



Teaching Excellence Framework Technical Consultation – Response Form

Name/Organisation: UK Institute of Physics and Engineering in Medicine (IPEM)

Please tick the box that best describes you as a respondent to this consultation:

	Respondent type
<input checked="" type="checkbox"/>	Professional Body

IPEM is the Learned Society and professional organisation for physicists, clinical and biomedical engineers and technologists working in medicine and biology aiming to advance physics and engineering applied to medicine and biology for the public good. Physicists, engineers and technologists play vital roles in delivering our healthcare and IPEM is the professional organisation that represents this workforce.

Its members help to ensure that patients are correctly diagnosed and safely treated for illnesses such as cancer and stroke. They also maintain and manage medical equipment such as MRI and ultrasound scanners, X-ray machines, drug delivery systems and patient monitors. Their research and innovation leads to new technologies and methods that advance medical treatments. IPEM is also a charity with around 4,000 members from healthcare, academia and industry. More can be found at www.ipem.ac.uk.



In this response, IPEM has only returned answers to specific questions of widespread relevance to the membership - questions 1, 2, 4, 5, 6 & 8.

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Methodology:

A response on behalf of IPEM members was led by its Academic Advisory Group (AAG), who sought the views of members actively involved in higher education, through means of university employment or guest lecturing duties on local courses. Evidence was collected through a survey via established IPEM email routes and verified for non-bias by an independent higher education expert, which was created on 19 June 2016 at <https://www.surveymonkey.co.uk/r/F5NXFDG>.

77 anonymous responses were collected from members. 40% of responders held university employment (or an honorary academic post), while 76% held an NHS post (or an honorary equivalent). 5% of respondents were associated with industry posts.

Question 1 (Chapter 1)

Do you agree with the criteria proposed in Figure 4?

Not sure

Respondents were asked directly “What forms of evidence would you like to put forward to demonstrate a high standard of teaching at your institute?”. Open, text answers were requested and best grouped into the 10 categories of Figure 4, with the number of responses indicated by the number of stars & a representative quote.

TEACHING QUALITY	
“Teaching provides effective stimulation” – 1 response (from 23)	
<i>“Monitor the percentage achieving distinctions etc.”</i>	★
“Institutional culture ... rewards excellent teaching” - 4 responses (from 23)	
<i>“Reward the qualifications and experience of teaching staff”</i>	★★★★
“Course design, development, stretching students..full potential” - 2 responses (from 23)	
<i>“Assign student presentations, posters, projects etc.”</i>	★★
“Assessment and feedback ... used effectively” – 1 response (from 23)	
<i>“Evidence of wider support for students - i.e. assistance for non-native speakers”</i>	★
LEARNING ENVIRONMENT QUALITY	
“Effectiveness of resources ...independent study and research skills” – 2 responses (from 23)	
<i>“new teaching facilities that promote attainment of research skills”</i>	★★
“Linkages between teaching & schol’ship, research or prof. practice” – 6 responses (from 23)	
<i>“working closely with employers and hospitals or industry”</i>	★★★★★★
“Students’ academic experiences are tailored to the individual” - 4 responses (from 23)	
<i>“Some measure of “Value Added” between course start and completion”</i>	★★★★
STUDENT OUTCOMES & LEARNING GAIN	
“Students achieve their educational ... goals, including...employment” – 1 response (from 23)	
<i>“Students securing quality employment, courses being accredited”</i>	★
“Students acquire knowledge....prepare...personal & prof. lives” – 2 responses (from 23)	
<i>“to undertake any clinical or workplace role for which they have been trained”</i>	★★
“Positive outcomes are achieved for students from all backgrounds” – 0 responses (from 23)	

These answers are from a technical, scientific and engineering discipline in which 20 (±5) % of those active in university teaching are estimated to hold a formal higher

education teaching qualification (i.e. FHEA, SFHEA), and in which 60 (± 5) % of those active in teaching had industrial or healthcare workplace experience.

Some of the 10 criteria were proposed by multiple respondents, while some were rarely proposed or even not addressed by any respondents. Overall, the responses showed that the “learning environment is enriched by linkages between teaching and scholarship, research or professional practice” is the most commonly addressed criteria offered in relation to this open question about best evidence. The learning environment aspect was seen as most relevant of the three aspects given in figure 4, with opinions that “Students’ academic experiences are tailored to the individual, maximising rates of retention” also common. The “Institutional culture recognises and rewards excellent teaching” criteria in the “teaching quality” aspect was also commonly discussed in the open answers.

