"Show and avoid": using custom-made videos highlighting common errors to improve student performance of veterinary nursing practical skills

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Introduction

The objective structured clinical examination (OSCE) is commonly a high stakes summative assessment. The examination format may make it difficult for examiners to perceive the reason(s) for poor performance and provide effective feedback. In addition, traditional skills training, with its focus on error avoidance, may result in students who are unaware when they make a mistake, or are unable to correct it once they recognise the error.

Laboratory skills were chosen for this study as the authors had noticed a tendency for students to repeat the same errors during examination of these tasks. This was despite customised videos demonstrating the correct performance of the task (error avoidance) being available to the students and the provision of written and/or oral feedback after task assessment.

Furthermore, registered veterinary nurses (RVNs) frequently perform laboratory tests without any direct supervision from colleagues and critical patient care decisions may be made based on the results obtained. It is therefore essential that RVNs are able to perform these skills correctly and independently.

Objective

To evaluate the effectiveness of customised videos in error guidance training of veterinary nursing students and their effect on student performance in a laboratory skills OSCE task. This approach has been shown to promote deeper learning and improve performance in medical training (DaRosa and Pugh, 2012; Gardner et al., 2015).

Implementation

25 DkIT second year veterinary nursing students were assessed on two laboratory skills OSCE tasks (task 1: blood glucose and urine dipsticks, task 2: urinalysis) on two occasions one week apart. Individual written feedback on performance, plus access to videos demonstrating common errors and how to avoid them, was provided after the first examination. The aim was to reduce the number of errors on day two and improve the pass rate.

Each OSCE task contained a number of critical steps that the student must perform correctly to pass e.g. wearing disposable gloves when handling blood or urine, mixing of the urine sample prior to specific gravity measurement. A standardised checklist was used to record whether or not the student performed each step correctly as well as their overall result (pass or fail). The result for each step was recorded as ordinal data in Microsoft Excel for analysis. The percentage of students completing it correctly was calculated for each step.

Customised videos were made that highlighted common errors and demonstrated how to avoid them. The videos were made available to the students via links posted on Moodle after they obtained their results and written feedback from day one.

Results

The overall pass rate for day one was 20% (5/25), 38% (5/13) for task one and 0% (0/12) for task two. It rose to 50% overall for day two (10/20); 82% for task one (9/11) and 22% for task two (2/9) (figure 1). Each student was asked to perform the same task on both days.

Figure 1. Percentage of passing students
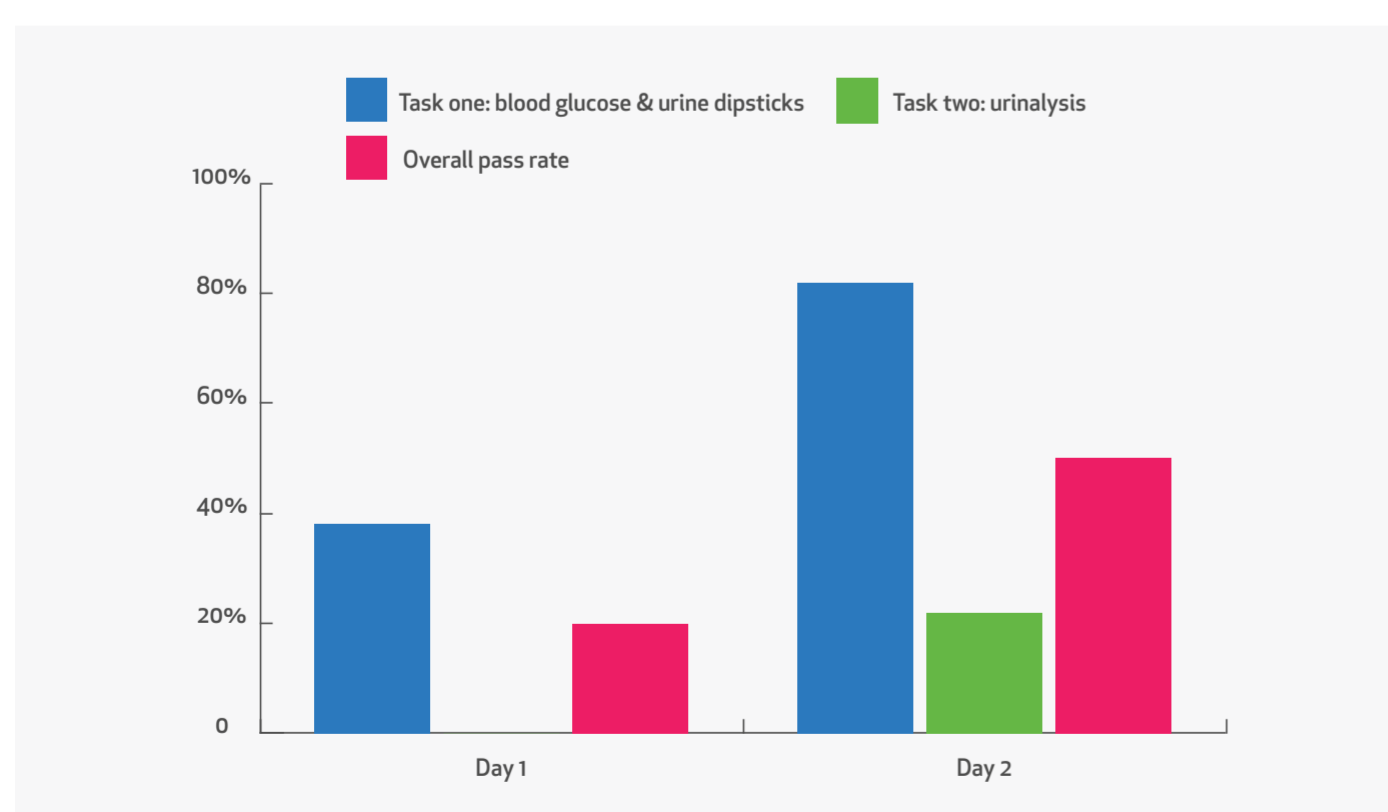
80% (18/20) of the students on day two indicated that they had watched the error guidance videos and found them to be either quite or very helpful (mean 3.67, S.D. 0.47). The pass rate for these 18 students rose from 22% on day one to 61% on day two. Of the two students who did not watch the videos, one passed and one failed task one on day one but they both were unsuccessful on day two.

