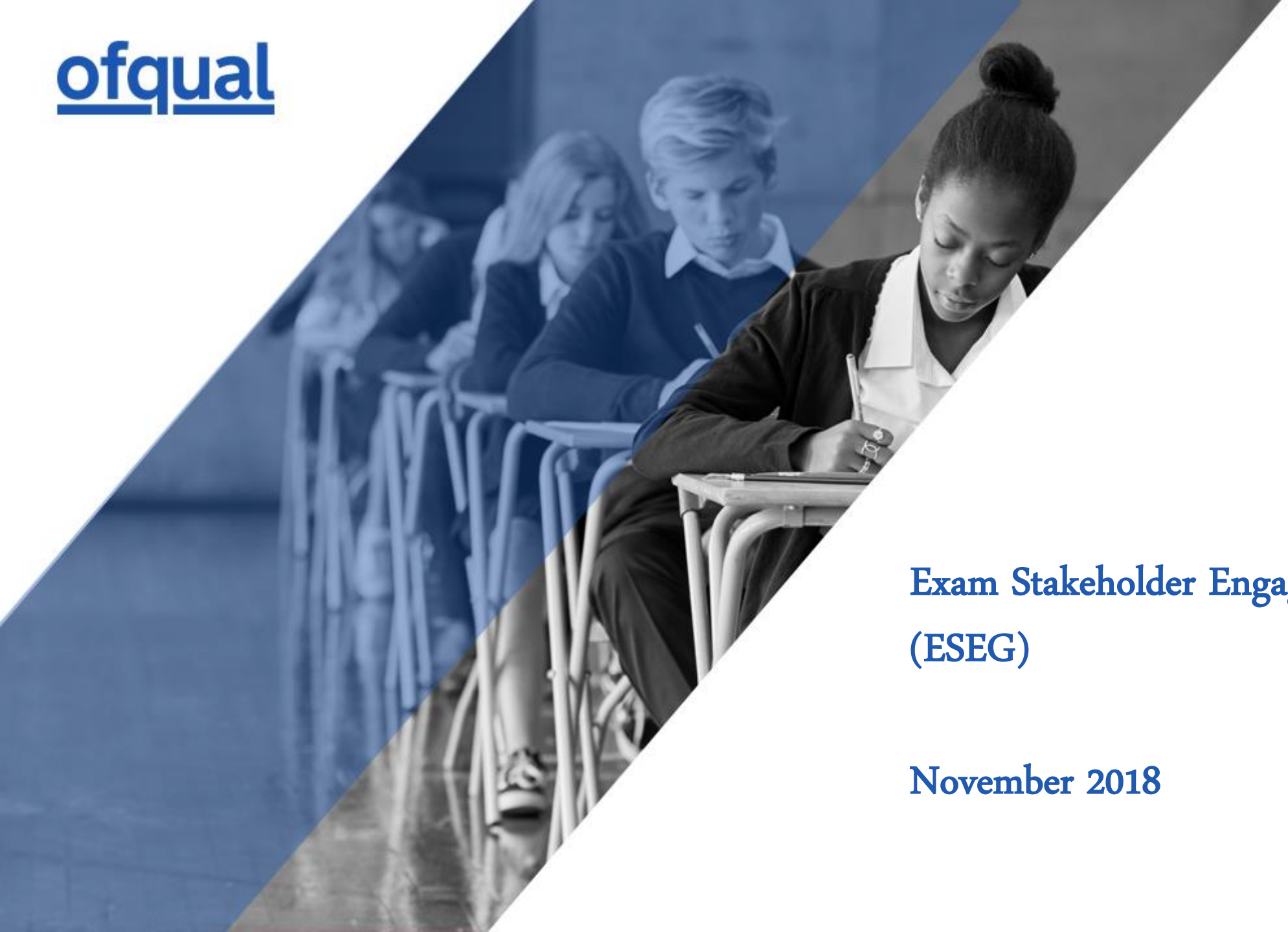


Exam Stakeholder Engagement Group (ESEG)

November 2018

Summer 2018 headlines – A level

- 25 reformed A level subjects awarded in 2018
- A level results stable
- Variability at centre level in line with previous years
- Number of A levels taken by 18-year-old students unchanged over recent years

Average number of A level qualifications per student (18-year-olds in England)				
	2015	**2016**	**2017**	**2018**
A levels	2.71	2.68	2.67	2.68

https://www.gov.uk/government/news/guide-to-as-and-a-level-results-for-england-2018

Summer 2018 headlines – AS

- Entries continue to decline for stand-alone AS
- Most now reformed
- Entries for many subjects too small to look at centre level variability
- Number of students taking an AS declined sharply in 2018

Number of students taking at least one AS qualification (17-year-olds in England)				
	2015	**2016**	**2017**	**2018**
Students	282,000	271,000	210,000	65,000

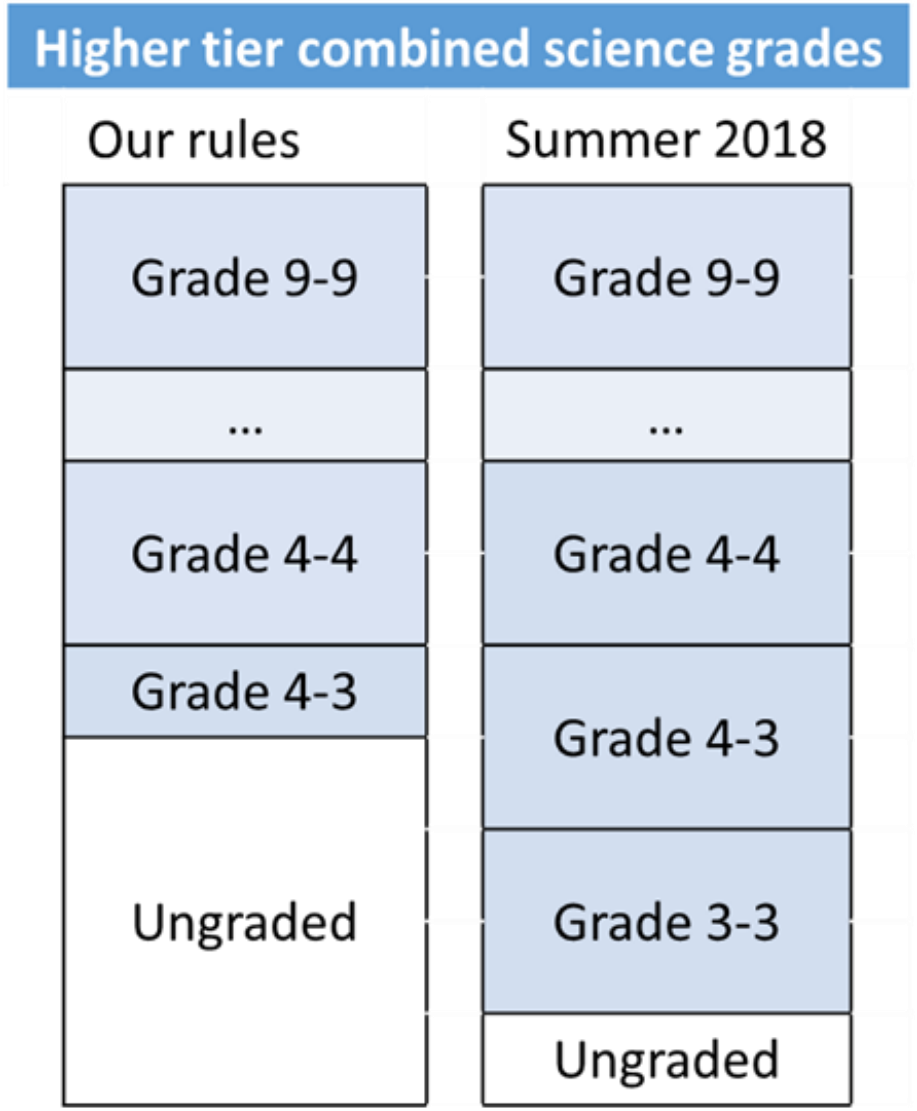
Summer 2018 headlines – GCSE

- 23 reformed GCSEs awarded (20 new + 3 from 2017)
- Overall results were stable
- Grade boundaries in English language, English literature and maths went up slightly on average (to be expected)
- Some changes in post-16 results in English language and maths

Post-16 outcomes in English language and maths					
Subject	Age	7/A 2017	7/A 2018	4/C 2017	4/C 2018
English language	17	1.1%	1.2%	29.1%	32.0%
	18	0.3%	0.5%	24.6%	27.7%
	19+	2.7%	2.7%	39.4%	39.8%
Maths	17	1.5%	1.5%	24.6%	22.3%
	18	0.4%	0.3%	16.5%	14.3%
	19+	2.4%	1.8%	33.9%	29.7%

