Science in Biomedical Sciences Programme (JS4550) was launched since the academic year 2016 by School of Biomedical Sciences, Faculty of Medicine. Biomedical research is the study of investigation of the new solutions to cure human illness. To strength the broad-based knowledge in biomedical sciences, teaching in research techniques, including animal handling, theories in electrophysiology, cell cultures, basic histology, transgenic technology and proteomic, are essential to introduce students before the laboratory induction. The laboratory safety, the use of advanced instruments and animals in experiments are standard training in clinical laboratory research. Concerning the experimental animals, it raises concerns related to animal welfare and ethics in animal research. This programme is consistent with worldwide ethical standards and contributes to animal welfare and the humane use of animals in useful biomedical research, i.e., it teaches the 3Rs (Replacement, Reduction, and Refinement).

This learning courseware has been embedded into our project which aims to develop a lively learning environment and mobile application, called "electronic techniques in practice (eTips)." Regarding the animal ethics, the experimental animals are suggested to reduce their usage number, especially for the laboratory skills practicing. The micro-modules format, AR, and VR technology are applied to create an alternative training environment.

Regarding the VR technology, we adapted the HTC Vive® immersive system comprising; the back-pack computer let the user move freely; the headset with two miniatures display makes the user having stereo physical sensation; motion tracker detect the user's position, and the controller trigger leads the user to respond interactively in the virtual environment. Here show you some of the demonstrations. The benefit of this virtual animal holding training courseware to students can facilitate more active learning, speed up the training process without unexpected accident happen, e.g., students may be bitten by the mice and most importantly execute the concept of 3R. Students' voices using HTC Vive® immersive system for the animal handling are very positive, they like it and feel interesting while they are learning the challenging technique. It was our team's honor that the one of the micro-module, i.e., Virtual Animal House was selected and presented to our Vice-Chancellor and President of CUHK, Professor S Rocky Tuan in the Centre for eLearning Innovation and Technology on 3 Jan 2018. This micro-module embedded with gamified VR element give a high impact in the virtual skill training. More importantly, it can inspire students to acquire the skill training activities but still gaining the hands-on experience; allows teaching to become more proficiently in complimentary with blended learning; motivate their critical thinking and stimulate their problem-based learning.

We have performed the courseware evaluation which is based on questionnaires and group interviews and explored that it

- can be applied and used as an educational tool for the training the technical skills;
- can facilitate and deepen the experiential experience of the new learners; and
- can make students' awareness of the concept of animal ethics, i.e., 3Rs (Reduce, Replace and Refine) in their future research study.

To Conclude, the pilot study of the innovative eTips is novel towards the strategic planning of simulation pedagogical education in biomedical research study.