An Evaluation of Videos used to Support Clinical Skills Teaching for Pre-registration Student Nurses

Abstract

The NMC suggest that to ensure high quality patient care it is essential that student nurses develop competence in a range of clinical skills (NMC, 2010a). The aim of this project was to determine whether nursing students perform the skills of infection prevention; hand washing; aseptic technique and vital signs measurement more competently in an Observed Structured Clinical Examination (OSCE), when traditional face-to-face teaching is enhanced with the availability of skills videos via an e-learning platform. The study employed a randomised controlled design. An intervention group were taught face-to-face in the clinical skills lab and had the teaching supplemented by access to clinical skills videos. The control group received the same classroom face-to-face teaching but did not have access to the videoed blended e-learning resources.

Student nurses of mixed gender and ages (n=229) were invited to volunteer to participate in the in-house study. Eighty-eight students consented and were evenly divided by random allocation to the intervention group (n=44) and to the control group (n=44). The mean score for all clinical skills was higher in the OSCEs in the intervention group who viewed the videos, this was not, however, statistically significant as the results were >.05.

Keywords

Nursing, Clinical Skills, Videos

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Introduction

The Faculty of Health, Social Care and Education (FHSCE) at Anglia Ruskin University has in excess of 1,500 students registered on the Nursing and Midwifery Council approved (NMC, 2014a) undergraduate bachelor of science with honours degree (BSc (Hons)), in the field of adult nursing. Anglia Ruskin is one of the leading providers of nurse education in the United Kingdom with three campuses in the East of England at Cambridge, Chelmsford and Peterborough. Anglia Ruskin is the only Higher Education Institution awarded 'Outstanding' in the fit-for-practice category in the NMC review of nursing and midwifery course provision (NMC, 2013). The course has a substantial essential nursing skills element (NMC, 2010a), embedded in a modular structure and is taught to students alongside contemporary theory within the 50:50 (practice: theory) curriculum (NMC, 2010b). Healthcare educationalists at Anglia Ruskin seek innovative pedagogical strategies that can be used to enable the development of essential skills competence in students with diverse learning abilities (Government Equalities Office, 2010).

This paper reports on a study to explore the impact of blended learning using essential skill videos in addition to traditional face-to-face teaching methods. This educational initiative took place during the first trimester of the first year of the BSc (Hons) studies, and was therefore carried out prior to students' first clinical placement learning experiences.

Background

The 'traditional' Anglia Ruskin face-to-face method for teaching essential clinical skills prior to practice placements involves an interactive demonstration of a skill by a lecturer to groups of around 25 students in a clinical skill laboratory, after which the students practice the skill under the supervision of the lecturer who offers corrective teaching to reinforce best practice. In clinical practice, for students' placements, the NMC requires a normal maximum nurse registrant mentor to student ratio of 1:3 for safe student supervision (NMC, 2008). However, the NMC does not specify ratios of lecturers to supervise skills teaching or number of students in tutorial groups in their approved educational institutions. Anglia Ruskin aims for a skills laboratory maximum staff member to student ratio of 1:12 to teach the skills, thus requiring a minimum of two lecturers per skills session of 24 students. It can be challenging to resource two lecturers per skills session. Anglia Ruskin is committed to ensuring consistency of high quality in teaching clinical procedures and has recently employed specialist skills tutors on all campuses. All lecturers on the pre-registration nursing programmes are NMC nurse registrants, and the FHSCE has the highest number of Principle Teaching Fellows of any university faculty in the UK (HEA, 2014). This was achieved through Anglia Ruskin's HEA-accredited in-house Anglia Professional Recognition Scheme (ARU, 2014).