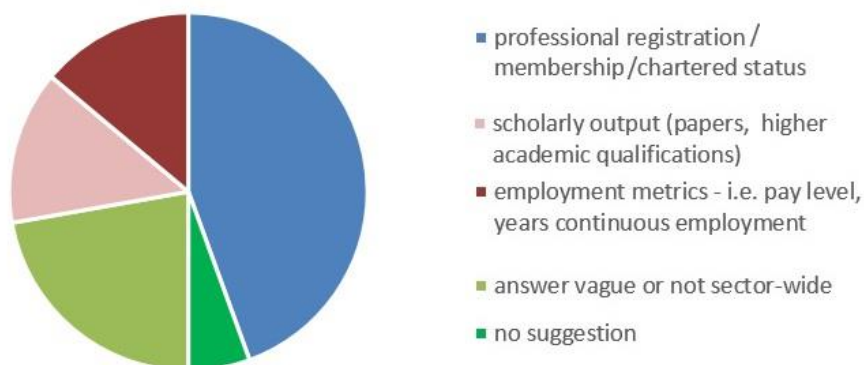
Some respondents warned about forgetting the wider student motivations for undertaking study, and challenged the assumed viewpoint that all university students are young and just embarking on their career path: “Students applying for postgrad courses while in employment are older but are not the same as someone going back to university in their 40s to change direction or in going back in their 60s for fun.”

Question 2 (Chapter 3)

A) How should we include a highly skilled employment metric as part of the TEF?

Of our 77 survey respondents, all were asked to suggest appropriate concepts for identifying those who are highly skilled in their physics & engineering employment. 36 answers were given (below)

Concepts for defining a "highly skilled employment" metric



Professional recognition (blue colours)

Close to half of responses (47%) felt that membership of a professional body or attainment of full professional recognition, such as state registration (in the case of the healthcare sector) or chartered status (in the industrial sector, predominantly, as well as some other sectors) were appropriate definitions.

Indicators of skill or seniority in employment (red colours)

Another quarter suggested that job metrics could be used as a link to high skill level. 14% felt that this could be done by directly measuring graduate pay or measuring the number of graduates who are stably employed – i.e. in periods of prolonged, continuous employment. A further 14% felt that measures of prestige/status from a work output or workplace role could be indicators of graduates who have gone on to become highly skilled. (i.e. a publication record, a patent application, having line management of staff, winning grant funding or national awards).

Uncertainty in answers (green colours)

This question was clearly hard to answer, being skipped by more respondents than answered, possibly due to the presence of many individuals or workplace colleagues with career paths that form exceptions to any rule. Almost a quarter of given replies stated not being able to give a suggestion, or provided vague answers that were not implementable across the whole TEF framework (i.e. milestones relating to specific NHS roles, job titles or further specialised training in a narrow field).

B) If included as a core metric, should we adopt employment in Standard Occupational Classification (SOC) groups 1-3 as a measure of graduates entering highly skilled jobs?

Yes

IPEM membership closely matches the descriptions for SOC groups 1-3 (“Managers/directors, Professional occupations & associate professional/technical occupations”), and so it is felt that stable employment within such SOC groups is a highly appropriate gateway measure for graduates entering highly skilled jobs. SOC groups 1-3 closely describe the skills and responsibility levels required for IPEM professional body membership, and typically those of other scientific, professional or engineering professional memberships. There are three requirements for IPEM membership:

- A relevant first degree or equivalent in physics, mathematics, computing or engineering.
- Completion of an additional three years of relevant formalised academic or professional training
- Currently work practicing in physics or engineering applied to medicine or biology

Those working in SOC groups 1, 2 or 3 would have typically meet these requirements: having undertaken education to degree level, having followed this academic study with a period of supervised, structured workplace training and thus now be actively practising in the field with some degree of competent independence.

These three career development stages also match well with requirements for chartered status, or state registration in healthcare science or engineering, and so there appears good consensus in this definition among IPEM members and perhaps all technical, scientific and engineering professions.

C) Do you agree with our proposal to include all graduates in the calculation of the employment/destination metrics?

Yes

Including all graduates in datasets appears sensible, with no clear rationale offered for exclusion of any of the proposed groups. It may be more difficult, however, to establish good data from overseas graduates after they complete their studies, where maintaining contact after graduation, even through email, can be challenging.

Question 4 (Chapter 3)

Do you agree that TEF metrics should be averaged over the most recent three years of available data? Please outline your reasons and suggest alternatives.

Yes

Recruitment numbers for UK medical physics and biomedical engineering taught programmes are variable on a year-by-year basis, particularly at postgraduate level. There are a number of factors that create this instability in course number including: variable NHS workforce demand in each specialism, fluctuations in the popularity of the UK as an overseas study destination, changes to student visa requirements and home/overseas tuition fee levels and scholarships offered.

