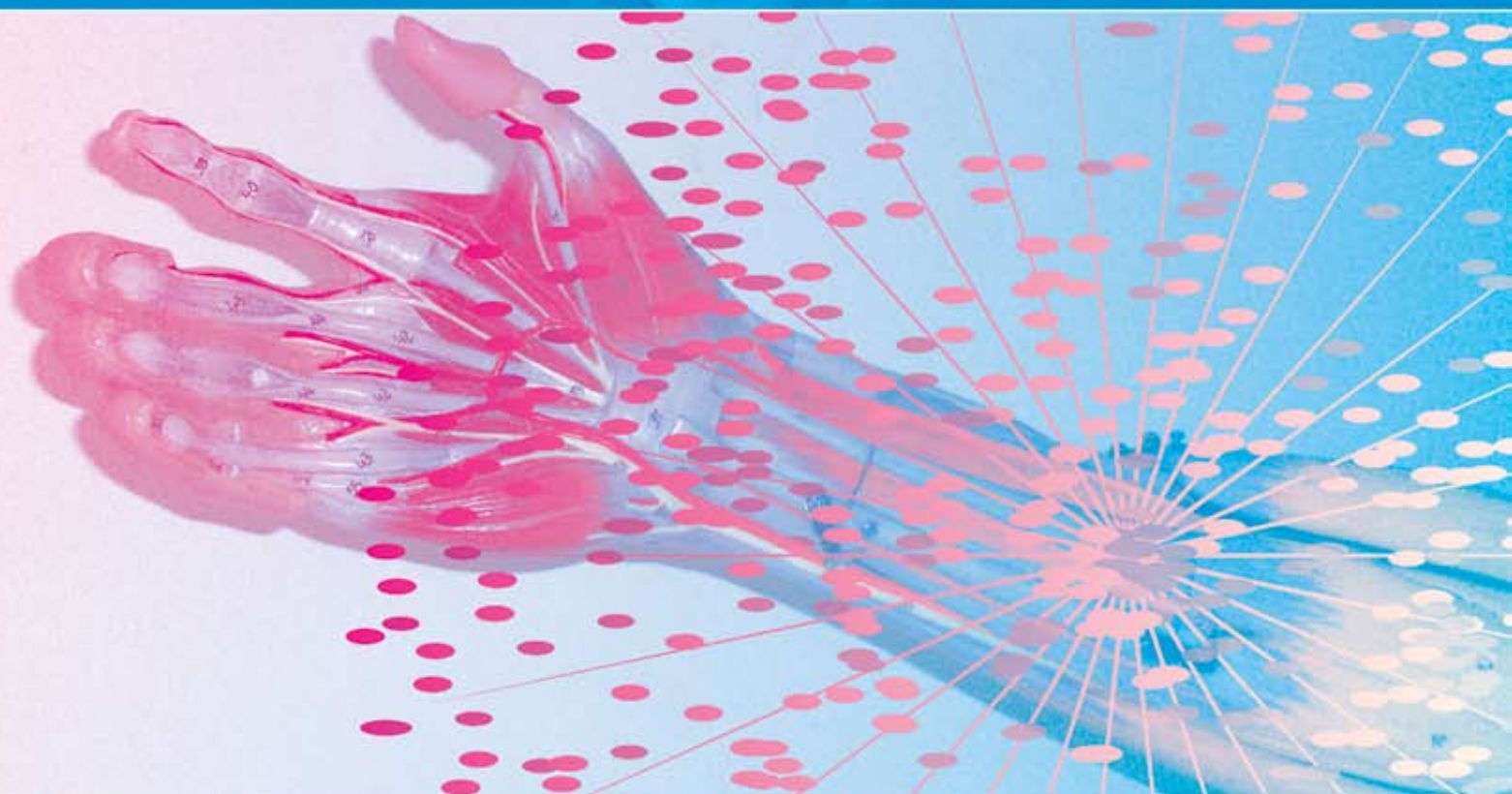


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A Peer Reviewed International Journal for the Advancement of Clinical Skills
- *'docendo ac discendo' - 'by teaching and learning'*



In this issue:

Simulating haemorrhage in medical students

The i-DREAM Project

Educational leadership: a core clinical teaching skill?

