



Scientia Education Investment Fund Grants Final Report

2/6/2018

The CLASSIE project – Clinically applicable student studies in Ethics, for Phase 3 medical students

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1. Executive Summary

The aim of this project was to create a suite of Clinical ethics modules to enable senior medical students to learn medical ethics in their clinical years and integrate it with their workplace learning. The need for this arose from the fact that senior medical students are taught entirely in the workplace. As a result of this, they have varied clinical placements and variable opportunities for explicit teaching of medical ethics (and the relevant laws). To ensure that all students are supported in this capability of their medical program learning, a suite of medical ethics scenarios and interactive online modules were created. These modules complement their clinical placements and are designed to be done during the relevant placement.

It was intended that a minimum of 6 modules would be created in the 2018 – Medicine, Surgery, Emergency medicine, Psychiatry, Primary Care and Professionalism. In fact, 11 were created within the 10 months that the project had funding. As well as creating 2 Medicine modules and 2 Psychiatry modules, I also managed to create a Child Health, and 2 Obstetrics modules. The clinical scenarios were filmed using 3D technology to provide an immersive clinical experience for the students (who could watch them using VR headsets or on computers) and the interactive tutorials were created using Smart Sparrow. These had entry and exit quizzes (for self-assessment and completion), information and interactive activities.

The main aim of this project was to fill a curriculum gap (explicit teaching of medical ethics in the clinical context) by the creation of an innovative, engaging and informative suite of interactive learning modules, all of which was online. The goal was that these modules would allow blended, personalised learning, woven into and integrated with workplace learning to enhance the student experience.

These modules highlight an innovative approach to delivering educational material for senior students in medicine on clinical placements using simulated clinical immersion (SCI). It is portable (mobile phone), cheap (headsets can be made out of cardboard), flexible (can be watched anytime) and compliment the clinical placements (and fills gaps in relation to teaching of clinical ethics). All these things make it an ideal approach to teaching clinical ethics. SCI can offer learning tasks closely connected with the clinical environment, with potential to reach higher levels of the Miller's pyramid of clinical competency.

This project clearly aligns with the first objective of the 2025 Strategy in the domain of Educational Excellence, which is to 'design, develop and deliver a distinctive higher educational experience through outstanding design, experimentation and continuous improvement'.

2. Outcomes and impact

Major achievements:

- Deliverables above predicted: this project saw the creation of not just 6, but 11 modules during the period of funding. There is a possibility of 4 more modules being created because of student demand, although as the funding was prematurely terminated (due to finance/project rule changes), this is now uncertain.
- The use of a novel technology in teaching medical students to create an immersive experience that simulates the clinical scenario. This was made possible because of the involvement of the immersive technologies unit (Literoom) in this project. It provides two potential benefits for medical students:
 1. Students experience a clinical situation that they otherwise would not have. This is important given the wide variety of clinical experiences that medical students have (do to different placements) and allows some standardisation of clinical experience.
 2. Provides an immersive learning experience which is more likely to better incorporate the emotional aspects of clinical scenarios and how these impact on clinical decision making in medicine.
- Students as partners: This project allowed for the engagement of medical students as partners in the creation of learning deliverables. This aspect of the project had many benefits for both myself and the students. As an educator, it allowed me to create educational offerings that were prepared using the student focus lens, so that they were prepared and presented specifically to engage students. From the students' perspective, involvement in this project helped them develop in 4 key areas:

1. Content knowledge relevant to them as medical students
 2. Teamwork and communication. We worked closely in teams, with shared responsibility for the creation of these modules. Students had to be responsible, work to deadlines and give and receive feedback and work together on content.
 3. Educational skills. Students had to develop learning content in a meaningful and effective way, as well as helping in the design of formative assessments (quizzes).
 4. Technological skills. Student developed skills in using 'Smart sparrow' a specific software tool for educators.
- Faculty outcomes: This project will serve as an example for other educators in medicine who have problems delivering quality learning opportunities to all students and also those areas where exposure to learning opportunities may be difficult because of the sensitive or problematic nature of finding clinical opportunities for medical students (such as obstetrics and paediatrics). It also provides an example of the use of a new technology in the creation of educational offerings. The use of this technique will be an exemplar for providing all students with equal learning opportunity wherever they are placed.
 - Evaluation of impact – student engagement, user experience, knowledge gains, student perceived knowledge gains (see Section 3). This project has been evaluated in a number of formats looking at a number of aspects of student learning. Hence it serves as an example of how academics can evaluate novel offering or even course changes to ensure best practice and continue to refine and improve educational offerings. The evaluation of the Classic modules has been presented within the Faculty of Medicine, at the UNSW Sydney learning and teaching forum and there is also a video piece that will be available on the CELEBS website which will be on the Teaching gateway. An abstract has been submitted to ANZAHPE (Australia and New Zealand Association of Health Professional educators) and the AAMC conference internationally.
 - Evaluation of involvement of 'students as partners' – there was a small evaluation done to examine how the students involved in this project had benefitted (described above). This has been presented at one of the PVCE Students as Partners workshops.