Summer 2018 headlines – GCSE combined science

- Exceptional arrangement made for summer 2018 awarding
- Exam boards making contact with schools with higher tier students who received 3-3s in 2018
- Consider tier entry carefully ahead of 2019
- Explained here: https://ofqual.blog.gov.uk/2018/08/20/gcse-results-day-what-to-expect/



Summer 2018 headlines - feedback from Stakeholders

- Overall, results days were quite quiet with no widespread issues emerging
- Student anxiety and mental health
- Access arrangements
- Accessibility of questions
- GCSE Combined Science
- Decline in AS entries
- Unconditional offers
- Moderation
- Positive feedback about our communications
- Media coverage

Recently published Ofqual consultations

Future assessment arrangements for GCSE computer science

- Open now until 3 December 2018
- Link: https://www.gov.uk/government/consultations/future-assessment-arrangements-for-gcse-computer-science
- Follows interim changes we made to the qualification's assessment arrangements in early 2018
- Programming will remain a key feature of the qualification under our proposals
- Priority to ensure assessments validly assess all of the subject content in a way that contributes towards students' final grades
- Conclusions:
  - is not possible to use non-exam assessment in this qualification to assess programming skills in a way that is manageable, reliable and fair
  - exam boards could assess programming skills in different and potentially innovative ways under exam conditions
- Please take a look at the consultation and encourage your members to give us their views
- We will be announcing our decision in early 2019

Recently published Ofqual consultations

GCSE and GCE music and dance

- Open now until 9 December 2018
- Link: https://www.gov.uk/government/consultations/consultation-on-gcse-and-gce-music-and-dance
- Following the first delivery of the reformed GCSEs, AS and A levels in music in summer 2018, we identified two issues with our rules for the performance assessment in these qualifications, one issue also applies to dance.
- We now propose to:
  - Revise our requirements to allow exam boards to determine how to mark a student's performance when that performance falls short of the minimum required length
  - Broaden the range of acceptable reference material beyond a traditional written score, where such a score is not available, for GCSE and GCE music
  - Revise our requirements for how many dances students are required to perform in the GCSE dance performance assessment to align with the DfE Subject Content
- Please take a look at the consultation and encourage your members to give us their views

Malpractice update

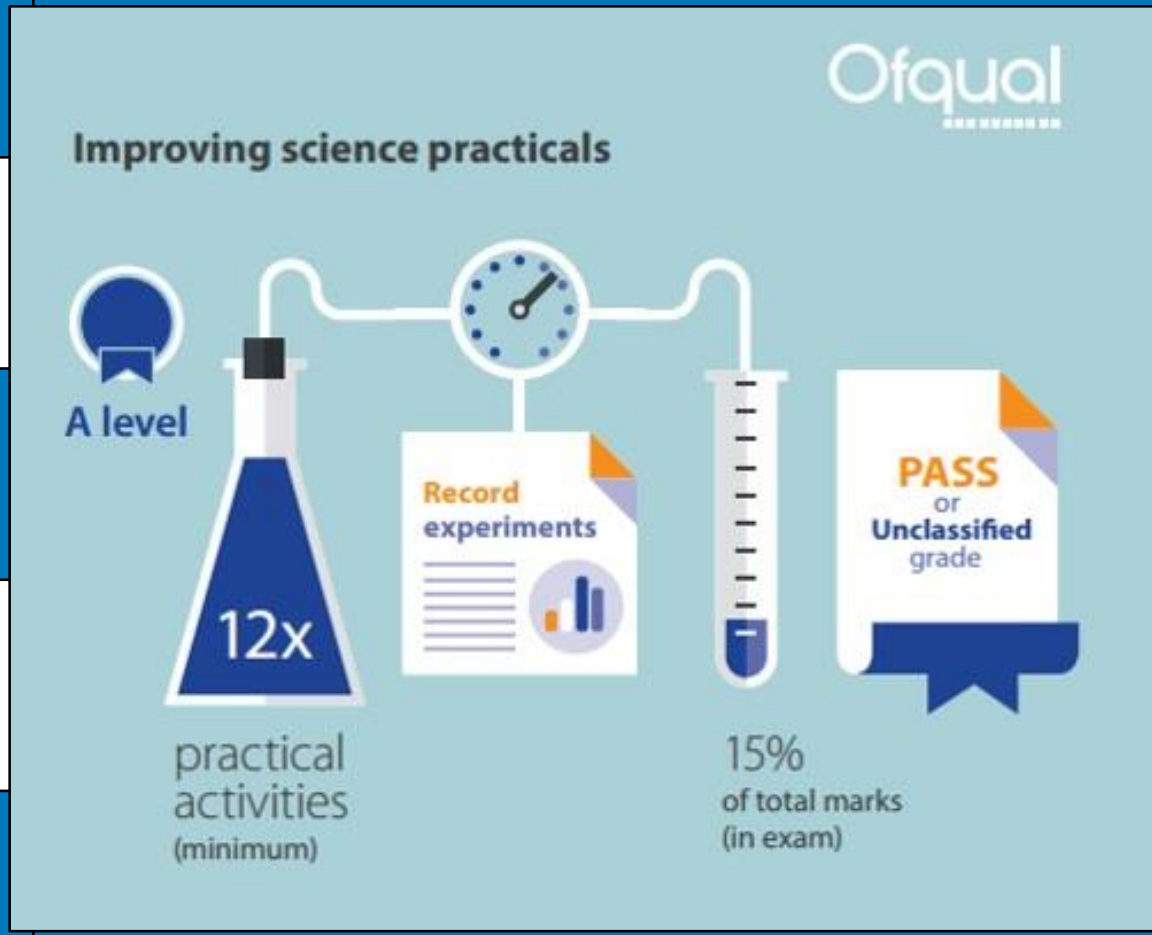
- Letter to 6,196 heads sent out 9 Oct (open rate 61%, compares with sector open rate of 17.2%)
- Content of letter promoted webinar and snapshot EO survey
- Webinar
  - Expectation: Up to 100 registrations.
  - Result: 350+ attendees.
  - Early feedback is positive (held this week)
- Snapshot survey:
  - Expectation: Up to 200 responses
  - Result: 784 responses (97% EOs, 3% other school/college staff).

ofqual

Evaluating the impact of A level qualification reform on science practical skills

The assessment of practical work in new A levels

Practical work directly assessed by teachers throughout the A level course
Assessment of a minimum of 12 practical assignments (per subject)
Performance assessed against 'Common Practical Assessment Criteria' (CPAC)
Students receive a separate result (Pass/Unclassified)
Min. 15% of marks in written exams allocated to indirect assessment of practical skills



The assessment of practical work in new A levels

Removing practicals from A-level science grades could 'damage pupils' motivation'

Wellcome Trust says removing science practicals from A levels could challenge 'authenticity' of qualification

A radical experiment to end science practicals? That's just not true

Our GCSE and A-level reforms will free teachers from assessment in science practicals and give them space to teach more creative lessons

Ofqual to press ahead with A-level science reforms despite criticisms

We need to change the current system to ensure students do not switch off when learning about science.

Ofqual's research programme

- **Study 1:** Teacher interviews – Perspectives on A level reform after one year
- **Study 2:** Pre and Post reform evaluation of practical ability – A comparison of science practical skills in pre and post reform cohorts of undergraduate students
- **Study 3:** Valid discrimination in practical skills assessment – An exploration of classification reliability when assessing the performance of practical skills
- **Study 4:** Technical functioning of assessment – An analysis of A level examination items that assess science practical skills

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- **Study 4:** Technical functioning of assessment – An analysis of A level examination items that assess science practical skills

Study 2: Research with universities

Research question:

What impact have changes to A level science had on the practical skills obtained by students?