Changes in student numbers may have knock-on effects for some of the proposed metrics, notably those that are percentage indicators, where small subsets of the metric data may become sensitive to year-on-year fluctuation in low student numbers. For this reason, a three year average appears sensible. The impact of Brexit may also introduce a gradual or sudden change in metrics from all institutions, or from particular institutions geographically located in one of the devolved constituent countries where student fees or intake characteristics could dramatically differ, and a three year averaging of data will better cope with such transition.

Question 5 (Chapter 3)

Do you agree the metrics should be split by the characteristics proposed above?

Yes

Please outline your reasons and suggest alternatives.

Two additional alternatives were suggested by members. 18% of survey responses suggested that a new split to differentiate between those in work while they studying, and those not in work while studying, to highlight the fate of students with work-life balance. 14% suggested that it may be fruitful to monitor the split between sponsored students and those self-funding their studies, mainly for reasons concerning the widening participation agenda. Thus two new proposed data splits:

“Working while studying / not in work while studying”

“Self-funding students / sponsored students”

Definitions may need to be produced on the number of hours that constitute being “in work”, as well as the financial nature of self-funding status given that some students may be awarded a partial scholarship for their programme of study.

Question 6 (Chapter 3)

Do you agree with the contextual information that will be used to support TEF assessments proposed above?

Yes

These categories appear sensible, but a concern is raised that relatively small numbers of students may be returned in some subsets, particularly once this data is analysed at a programme level in future years of the TEF. This argument offers another reason for a 3 year average of metric data (question 4).

The employment data timepoint(s) needs careful consideration for the proposed data mapping methodology. In the IPEM survey, respondents were asked about the timepoint at which employment data should be taken; asking staff to use their experiences with students and role in providing references to estimate the time at which they felt half of their cohort had secured graduate-level employment. 25% felt they could not answer the question, but of those who could, the results are shown.



Results suggest that six months serves well as a compromise time period at which to survey students; the majority having secured graduate level employment at this stage. Moreover, this 6 month delay from graduation is not too extended to risk widespread loss of contact to prevent HESA or other data collecting agencies from doing their work due to student relocation, change of email address or loss of motivation in completing a survey.

Question 8 (Chapter 3)

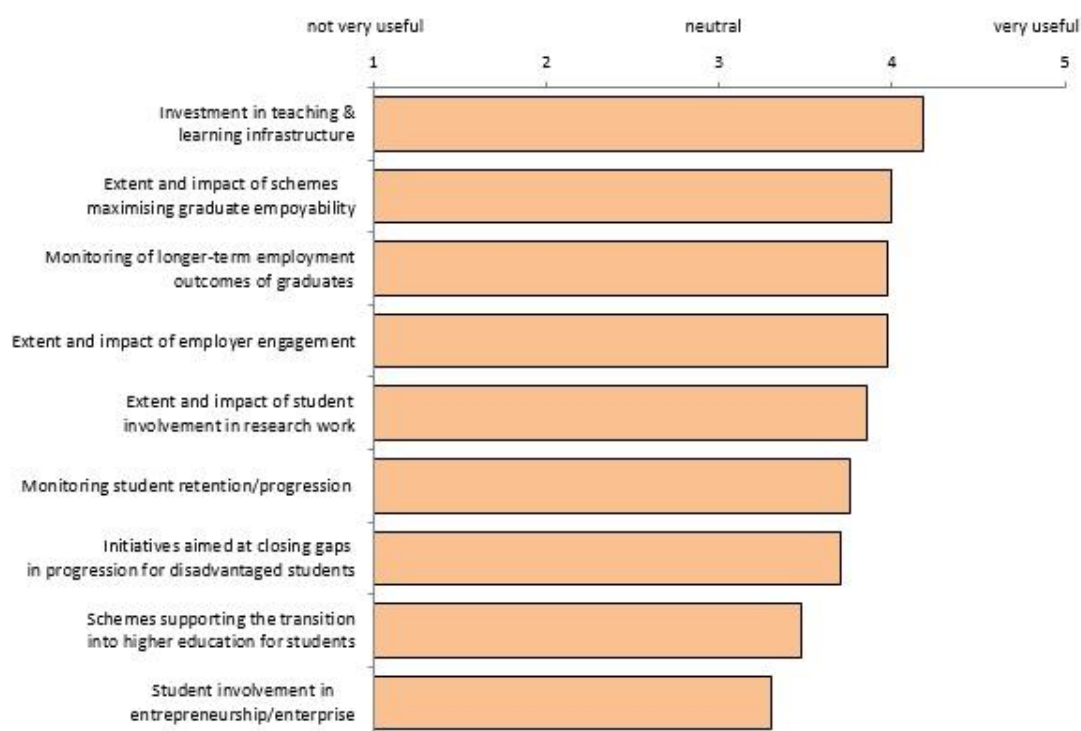
Without the list becoming exhaustive or prescriptive, we are keen to ensure that the examples of additional evidence included in Figure 6 reflect a diversity of approaches to delivery. Do you agree with the examples?