At the end of the first module of the pre-registration nursing programme, in the first trimester of Year 1, the students undertake an OSCE as a formative assessment and learning experience prior to their placement in clinical practice. Historically, students tell Anglia Ruskin nurse educationalists that skills acquisition is challenging, and it is evident in the formative OSCEs that many of the students struggle to grasp some of the complexities of skills competency. Complex tasks include, for example, demonstrating the manual dexterity of a skill such as hand washing whilst answering knowledge-based questions on infection prevention; or communicating effectively with the person role-modelling as the service user (patient) whilst removing a soiled dressing. The learned ability to speak-and-do is highly important in competent nursing healthcare, where the domains of cognitive, psychomotor and affective ability must be employed simultaneously.

The Department of Health (2013) states that health professionals need to be 'unfailing in rooting out poor care and unflinching in promoting what is excellent' (2013: 10), and in addition, there is a need to 'ensure that the fundamental standards of care that people have a right to expect are met consistently, whatever the settings' (ibid.). The NHS Constitution (2013) also highlights the need to ensure that the NHS aspires to high standards of professionalism in the provision of safe, high quality care. In preparing nurses for their professional roles Anglia Ruskin has, therefore, a responsibility to prevent problems by ensuring that excellence is achieved in clinical skills teaching, learning and knowledge acquisition.

Aims of the project

The aim of this project was to develop and evaluate the effectiveness of a series of instructional videos for clinical skills for the first module in the pre-registration adult nursing programme. This module introduces a range of foundation clinical skills (18 three-hour sessions over nine days) to student nurses prior to their first allocation in a practice area.

Method

The production of videos was funded by a Learning and Teaching Project Award of £3000 from Anglia Learning and Teaching. To work within the constraints of a tight budget, third year students from the media department were paid, in the capacity of digital partners, to assist in the production of the videos. The students were recruited via Anglia Ruskin's Student Employment Bureau and references obtained from their tutors. The production process was a partnership between lecturers at Anglia Ruskin and Senior Clinical Specialist Nurses at Addenbrooke's NHS Trust, who provided expert clinical advice. This partnership ensured that the skills demonstrated in the videos adhere to current evidence-based best practice. Third year student nurses were recruited via the Employment Bureau to demonstrate the clinical skills in the videos. The academic staff identified the educational objectives for each video in line with the module learning outcomes. The design of the content was allocated to six teams – one for each video – which included an academic and specialist clinical nurse. A team of three media students worked with the academics to storyboard the content. Filming was undertaken in the clinical skills labs on our University campuses in Cambridge and Chelmsford. Once filming was complete, the footage was edited, and then reviewed by a team of lecturers. During this review meeting graphics, text and background music were inserted and final editing took place.

The clinical skills videos created were:

- Aseptic technique
- Basic life support
- Measuring and recording blood pressure
- Hand washing and Personal Protective Equipment (PPE)
- Respiratory rate
- Preparing a bed space for admission

Participants

The study participants were recruited from the total population of first-year student nurses (n=229) undertaking the first module of the BSc (Hons) in Adult Nursing. Students were recruited from the Cambridge campus prior to a lecture which all students were required to attend. On the Chelmsford campus students were recruited prior to the commencement of one of their compulsory group tutorial sessions. A participant information sheet was distributed to all the students and they were asked to return a signed consent form via the internal post or their tutor to the researchers. The inclusion criterion was that the students were registered as part of the module 1 Registered Nurse Undergraduate Degree cohort. A total of 88 students (38.4%) volunteered to participate in the study.

Ethics

Ethical approval was obtained from the Faculty Research Ethics Panel prior to recruitment. All 'actors' volunteered to participate and were fully informed that the videos would be used extensively for educational and research purposes and would be published widely, including on Anglia Ruskin's My.Player, Vimeo, and for open access on the internet via iTunesU. All 'actors' consented to participate with this understanding.

Design

The study employed a randomised controlled design. Each participant was allocated a sequential number which became their unique code. A computerised random number generator was used to assign participants to the intervention or control group using these codes. The unique code was used was used on all written data to ensure anonymity. Both the intervention and control groups were taught the skills in the 'traditional' manner of lecturer demonstration followed by a scheduled period of practice in the skills lab under supervision. In addition to the 'traditional' teaching the intervention group were provided access to six skills videos via a password protected Vimeo account. All students were instructed not to share their password with other students.