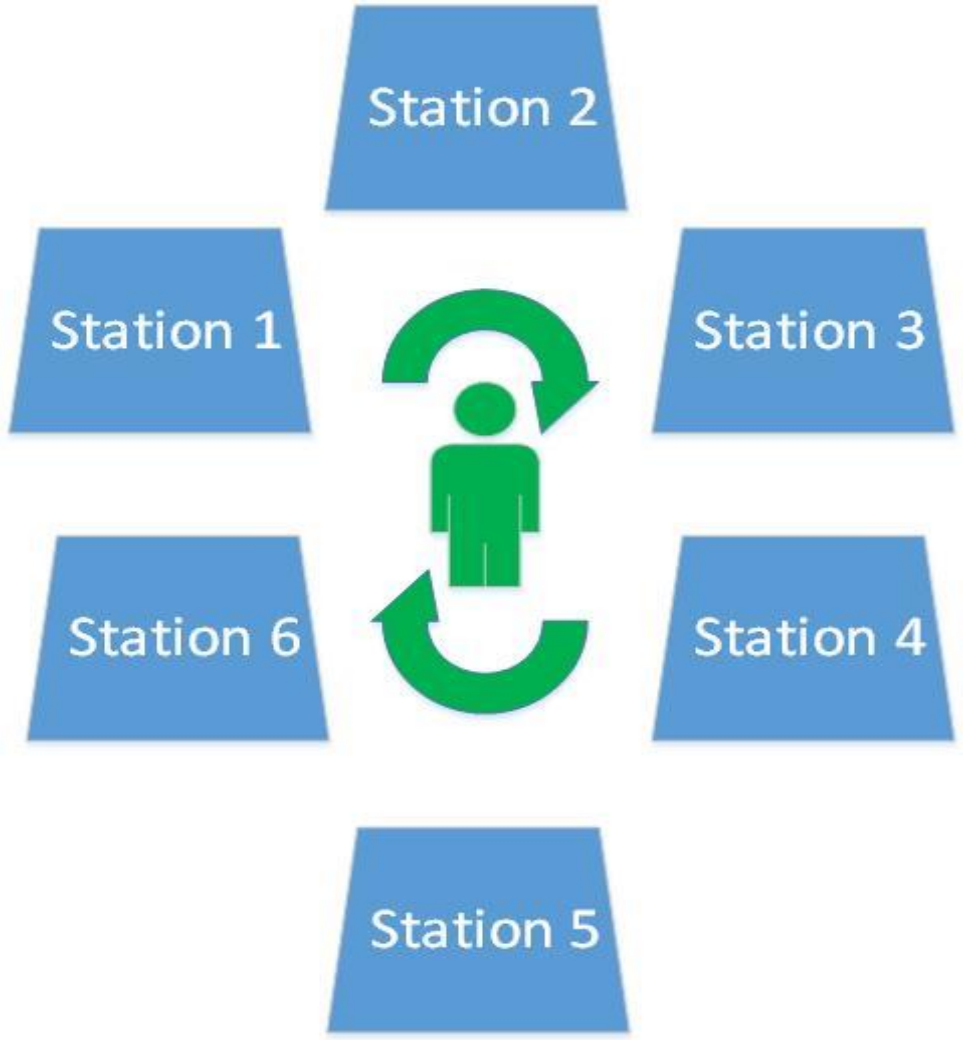
Method:

Quasi-experiment which compares the practical skills of two groups:

a. New undergraduates who studied pre-reform A-level science
b. New undergraduates who studied post-reform A-level science

- Data collected at universities
- Practical Skills Measure (PSM)
- Biology, Chemistry and Physics
- Three phases (Autumn 2016, 2017, and 2018)

Study 2: The PSM carousel

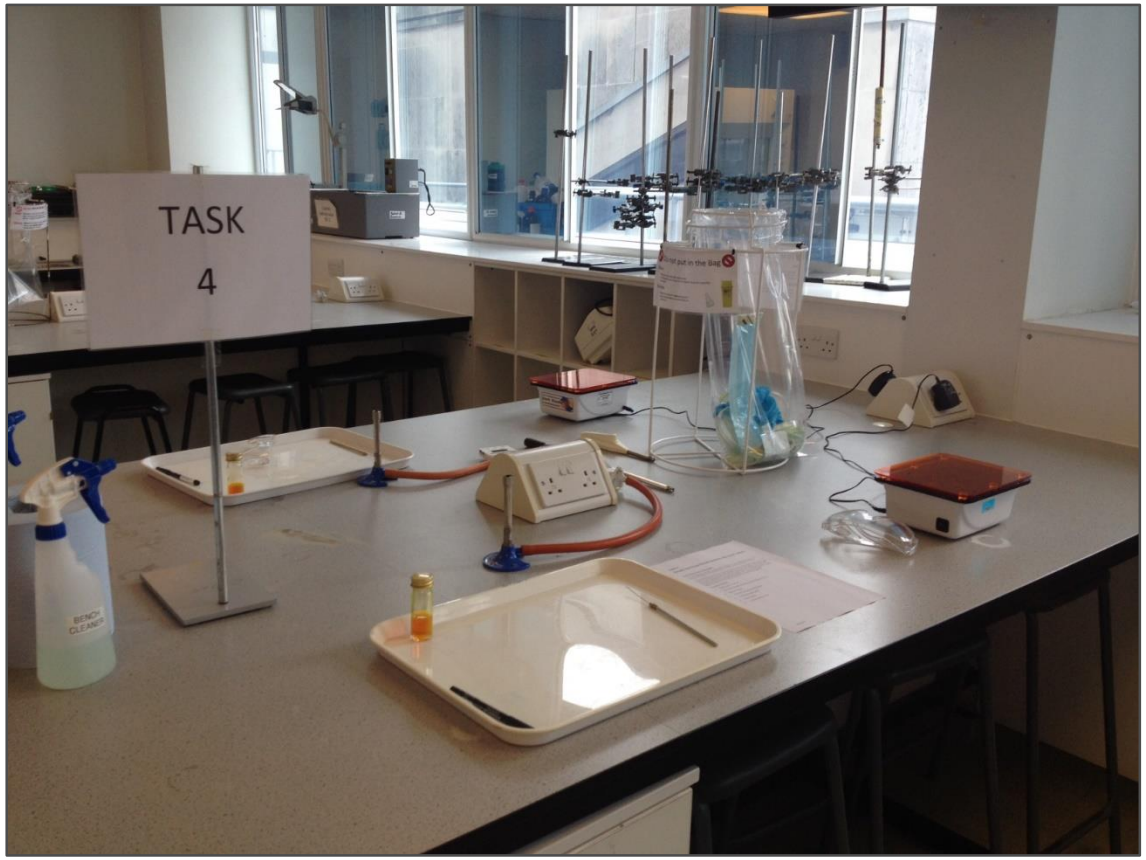


- ‘Carousel’ of practical tasks (15 mins for each)
- Observed and assessed by university lecturer or PhD student
- Focus is on *direct* assessment of practical skills
- Participants are ‘marked’ against binary assessment criteria
- Questionnaire about A-level attainment, level of confidence, and experience with practical work

Subject	Unis	2016	2017
Biology	6	140	329
Chemistry	4	155	172
Physics	5	293	225
TOTAL	**15**	**588**	**726**

