.0 Era. The objective was to determine students' perceptions on knowledge, skills and attitude gain following the usage of BSL. A cross-sectional study using purposive sampling method was conducted on medical undergraduates. A pilot correlation study was conducted in which the Cronbach Alpha reliability values obtained were 0.929. Online questionnaire was distributed. Statistical descriptive methods were used followed by inference tests to see the relationship between the components of knowledge, skills and attitude with BSL usage. There was a total of 118 respondents. Although only 28% of students had a high BSL usage, they gave very positive feedback on the aspects of knowledge, skills and attitudes. They agreed that education through simulation improved their skills, positive attitude change, and improvement of knowledge in 97%, 92.4%, and 87% respectively. The simulation lab is safe to practice performing procedures. The study found that there was a Pearson correlation coefficient which indicated the existence of a strong positive linear relationship between the BSL usage with knowledge, skills, and attitude where the value of r = 0.76, 0.76, and 0.66 respectively were greater than the value of critical r = 0.17. There was a very positive perception on knowledge, skills and attitude following the use of BSL. The use of BSL should therefore be intensified as it provides useful benefits to students.

Keywords: simulation, knowledge, skills, attitude, perception

Prevalence of Burnout and Its Association with Self-Efficacy of Digital Learning and Loneliness During COVID-19 Pandemic

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ABSTRACT

During the COVID-19 pandemic, students were isolated at home and rapidly forced to adopt online learning environments. The relationships between self-efficacy of digital learning and loneliness, which contribute to burnout, were understudied. To determine the prevalence of burnout and examine its association with self-efficacy of digital learning and loneliness among Universiti Putra Malaysia (UPM) medical students during the pandemic. A cross-sectional study was conducted in early 2022 on 86 students selected through a universal purposive sampling method. Data were collected using online questionnaires containing demographic information, level of burnout (Oldenburg Burnout Inventory), self-efficacy of digital learning (Online Learning Self-Efficacy Scale), and loneliness (UCLA Loneliness Scale: Version 3). Descriptive analysis was used to describe the socio-demographic characteristics, levels of self-efficacy of digital learning, and burnout. In addition, bivariate analysis was used to investigate the associations between burnout and self-efficacy of digital learning and loneliness. There were 78 responses. Up to 87.2% of the students had a low level of burnout, followed by 12.8% (moderate). None of them had a high level of burnout. Male gender was significantly associated with higher burnout (p= 0.045). A majority (97.4%) had low self-efficacy in digital learning. The mean score of loneliness was 20.65 (low degree). There were no significant associations between the levels of self-efficacy of digital learning and loneliness with burnout. Most UPM medical students did not experience burnout and loneliness during the COVID-19 pandemic. However, almost all of them had low self-efficacy related to digital learning. In addition, male students had higher burnout.

Keywords: burnout, loneliness, self-efficacy, digital learning, pandemic

Usability of Mobile Health Application Among Adult Asthma Patients in Malaysia

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ABSTRACT

Asthma is a chronic respiratory disease that affects more than 334 million people of all ages globally. Although there are evidence-based guidelines and effective treatments for this disease, many patients with asthma still have uncontrolled symptoms. The successful control of chronic diseases mainly depends on how well patients manage their disease conditions with the aid of healthcare providers. An asthma action plan will assist the healthcare provider by using a written plan customised for every asthmatic patient. This action plan will help asthmatic patients to control and manage their asthma during asthma attacks. The objective of the study is to develop a working prototype of an asthma medical application based on the asthma action plan for an efficient clinical practice in adult asthma management. There would be a groundwork preparation in developing the prototype of the asthma medical application. The development is based on Rapid Application Development (RAD) which starts from requirement planning, user design, construction, and cutover phases. The expected output is a novel medical health application that can be used for patient self-empowerment. The usability of the medical health application will be assessed through an appropriate clinical study. The expected outcome of this clinical study will lead to better care among adult asthma patients. Thus, it concludes the objective of this study to develop a working prototype of an asthma medical application based on the asthma action plan for an efficient clinical practice on adult asthma management. The study provides a positive impact on the optimization of asthma control via patient self-

empowerment with the assistance of medical health applications. In this era of the COVID-19 pandemic, it will further ease the burden of the healthcare workers in Malaysia and reduce complications of Covid19 infection among patients with respiratory illnesses like asthma.