Impact

- Impact on student experience – students now have access to high quality learning opportunities in medical ethics. These can be done flexibly and are integrated with the clinical experiences of the students. Students have found these modules relevant and highly engaging. Some commented that they had been in the exact situation and hadn't known what to do before doing the modules. These modules will also deliver learning opportunities to students at the Port Macquarie campus.
- Impact on staff within medicine – a number of other faculty members are now looking at ways of using VR technology to enhance their educational offerings. These are particularly useful when trying to provide support for students in diverse learning environments (as during phase 3) or when it is difficult to provide them with adequate real-life learning experiences (such as paediatrics).
- Impact on staff throughout the university - The framework used to create these modules can be adapted for use in any faculty that may experience some variability in learning opportunities due to different workplace placements for students. They also provide an example of how to evaluate an educational innovation.

Strategic Priorities

- This project addresses the strategic priority of academic excellence by the design, development and delivery of an educational offering that provides students with a distinctive learning experience. We have also built into this project, a formal evaluation of the modules which has allowed for refinement and improvement. Subsequent modules are also now being developed using this feedback.

Student numbers impacted by this project

- This project will directly benefit all medical students going through the medicine program at UNSW Sydney. The modules are undertaken flexibly across the last 2 years of the program (phase 3) in conjunction with their workplace learning. They will be linked to 7 courses in Phase 3 across two years

of the medical program. There are approximately 250 students in each year of medicine. A module is also now being used by Year 4 students in the clinical re-entry year at the end of their independent research project year.

2. Dissemination strategies and outputs

Dissemination

- The deliverables of this project (the Classie modules) have been easily disseminated to all medical relevant medical students via regular email notifications about their courses. Dissemination of the process of the design, development and creation of these modules to other academic staff within the faculty has been done via Phase committee meetings and also at the annual Medicine faculty learning and teaching forum.
- In relation to dissemination to the broader academic community at UNSW Sydney, this project has been presented at the annual UNSW Sydney learning and teaching forum. It is also being presented as part of the EF development 'lunch and learn' series, with a particular emphasis on lessons learned which may be valuable to other EF academics. This project illustrates many valuable broad learning topics for academics outside of medicine including – how to design and develop an innovative learning tool, the use of VR technology in teaching, how to evaluate a teaching innovation and the use of students as partners in the development of novel teaching tools.
- An abstract has also been submitted to present this project at the annual meeting of Australia and New Zealand Health Professional Educators in Canberra in July 2019 and to AAMC (November 2019).

Outputs

- One of the outputs resulting from the Classie project will be that UNSW medicine students will obtain a more holistic education and be better supported in their learning, particularly in relation to the Medical Ethics graduate capability. They will receive explicit teaching in Medical Ethics that integrates with the practical clinical experience they have in the workplace. They have already given feedback on the fact that they modules are helping them learn how to deal with real clinical situations (which they didn't previously know how to deal with). They are also writing reflections on how the integrated learning of medical ethics using these modules has helped with their medical learning and practice (see Section 3).
- These modules are doing at least two incredibly useful things:
 1. Supporting students by providing high quality, relevant and practical educational material.
 2. Encouraging them to develop their reflective learning skills by making it contemporaneous with clinical learning and experience.
- Doctors need to be lifelong reflective learners, with the ability to adapt and evolve to changing workplace needs, knowledge and technology. These modules help by providing up to date content in an innovative format, which integrates with contemporary workplace learning. Apart from providing support in relation to the medical ethics content for medical students, they also help students develop other capabilities such as professionalism, communication, and reflection.

3. Evaluation of project outcomes

Evaluation strategy

- Evaluation was initially done using 3 main formats and examined 4 main aspects (student engagement, user experience, analytics relating to knowledge gains, self-perceived knowledge gains). The formats used were – pilot evaluation study with questionnaire (quantitative and qualitative data), small focus groups with facilitator (qualitative data) and smart sparrow analytics (qualitative data). The questionnaire has also subsequently been administered to students undertaking the modules as part of their ongoing medicine studies, rather than in the focus group setting.

- Fifty-two students participated in the pilot evaluation study that used mixed methods to collect qualitative and quantitative data after completion of 3 modules – student engagement, knowledge gains (using analytics and self-perceived) and user experience. These were done (other than quantified knowledge gains) using an online anonymous questionnaire and a focus group which was conducted on a subset (20 students).
- Smart Sparrow analytics on time spent doing the modules and knowledge gains were also assessed for this pilot evaluation study.
- We also subsequently collected and reviewed anonymised student reflections as further qualitative data about the utility of the Classie modules.
- We have also collected further evaluations using the same questionnaire from subsequent students who have done the modules.