Designing a clinical skills programme...

Learning to talk with patients

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The International Journal of Clinical Skills looks forward to contributing positively towards the training of all members of the healthcare profession.

Contents

The Executive Board Members	71
Acknowledgements	71
The Editorial Board	72
Foreword	73
- Dr Atef R Markos	

Editorials

Simulating haemorrhage in medical students	74
- Marina Sawdon	
Educational leadership: a core clinical teaching skill?	79
- Judy McKimm	
Investigating new approaches to facilitating the learning of female pelvic examination for health care professionals	86
- Nick Purkis	
Using simple learning objects to enhance early skills learning	94
- Andy Wearn	

Original Research

i-DREAM Project: Interactive Diabetes Research Evidence Application in Management	99
- Vinod Patel	
Is it possible to prepare medical students for clinical years using a laboratory based education programme?	108
- Claire Dunstan	
The evaluation of a ward simulation exercise to support hospital at night practitioners develop safe practice	112
- George Hogg	
Initial evaluation of the use of experiential learning in teaching clinical skills to trainee physicians	118
- Paul Jones	
Learning to talk with patients: feasibility of a volunteer simulated patient programme for first-year medical students	121
- Debra Nestel	

Reviews

Designing a clinical skills programme: a partnership between students, patients and faculty	130
- Darrell Evans	
Examination of the ear: a structured teaching resource	135
- James Rainsbury	
Developing instructional videos in-house; notes from the front line	138
- Colette Lyng	
Peripheral Arterial Disease & Ankle Brachial Pressure Index (ABPI)	143
- Muhammad Akunjee	

Correspondence	147
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Clinical Skills Notice Board	148
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Foreword

Globalisation and Clinical Skills

The International Journal of Clinical Skills (IJOCS) – the new road to new skills? Maybe – but it has certainly opened a platform for the globalisation of clinical skills. The World Health Organisation's (WHO) programme on globalisation targets public health risks, security and outcomes. Driven by the concept of “global public goods” and cross-border health risks, the underpinning issue is to promote health for the poor by way of achieving national health targets. As with the IJOCS, the WHO strategy seeks new technologies in the clinical arena to provide investigative tests – with the WHO being particularly interested in those tests which are suitable for developing countries along with new drugs for endemic diseases. The aims are indeed noble. Investigative and therapeutic technologies create a vacuum for the dissemination, sharing and globalisation of clinical skills, which remain the main asset and commodity which clinicians of poorer nations exercise, promote and share. The IJOCS has released a bolt for health professionals to do just that – share knowledge.

The provisions of the healthcare industry in developed countries by sheer volume and demand, streamlines clinical skills into sub-specialised areas. Clinicians (medical, paramedical and nursing) in these areas gain clinical expertise that are unique to their field and emerge from rich patient-clinician interactions. The clinical skills of dealing with children with disabilities, rehabilitation medicine and terminal care are mere examples that are deficient in the poorer health economies that spend the best part of their human resources to combat diseases of malnutrition and poor sanitation.

The IJOCS provides a global resource centre for sharing and promoting clinical skills between clinicians and health professionals. Senior clinicians, who practiced medicine during the last four decades, will have recognised a gradual and progressive pattern of dependence on technologies with less reliance on clinical skills. The IJOCS provides a platform for sharing and debating the inter-phase and interactions between new technologies and clinical skills. It promotes the development of a new layer of clinical expertise that will emerge from the interpretation, application and/or exclusion of new technologies, for the benefit of clinical care.