Keywords: mobile health device, asthma management, self-care education

A Study Protocol on Disaster Medicine Preparedness among Medical Students in Universiti Pertahanan Nasional Malaysia (UPNM): Assessment of Knowledge, Attitude and Readiness to Practice

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ABSTRACT

Disaster preparedness is defined as the 'measures taken to prepare for or reduce the impact of disaster'. Medical students' perception on disaster preparedness provides further insights into their learning needs, strengthen the disaster medicine curriculum, and improve their personal professional development. There is scarce information regarding this topic and disaster medicine education is scattered in the current medical curriculum. The aim of this study is to assess the knowledge (K), attitude(A) and readiness to practice (rP) regarding disaster preparedness among medical students in a military university. A cross-sectional study will be conducted among all medical students in UPNM using a self-administered validated questionnaire via google form. The calculated sample size is 176 using two proportion formula via PS software. The questionnaire consists of i) demographic data; ii) knowledge of disaster; iii) attitude; iv) readiness to practice and responses will be scored as high, moderate, and low. Independent t-test and chi square test are used to test the bivariate association between demographic data with K, A and rP. Multiple linear regression is used to test association of rP based on predictor variables (K, A and sociodemographic). A preliminary result of the study will be presented in conferences and scientific meetings. These data are essential in developing proper training in disaster management. It facilitates the framework of disaster medicine curriculum which focusing on disaster preparedness and targeting on the domains of knowledge, professionalism, communication, and teamwork.

Keywords: medical students, disaster medicine, disaster preparedness, medical curriculum

Physical Examination Training for Clinical Year Medical Students: An Experience in Jigsaw Classroom

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ABSTRACT

Competency in performing clinical physical examinations is an essential core skill in undergraduate medical training. The usual teaching method of clinical physical examinations is through rote learning combined with students' independent practice with real patients. To maintain their motivation to continue practicing clinical skills, cooperative learning, and peer teaching through the jigsaw method is introduced. The study aims to describe the students' experience and feedback on the jigsaw method in clinical examination class. A mixed-method approach was used to collect data among 54 clinical-year medical students during their family medicine posting in 2021. An online questionnaire was distributed to measure students' perceptions of their learning experience, using a 5-point Likert scale, and their subjective reflection was collected for qualitative analysis. Descriptive analysis was conducted for quantitative data. The student's feedback was qualitatively analysed using the grounded theory, to explore the emerging codes, concepts, categories, and themes. The feedback revealed majority of students strongly agree that the session was interesting (88.9%) and well organised (87%), the content and materials were relevant (94.4%), and the class delivery was precise (90.7%). Thirteen percent (n=7) of students prefer more time for hands-on activities. Two themes were generated from students' reflections: attributes of effective clinical examination teaching and benefits of effective clinical examination teaching to students. The jigsaw method is feasible for clinical examination training for clinical year medical students. It is regarded as effective and beneficial by the students in reinforcing their clinical examination skills.

