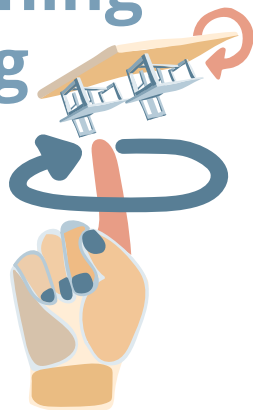


GOOD Flipped Classroom CASE

Flipped Learning
and Teaching
Initiative



15

Instructor
Professor Billy So

Department
Department of Rehabilitation Sciences (RS)

RS 4910
Acupuncture for
Physiotherapy Practice

Class size **150**

Students
Year 3 students from BSc (Hons)
Rehabilitation Sciences

Details of Flipped Classroom IMPLEMENTATION

Why did the instructor use the flipped classroom approach?

In Billy's course, traditional teaching methods required instructors to dedicate substantial class time to demonstrating fundamental techniques, such as acupoint localisation and needle insertion, which left students with limited opportunities for hands-on practice and personalised guidance. To address this, Billy used the flipped classroom approach to save in-person class time for clinical practice. This approach bridged the gap between theoretical knowledge and practical application while enhancing the efficiency of motor skill acquisition. By applying this approach, Billy aimed to cultivate students' abilities from cognitive understanding to skill mastery, thereby supporting a comprehensive process of clinical competence development.

How was the flipped teaching approach implemented?

Preparation of materials

→ To simulate authentic clinical practice, Billy designed and produced 30 VR360 clinical scenario videos, meticulously aligned with internship assessment criteria, with a focused emphasis on hands-on components like patient positioning and medical equipment operation. These videos were uploaded to YouTube and integrated via the Blackboard learning management system, enabling direct access through hyperlinks.

To further address spatial cognition challenges often encountered in clinical practice, Billy developed a virtual acupuncture human model in the Metaverse. This virtual human model comprehensively displays 14 meridians with precise acupoint localisation, supplemented by embedded instructional videos demonstrating palpation techniques and positioning protocols.

Pre-class activity

→ Billy restructured eight weeks of teaching content into online lectures, supplemented with additional online learning resources. Students need to watch the online lectures and VR360 videos first, which makes them familiar with the theoretical knowledge and clinical scenarios in advance. Then, students are requested to complete pre-class quizzes on Blackboard, which encourages engagement and reinforces learning. By not making the quizzes mandatory, students may feel less pressure and anxiety, which can create a more positive learning environment. This approach can help students engage with the material more willingly and without the fear of negatively impacting their grades, allowing students to complete them at their own pace without affecting their grades or serving as prerequisites for future sessions. The low-pressure design reduced student anxiety and fostered intrinsic motivation through autonomy.

In-class activity

→ Billy divided the students into six groups of 25, with each group participating in six identical practice sessions. To make the practice sessions run smoothly, Billy developed a schedule based on the weekly lesson plan. Each session comprised two phases:

- **Phase 1:** Billy hosted a live Q&A session during class, clarifying ambiguities from pre-class materials and addressing common difficulties encountered by students.
- **Phase 2:** Students practised in pairs under direct supervision. Billy offered real-time feedback to refine student techniques, enabling step-by-step mastery of clinical procedures.

This approach solved the frequent lack of individual guidance in traditional large-class teaching while ensuring every student received personalised skill refinement.

Post-class activity

→ Billy provided case studies related to the lecture and practical session content for students to analyse and solve. This not only helps students apply theoretical knowledge to practical scenarios but also enhances their problem-solving skills.

What was the impact on student learning?

The student feedback collected during the classes reported increased understanding of theoretical knowledge and clinical scenarios due to the combination of online lectures and VR360 videos.

Also, Billy compared the assessments and practical tests from before and after the implementation of the new structure to measure the improvements in practical skills.

What are the good practices that can be learnt from this case?

Using an immersive environment to engage students

- Billy developed the Metaverse-acquired human acupuncture model, specifically targeting textual and numerical acupoint identification challenges in spatial cognition. The use of VR360 clinical scenarios as interactive learning modules provided students with an immersive experience grounded in real-world clinical settings. These scenarios allow students to observe patient positioning, equipment placement, and acupoint details in a 360° view through VR devices. This model visualises theoretical concepts, enabling intuitive spatial understanding and fostering early-stage "hand-eye coordination" in a virtual environment. This immersive learning reduced operational errors during live practice, allowing face-to-face sessions to focus on advanced skill refinement. As a result, students efficiently transition from cognitive understanding to procedural internalisation.

Designing practice sessions into a structure to provide personalised feedback and improve learning efficiency

- Billy designed the face-to-face practice session into a structure which has two features. The first feature is repeated group practice. Billy divided the 150 students into six groups, with all practice conducted in pairs. Students repeated the same exercises to consolidate skills and achieve proficiency. The repeated group practice allowed Billy to standardise content delivery through fixed time slots and provide one-on-one guidance tailored to each group's needs. The second feature is dual-phase activities. In the first phase, Billy addressed common issues from students about pre-class video learning. In the second phase, he paired students to practice skills, starting with standard procedures and progressing to complex clinical simulations. Through the way of dual-phase activities, students can master the skills and practice progressively. This way also improved the efficiency of teacher-student interaction. This is because the first phase of addressing collective issues saves time, and the second phase of group instruction allows Billy to provide precise feedback on individual issues. All in all, the benefit of designing the session into such a structure is not only focusing on the needs of individual students but also making the classes efficient.

Integrating innovative learning technologies to reduce workload

- Traditional methods of producing videos were highly time-intensive and mainly influenced by two factors. On the one hand, it is easy to frequently make verbal slips or logical errors during recording, leading to frequent retakes. On the other hand, the office environment is not conducive to recording due to frequent interruptions like telephone calls and background noise. To address these inefficiencies, Billy utilised an AI-powered video production tool called HeyGen to create standardised and professional teaching videos. Billy uploaded teaching materials and his photo on HeyGen, enabling rapid and efficient video production. The benefit of utilising HeyGen greatly reduced Billy's workload. This allowed him to focus on higher-value tasks like designing structured practice sessions and providing personalised feedback in face-to-face sessions.

What were the challenges encountered during the implementation and what solutions were used?

Lacking the expertise in producing high-quality learning videos for flipped learning

- Teaching staff always face problems when creating high-quality videos because they lack expertise in video production. Billy also encountered various challenges, such as how to select pedagogically effective filming perspectives, limitations of technical resources, and making the production process standardised. To address these challenges, Billy has adopted several approaches, including consulting student feedback, applying funding to support the development of technical resources and seeking the help of a professional production team.

Based on his experience, it should be noted that producing high-quality learning can be challenging. However, with adequate resources and professional staff support, the final results can be promising.