After the completion of data collection, all students, including the control group and non-participants, were provided with access to the videos. The entire cohort were therefore able to view the videos prior to their first placement in clinical practice to ensure that there was minimal, or no, implications for patient care.

Viewing of the videos by the students

The videos proved popular with student nurses with a peak in viewing on day 23, which was the day before OSCE assessments were undertaken on the campus in Chelmsford which has the largest number of students registered on the RN Programme.

The five graphs below shows the viewing data for the videos. Three separate statistics are displayed for each video: Loads; Embed Plays; and Total Plays. A Load was counted each time the video player loaded on any page, either on Vimeo.com (a video-sharing website, where the videos are hosted) or embedded on another website. Embed Play refers to videos viewed directly on the *Vimeo* website. Total Plays is the number of plays of a video both within *Vimeo* and on any other sites in which it is embedded, and therefore includes Embed Plays. The fact that Total Plays and Embed Plays are identical demonstrates that access to the videos was restricted to the password protected Vimeo website and that students without a password did not access them elsewhere on the internet.

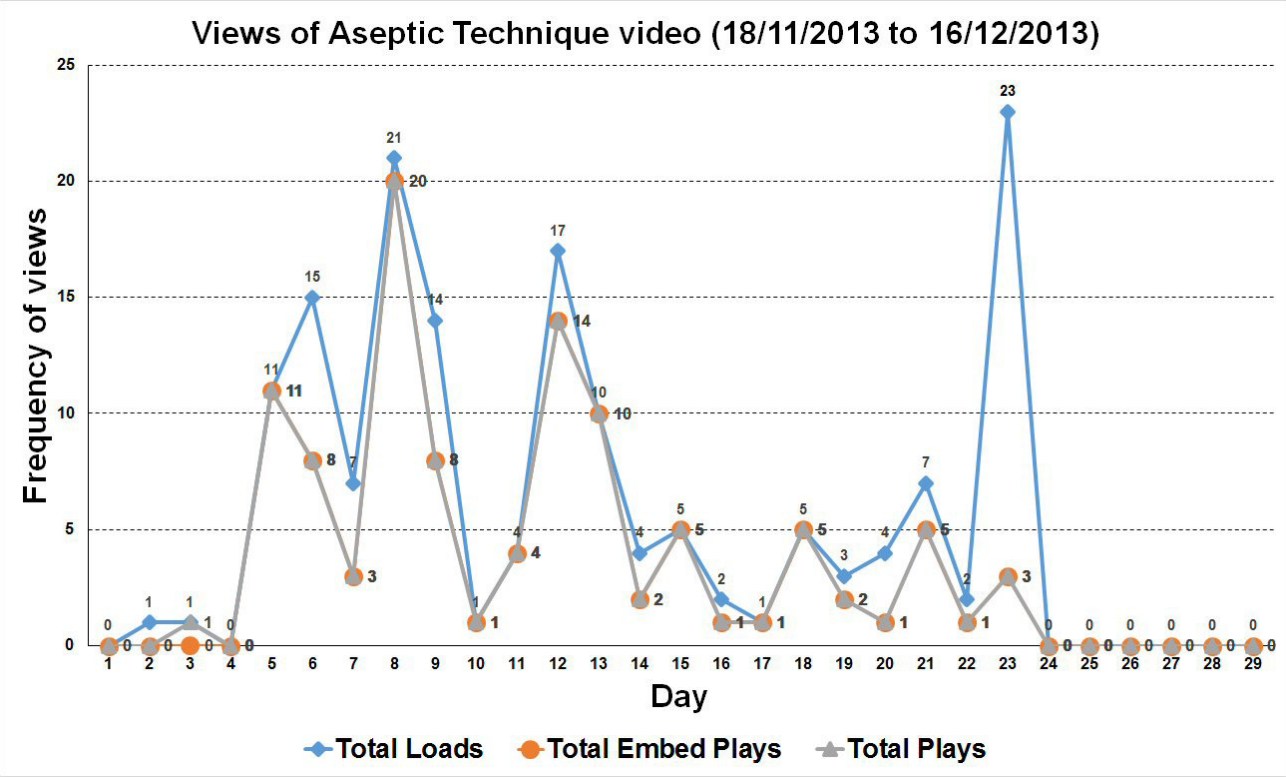

Figure 1: Loads and plays of Aseptic Technique video