Keywords: jigsaw classroom, medical students, physical examination, clinical clerkship

Pre-Clinical Medical Students' Perception on Self-Directed Learning in University Teknologi MARA

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ABSTRACT

Self-directed learning (SDL) is a vital part of lifelong learning. As medical knowledge is constantly changing, lifelong learning is important for future healthcare providers to ensure betterment of their services. Therefore, medical students need to start developing their SDL abilities during their undergraduate years. The purpose of this study was to evaluate the perception of pre-clinical medical students at Universiti Teknologi MARA on their SDL abilities and identify the factors that motivate or discourage SDL. In this study, a mixed model design was used. A validated 20-item SDL Instrument (SDLI) questionnaire was used to quantitatively assess students' SDL abilities. The students were then asked to respond to open-ended questions on the motivating or discouraging factors in implementing SDL. There were 232 respondents among Year 1 and Year 2 medical students with ratio of 3 to 7 of male and female students. The respondents' mean SDLI scores was high, indicating that they had good SDL abilities. There were no significant differences in SDLI scores between genders, academic backgrounds, or academic years. Guidance and support from lecturer, faculty and family are important influencing factors of SDL reported among these students. Distractions from current technology and social media are significant discouraging factors of SDL reported among these students. The influencing and discouraging factors reported in this study should guide the faculty in designing appropriate teaching-learning activities that guide and support SDL.

Keywords: self-directed learning, perception, pre-clinical student

Stress, Anxiety and Depression in Undergraduate Medical Students: A Risk Factor Analysis

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ABSTRACT

Medical students have been reported to experience high degree of mental distress. This study aims to identify factors affecting stress, anxiety, and depression in medical students in a public university. Years 1 to 5 medical students were invited participated in anonymised questionnaire, which include clinical, socio-demographic data and DASS-21. The DASS-21 scoring are for stress, anxiety, and depression. Descriptive data was analysed for frequency and percentages using Chi-square test, and inferential statistics using univariate/multivariate logistic regression analysis. Out of 907 participated, stress was felt by 35.2% (20.8%; mild and 13.7%; moderate levels); 43.5% had anxiety (10% severe and very severe levels); and 7.1% had mild to moderate depression. Multivariate final model analysis showed, B40-family students were 1.7x likely to be stressed [β:1.79; 95%CI:(1.183,2.718); p=0.006] compare to T20-family. Those without psychiatric and medical illnesses had 80% [β:0.202; 95%CI:(0.69,0.597); p=0.004] and 34% [β:0.666; 95%CI:(0.445,0.994); p=0.047] reduction in stress level; 86% [β:0.143; 95%CI:(0.038,0.535); p=0.004] and 39% [β:0.614; 95%CI:0.409,0.923); p=0.019] reduction in anxiety levels. In addition, those without psychiatric illness had 91% [β:0.094; 95%CI:(0.032,0.275); p=<0.001] reduction in depressive symptoms. Those who considered counselling, were 1.8x more likely to be stressed [β:1.849; 95%CI:(1.367, 2.500); p 0.001] and has anxiety [β:1.879; 95%CI:(1.387,2.545); p 0.001]. Interestingly, students who

smoked were 19x more likely to be depressed compared to non-smokers [β:19.204; 95%CI:(2.647,139.338); p=0.003]. There is high prevalence of anxiety and stress among medical students, but low occurrence of depression. Being in the B40 group, having medical and psychological illnesses and smoking resulted in a higher risk for stress, anxiety, and depression.

Keywords: medical students, risk factors, stress, anxiety, depression.

Online Assessment Using Secured Open-Source Platform in a Malaysian Public University: Perceived Usefulness, Perceived Ease of Use and Acceptance

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ABSTRACT

Online teaching, learning and assessment have become a new norm in higher education institutions. Therefore, the pandemic has forced medical schools to adapt to online environment. It has also urged academics to find the best approach to conduct assessments via online platforms. The purpose of this research was to explore the perception of medical students in terms of perceived usefulness, perceived ease of use and acceptance towards online examination using Moodle platform in USM School of Medical Sciences. This study used mixed method design. Feedback from year 1 to year 4 medical students was sought after finishing their semester examination. Google Form was utilized to collect the data. All items for perceive usefulness, perceive ease of use and acceptance have mean score more than 4.00 (positive areas) except for items "I prefer online examination compared to paper-based examination" which has mean score of 3.78 (areas for improvement). No item with mean score below 3.00 (areas of concern). For qualitative data, a total number of codes generated were 336. They were then grouped into three different themes which were advantages, disadvantages and suggestions. There were eight subthemes emerged from advantages theme, eleven for disadvantages theme and eleven for suggestions theme. Generally, the open-source learning management system is feasible and acceptable to replace traditional face-to-face assessment. However, there are few disadvantages that might compromise the validity and reliability of the assessment. Thus, medical schools must try their best to minimize the impacts from all the negative sides of online assessment.