Evaluation Results:

- Engagement - Over 95% of students agreed or strongly agreed that the modules were engaging and interesting. Many stated that they had been in similar clinical scenarios and not known what to do. Almost 90% said the modules helped them understand the ethical issues that affect clinical decision making either a lot or a great deal. They commented that scenarios were clinically relevant and informative.
- Self-perceived knowledge gains - the self-perception of knowledge gains was extremely high by over 90% of students.
- Measured knowledge gains - Quantitative analytics showed a 10% increase on the mean mark on 1st quiz attempt, between entry and exit after doing these modules.
- User experience was mixed with a fairly even spread across the likert scale between strongly agree-disagree for whether the VR videos enhanced the learning experience. Free text comments revealed a theme of wanting to get through the videos more quickly than possible with this technology. Some students even requested a transcript.
- In the small focus groups, they touched mainly on:
 - Engagement: overall very high, thought the modules were really fun and they covered a lot of really good ethical scenarios.
 - User experience – two main themes emerged. One was about technical issues which we experienced on the night (such as slow download speed) and time to watch a module (they could not be sped up). Some students commented that they could read a scenario much faster, so that it would be nice to have the option of watching or reading. The other theme was around the benefit of VR technology. Once again, this was quite mixed. Some students commented things like 'The videos in the VR thing was like a really cool and it ... in a way it felt really cool to be immersed' and 'it really helped you focus on the scenario'. Others commented that they felt it was a 'bit gimmicky'.

Report on evaluation

- As mentioned above, the evaluation of this innovation has been a very important aspect of the project. It has been very useful in confirming some things, such as the value of the content provided to the students, it has helped us to refine modules to make them even better (both in terms of user experience and content) but it has also raised some interesting questions about the benefits of using VR technology.
- The evaluation of this project used a number of formats and a mixed method approach that allowed us to get information (both quantitative and qualitative) about a number of important aspects of these modules. This information has been used to improve the user experience and the technical aspects of the modules. The VR videos are now available in a number of different resolutions to ensure that download speed is no longer an issue. Instructions on how to navigate through the Smart sparrow modules, some of the content and the exit quizzes have also been improved. We have had subsequent students complete the questionnaire after doing the modules and these specific issues appear to have been resolved.

- A surprising aspect of the student feedback was the mixed response to the use of VR technology in both the questionnaire and the focus group. Whilst most students embraced it and reflected on the experiential and emotional nature of the immersive scenarios, a number did not. On digging deeper, the sub-theme of this was two-fold – technical (slow download for some videos) and time-related (VR technology did not allow students to skim/speed through the video). Explaining the educational theory behind this technological approach has also proved to be important and mostly very appreciated. Although the main purpose of using the VR technology is now made even more explicit to students, some will continue to be strategic learners and have a very strong desire for their study to be as time efficient as possible. The students also expressed a strong desire for most modules to be created using these formats.
- Student reflections were perhaps the most telling feedback on the project in terms of its utility from a student perspective. Many of the students did reflections on these modules in 2018. They revealed a high level of reflective learning as a result of integrating these modules with workplace learning. Some examples follow:
 - I had been in the exact scenario as Psychiatry 1 - Schizophrenia. In that session, we did not address the ethical issues with the patient, and the doctors did not explain them either. This scenario helped me understand how to deal with such a situation in real life
 - While I thought that I had understood the guardianship and idea of 'person responsible', in reality that can be quite a nuanced concept, and this module was a fantastic learning experience for situations in which the answers aren't black or white
 - It made me reflect that each ethical decision is case based- but requires a strong understanding of the fundamental ethical and legal obligations to underpin that decision
 - Completion of the Classic modules provoked a strong response in me as they reflected scenarios which I have encountered during the course of Phase 3.
 - The medicine case regarding transfusion refusal prompted me to reflect on a case which I encountered during my gastroenterology term.
- We also made modifications to the modules following the evaluation. We created videos of different resolutions to cater to situations with the potential for poor download speed. We made very explicit the purpose of using SCI, despite the fact that scenarios could be read faster. We anchored them in clinical experience and encouraged both discussion and reflection.
- Subsequent questionnaire feedback has been even more positive. For example:
 - The ethical concepts explored are excellent and very relevant for phase 3 assessment relating to ethics. A good tool to have.
 - Everything was explained very well and in simple, clear terms.
 - The information was succinct, digestible and accessible.
 - Having realistic life scenarios that we may encounter
 - These are really good, the topics are all very relevant. The resources provided were interesting. The videos were great.
 - It felt very real!
- We will continue to collect feedback and improve these modules wherever possible.
- Despite the loss of funding, I am in the process of creating 4 more modules in response to student requests.