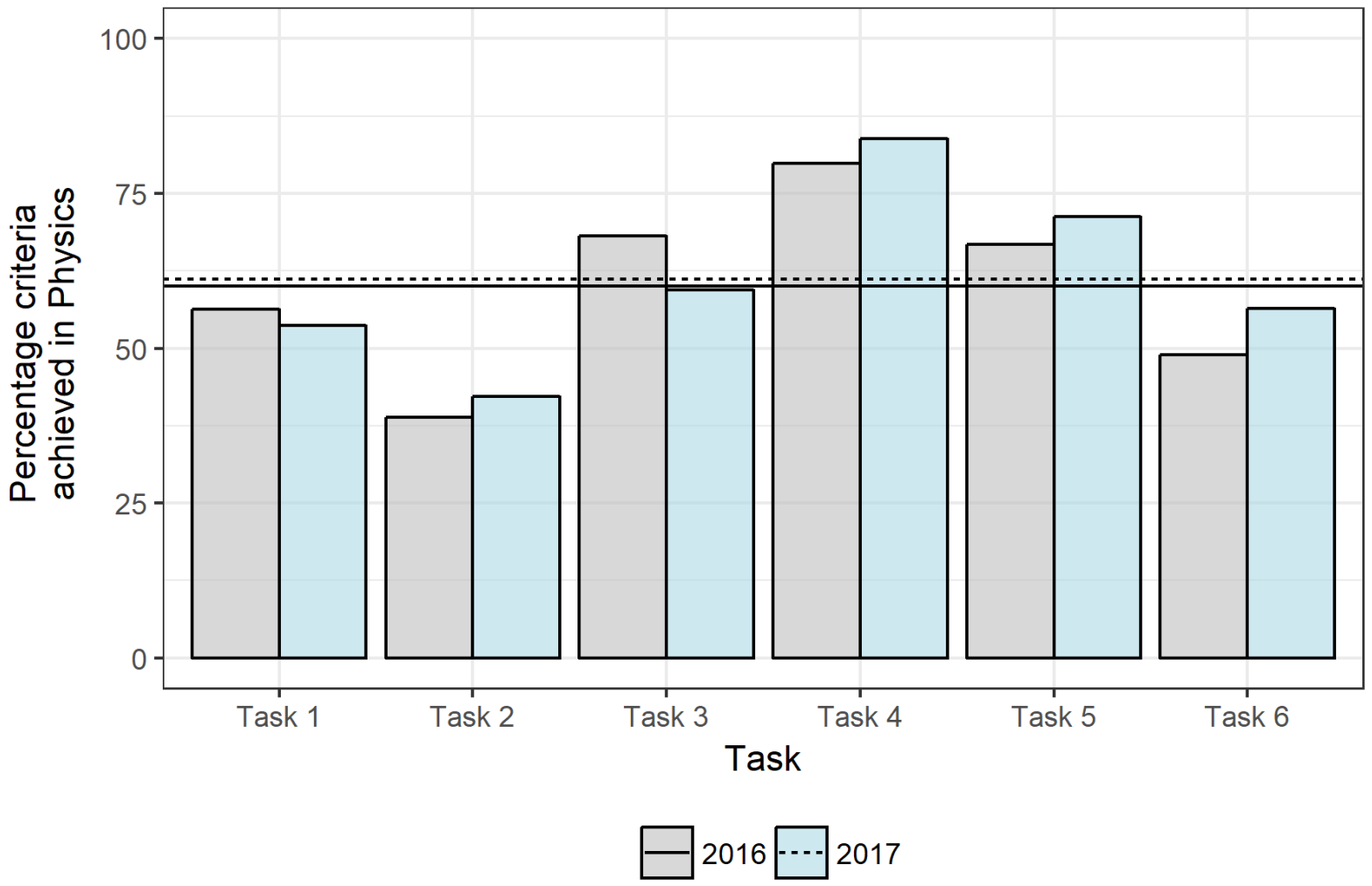
Study 2: Biology PSM stations

Task 3: Determining concentration of an unknown from a standard curve



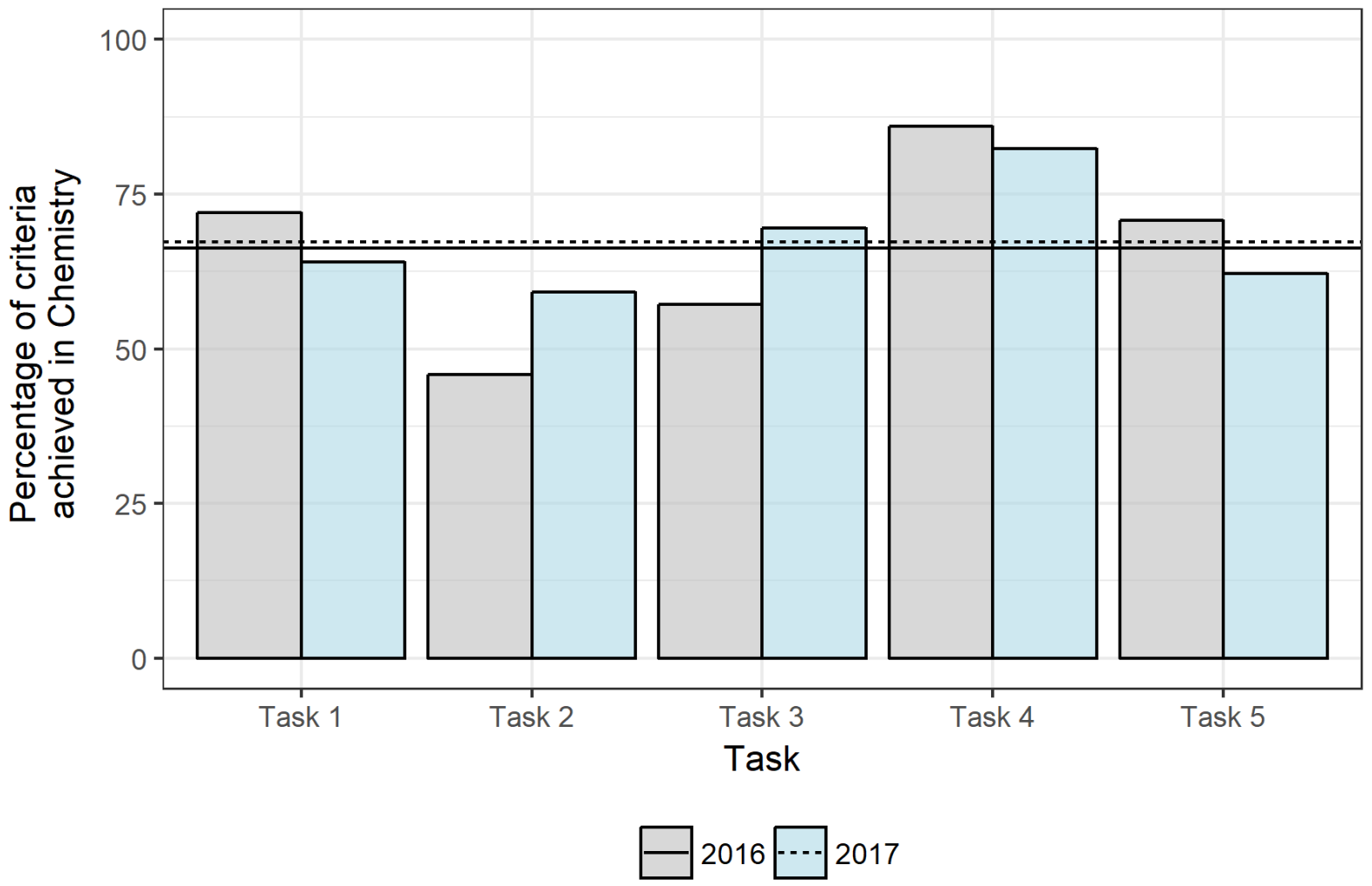
Task 4: Aseptic technique - streaking plates with mock culture

Study 2: Overall performance by task - Physics



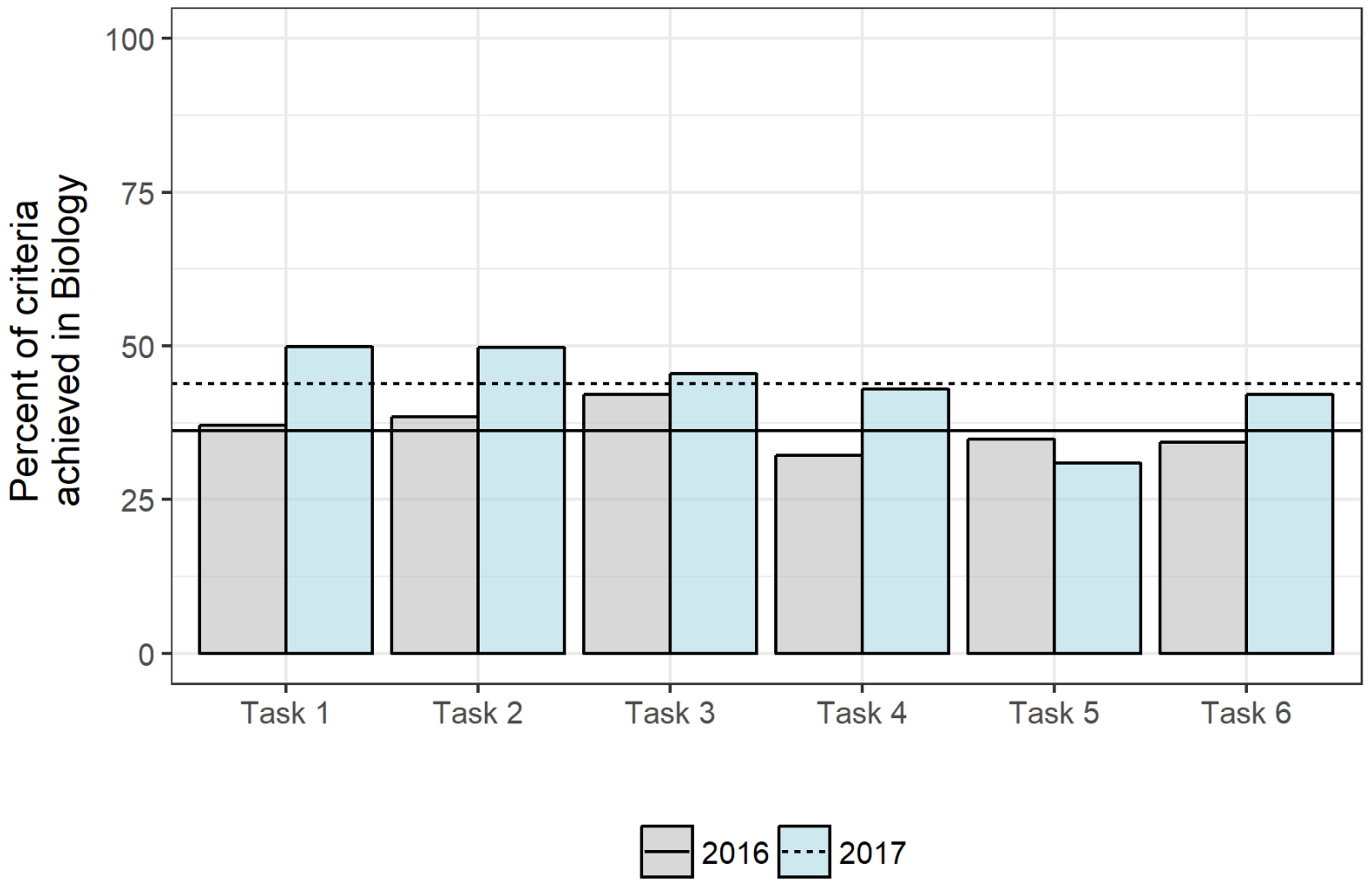
Tasks
1) Use of an oscilloscope to measure the EMF of a battery
2) Micrometre and Vernier caliper
3) Measuring resistance with a voltmeter and an ammeter
4) Preparation of a circuit
5) Measurement and timing with a pendulum
6) Use of a signal generator and an oscilloscope