Keywords: COVID-19, online assessment, Moodle, learning management system, pandemic

The Essential of Circle of Willis

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ABSTRACT

Stroke is the term use to describe the death or dysfunction of brain tissue due to vascular disease. Stroke is Malaysia's third leading cause of death. Compromised blood supply to the brain will lead to transient or permanent damage of the brain and subsequently lead to stroke. Understanding the blood supply and vascular territories of the brain can provide information about the affected location in the brain in stroke. Therefore, we can relate functional consequences of strokes with the affected artery and location in the brain. The main objective of this project is to create alternative tool of 3-dimension (3D) diagram of 'Circle of Willis' blood vessels in assisting the undergraduate and postgraduate medical students of Universiti Putra Malaysia in understanding and memorizing the complex structures and functions of the arterial supply to the brain. The 3D diagrams were reconstructed from the raw data from the Magnetic Resonance Angiography (MRA) study by using 3D software. Each different vessel was coloured, labelled, and tagged with the QR codes accordingly. User acceptance test (UAT) questionnaires was then distributed among the students in Radiology posting. The QR code of 'Circle of Willis' 3D diagrams provide students with easy access to the links during teaching. The UAT showed that the students gave very positive feedback and supported the use of this application for more effective understanding. The 'Circle of Willis' 3D diagrams is a new alternative in radiology teaching. The usage of QR codes, which are generally regarded favourably by the UPM medical students, can be used to improve students' knowledge and understanding on this important brain structure effectively.

Keywords: circle of Willis, anatomy, radiological anatomy, QR code

Transition from Traditional to Problem-Based and Self-Directed Learning: Lessons Learnt from the Challenges Encountered

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ABSTRACT

The expeditious changes of the world today require for an ever-transitioning necessity to upgrade the student's preparation for functioning in a highly competitive goal-oriented environment. Focusing on concept-based learning is the cornerstone for a better outcome. Although didactic lectures (DL) have been widely used, in the current changing face, a multi-modality approach with focus on problem solving skills and integrated application of textual matter needs to be incorporated. Newer techniques like self-directed learning (SDL), SDL with focused discussion (SDL-FD) and problem-based learning (PBL) are methods which encourage active participation by the learner towards self-learning for more undogmatic understanding of the subject. This study aims to compare the impact of the instructional approaches involving lectures, PBL, SDL and SDL-FD. A retrospective study was conducted involving 409 students, over two years, to evaluate the scores attained in formative examinations among topics delivered by different modalities. The scores achieved in formative assessment were higher among topics delivered by DL when compared with SDL (p=0.0001) and PBL (p=0.001) approach which were statistically significant. The score of DL when compared with SDL-FD was higher, however did not have statistical significance (p=0.4545). DL may help the learner in a scenario of an examination-oriented evaluation. However, it may limit the learners' ability to question and ponder over the subject matter, mindlessly clinging to facts dissipated in classroom. We recommend that a unified approach along with activities of self- learning and discussions, may tremendously improve the outcome.