I trust that clinicians practicing in poorer health economies will enhance the Journal by sharing their clinical skills and knowledge. Their special expertise of managing clinical needs, within restricted resources, expectedly stimulates the human ingenuity and creativity, leading to the development of clinical skills suitable for each unique circumstance. I, for one, will be actively supporting the IJOCS innovative approach to collaboration of skills. The IJOCS will provide a vehicle for the transmission of these skills across the globe for sharing expertise between different health economies to enrich the overall clinical skills arena.

Hippocrates recognised the professional responsibility of the individual clinician by stating that physicians “must have a wealthy ...medical knowledge, clinical skills, medical ethics, interpersonal skills,...”. The IJOCS improves the physician's opportunity to enhance his/her clinical skills “by teaching and learning”.



Dr Atef R Markos FRCOG FRCP

Developing instructional videos in-house; notes from the front line

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Introduction

In nursing it is expected that newly qualified nurses are competent in a wide variety of clinical skills upon registration. Therefore, there is an onus on undergraduate educational programmes to ensure that students are prepared in this regard so that they can deliver high quality care [1,2]. Instructional videos are recognised as valuable educational tools to assist students acquire many of these skills. They are successfully used in many disciplines including nursing and their benefits have been documented through research [1,3,4] although it has been suggested that further empirical evaluation is required in this area [5].

A group of School of Nursing Staff from Dublin City University recently completed a project to develop and produce a set of instructional videos that are now embedded in one first year module and form a compulsory part of students' course requirements. These videos are continually available to students via the media web server and can be accessed both on and off campus provided that broadband facilities are available. In this paper the video development and production process, the difficulties encountered during the process, the integration of the videos into the module and subsequent changes in teaching methods are discussed. In addition the evaluation methodology and results are briefly outlined and discussed.

Background

With the 'transfer' of undergraduate nursing education in Ireland to the tertiary education sector in 2002, the BSc. (Hons) in Nursing became the standard entry route to the profession. This four year programme consists of three pathways – General, Mental Health and Intellectual Disability Nursing. A fourth undergraduate pathway, the Integrated Paediatric and General programme started in September 2006. This is an extended programme which allows for dual entry to the General Nursing and Sick Children's Nursing registers upon completion. Notwithstanding the distinctive features of each pathway, the common elements of the programme are delivered through 'shared' modules to all four pathways. Several of these modules have a significant skills component, particularly in first and second year. Traditionally, these skills were taught to groups of students using a demonstration and practice technique. This didactic approach involved the lecturer demonstrating and explaining the skill followed by students practicing it under the supervision of the lecturer.

This teaching method presents a number of difficulties, many of which have been highlighted previously. These include resource intensity, consistency in learning experiences, information retention, reliance on a single demonstration and group sizes [6,7].

(1) Resource Intensive: We have 242 first year students and to provide all of them with demonstration and practice of skills in a shared module requires in the region of 150 hours of lecturer time. Much of this time is spent repeating the same demonstration to different groups of students. Feedback from lecturers suggests that it is difficult to remain motivated and enthusiastic while repeatedly delivering the same material. We believed it would be better use of lecturers time and

Abstract

Blended learning is a combination of two or more teaching methodologies intended to enhance the learning experience. A group of School of Nursing Staff from Dublin City University recently completed a project to move towards a blended learning model for the practical skills element of one core first year nursing module. This involved the production and development of a bank of continually accessible online instructional videos which are now embedded in the module. The main focus of this paper is on the challenges encountered and solutions devised during the development, production and integration into the module of the instructional videos. The reasons for the shift to a blended learning model and the student evaluation of the videos are also discussed.

more beneficial to students to be in a position to reduce the amount of time spent on demonstration and dedicate more time to practice where individual concerns and issues could be addressed. Practice is vital to acquiring psychomotor skills as it enables students to learn the movements required and become proficient at them [8,9].

