Using Objective Structured Practical Examinations (OSPE's) to consolidate practical skills and assess graduate attributes in life sciences

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Background to Project

- Need for a final year, rigorous practical experience.
- Assess a wide variety of students from different backgrounds.
- Integration of visiting students.
- How do we assess skills that are perhaps not the usual focus of our teaching and learning activities?
- Curriculum Reform and Graduate Attributes.
- Staff Succession Planning.
- Preparation for Honours projects.
# Background to OSPE Design

## Aberdeen Graduate Attributes

<table>
<thead>
<tr>
<th>Academic excellence</th>
<th>Critical thinking and effective communication</th>
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<tbody>
<tr>
<td>- In-depth and extensive knowledge, understanding and skills at internationally-</td>
<td>- A capacity for independent, conceptual and creative thinking;</td>
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<td>recognised levels in their chosen discipline(s);</td>
<td>- A capacity for problem identification, the collection of evidence, synthesis and dispassionate analysis;</td>
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<td>- A breadth of knowledge, understanding and skills beyond their chosen discipline(s);</td>
<td>- A capacity for attentive exchange, informed argument and reasoning;</td>
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<td>- An ability to participate in the creation of new knowledge and understanding through research and inquiry;</td>
<td>- An ability to communicate effectively for different purposes and in different contexts;</td>
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<td>- A contextual understanding of past and present knowledge and ideas;</td>
<td>- An ability to work independently and as part of a team;</td>
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<td>- An intellectual curiosity and a willingness to question accepted wisdom and to be open to new ideas</td>
<td>- A diverse set of transferable and generic skills</td>
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<th>Learning and personal development</th>
<th>Active citizenship</th>
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<td>- An openness to, and an interest in, lifelong learning through directed and self-directed study;</td>
<td>- An awareness and appreciation of ethical and moral issues;</td>
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<td>- An awareness of personal strengths and weaknesses.</td>
<td>- An awareness and appreciation of social and cultural diversity;</td>
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<td>- A capacity for self reflection, self discovery and personal development</td>
<td>- An understanding of social and civic responsibilities, and of the rights of individuals and groups;</td>
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<td>- An appreciation of the concepts of enterprise and leadership in all aspects of life;</td>
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<td>- A readiness for citizenship in an inclusive society</td>
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Background

- 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.

- Used in clinical courses a lot.

- Six stations, each assessing a mixture of different skills.

- 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?
What happens during the Biomedical Science OSPE?
Overview of the OSPE

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
How does the OSPE work?

Select your stations/timing to suit your students

1. ECG Measurement
2. Serial dilutions
3. Respiratory testing & Cardiovascular Calculations
4. Solution Making
5. Urinalysis
6. Phlebotomy
Outcomes & Feedback

- Students reported they 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.
- Staff felt it was 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.
- Students reported thinking more about skills expected in future employment, and also considering their strengths and weaknesses.
- Assessment of communications skills improved – sometimes forgotten in traditional science-based curricula.
- Students felt they could display their full range of knowledge, skills and abilities.
- Strong support team is required to initially set up such assessment activities.
**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
Future Developments

How can we make this work better?

Â Remove more paper and automate as much as possible.

Â Increase the number of staff and subject that can take part in the OSPE.

Â Remove any subjectivity in assessment.

Â Could we deliver feedback and grades to the VLE almost immediately?

Â Outreach, remote and rural considerations?
Use of iPads

Development of an app that can be adjusted by the assessors

- Marking criteria structured and published in advance
- OSPE – assess theoretical, practical and problem-solving skills at multiple stations
- Students receive the same test and interaction with different examiners
- The App
  - Subjective scoring replaced with clearly defined marking criteria.
  - Questions structured – improved consistency between examiners.
- Phlebotomy station – assess communication skills when undertaking a complex task. Paper-based system time consuming to collate and feedback to students.
- Could iPad technology be used to optimise quality and speed of feedback to students and minimise variation between examiners?
- Different styles of assessment and feedback utilised
- Marks and comments quickly downloaded to spreadsheets after examination
Screenshots from OSPE App
Come Here.
Go Anywhere.
That’s the difference