



## A new spin on vertical integration

Ziad Farah & Nassim Parvizi

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from Taiwanese students in terms of both their cumulative and first-year GPAs.

As there is currently a significantly larger percentage of male medical students than female medical students at our institution, international students serve to balance this gender disparity. In addition, research has shown that students of low socioeconomic status are underrepresented in medical schools, leading medical educators to warn that a medical education is becoming something that is exclusively for students from rich families. Our results imply that the admission of international medical students to our university can increase the range of students' socioeconomic backgrounds.

The admission of international students to our medical school has not only brought unique perspectives to our campus, but has also led to less gender inequality and more socioeconomic diversity. Further, these students have shown themselves to be just as academically competent as Taiwanese medical students. Thus our results show that in Taiwan, international students can greatly increase diversity with limited drawbacks.

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## A new spin on vertical integration

Dear Sir

Over recent years, medical schools have incorporated Vertical Integration (VI) into their curricula. Bradley and Mattick (2008) defined VI as a '*... combination of basic and clinical sciences in such a way that the traditional divide between pre-clinical and clinical studies is broken down*'. There is growing evidence that VI provides a more contextualised approach to learning, eases the transition to post-graduate training and facilitates earlier career choices. Recently, there has been a drive towards integrating basic sciences with clinical sciences within specific teaching sessions. There is little research, however, into the benefits of using VI within small-group teaching sessions and in evaluating the perceptions of medical students of this style.

For the first time at Northwick Park Hospital, we organised junior-doctor led interactive sessions for first-year clinical students. The sessions integrated biomedical sciences with cases relating to common topics encountered in daily clinical practice. For example, a session on arterial blood gases involved a series of clinical scenarios with real-life blood-gas results followed by a detailed discussion on the physiology of

gaseous exchange and the biochemistry of plasma acid-base balance, relating these back to the clinical presentations.

25 students with a mean age of 20.8 years (20–23) who attended >6 sessions, filled out feedback questionnaires. 92% of the students expressed a preference for more vertically integrated small-group teaching throughout their medical curricula. All students preferred VI sessions to either basic science or bedside teaching alone.

There is growing awareness of VI and its usefulness in medical training. The results of our questionnaire-based study concur with the overall positive outlook on student perception of VI in medical education today. We also demonstrate that students show a preference for the use of VI within individual teaching sessions.

It is interesting to note that almost all the studies assessing VI that have been published so far are questionnaire-based analyses, including our study. This indicates that the evidence of perceived benefits of VI is based on study participants' opinion. To date, studies looking specifically at comparing set end-points between students undergoing training with traditional versus vertically integrated medical curricula are lacking.

Medical education is constantly changing. The search for the optimal teaching style continues. Our study demonstrates a preference for the use of VI within small-group teaching sessions. Exactly where this particular teaching style lies among the other proposed styles on the backdrop of an evolving medical system is yet to be determined.

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## Postgraduate clinical teaching

Dear Sir

Two recent 'Twelve Tips' in the same issue of *Medical Teacher* provide an interesting contrast and the positions from which they are written identify a key issue for those learning and teaching in postgraduate medicine. Dennick (2012) considers three aspects of learning theory and from them draws conclusions about how learning opportunities might be best constructed. Of particular importance is a learner-centred approach, identifying and building upon previous knowledge,