(2) Consistency in Learning Experiences: Although a template was used for each skill to ensure that the same material was being taught, lecturers teach in different ways. They may place emphasis on different areas of the skill or may spend different amounts of time on the demonstration or practice element. In addition, the more demonstration that is done the less time there is for students to practice. The introduction of online videos would ensure a more standardised approach to skills teaching. Students also learn in different ways with each student having their own individual learning style [10,11]. The didactic nature of lecturer demonstration does not suit all students. The online videos represent a more student centred approach allowing the students to watch them in their own time, at their own pace as often as they choose. The addition of online videos to the module would broaden the teaching and learning methods used in the module thus catering for a wider range of learning styles.

(3) Information retention / reliance on a single demonstration: Some skills are quite complex and difficult to learn. It can be difficult for students to absorb, remember and perform all of the steps presented in a single demonstration. It was not possible to timetable additional demonstrations because of the large numbers of students in the programme and the consequent effects on lecturer and Clinical Education Centre availability. Students could attend additional practice sessions facilitated by the Clinical Skills Nurses but would still be relying on memory after these. The videos would provide continually available demonstrations which the students could watch at their own convenience from any location.

(4) Large group sizes: Due to high student numbers in first year core modules it was usually necessary to have 25 – 30 students in each group. With these numbers it can be difficult to ensure that all students are benefiting from the learning experience. Even ensuring a group of this size can actually see the demonstration presents logistical problems. It can also be quite difficult to get around all of the students to watch them performing the skill in the time allocated particularly if some students are having difficulties or practicing incorrect techniques which, once committed to memory can be challenging to unlearn [12,13]. Continually available online videos would provide students with reference material for any aspects of a skill they were unsure of.

In order to address these issues a group of academic, IT and Clinical Education Centre staff in the School of Nursing embarked on a project to adopt a blended learning approach to skills teaching in one first year module – “Meeting Fundamental Needs in Nursing Practice”. Blended learning is described as a combination of teaching methods that complement each other including, but not limited to, traditional classroom teaching and on online activities [14]. This involved the development of a series of teaching videos that would be embedded in one first year module and provide an additional teaching method to complement the existing teaching methods of

lecture, demonstration and practice [3,15]. They would form a core component of the module rather than functioning as supplementary material and would be continually available on-line. This additional e-learning element in the module would provide an ‘increase in the number, frequency, and variety of student learning experiences’ without increasing demands on academic staff [16, page 226]. Research suggests that combining online videos with face to face instruction can enhance understanding and learning of clinical skills and yield better results than either method used alone [7,15,17,18,19].

Previous experiences in video production

While this may have seemed an ambitious project a number of the project team had prior experience in skills video production. In 2005 a single video focussing on aseptic technique was produced and used to teach this skill in the second semester of the 2005/2006 academic year. This teaching video replaced the demonstration element of the skills session. Students viewed it online in the computer laboratory before attending their timetabled skills session. After viewing the video, the students spent the rest of the allotted time practicing this skill under the supervision of the lecturer. In addition to timetabled skills sessions students could avail of additional practice sessions and watch the video as often as they wished.

This method of skills teaching was evaluated positively by the students and the lecturer involved. Of the 66 students who completed the questionnaire, 86.4% stated that it was a good way of learning a skill. Responsibility, autonomy and being able to engage in self-paced learning were valued by them. They also identified it as a valuable revision tool [20].

We subsequently developed five teaching videos simultaneously. Four of these focussed on the basic but important infection control issues of hand washing, using alcohol hand rub, putting on and taking off an apron, and putting on and taking off non-sterile gloves. The fifth video demonstrated the insertion of suppositories and enemas. The four infection control videos were used in a first year module in semester one. They were available to students in addition to the demonstration and practice element of teaching.

The main aims of developing these videos were to experience and reflect on developing a number of videos simultaneously and to provide students with a continually available learning resource for fundamental yet vital skills that they will need to use throughout their nursing careers.