Study 2: Overall performance by task - Chemistry



Tasks
1) Setting up a burette
2) Thin layer chromatography
3) Setting up a reflux and distillation
4) Making up a standard solution
5) Iodine clock (kinetics)

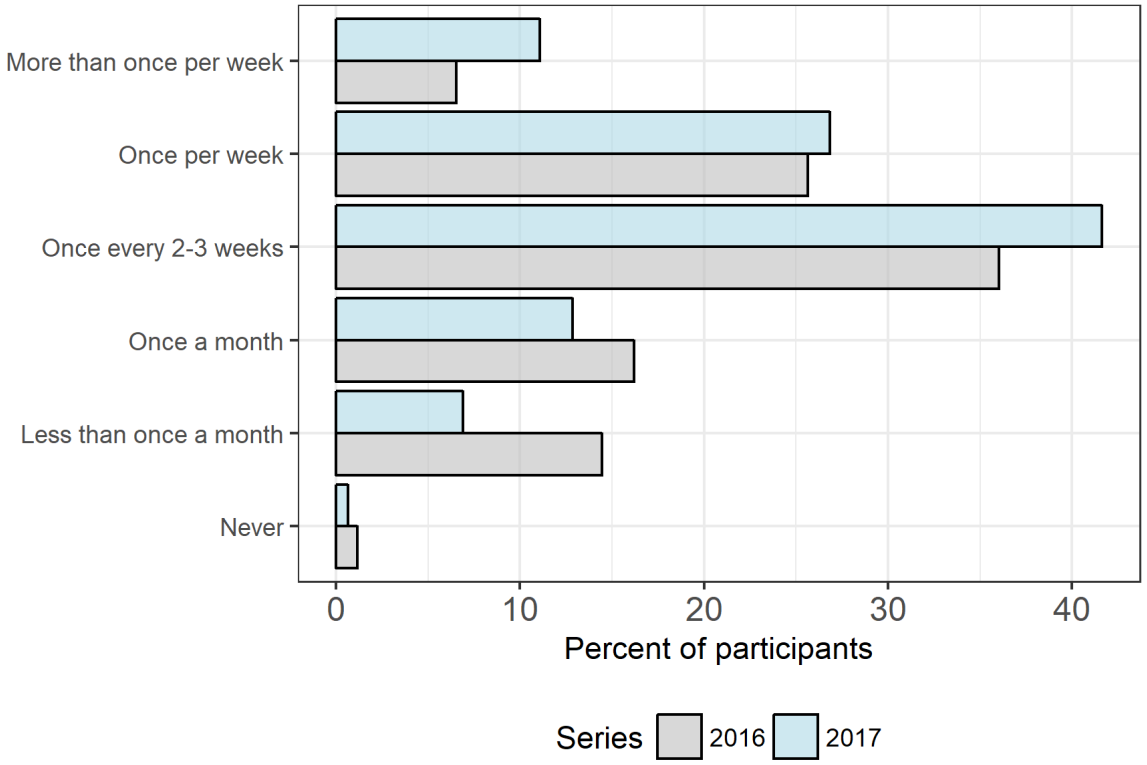
Study 2: Overall performance by task - Biology



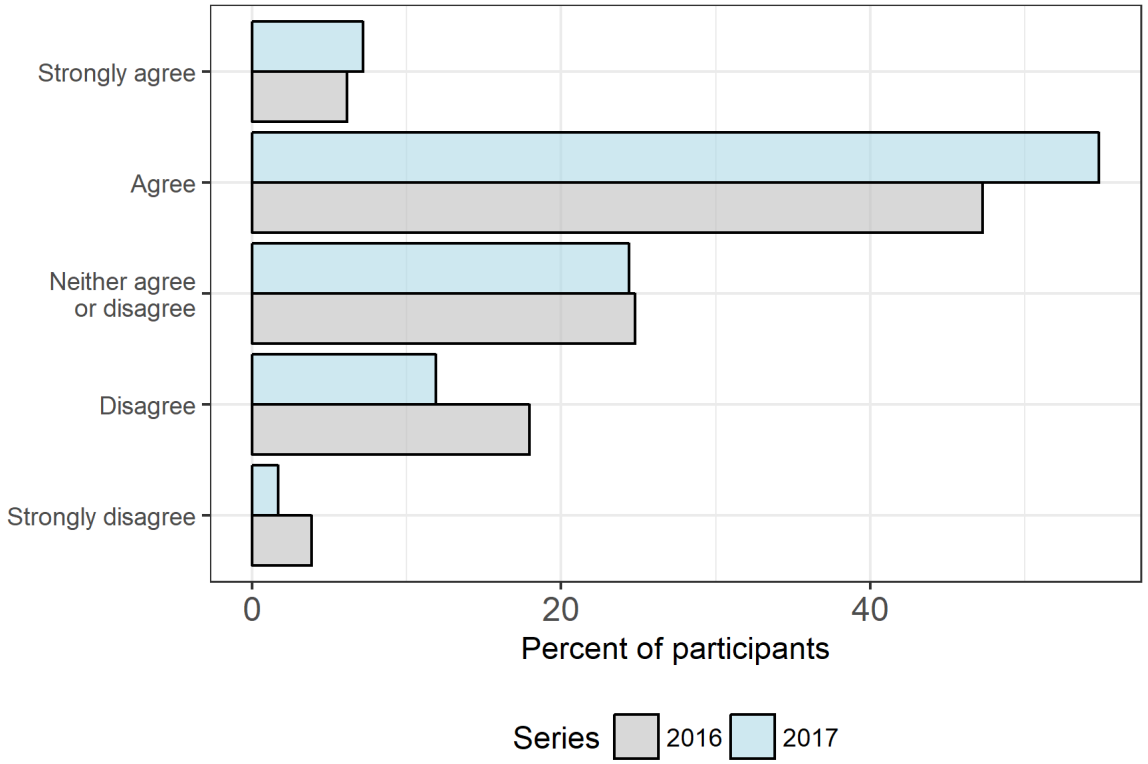
Tasks
1) Making a standard solution and 10 fold dilution
2) Using a compound high power microscope
3) Determining concentration of unknown from standard curve
4) Aseptic technique - streaking plates with mock culture
5) Using an eyepiece graticule
6) Field survey skills

Study 2: Confidence and practical work frequency

Please estimate how often you did practical work in your school or college during your science A-levels



To what extent do you agree with the following:
I feel confident about carrying out practical work



Study 2: Summary

- **Reasons to be optimistic:**
  - No evidence for a decline in practical skills
  - Some tentative evidence for an increase in skills in biology
  - Self-report evidence of an increase in frequency of practical work

- **Reasons to be cautious:**
  - There are limitations to the sample and methodology
  - Reformed qualifications are still ‘bedding in’ – things may change!

Study 4: Examination items assessing practical skills

Research questions:

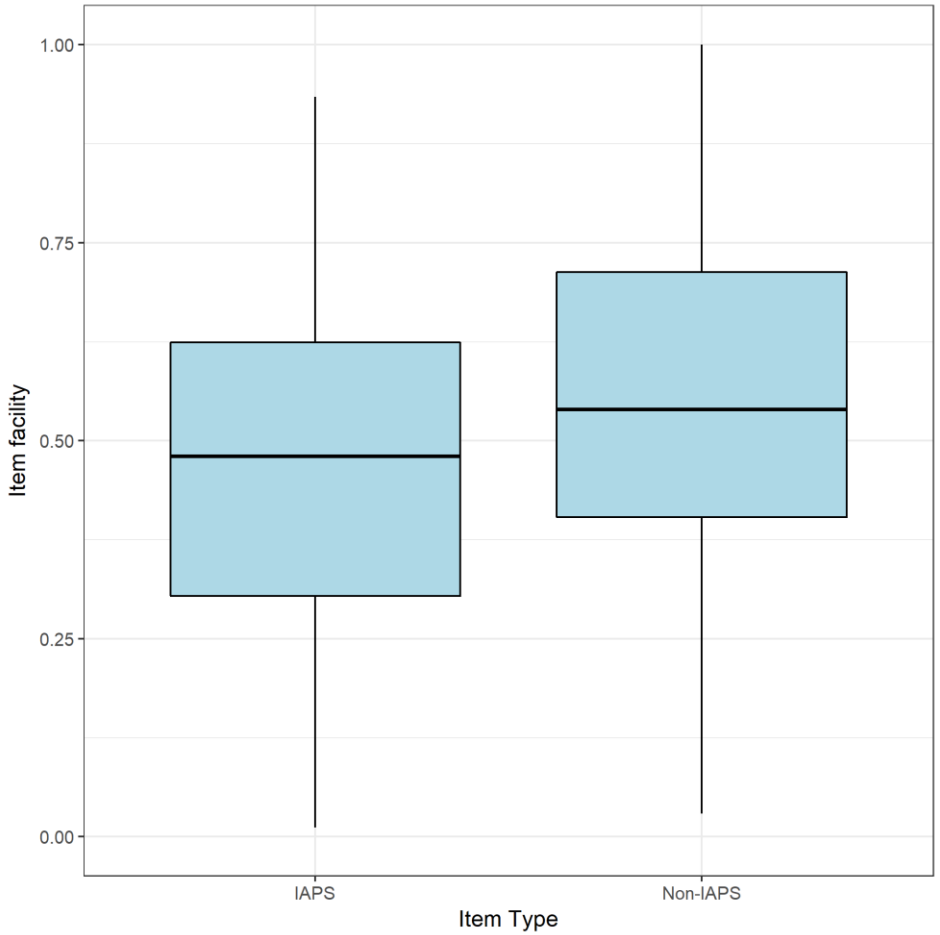
1. Were the practical skills questions in the 2017 science A level exams more difficult than the other questions?
2. What was the relationship between students' practical endorsement grade (Pass/Not Classified) and their performance on the practical skills questions?
3. Do the practical skills questions measure something statistically distinct (a unique underlying construct) within the examinations?

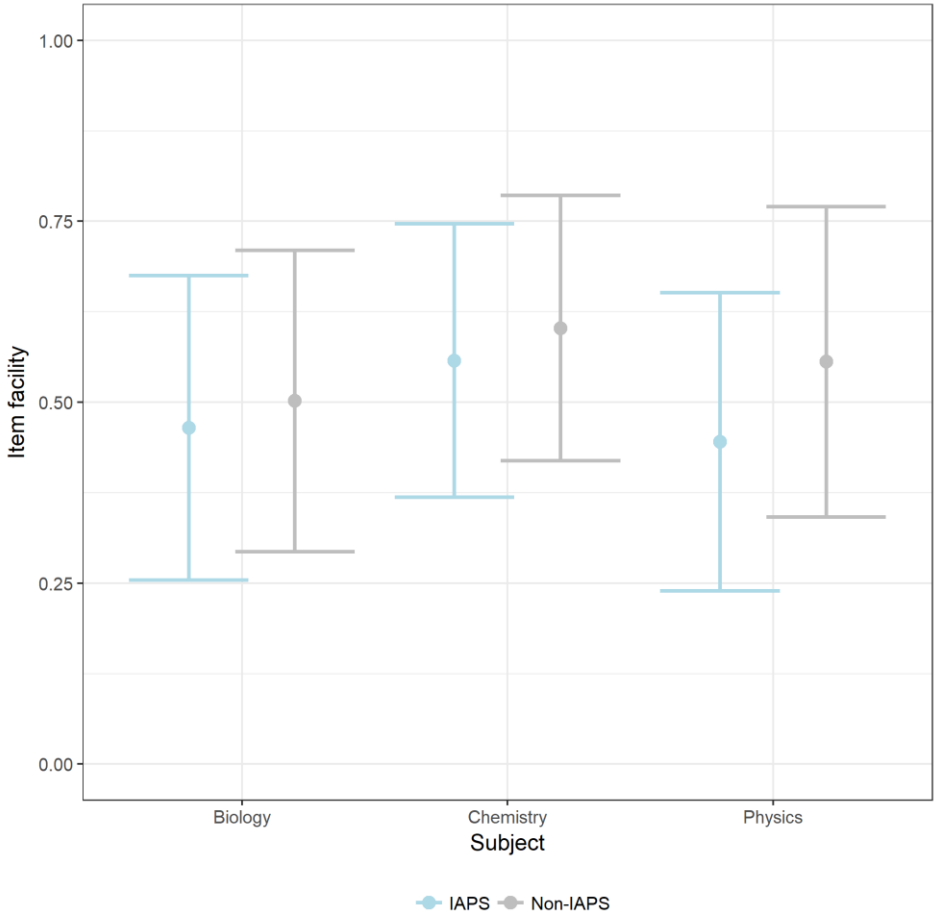
Method:

- Statistical analysis of 'item level' data
- Data provided by from 4 exam boards
- 16 Biology, Chemistry and Physics specifications

Study 4: Examination items assessing practical skills

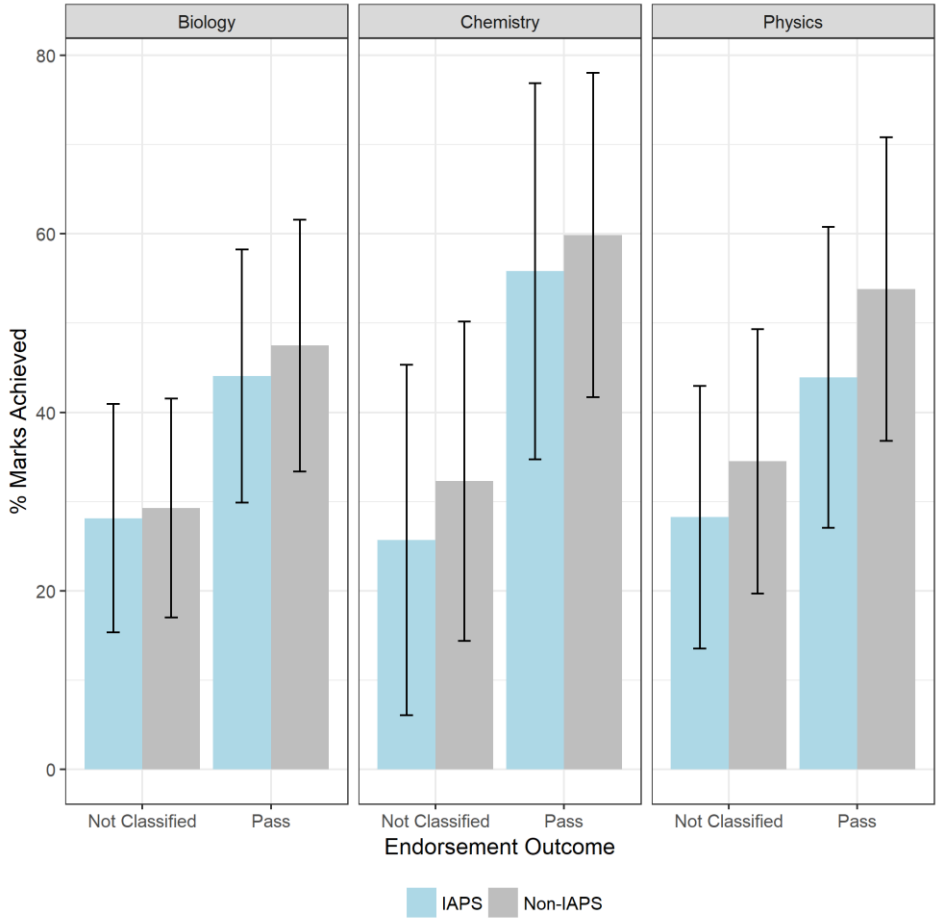
RQ1: Practical skills questions were, *on average,* more difficult than other questions in the 2017 exams. This was true across all subjects and most specifications.

