From potpourri to perciption: Developing problem solving skills in medical students through a computer assisted active learning strategy

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**CONTEXT**
- Melaka Manipal Medical College (MMMC) hosts a twinning programme in medicine
- The first year's curriculum consists of 3 subjects, taught with a system-wise approach
- Subjects are anatomy, physiology and biochemistry
- Avenues for active learning through problem-solving (CBL, PBL) are limited in the curriculum
- The institution recently commissioned a digital laboratory which is widely used to conduct practical sessions

**OBJECTIVES**
- Training individual students in correlating the steps involved in case diagnosis using case scenarios
- Promoting active learning and problem solving
- Exploring the use of the digital laboratory for active learning

**INTERVENTION**

- **Step 1: Faculty**
  - 50 case scenarios designed using power point 2013
  - 7 case scenarios selected after vetting
  - Each case scenario divided into 5 slides: Case title, Case history, Clinical Findings, Investigations and Treatment
  - Slides jumbled to form a ‘potpourri’ of 35 slides
  - Ethical clearance taken (IRTC 333/2013)

- **Step 2: Students**
  - 1st year MMC students in the 3rd week of their 6th and 7th month were given
  - Informed consent taken
  - The ‘potpourri’ administered to students individually after appropriate instructions, in the digital laboratory using LAV while given
  - Slides sorted to students and diagnosis given in a separate slide in each case
  - Power Point files deposited in the master computer through LAV
  - Flex retained and data analysed

- **Step 3: Faculty**
  - Questionnaire designed on Libretto scale using Google forms to collect feedback from students

**RESULTS**
- In each one of the 7 case scenarios the marks obtained for assembling the slides was above 90%
- Marks obtained in diagnosis varied widely from 22% to 78%. Thus, the marks obtained in diagnosis were consistently lower than the marks obtained assembling the slides
- Correlation of marks obtained in assembling the slides to the marks obtained in the diagnosis yielded ‘r’ values in the range 0.1 to 0.4 for the 7 different case scenarios in the activity
- Percentage of students who scored zero marks in diagnosis in spite of arranging the slides in the right order ranged from 14% to 73% in the 7 cases administered
- However, all students who got the diagnosis right had full marks in matching the slides
- Correlation of aggregate marks (900) obtained by students (n=81) in the previous internal assessment examinations (theory component) to the marks obtained in the activity was weak (r=0.14)
- Students who had scored distinction marks (75%) and above showed a better correlation with the marks obtained in diagnosis in 7 case scenarios (r = 0.4 to 0.7) when compared to students who had scored lower(r = 0.01 to 0.2)

**CONCLUSIONS**
- Though most of the time students succeeded in bringing order to the ‘potpourri’, their success in achieving ‘perciption’ was limited
- The study underlines the importance of exposing students to problem-solving activities more often and throughout the curriculum to increase their ability and agility in applying knowledge
- Students need to reorient their learning strategies towards deeper understanding and it is necessary to sensitize the teachers to help them achieve this goal
- This novel experiment successfully explored the feasibility of using the digital platform for building and assessing skills essential for clinical practice
- The fact that the students appreciated the activity, will encourage the faculty to plan and execute more activities of this kind