As a result of the positive evaluation of the “Aseptic Technique” video and the understanding of the video development and production process gained from developing the small set of teaching videos we felt that we had sufficient knowledge and experience to embark on the aforementioned project, which was to develop a series of teaching videos that would be embedded in, and form a core component of one first year module. The co-ordinator of this particular module, who had been involved in script development for the videos previously made, became actively involved in all aspects of this project. The project team consisted of five members including four nurses with diverse clinical expertise and clinical skills teaching experience, and an audio-visual technical officer with extensive experience in video

production and development. The potential value of this project was recognised by a funding grant from the Learning Innovation Fund in Dublin City University.

Before starting the project we examined the possibility of using teaching videos produced externally but these did not meet our requirements for a number of reasons. Many of them did not cover material in the way that suited the requirements of our particular student group [6]. It is very expensive to buy a site licence to allow continual access via the media web server to the videos. In addition we would have had to buy the whole series; we could not select certain parts [6]. Producing our own videos would circumvent these issues and allow us to make a set of continually available and accessible learning tools tailor made to meet our students learning needs that could be updated in the future if required.

Video development and production project

The video development project started in late 2005 and finished in February 2007. Thakore and McMahon suggest that the development of an effective multi-media module consists of four phases [16]. These steps include

1. identifying the educational objective
2. designing the content
3. building or creating multimedia material that is relevant to the educational objective
4. the evaluation and integration of the e-learning module into the curriculum [16, page 228]

Having identified our educational objective the next steps were to design the content and create the videos. We originally identified 17 videos focussing on patient hygiene, elimination, admission to the care setting, eating and drinking, respiratory therapy, patient positioning and temperature measurement.

The production and development of the videos was a complex process that involved a number of independent steps many of which were ongoing simultaneously. These included

1. Script writing, circulation, feedback, and revision
2. Recruitment of actors
3. Identification and procurement of material resources and equipment
4. Initial filming
5. Reviewing and editing of video footage
6. Re-shooting of video footage (where required)
7. Voiceover recording
8. Insertion of graphics
9. Final editing

Challenges encountered

During the development and production of the videos we encountered a number of procedural difficulties that could be classified as either technical or educational. From an educational perspective the difficulties related mainly to the content of the videos and ensuring that they reflected best practice.

Scriptwriting is an extremely important and time consuming aspect of video production [6]. It is vital to ensure that all

relevant, accurate, up to date information is included, but at the same time scripts must be kept clear and concise to facilitate student understanding and retain their concentration and attention. In our initial scripts we included all aspects of the particular skills being covered including theoretical and background information. For example, the original tympanic temperature measurement scripts included information about when temperature should be measured, how the tympanic thermometers work, the relationship of tympanic temperature to core body temperature, normal ranges and terminology. When this was filmed it resulted in long clips of video with narrated script but no action. These were quite boring and failed to hold our attention even though we were watching closely for anything that might need to be re-recorded. It was therefore unlikely they would retain students' concentration or encourage them to use them in the future. As a result of this we reduced all of the scripts to include only information directly related to the performance of the skill. As the theoretical information related to the skills would be covered in lectures and notes, the students were not missing out on valuable information.

Obviously we wanted our videos to reflect best practice. At times it was difficult to achieve consensus as to what best practice is. One example is in relation to nebulisers. The main writer of this script recommended tapping the nebuliser chamber so that condensed solution fell back into the chamber thus ensuring that all of the solution was nebulised. This was queried by another member of the project group and it transpired that two of the four nurses in the project group were familiar with this practice and two had not heard of it. A search of literature and text books revealed nothing conclusive. A survey was conducted among school of nursing staff and replies were split roughly 50:50. We then contacted two respiratory nurse specialists one of whom said it should be done and one of whom said it should not. As there was no conclusive evidence that the nebuliser chamber should be tapped we decided that the best course of action was to film footage of this being done but to exclude it from the video for the moment. In this way we have footage available to insert into the video should it be conclusively shown that tapping the nebuliser chamber is best practice. One anecdotal finding of our script writing was that while there is a lot of research done on more advanced nursing practices or skills, in some cases there is very little published evidence to support common practices in basic nursing care.