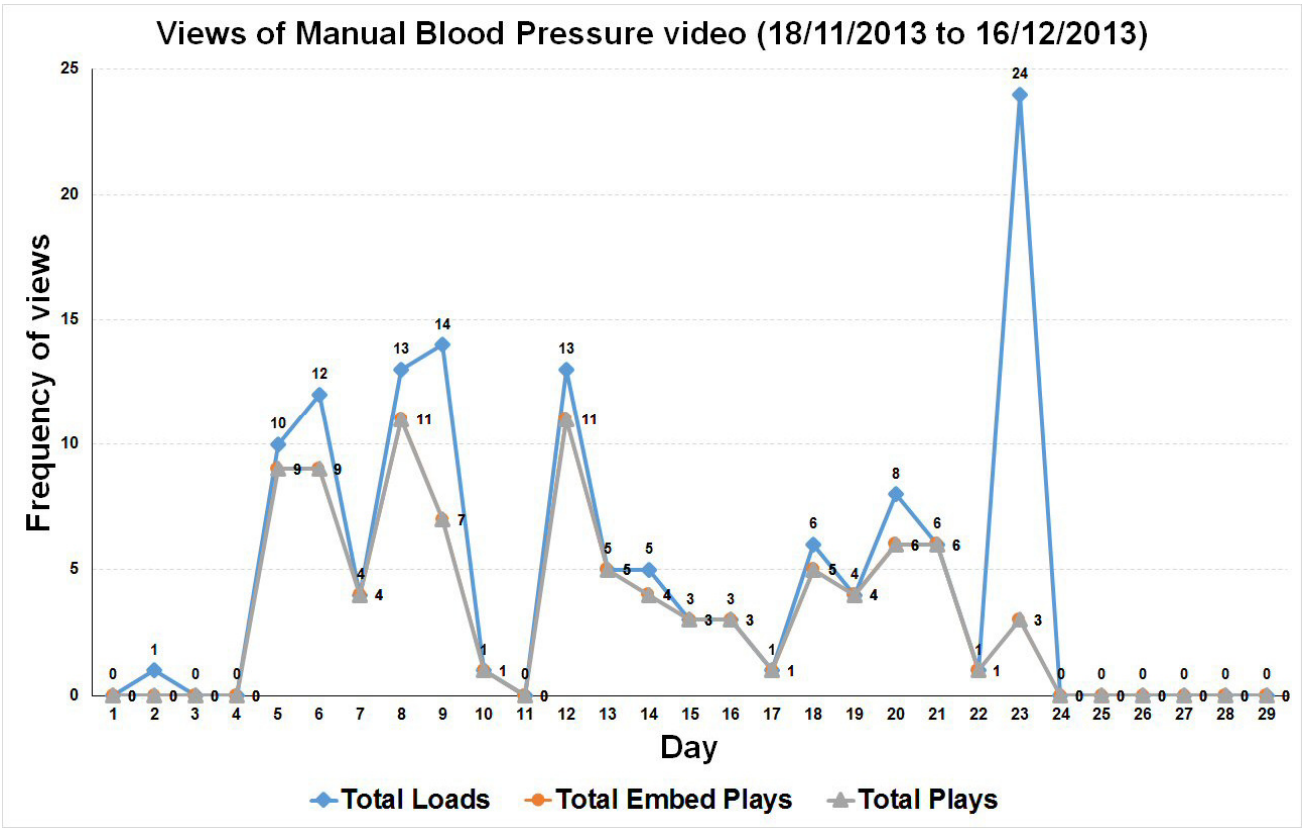

Figure 2: Loads and plays of Manual Blood Pressure video

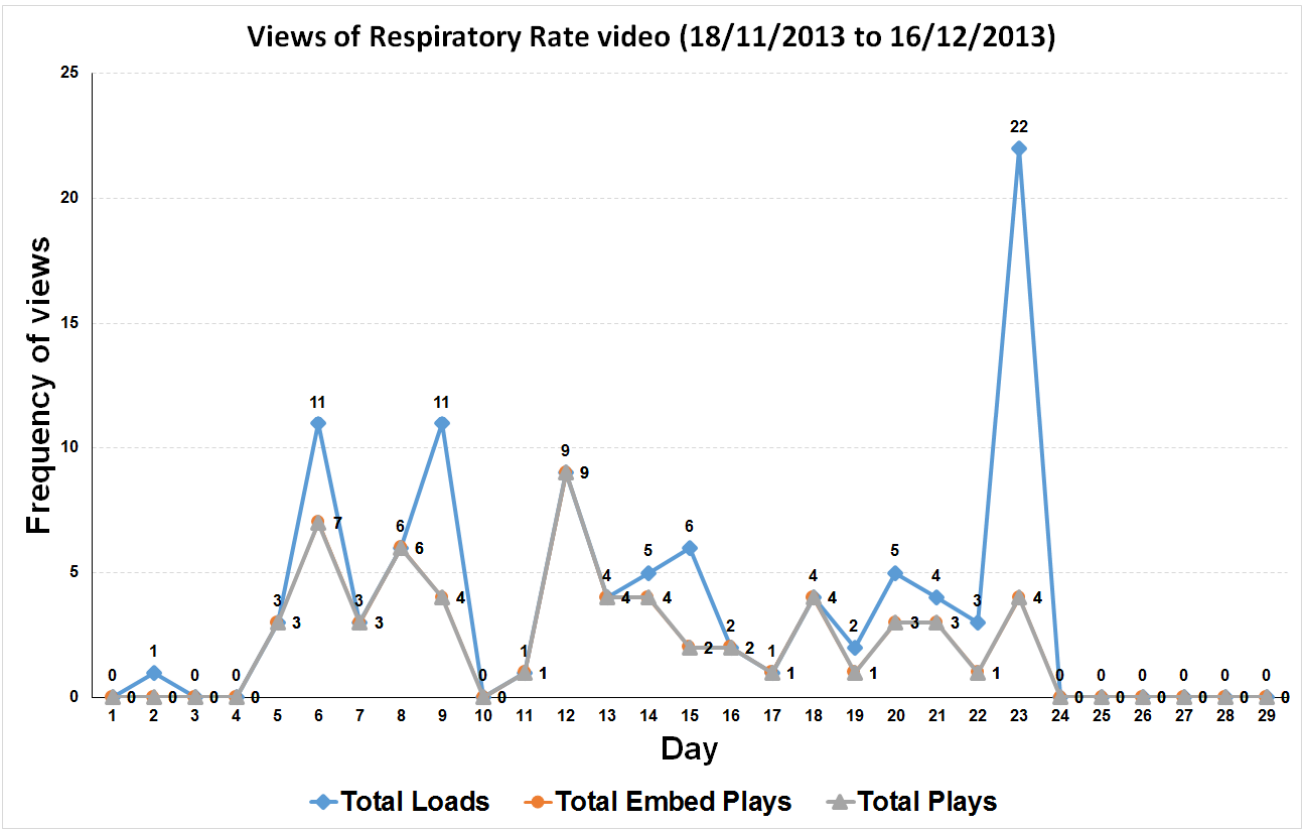

Figure 3: Loads and plays of Respiratory Rate video

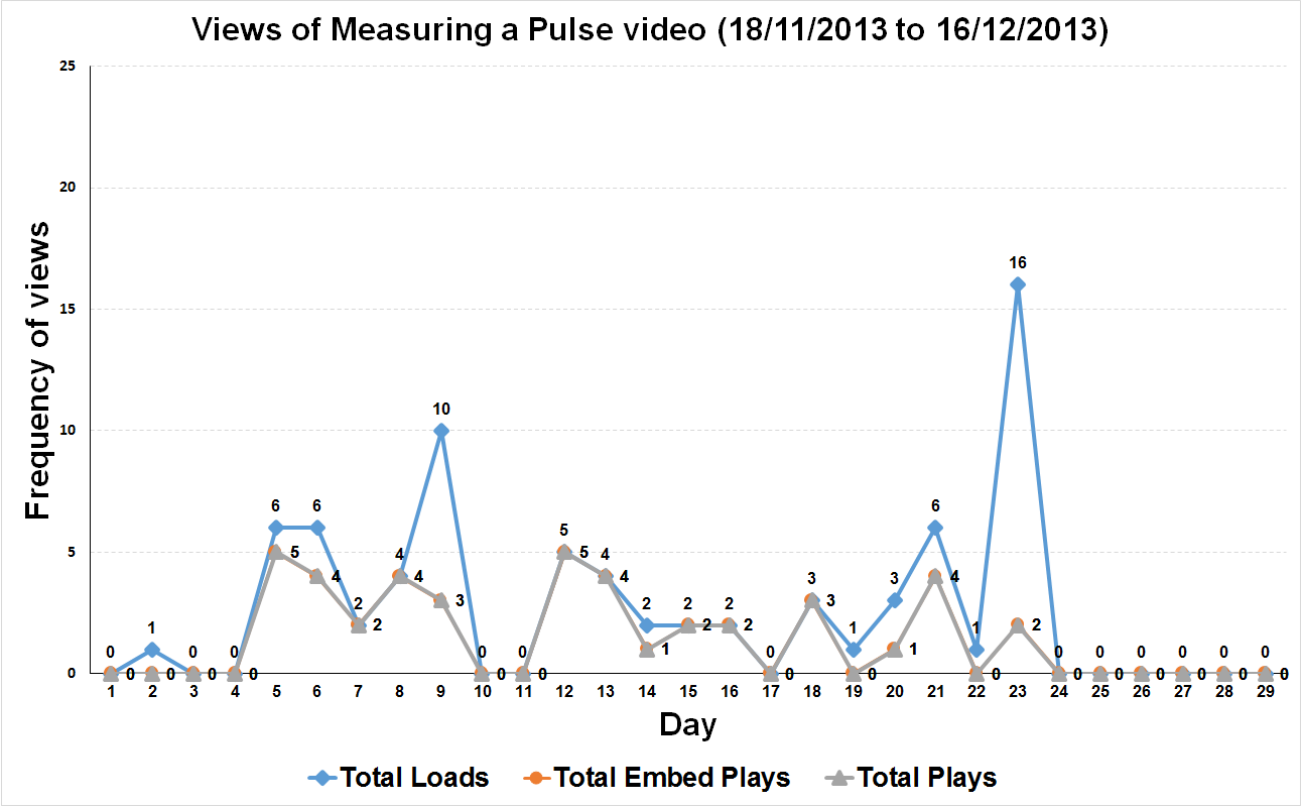

Figure 4: Loads and plays of Measuring a Pulse video

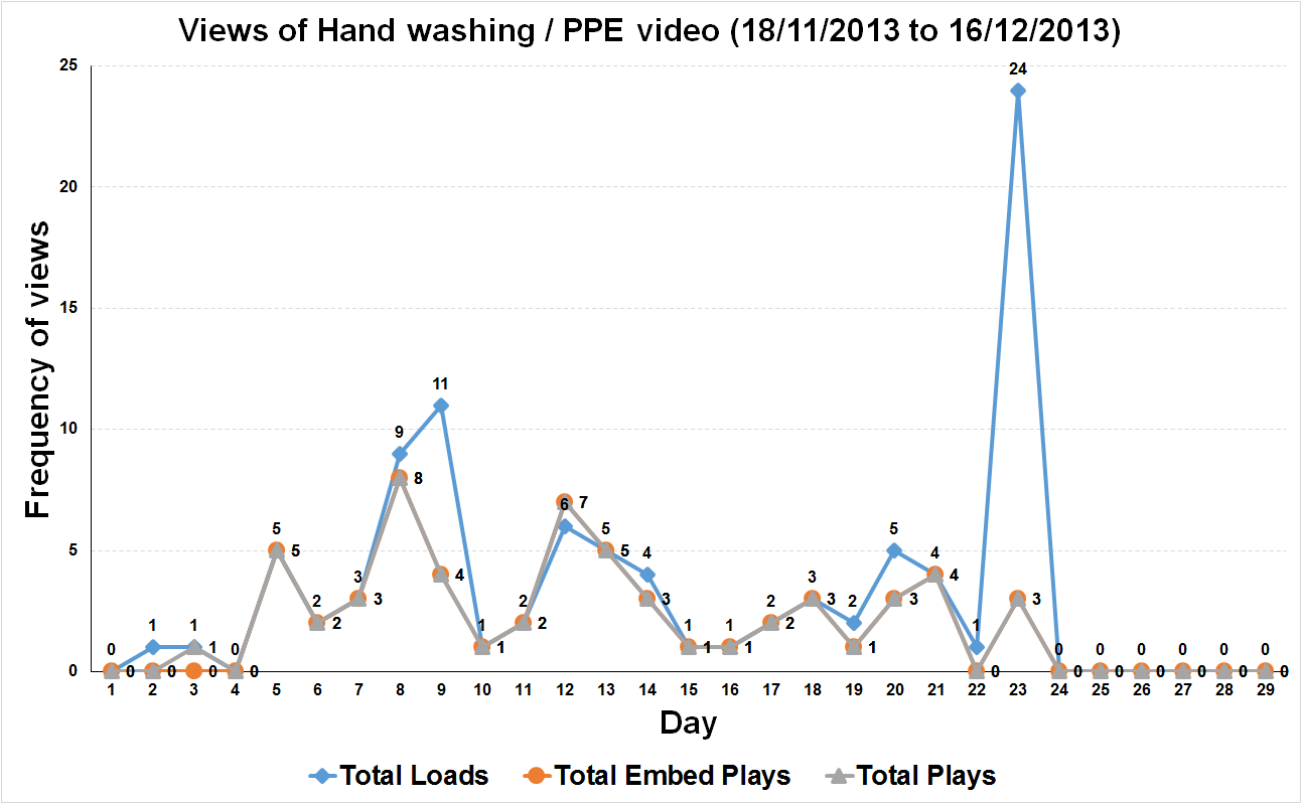

Figure 5: Loads and plays of Hand washing / Personal Protective Equipment video

On completion of the study the videos were released to open access viewing internationally. Since release there have been 2,375 total views via Vimeo in 23 countries (see Table 1).

Country	Total Views
UK	1,838
USA	178
Israel	134
Germany	63
Taiwan	50
Spain	47
Australia	20
Canada	17
Netherlands	8
Ireland	2
New Zealand	2
Russia	2
Singapore	2
Turkey	2
Ukraine	2
Argentina	1
Belarus	1
China	1
Czech Republic	1
Finland	1
Hungary	1
Pakistan	1
Saudi Arabia	1
Total	**2,375**

Table 1: Total views of all videos internationally since release.

Data Collection

The ability to perform three of the clinical skills (Infection control / hand washing, vital signs, and Aseptic technique) was assessed using OSCE. These skills were chosen as the OSCE assessment of these three skills forms part of the existing formative assessment of the module. Using an existing assessment minimised the impact on the students and also the resources required to obtain data about performance. The sample was blinded in that lecturers undertaking assessment of the students had no information about which students belonged to each of the three categories – intervention group, control group, and non-participants. Each student was individually assessed by a lecturer in the clinical skills lab against a numerical performance checklist. Two marks were awarded for excellent performance, one for adequate performance, and no marks for unsatisfactory performance. The baseline observations / vital signs checklist had 10 items (maximum score 20), hand washing / infection control had eight criteria (maximum score 16), and aseptic technique had 10 criteria (maximum score 20). The assessment criteria had been developed for the existing formative assessment and had been tested extensively with previous intakes of nursing students at Anglia Ruskin.

