

# A hearty dose of simulation—sharing best practice and resources across different disciplines in medicine and medical sciences.

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## Introduction

- In recent years, many teaching technicians have had to diversify their skills set and work in different departments or disciplines. From recent experience working both in classes for BSc students in medical sciences and now in clinical skills, it is clear that students from across these different disciplines all cover many of the same practical aspects of a subject, but from different approaches. It is also clear that many of these disciplines may operate autonomously and do not necessarily share all of the practical and staffing resources they might have access to.
- One of the areas where this is evident is in cardiovascular teaching. Physiology students use PowerLab/ LabTutor data capture resources extensively with peers or external volunteers, whilst subjects like medicine tend to rely more on simulation with volunteer 'patients' or simulation mannequins. Since the merger of medical science and medicine at our institution, the opportunities for sharing staff skills/experience, resources and equipment have increased.



Figure 2. Examples of high-fidelity human patient simulators that are now shared between clinical and medical sciences students.

Medical science students now have a dedicated simulation lab, but now also have access to the wide range of clinical simulator facilities traditionally only used by medicine and dentistry.

## Aims

Using the skills of a member of teaching technical staff who has experience of working both in medical science laboratories and in a clinical skills facility, the following changes to our practice were identified:

- Increase development of practical skills that are transferable to real world work place scenarios and increase employability beyond studentship.
- Create versatile practicals that encompass varying levels of experience and have the scope for progression.
- To integrate styles of teaching between the different disciplines to improve teamwork and the training experiences for students of all backgrounds.
- To identify areas of staffing, resourcing and experience that could be better shared.
- Introduce staff in different disciplines to different ways of teaching and learning physiology.

## General Approach to Improving Innovation/Collaboration

- Theory and practical skills are both paramount in the learning process of science and medical students (Nestel *et al.*, 2011). From a technical aspect sessions take a great deal of planning and are designed to be cost efficient, time effective, enjoyable, adaptable to participants needs and should reiterate the understanding of complexed information (Fang, 2007).
- A practical session is always in review to keep it up to date and relevant, this fully equipping the students for the next stage of their careers. This involves:
  - Networking with sales reps to establish innovative ideas
  - Mimicking real life scenarios
  - Measuring cost and time against effort involved
  - Gaining continual feedback from staff and students

We have adapted some of the methodology used in simulation training to help staff to informally evaluate what they do in practical classes (see Figure 1).

Such an informal approach may make change seem less threatening to some individuals and just be viewed as a part of their normal continuing professional development (CPD).



Figure 1. A progressive approach to studentship into the workplace.

This model can be used to encourage teaching staff to reflect on their practices and to improve upon them.

## Innovations in High-Fidelity Simulation Use

- Current examples include the introduction of high fidelity human patient simulation into medical sciences.
- The recent installation of a dedicated CAE iStan Adult Simulator solely for medical sciences teaching in our biomedical e-learning lab, and provision of access for these students to the other clinical simulators has allowed the provision of a greater range of research projects for BSc students and is allowing science academic staff to diversify the range of assessments and teaching styles that they use with the students in both medicine and science (see Figure 1).
- This also provides support and backup to the clinical simulation staff who now have a wider pool of staff who are experienced in high-fidelity simulation and who can author new materials. Science staff have also adopted multi-station, skills-based practical examinations (OSPE's) that are commonly used in clinical training.

## Cardiovascular Teaching

- Staff have also been encouraged to explore other areas of resource, equipment and expertise where they might be better able to collaborate such as in cardiovascular physiology teaching.
- By showcasing different types of equipment and resources, we have increased the ability of staff in both non-clinical and clinical disciplines to improve their teaching and the practical experiences in their classrooms (see Figure 3).



Figure 3. Resources now shared between science and clinical disciplines.

Collaborative use of such resources has led to an increase in the range and quality of student projects and teaching sessions available, plus is viewed favourably by the University as a means of providing better value for money when providing funds to purchase expensive educational equipment.