The final educational difficulty encountered was that at times our actors, who were newly qualified nurses, felt we were being overly particular about how we wanted particular skills performed. Their argument was that what we were advocating does not always happen in practice. One example of this was assisting a patient with personal hygiene by providing a bed bath. The actors felt that in practice this would not be done in the deliberate, methodical manner we wanted portrayed in the video. While we recognise that parts of the videos may not mirror exactly what happens in clinical practice and that there may be more than one way to perform certain skills we felt that as they are educational instruments we should use a systematic, logical approach to ensure that students are aware of all aspects of the particular procedure. When they master the individual steps and understand their underlying rationales they can then develop their own way of performing them whilst still adhering to basic principles.

We completed 12 videos which are now continually available to students to watch online. We also recorded footage for another five videos in relation to elimination and oxygen therapy however did not proceed with them. In relation to elimination, the mannequins we have proved unrealistic as patients for two reasons. Firstly the perineal area is not sufficiently realistic to adequately demonstrate care of this area post elimination. Secondly, the footage demonstrating moving and positioning the mannequins was unrealistic due to the rigidity of the mannequins' limbs. We discussed the possibility of recruiting a person to act as a patient but felt that there were legal, ethical and professional issues that needed further investigation before proceeding with this.

After reviewing the footage of the oxygen therapy video we felt that it was a very complex skill with too many variations to cover in a video for first year students. It was difficult to clearly demonstrate various aspects of the skills without becoming repetitive, for example the variety of delivery devices available, their appropriate flow rates, and when humidification is required. Instead, segments of this footage are incorporated into the lectures on this topic.

Integration of videos into module

The twelve completed videos were first used in the first year module "Meeting Fundamental Needs in Nursing Practice" in the 2006/2007 academic year and have now been fully incorporated into the module. As with the "Aseptic Technique" video the students viewed the relevant videos prior to attending the skills session and then spent the time allotted to that particular skill practicing it. It quickly became apparent that this system worked well for straightforward skills but students had difficulties with more complex skills. They often needed further demonstration and explanation during the skills sessions. The teaching strategy was therefore adapted to reflect this.

Monitoring of the media web server indicates high usage prior to both timetabled skills sessions and objective structured clinical exams. We can only identify how many people watched the videos but cannot say how many times each student watched each video.

There were a number of expected benefits from this project including consistency in material taught, reduction in resource requirements leading to increased cost effectiveness, increased time for students to practice and continual accessibility.

Feedback from both students and lecturers suggests that the videos have helped to achieve consistency in material taught. As all students receive the same material in the demonstration element of the skills teaching, this part of the learning experience is consistent for each student. It also provides a guide for lecturers as to the desired content of the session.

It is less resource intensive and time-consuming than the traditional demonstration and practice method [7]. Lecturers still work with groups of students to facilitate supervised practice and answer any questions that may arise during the timetabled skills sessions however the duration of the hands-on practical sessions has been reduced for three reasons. The first is to allow students time to watch the videos. The second

is because for most skills, time no longer needs to be set aside for demonstration of the skill. The third is because students have been able to watch the videos as often as they like prior to the session, they are familiar with the skill so their practice time is more productive.

Although the official duration of the practical skills sessions has been reduced the clinical education centre has been block booked for this group of students for the times previously used. This means that students have the option to practice their skills for a longer period than before enabling them to perfect techniques, build their confidence and achieve competence.