The majority of the errors highlighted in relation to task one were reduced on day two (figure 2).

Figure 2. Avoidance of common errors in task one: blood glucose & urine dipsticks
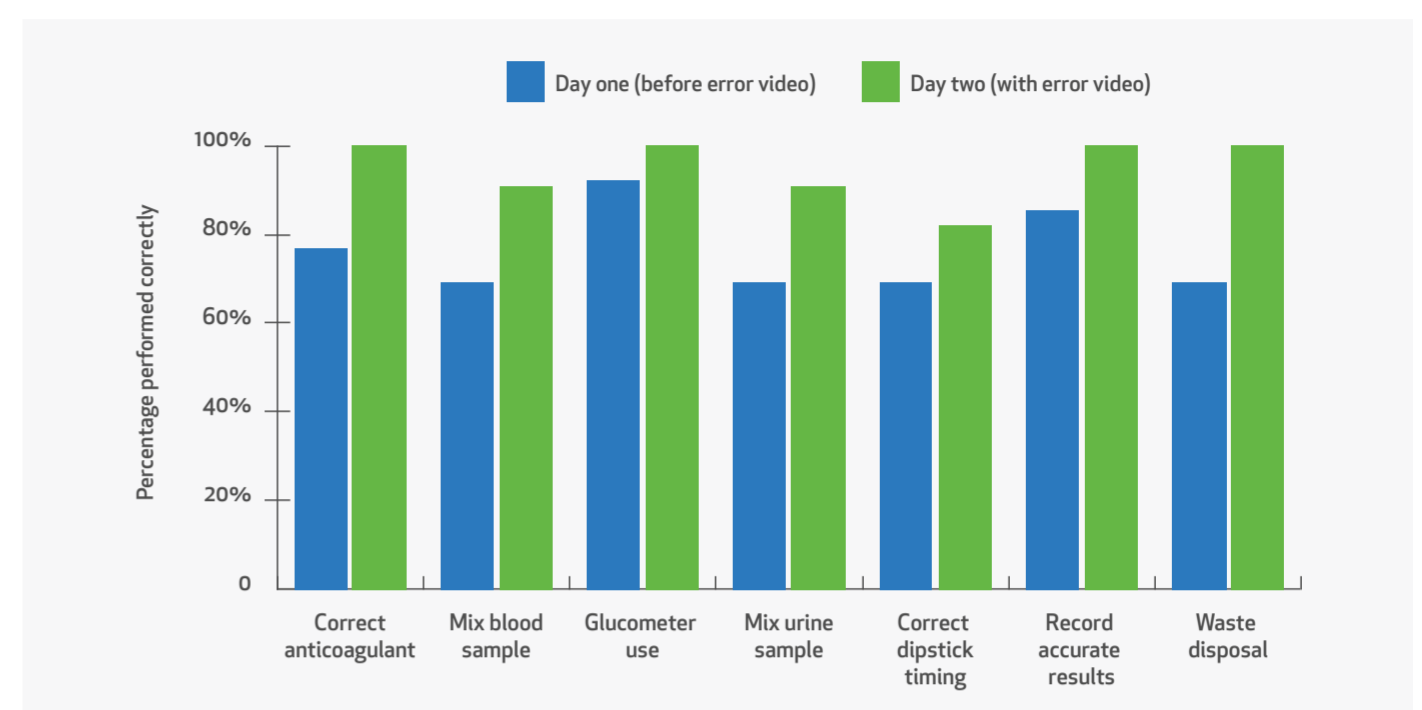
Urine specific gravity measurement remained problematic (figure 3), with most candidates continuing to read the result from the incorrect refractometer scale and/or record the result incorrectly. This was despite the fact that the correct scale and method of recording the results accurately (what units to use) was highlighted in the relevant error guidance video.