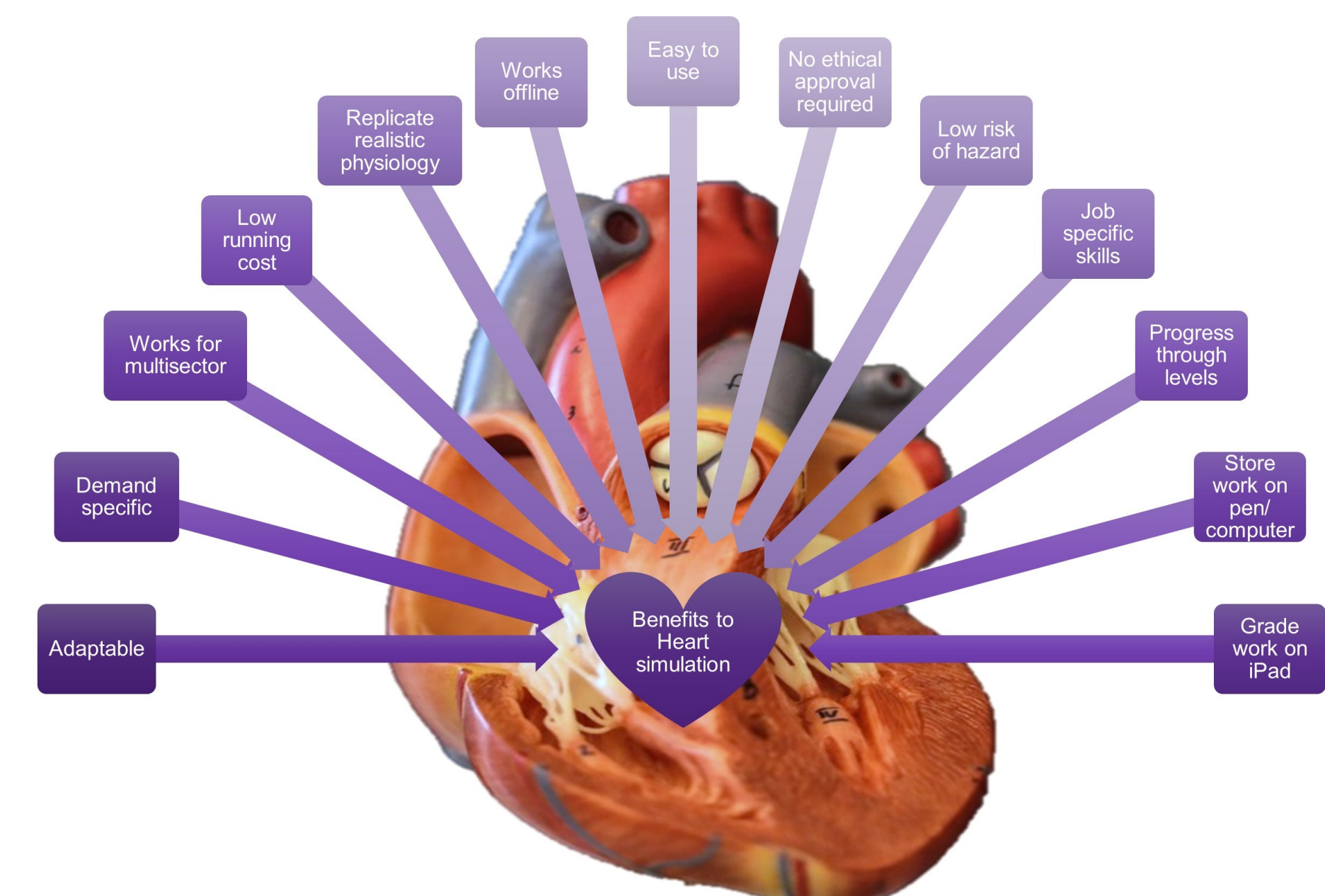


Figure 4. Perceived benefits of sharing simulation using cardiovascular physiology example.

The feedback here is typical of staff members who use a variety of resources, rather than just sticking to one educational approach.

- Initial cost is high
- Undiscovered medical concern may be detected in human volunteers
- Unable to examine physical cues (McFetrich, 2006)
- Invasive to individuals (peer testing ECG)
- Empathy when not a real human declines (Neumann *et al.*, 2011)

Figure 5. Perceived limitations of using some of these new technological approaches

Not every type of technology is useful for all types of class or topic, and we encourage users to weigh the benefits and drawback during the planning stages.

## Discussion & Conclusions

- Science staff are also now introducing use of Powerlab data capture technology to clinical staff to help them improve their research capacity and help clinical students understand physiological measurement more effectively. Sharing of synthetic physiological samples from science classes has also allowed medicine to improve their use of moulage during clinical teaching.
- Our experience is that the basic biomedical and clinical disciplines can benefit from greater collaboration in terms of sharing experience and resource in practical teaching.
- We have found that a technician-led initiative for collaboration in practical teaching can pay dividends and is viewed favourably by most academic staff, allowing more efficient use of existing resources and enabling students and staff to more easily undertake a wider range of learning activities.

### References

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