Finally, the teaching videos are a continually accessible learning resource. They are available on the media web server 24 hours a day, seven days a week. Students can access them from any computer on campus, at home or on clinical placement using the appropriate ID and password. This has been described as "the holy grail" of e-learning [9, page 212]. This allows students to learn at their own pace in their own time giving a more flexible, independent, student centred learning experience [7,16,17,18]. With the previously used demonstration and practice method, if a student missed some element of the demonstration or forgot how to do something they would have to arrange a time with a clinical skills nurse to go through it. Students can still avail of additional optional sessions to practice any of their skills throughout the semester. A clinical skills nurse is present during these sessions to assist students and clarify any issues that may arise.

Evaluation of the videos

Following their integration into the first year module "Meeting Fundamental Needs in Nursing Practice" in the 2006/2007 academic year, outcomes and process evaluations were completed. Ethical approval was received from Dublin City University ethics committee.

Outcomes evaluation refers to whether or not the videos enhanced student learning. This involved allocating student volunteers to a control group or experimental group. The control group were taught three skills using the demonstration and practice method. The experimental group were taught these skills using videos and practice. Their learning was then assessed using a Multiple Choice Questionnaire and three Objective Structured Clinical Exams. Overall the students in the experimental group performed slightly better than those in the control group. However, these results are not generalisable as the sample size was very small ($n=10$) and the demographic profile of the students did not reflect that of the target population.

The process evaluation measured students' attitudes towards and opinions of the videos. This required completion of a questionnaire with open and closed ended questions. This showed that the students ($n=134$) were favourably disposed to the use of videos for skills teaching. They particularly valued being able to watch them in their own time at their own speed, and felt that they were a useful revision tool. However, some students cited not being able to ask questions immediately as a drawback and some felt that a demonstration should still be given by lecturers during the skills sessions, particularly for more complex skills. As previously mentioned, this adjustment was made early in the module to optimise learning for students.

Conclusion

Blended learning combining didactic teaching methods with online resources is recognised as a useful and effective method to teach practical skills. Online instructional videos, forming part of the educational package, offer a student-centred teaching method that enables students to learn in their own time at their own pace. Development of educational videos is a time consuming process that may present a number of difficulties. Whilst we cannot definitively state that this series of videos led to better academic outcomes for students it is clear that they were valued and regarded as a useful addition to the module.

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Mary Kelly is a lecturer in nursing and coordinated the module in question. Her clinical background is medical-surgical and critical care nursing. Her research interests include the promotion of student-managed learning in undergraduate nurse education.

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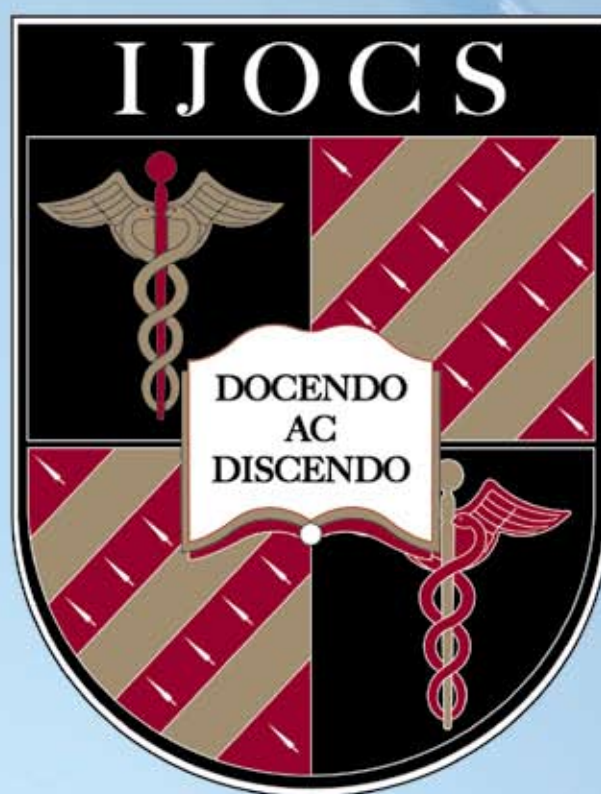
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