Keywords: didactic, problem-based, self-directed, focused discussion

Discrimination Index of Short Answer Questions Administered in a Professional Examination of Preclinical Medical Students

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ABSTRACT

Short answer questions (SAQs), or other forms of similarly structured examination methods, have long been employed as assessment tools to gauge the competency of medical students. However, the discrimination indices of these type of questions are rarely reported. In this cross-sectional study, we looked to determine how effectively these SAQs differentiate between students who are relatively good and students who are relatively poor in their performance during the examination. Discrimination index of each sub-question in the SAQs were analysed using Microsoft Excel (Microsoft Corporation, Washington, United States). Marks obtained by the top 27% and bottom 27% of 169 students who attempted the SAQs were used to generate the discrimination indices of each sub-question. A total of 27 sub-questions from five SAQs were analysed. The discrimination indices of the sub-questions ranged from 0.043 to 0.935. Out of the 27 sub-questions, three sub-questions had relatively low discrimination indices of 0.043, 0.130 and 0.152. No sub-questions returned a negative discrimination index. SAQs administered in a professional examination of preclinical medical students exhibit sufficient discriminating power. However, improvements must be sought for sub-questions that return poor discrimination index values.

Keywords: discrimination index, item analysis, short answer questions, assessment

Examining the Effect of Item-Writing Flaws on the Item Analysis of Single Best Answer Questions in Medical Training

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ABSTRACT

Single best answer (SBA) questions are increasingly used to assess the application of clinical knowledge. However, SBA that is not constructed based on guidelines may introduce item writing flaws (IWF). This study examined the distribution of IWF and item analysis of SBA questions in a final year medical curriculum, and the effect of item flaws on the item analysis properties. We conducted a retrospective record review by examining 300 SBA questions from USM Final Professional Examination papers. The study utilized Item Writing Flaw Examination Instrument (IWFEI) and item analysis indices to examine the distribution of IWF and item types in SBA questions. The association between item flaws and item types was then examined using the Chi square test. Sixty-seven percent of questions displayed at least one IWF. The most common IWFs were uneven answer distribution, plausible answers, and uneven answer choice length. Overall, 58.3% of SBA questions were found to be of good quality (moderate to high difficulty and were able to discriminate between good and weak students). While there was no clear association between most IWF and item types, the study found that good SBA has a clear stem. SBA has the ability to discriminate between good and weak students. However, IWF are common and faculty development is essential to improve the validity of the assessment.

Keywords:　　IWFEI, item types, SBA, item analysis

Attitudes on Patient Safety Among Universiti Sains Malaysia (USM) Medical Students

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ABSTRACT

The issue of patient safety has gained significant attention in recent years. As medical errors can lead to adverse outcomes for patients, it is essential for medical schools to prioritize patient safety in the curriculum. The aim of this study is to explore the attitudes and its associated factors on patient safety among Universiti Sains Malaysia (USM) undergraduate medical students. A cross-sectional study was conducted among 457 Year 2 to Year 5 medical students using the Attitudes to Patient Safety questionnaire (APSQ) III. The APSQ III measures 9 domains; 1) patient safety training received 2) error reporting confidence 3) working hours as error cause 4) error inevitability 5) professional incompetence as error cause 6) disclosure responsibility 7) team functioning 8) patient involvement in reducing error and 9) importance of patient safety in the curriculum. Each domain was interpreted as positive > 4, neutral = 4, or negative attitudes mean score < 4. Statistical analysis independent t-test, one-way ANOVA and Pearson correlation test were performed using Statistical Package for Social Sciences (SPSS) version 24 and there were 93.4% responses. Domain 7 scored the highest and domain 5 scored the lowest. All were positive attitudes except for domain 5. Post-hoc analysis showed a significant mean difference of attitude to patient safety score and year of study among pre-clinical and clinical year students in five domains. There was poor positive correlation between age and domain 3. There was also a poor positive correlation between academic performance for domain 3 and domain 4. However, attitudes on patient safety were not associated with gender. Although our students had a positive attitude towards patient safety in general, however, a thorough review on patient safety curriculum in medical schools are crucial to ensure improvement of patient safety among medical doctors.

