

How to OSPE

Dr Derek Scott & Prof Alison Jenkinson

School of Medicine, Medical Sciences & Nutrition



Adapting Objective Structured Practical Exams (OSPE's) to assess laboratory science skills



Project Background

- Need for a rigorous final year practical experience
- Assess students from a wide variety of different backgrounds
- Integrate visiting students
- Assess skills that are not the usual focus of our teaching and learning activities
- Curriculum Reform and demonstration of Graduate Attributes and Employability skills
- Staff succession planning
- Preparation for Honours projects



OSPE Overview



Aims

- Objective Structured Practical Examination (OSPE) assessments - assess theoretical, practical and problem-solving skills at multiple stations.
 - Marking criteria structured and published in advance.
 - Students receive the same test and interaction with different examiners.
 - Six stations, each assessing a mixture of different skills.
 - Automated timing using PowerPoint
 - Would this method be suitable to assess Honours sciences students in practical and communications skills?
 - Is it an efficient method to assess a large Honours class and provide timely and USEFUL feedback?
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Outline Protocol

- 100 students over 2 assessment days
- Assessment tasks introduced during an all day practical class

- VLE resources/extra tuition provided
- Students move round each station for assessment

- Objective and consistent
- Stations reusable and adaptable



Station 2 – Serial Dilution (10 mins)

- Undertake 3 serial dilutions (contextualised for different disciplines)
 - how much methylene blue must be added to a given volume of water)
 - Reinforce basic lab skills
 - Safety equipment, pipette skills, appropriate waste disposal
 - Requires speed and efficiency (time pressure)
 - Final dilutions read on a spectrophotometer
 - Students record dilutions requested and absorbance results
 - Absorbance predetermined (with a reasonable tolerance level)
 - Different dilutions given to students between rotations
 - Automatic fail for lack of adherence to H&S requirements
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Station 6 – Phlebotomy (10 mins)

- New skill for majority of students
- Students interact with examiner assuming they are a research study volunteer
- Enables assessment of ethical approach, communication skills, H&S, using sharps and handling containment level 2 materials – ALL whilst undertaking a new task (taking a blood sample)
- Marking scheme published in advance
 - Negative marking used for unsafe practice (eg failure to wash hands, wear gloves or dispose of needles appropriately)
- Moved from paper marking system to iPad after 1st year to enhance feedback
 - Review of marking scheme to improve consistency between examiners
- Lengthened station with additional H&S and ethics questions

Outcomes



Outcomes & Feedback

- **Students**
 - Found the process “a bit stressful” as they had to prove they knew how to perform specific tasks/skills.
 - However, found it worthwhile preparation for upcoming practical work and employment opportunities.
 - Reported thinking more about skills expected in future employment, and also considering their strengths and weaknesses.
 - Felt they could display their full range of knowledge, skills and abilities.
 - **Staff**
 - A useful way of assessing wide array of graduate attributes at Honours level WITHOUT large amounts of paperwork.
 - However, requires planning, clear aims and flexibility in initial stages.
 - Assessment of communications skills improved – sometimes forgotten in traditional science-based curricula.
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Advantages

Can assess a range of graduate attributes not easily accomplished via traditional assessment methods

Students often try much harder to succeed as they cannot hide behind written work or group work

Easily adaptable for different skills, disciplines and locations

Fast and easy way to assess practical skills in large groups of students

Disadvantages

Lot of effort to initially set up

Planning and organisation are key to success

Some nervous students need reassurance if previously reliant on written work

Need backup plans

Developments

- **Year 1**

- Remove paper and automate as much as possible.
- Increase the number of staff and disciplines doing OSPE.
- Remove subjectivity in assessment.
- Could we deliver feedback and grades to the VLE almost immediately?

- **Year 2**

- Introduce iPad for marking
- Expanded disciplines taking assessment
- Increased student numbers
- Emergency back up plans (business continuity)
- Duplicate stations and multiple locations used

- **Year 3+**

- Increased staff interest/engagement in this style of assessment
- New stations to include pharmacology students (see poster)
- Videos of stations on VLE to help practice and preparation
- Integrate use of technology
- Encourage greater student reflection on skills weaknesses (time management, communication *etc*)
- Outreach, remote and rural considerations?

EVERY YEAR – POSITIVE STUDENT FEEDBACK

*Transforming the world
with greater knowledge
and learning*

Station Instructions

Dr Alison Jenkinson -- (001)

10:00

Restart

Submit

Introduces self, identifies 'volunteer' and explains procedure

Checks consent has been given

Considerate and polite approach (includes saying thank you to volunteer)

Confident approach

Able to engage volunteer in conversation

Station specific skills

Technique of Hand Washing / alcohol gel hand rub ✓

Cleaned well ✓

Basic attempt

No attempt

Collect / select all necessary equipment and materials into a kidney dish / container for venipuncture:

Assembles syringe with needle using aseptic technique

Applies tourniquet with explanation to volunteer

Application of tourniquet

Tourniquet location appropriate

Selects a site and a 'good vein' in cubital fossa

Prepares and cleans site with medi-swab

Wears gloves and apron (no penalty if put on



Ask candidate to place the appropriate blood tube on each of the 3 cards on the bench

Examiner selection 1



Student identification 1

Examiner selection 2

Student identification 2

Examiner selection 3

Student identification 3

Clot Activator (red / pink)

Lithium Heparin (green)

Potassium EDTA (purple)

Sodium Citrate (blue)

Sodium Fluoride ✓ (grey)

Serology / Immunology (red)

Crossmatch Testing (pink)

Clinical Chemistry (green)

Haematology (purple)

Coagulation (blue)

Glucose (grey)

Ask the candidate **ONE** of
the following 3 questions:

Needle stick injury



Blood spillage

Informed Consent

Station Instructions

Dr Alison Jenkinson -- (001)

10:00

back

Submit

Global score

Unsatisfactory

Borderline

Satisfactory

Highly Satisfactory

Excellent

Comments: ▾

Empty text input area for comments.