However, unlike the other mistakes that were actually demonstrated in the error guidance video, only the correct way to read the scale and record the results was shown for this step. It may be the case that the failure to actually show incorrect results being recorded in the training video contributed to this outcome.

Figure 3. Avoidance of common errors in task two: urine dipsticks & specific gravity (S.G.)
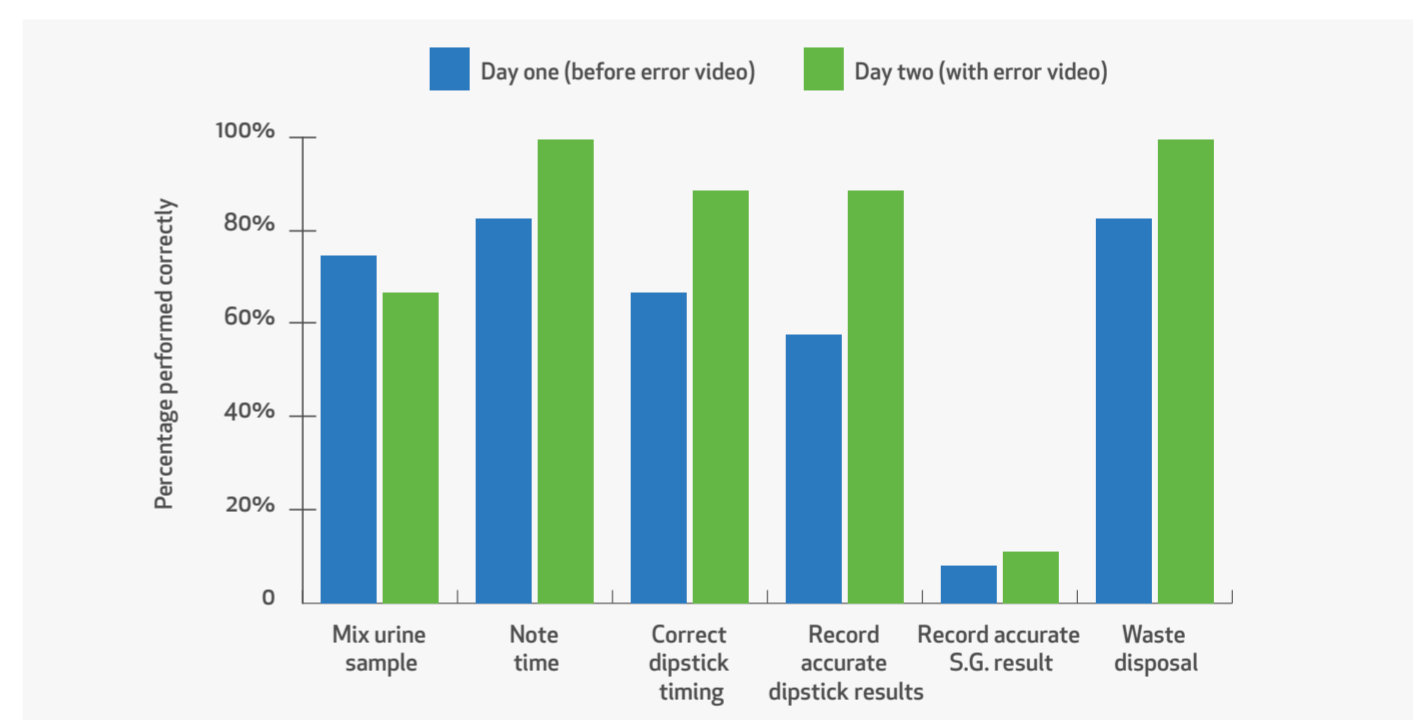
Conclusions

These provisional results suggest that training videos highlighting errors and how to avoid them have the potential to improve the performance of veterinary nursing students in laboratory-based OSCE tasks. However care must be taken to avoid further reinforcing incorrect techniques or lack of understanding.

The finding that the videos did not improve student performance when recording the urine specific gravity results warrants further investigation. The error guidance video will be updated to show incorrect recording of the results, as well as the correct method, to see if this addresses the problem in future assessments.

Recommendations

1. Consider incorporating error guidance, in addition to error avoidance, into the teaching of veterinary nursing practical skills training.
2. Ensure error guidance training videos demonstrate both common mistakes and how to correct or avoid them.

References

DaRosa D.A. and Pugh C.M. (2012). Error training: Missing link in surgical education. *Surgery* 151(2) pp.139-145.

Gardner A.K., Abdelfattah K., Wiersch J., Rami A.A. and Willis, R.E. (2015). Embracing Errors in Simulation-Based Training on Retention and Transfer of Central Venous Catheter Skills. *Journal of Surgical Education* 72(6) pp.158-162.

Ethics: Ethical approval for this study was granted by the Dundalk Institute of Technology School of Health & Sciences Ethics Committee.

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