Keywords: attitudes, medical students, patient safety

An Evaluation of an Online Pharmacology Workshop for Medical Students in Malaysia

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ABSTRACT

It is now apparent that technology enhance learning has lend themselves to implementing inclusionary practices in the medical teaching and learning environment. During the COVID-19 pandemic, workshops organised by student associations were required to stop and to take on an online format. A Pharmacology workshop was conducted by the Asian Medical Students Association (AMSA) Perdana University in September 2021. This online workshop aims to reach out to AMSA students attending medical schools at different locations in Malaysia, being inclusive and benefiting many simultaneously. To evaluate the effectiveness of this online workshop using student feedback. Zoom was the online platform and Kahoot was used to engage the participants. It covered Cardiovascular and Neuropharmacology, delivered by 2 pharmacology lecturers and 85 medical students from private and government medical schools in Malaysia were included. Written feedback evaluation was collected at the end of the online pharmacology workshop. 85.4% of the respondents answered yes to the question "would you be interested to join future AMSA PU events". 87.5% answered 5 (very satisfied) to the question "how satisfied were you with the Neuropharmacology section". 85.4% answered 5 (very satisfied) to the question "how satisfied were you with the Cardiopharmacology section". 85.4% answered 5 (very satisfied) to the question "What is your overall experience of the event". Technology enhanced learning provide inclusivity to medical students learning pharmacology in Malaysia, via the AMSA pharmacology online workshop and satisfactory feedback was received.

Keywords: online learning, pharmacology, workshop, Kahoot, inclusivity

'Ohh My Joint (OMJ)' Effectiveness and Perception in Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

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ABSTRACT

The majority of medical schools use learning technologies to supplement their instruction of medical courses. Nearly every industry has adopted Quick Response (QR) codes. The use of QR codes to teach and comprehend the structure of human musculoskeletal joints, however, has not yet been tested. Students from the Faculty of Medicine and Health Sciences (FMHS), University of Putra Malaysia (UPM), were asked to evaluate the effectiveness of a QR code learning tool on the joints of the musculoskeletal system. In order to provide the target audience of medical and health sciences students with a fundamental understanding of human joints, the QR code e-learning tool "OHH MY JOINTS! (OMJ!)" was created. A convenience sample technique was used to perform a cross-sectional study. Google Meet sessions lasting 15 to 20 minutes were held with each participant. The Google Form was used to disseminate pre- and post-research questionnaires for self-administration. This study involved 172 students in total. Results showed that after utilising the OMJ! e-learning tool, students had statistically significant (p<0.001) higher levels of knowledge on the musculoskeletal joints, and 93.0% of respondents thought well of the OMJ! e-learning tool. The OMJ! e-learning tool is highly straightforward, user-friendly, cost- and time-efficient, and it has enough information to be disseminated in a timely, systematic, and successful manner. The musculoskeletal joints can be studied well with the use of QR codes, which are generally viewed favourably by UPM students studying medicine and health sciences.

Keywords: effectiveness; joint; medical education; perception; QR code

Innovation-Integrated Community-Based Learning in Special Care Dentistry Education During the COVID-19 Pandemic

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ABSTRACT

SULAM (Service-Learning Malaysia-University for Society) advocates for service/community-based learning. The Ministry of Higher Education developed this as a High-Impact Educational Practice. This concept was adopted in the teaching and learning of Special Care Dentistry (SCD) at Universiti Teknologi MARA, via the conduct of group innovation projects. This study was undertaken to analyse the student's perceptions of SULAM teaching for SCD training during the COVID-19 pandemic. All final year dental students (n=90) were divided into 8 groups to develop innovative products for designated SCD patients. After the project, students were invited to answer a validated online feedback survey on their perceptions of the activity. Quantitative data were analysed using SPSS for frequency, while qualitative data were analysed via thematic analysis. Cumulatively, 82 students (Response rate= 91.1%) responded to the survey. Most agreed that it was interesting (90.2%), improved understanding (89.0%), allowed interaction (90.2%), supported sharing of ideas and experiences (97.6%), encouraged student-lecturer interaction (95.7%) and enhanced knowledge integration and application (93.9%). Nevertheless, about half (53.7%) were neutral about the increased workload. Students expressed that this was beneficial in enhancing creativity and innovation, improving knowledge, and understanding, instilling interest and positive attitude towards learning SCD, and encouraging teamwork. However, some students noted facing limitations throughout their projects (technological challenges and reduced accessibility to purchase materials). Mixed responses were obtained in terms of time, finances and involvement of patients and supervisors during the project development. Students perceived that the SULAM-based innovative project was beneficial in multiple aspects of SCD training during the pandemic.