Not sure

Please outline your reasons and suggest any additions or alternatives?

This answer addresses the proposed forms of additional evidence by ranking the favourable opinion of survey respondents to each type of evidence, rather than attempting to convey conclusions that agree or disagree with proposed forms of alternative evidence. Survey respondents were asked to rank the usefulness of different proposed forms of additional evidence relating to (a) teaching quality and (b) the learning environment / student outcomes & learning gain, as outlined in the consultation document figure 6. Below are the findings for teaching quality.

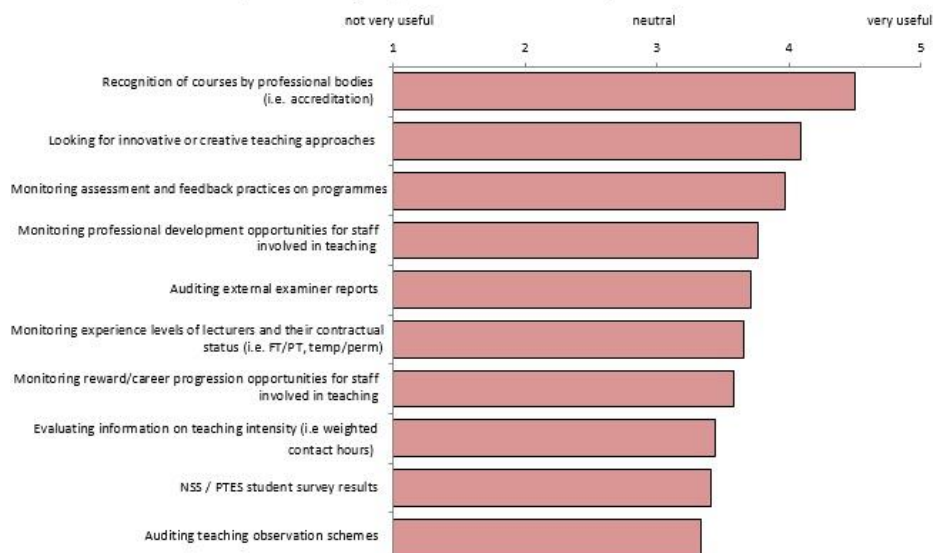
Analysis of concepts introduced in Figure 6 - Judgement of proposed teaching quality criteria



Notably, only one of the criteria (investment in teaching & learning infrastructure) scored above the Likert scale ranking of 4 (“useful”). The lowest score of 3.30 for student involvement in enterprise/entrepreneurial activity was barely favourable only just scoring above the Likert scale of 3 (“neutral”). Schemes to monitor and foster employer engagement or longer term graduate career development were most favoured, albeit without marked popularity of any suggested form of evidence.

Below are the findings for learning environment/student outcomes & learning gain.

**Analysis of concepts introduced in Figure 6 -
Judgement of proposed environment/outcome criteria**



Accreditation status and recognition by professional bodies was the clearly favoured means of additional evidence in this category, echoing the conclusions of the Wakeman Review of STEM Degree Provision & Graduate Employability that found accreditation vital to incentivising employability measures in STEM subjects. Accreditation rated 4.5/5.0 on the Likert scale for usefulness, markedly higher than any other opinion that was sought. Measures that promoted innovative or creative teaching approaches were also favoured, together with more monitoring of assessment or feedback practices. Actions to better promote teaching-based university careers were only middle-ranking, while proposals to audit NSS/PTES survey findings, or investigate the findings of teaching observations, scored lowest.

**Question 3 (Chapter 3), Question 7 (Chapter 3), Question 9 (Chapter 4)
Question 10 (Chapter 4), Question 11 (Chapter 4), Question 12 (Chapter 5)**

No answers are given for these questions, which are felt to be more appropriate for a Higher Education Institute than a Professional Body to answer.

We do not intend to acknowledge receipt of individual responses unless you tick the box below.

Please acknowledge this reply

At BIS we carry out our research on many different topics and consultations. As your views are valuable to us, would you be happy for us to contact you again from time to time either for research or to send through consultation documents?

Yes

No

BIS/16/262/RF