After completion of the OSCE, the performance checklists of the intervention and control groups were extracted from those of the rest of the cohort and blinded using the unique identification codes. Some of the students who consented to participate in the study did not undertake the OSCE because of sickness on the day of the assessment. There was also non-return of some of the OSCE forms so the final sample size was reduced.

Data Analysis

The performance of the experimental group was compared to that of the control group using the standard existing formative assessment checklist and grading. A Two Independent Samples t-test was undertaken using SPSS to compare the means of a normally distributed interval dependent variable for the two independent groups. The null hypothesis was that viewing the videos would have no effect on the mean scores of the students in the OSCE assessment.

Results

Tables 2 to 4 below outline the mean scores of the students in the three OSCEs. The data was normally distributed and a two tailed t-test for independent groups was used for analysis. The results demonstrate that the null hypothesis was supported. Whilst the average score was higher in the intervention group (students who viewed the videos) in all three OSCEs there was no statistical significance between the performance of the intervention and control groups skills assessed.

Competence in Undertaking Observations	N	Mean	Std. Deviation	Std. Error Mean
Participants	25	19.44	1.12	.224
Non-Participants	23	18.65	2.14	.447

Independent Samples T-test

Levene's Test for Equality of Variances			t-test for equality of means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Upper	Lower
Equal variances assumed	4.13	.048	1.61	46	.113	.788	.488	-.195	1.77
Equal variances not assumed			1.57	32.56	.125	.788	.500	-.230	1.80

Table 2: Student performance in vital signs / baseline observation OSCE

Competence in Undertaking Aseptic technique	N	Mean	Std. Deviation	Std. Error Mean
Participants	30	17.33	2.26	.413
Non-Participants	26	16.77	2.60	.509

Independent Samples T-test

Levene's Test for Equality of Variances			t-test for equality of means					
	F	Sig.	T	Df	Sig. (2-tailed)	Mean difference	Std. Error Difference	95% Confidence Interval of the Difference
								Lower / Upper
Equal variances assumed	.015	.904	.869	54	.389	.564	.649	-.738 / 1.886
Equal variances not assumed			.860	50	.394	.564	.656	-.753 / 1.881

Table 3: Student performance in aseptic technique OSCE

Competence in Hand washing / Infection Control	N	Mean	Std. Deviation	Std. Error Mean
Participants	25	13.04	3.32	.664
Non-Participants	24	12.62	2.94	.601

Independent Samples T-test

Levene's Test for Equality of Variances			t-test for equality of means					
	F	Sig.	T	Df	Sig. (2-tailed)	Mean difference	Std. Error Difference	95% Confidence Interval of the Difference
								Lower / Upper
Equal variances assumed	.212	.648	.462	47	.646	.415	.898	-1.39 / 2.22
Equal variances not assumed			.483	46.7	.645	.415	.896	-.1.39 / 2.22

Table 4: Student Performance in hand washing / infection control OSCE

Limitations

The major limitation of this study is the rate of participant attrition through non-return of the assessment forms and non-attendance by some students at the formative assessment. This has the potential to introduce bias, which may have influenced the findings. Therefore, findings from the study must be interpreted with caution, and future research is recommended with a larger sample.

Conclusion

The use of videos was implemented to enhance the student learning experience of how clinical skills are taught. The videos ensured parity in how the skills should be performed thereby minimising procedural and methodological inconsistencies. This evaluation focussed on the impact on skill competence as measured in student performance in an OSCE. Further research is recommended in the students' experience of viewing the videos and the impact on performance in clinical practice.

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