Keywords: learning, dental students, perception, pandemic

Impact of Innovative Online Peer Learning Approach to Special Care Dentistry Training During COVID-19 Pandemic

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ABSTRACT

Restrictions of face-to-face learning in dentistry due to COVID-19 pandemic indicates the need for development of an innovative Special Care Dentistry (SCD) educational intervention. This study aims to analyse the impact and perceptions of online peer learning (OPL) in SCD training during the COVID-19 pandemic. A descriptive cross-sectional quantitative and qualitative study employing a vetted online pre- and post- intervention quiz involving all final year undergraduate dental students from Universiti Teknologi MARA was done as well as a validated feedback survey of the OPL activity following a seminar conducted by two SCD postgraduate students. Quantitative data were analysed via paired t- test using SPSS (significance level, $p<0.05$). Qualitative data were analysed via thematic analysis. Overall, 68 (Response rate= 75.6%) and 81 (Response rate= 90.0%) students participated with a significant difference in the total mean scores. Most students (86.5% to 97.5%) indicated positive reviews in multiple aspects of the OPL session, while only some students rated feeling discouraged to ask questions (1.2%) and noted punctuality issues (3.7%). Students perceived that the OPL session was useful in terms of its 1) comprehensive content (supplement revision), 2) preparation process experience (enhance creativity, encourage teamwork), 3) technology used in teaching (promote interactivity, stimulate interest) and 4) involvement of lecturers in giving feedback (improve knowledge, allow critical thinking). Students responded positively to OPL as an innovative approach to SCD training during the COVID-19 pandemic.

Keywords: peer learning, special care dentistry, training, pandemic

Development of Core Entrustable Professional Activities for Indonesia Undergraduate Medical Education: The Experience of Universitas Muhammadiyah Jakarta

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ABSTRACT

Indonesia has implemented Curriculum-Based Education (CBE) since 2006 using a national standard for doctor competencies. The challenge is translating competencies statements into clinical practice activities. Entrustable professional activities (EPA), were reported to help promote CBE by operationalizing competencies. This study aimed to develop Core EPA for undergraduate medical education in Indonesia. An exploratory qualitative design with 2 rounds of modified Delphi was employed for this study in October-November 2022. Referring to literature and medical education frameworks, professional activities were identified 34 for individual medical services (A) and 17 for family-community medicine/public health (B). Those were included in the instrument for Delphi round 1. Subjects to be included were (1) experts in medicine such as internal medicine, surgery, neurology, radiology, medical education, etc, and (2) engaged as a medical teacher in the preclinical or clinical stage for 2 years or more. Fifteen experts were involved in both Delphi rounds. The consensus was reached if 80% of experts agreed on the statement. The Delphi 1st round showed that 31 activities of A and all activities in B reached consensus. One expert suggested 2 additional activities for B. The 2nd round listed all activities of A and B with a percentage of agreed experts of each activity and 2 additional activities. The consensus was reached on 32 and 17 activities of A and B, respectively, and 1 additional activity for B. It resulted in 32 Core EPA from individual medical services and 18 in family-community medicine/public health.

Keywords: entrustable professional activities (EPA), undergraduate, medical education, development, Indonesia