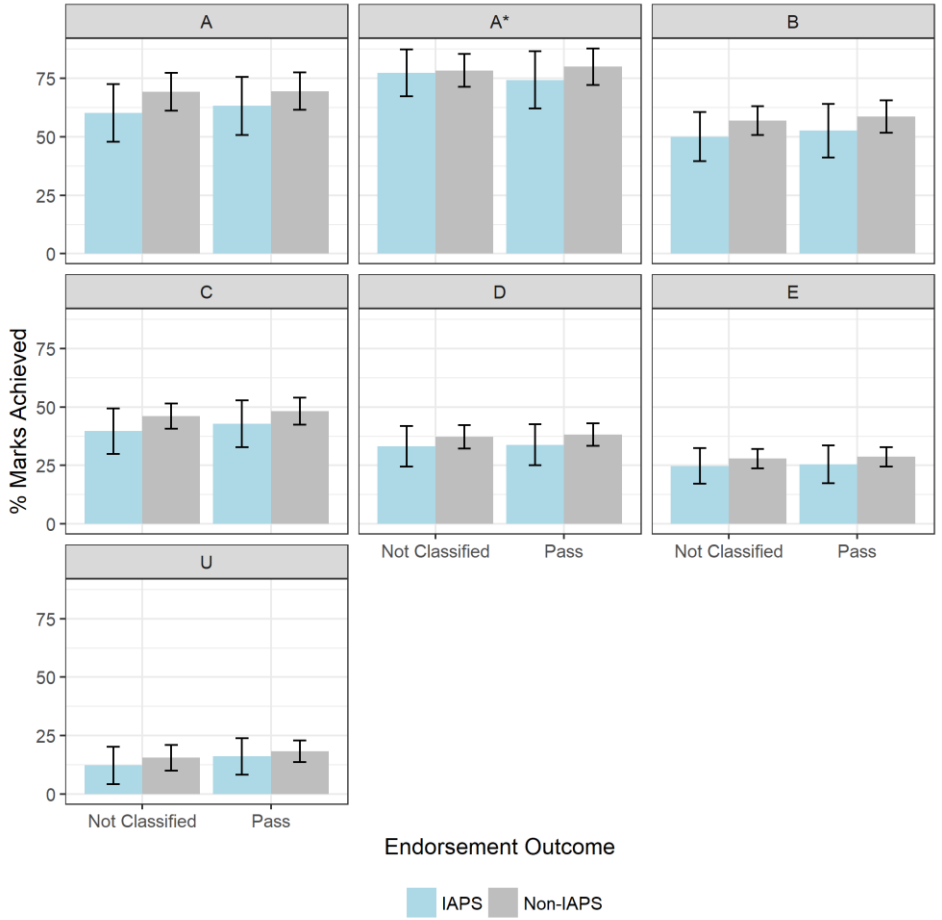




Study 4: Examination items assessing practical skills

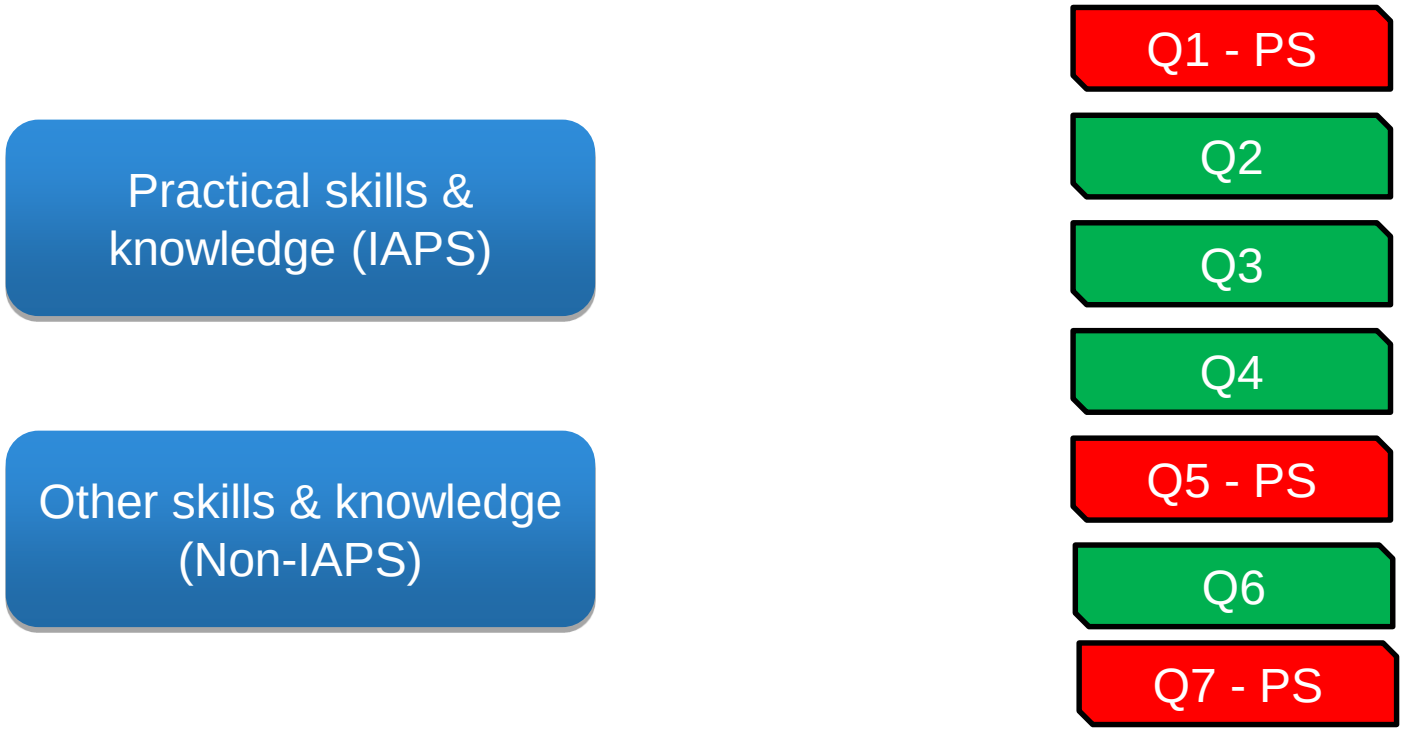
RQ2: Students who achieve a 'Pass' in the endorsement outperform those who receive an 'NC' across all questions. When overall grade is accounted for, there is no difference between the performance of these two groups on the practical skills questions.





Study 4: Examination items assessing practical skills

RQ3: Principal component analysis (PCA) found that practical skills questions were not generally clustering together to assess a single underlying construct.



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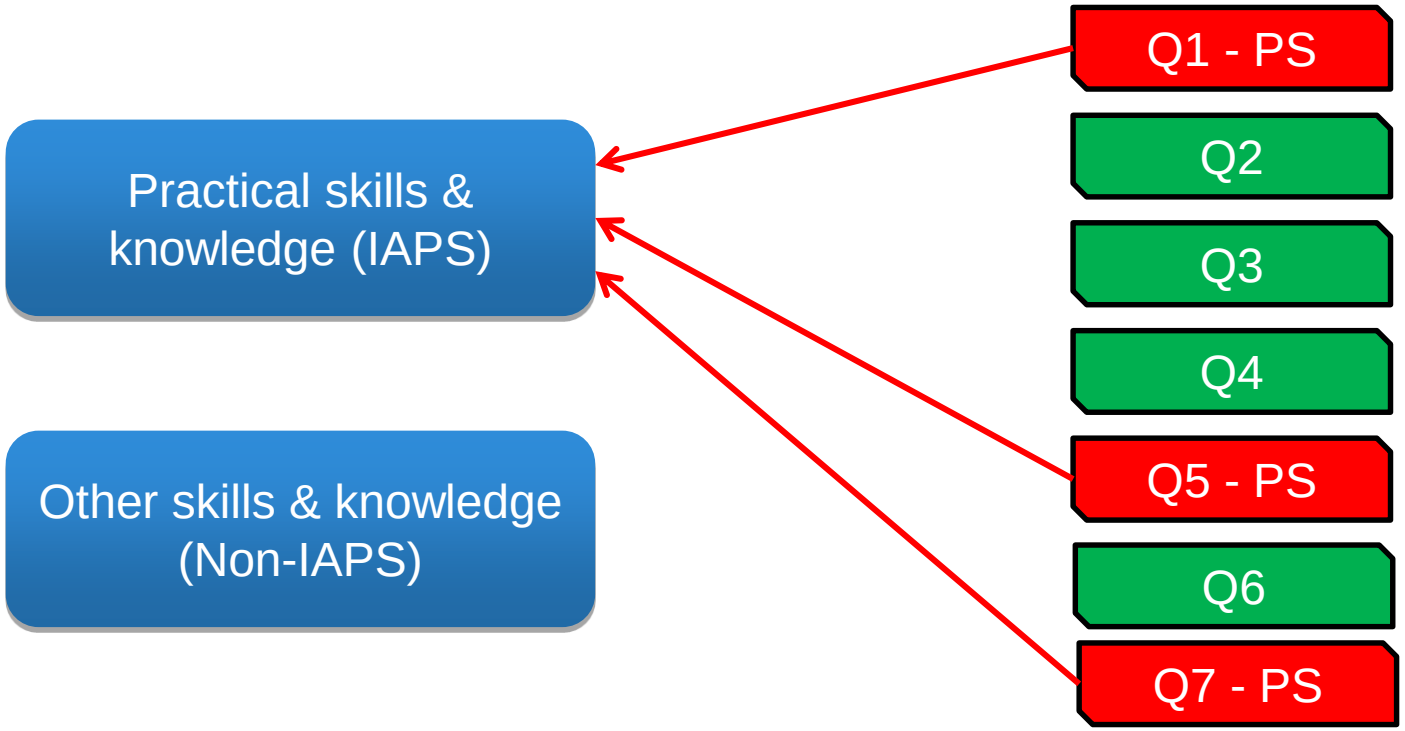

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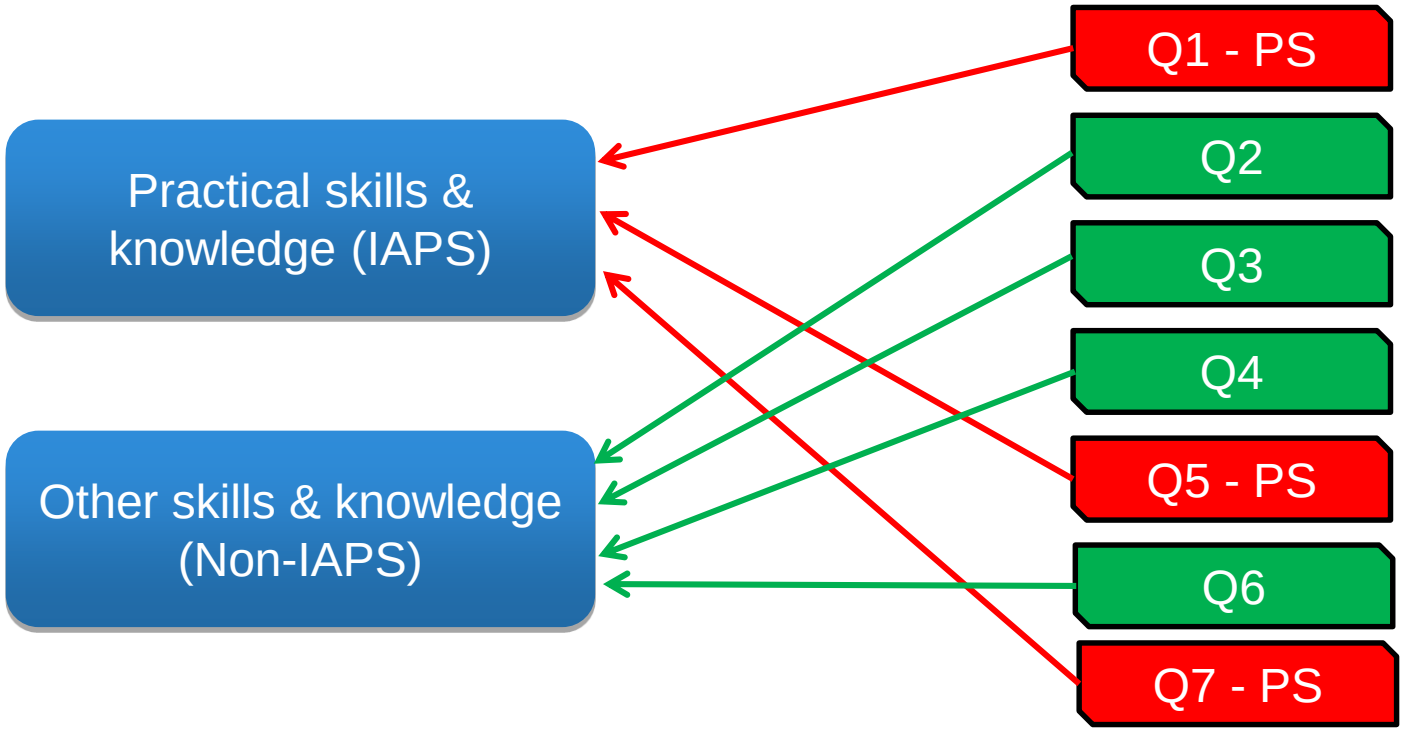

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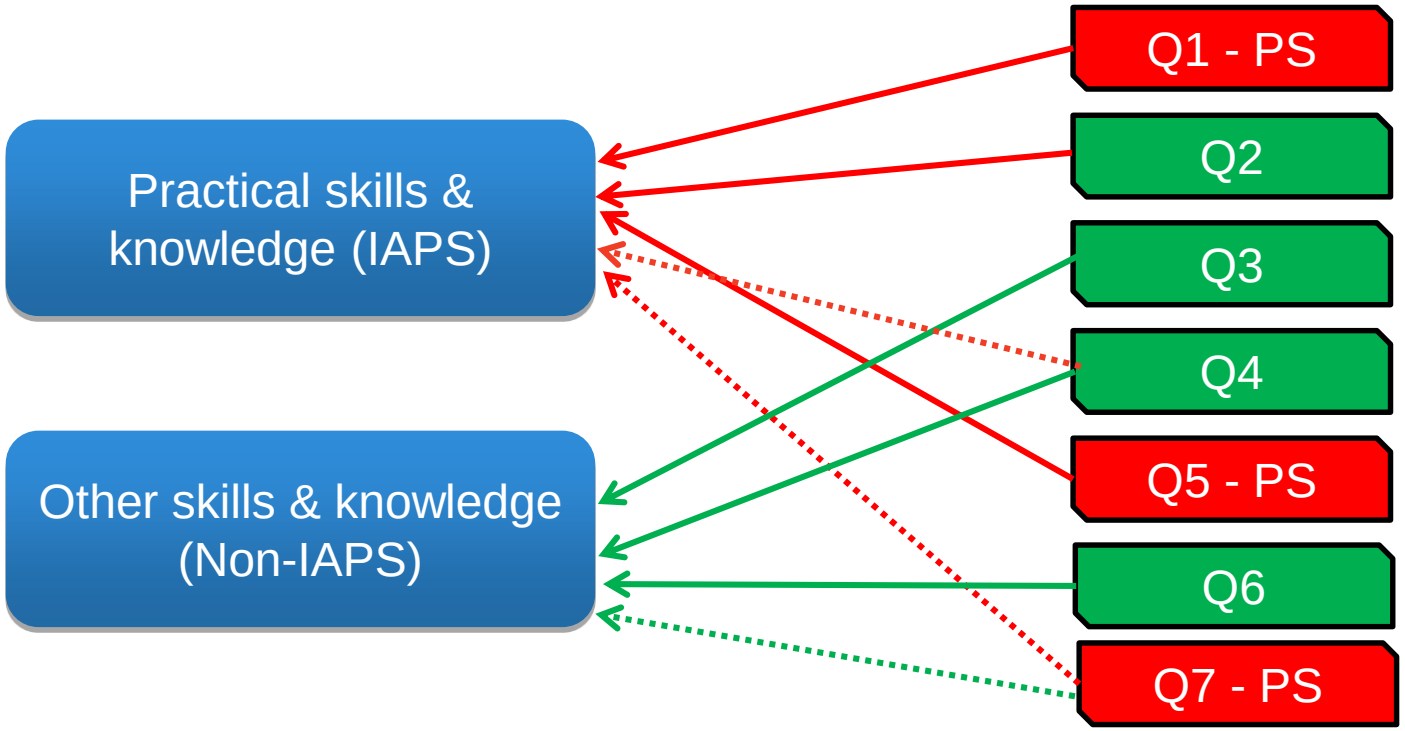

Study 4: Examination items assessing practical skills

RQ3: Principal component analysis (PCA) found that practical skills questions were not generally clustering together to assess a single underlying construct.

Specification	Proportion IAPS items with loading greater than 0.3 on each PC		Proportion Non-IAPS items with loading greater than 0.3 on each PC	
	F1	F2	F1	F2
Biol A	0.31	0.37	0.49	0.22
Biol B	0.19	0.57	0.48	0.11
Biol C	0.11	0.53	0.42	0.21
Biol D	0.14	0.29	0.42	0.17
Biol E	0.25	0.22	0.44	0.14
Biol F	0.10	0.36	0.41	0.19
Mean biol.	0.18	0.39	0.44	0.17

- Questions do not indirectly assess practical skills in isolation from other knowledge and skills
- Questions cover a variety of skills and techniques
- Performance on practical questions closely related to performance on the other items - if a student does relatively well on practical skill items they also do relatively well on the other items

Study 4: Examination items assessing practical skills

- **Findings and expectations:**
  - Practical skill questions assess something different to the endorsement
  - Questions do not assess skills in isolation of course content
  - However, we would expect those students who had received a broad and rich experience of practical work to perform better

- **Limitations and considerations:**
  - Classifying questions is challenging – this analysis used exam board classifications
  - Exam boards still developing their approach to producing practical skills questions
  - Teachers and students are adapting to the reformed qualifications

Thank you!

- Reports available at: www.gov.uk/government/publications/
  - **Paper 1:** Teacher perspectives after one year
  - **Paper 2:** Pre- and post-reform evaluation of science practical skills
  - **Paper 3:** Valid discrimination in the assessment of practical performance
  - **Paper 4:** Technical functioning of assessment

- Final phase of data collection was this autumn

- Contact: Stuart.Cadwallader@Ofqual.gov.uk

What's coming up...

- Inter-subject comparability update, November
- December publications: includes 2018 summer report and official statistics, National Reference Test documents.
- General Qualifications Evaluation workshop, 23 Jan 2019

- Any further questions?

Thank you for coming

Date of next meeting:

Tuesday 26 February, 13.15