

Report on consultation on Draft Themes and Topics for the Diploma in Science

SUMMARY FOR STEERING GROUP – 29TH OCTOBER 2008

1. INTRODUCTION

This document provides a brief summary of the key messages resulting from the consultation carried out during September and October 2008 on the draft themes and topics for the Diploma in Science. The feedback obtained during this consultation will be used to review, revise and further develop the content of the Diploma in Science during forthcoming work by the Project Team to produce the draft Line of Learning Statement of Content (QD9).

Several strands of consultation activity have been used to gather feedback from stakeholders. These were:

1. an online consultation survey questionnaire made available through the Diploma in Science website www.sciencediploma.co.uk
2. several workshop meetings facilitated by Ken Gadd¹

Other consultation activity has also been occurring but these have had a wider focus; for instance there was an initial meeting with Awarding Bodies to talk about the Phase 4 Diplomas and to open the door with regard to discussions on the forthcoming development of the Science Line of Learning Statement and Criteria, and assessment thereof; and, Pye Tait have been undertaking phone interviews with employers and providers to acquire skills and qualifications specific information to feed into the Market View research.

The three workshops facilitated by Ken Gadd were arranged at the Institute of Biology, Institute of Physics and the Royal Society of Chemistry. In total 26 people from Schools/Colleges/Universities, the Learned Societies or employers or in their own capacity as Specialist Advisers or consultants attended the workshops. The participants discussed the vision, purpose and structure of the Diploma in Science and provided insight for content purposes from the perspective of each of the

¹ Specialist Science Adviser to the SDDP Chair, Professor Hugh Lawlor and lead on the Themes and Topics
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traditional disciplines. This was also helpful from a progression point of view.

For the online survey there were, in total, 264 responses, of which 9 were received outside of the online format (7 by email and 2 by post). Furthermore, 8 additional commentaries, in the main from learned societies, were received by email.

A very high proportion of responses were received from Higher Education Institutions. Altogether providers represented over 60% of the responses. This predominance of the provider and in particular Higher Education voice is not surprising, at this early stage, given the large numbers of HEIs and mixed economy institutions versus the relatively smaller number of learned societies and employer organisations². Work is ongoing within the SDDP to ensure greater participation by employers in the future.

2. KEY FINDINGS FROM THE SURVEY

Rationale

Respondents are generally satisfied that the overarching rationale and general statements of purpose reflect the vision presented in the document. The split between being broadly satisfied and broadly dissatisfied for the rationale is 59: 41.

Approximately a third providing additional commentary said the statements should have a greater emphasis on, and reassurance about, the development of **scientific skills and knowledge** (i.e. understanding principles of science, scientific method).

Purpose Statements

There is, in general, a positive reaction to the purpose statements with the split between broad satisfaction and broad dissatisfaction being slightly more positive for the purpose statements than for the overarching rationale (61: 39).

Some 25 respondents providing commentary on the purpose statements for each level say they are too vague, lacking detail particularly in the sections on 'entry from..' and 'progression into..', and in terms of the specific skills to be developed at each level.

² Although there are potentially many employers requiring scientists or people with scientific skills, it is, at this early stage of development, not unexpected that employers may leave commenting to their employer representative organisations or associations.

Guiding Principles

The survey indicates an almost exact 50:50 split between broad satisfaction and broad dissatisfaction with the Guiding Principles.

First principle: work related learning: Of the additional comments, 17 raised issues about the practicality of focusing on work related learning/authentic workplace practice. One suggested that, for example, 'authentic' is not always 'ideal' workplace practice.

Second principle: the effective use of science: raised the issue of wanting to see more emphasis on ensuring the development of scientific skills and knowledge. Several respondents emphasise this is particularly important in a work-related learning context.

Third principle: transferability and the future: six respondents queried the inclusion of this principle. Comments range from – knowledge transfer/predicting the future is difficult for this level of learner – to it adds little to the overall principles, as it would be part of the first two principles.

Theme Titles

Over a quarter regard the theme titles as being synonyms for the three 'traditional' disciplines of Physics, Biology and Chemistry. Some see this as a good opportunity to make science more engaging, others say not using the traditional titles will just cause confusion. Just under a quarter suggest the theme titles should revert to the three subjects; the others acknowledge a reference to the three disciplines but that the themes show the 'balance'/'overlaps' between them.

3.5 The Theme Diagram

The Venn diagram approach to illustrate and convey the interdisciplinary nature has been on the whole well received. The three workshops confirmed that the diagrams help to show the relationship between subject content and potential for the areas that overlap. Concerns relating to the interdisciplinary nature show that, although it is generally regarded as commendable, respondents consistently state that the Diploma in Science must have **depth**, particularly at Advanced level and for those planning to go onto Higher Education.

However, some participants at the workshops felt that maintaining (from Key Stage 4) a breadth of science was a strength and welcome given that the Diploma structure

allowed increased depth of knowledge and understanding to be acquired beyond Principal Learning. There are two main areas currently felt to be missing from the diagram: 1) Mathematics and Statistics, and 2) Psychology/behavioural science

Topic Titles and Content

The level of satisfaction with topic titles is highest at Foundation level with a decreasing trend for Higher and Advanced topic titles. Respondents are most satisfied with how well the proposed topics fit with the Themes at **Foundation** and **Higher** levels. Respondents are slightly less positive that the proposed topic titles will be engaging for learners aged 14-19. The main changes respondents would like to see to topic content are the further inclusion of essential **mathematical** content and the addition of **psychology** within the topics.

Equality of Opportunity

For **Foundation** and **Higher** levels, a lack of sufficient or suitable work placements is most commonly seen as being a potential barrier for learners; at **Advanced** level respondents raise most queries regarding the potential for learners to be able to progress onto the HE courses of their choice.

3. CONCLUSIONS

Based on the online survey responses the following main points stand out :

1. **greater emphasis required on mathematics** – 1) have mathematics as its own theme, 2) mathematics is simply missing, and 3) the topics are lacking mathematics content. To a lesser degree **psychology** is also seen as missing sufficient reference in the detail.
2. **insufficient emphasis on learners acquiring sound scientific skills and knowledge** - ie understanding the principles of science/scientific method.
3. **concern over the depth of the Diploma:** respondents feel more needs to be done to ensure the learner is given sufficient depth, particularly at Advanced Level, to give them the necessary grounding in the separate disciplines (and Mathematics) for progression into Higher Education study.
4. **difference from other provision** – there is, as yet, it appears insufficient clarity about the difference of the Diploma from other provision

5. **theme titles** - there may be scope to reconsider and identify newer titles that may further capture cutting edge scientific research and development

Foundation level: Receives the highest level of satisfaction from respondents in all areas. Further work reviewing the Foundation level purpose statement, themes and topic titles should help bolster this initial positive response during future consultations.

Higher level: Levels of satisfaction are not as high here as at Foundation level, but again, further consideration of the Higher level purpose statement, themes and topic titles should improve stakeholder reaction towards this level.

Advanced level: Levels of dissatisfaction with the purpose statement, themes and topic titles are at their highest here. Particular concerns from respondents may need addressing, ensuring that learners are able to cover specific disciplines/subject areas in sufficient depth for progression into HE.

4. RECOMMENDATIONS

1. amend the overarching statements and purpose statements to reflect:
 - a greater emphasis on learners' understanding of sound scientific knowledge and scientific principles,
 - make a much stronger reference to mathematics in the statements,
 - adjust references to 'appropriate', alternative (Foundation level) and quality (Higher)
2. greater explanation is required to show how the Diploma at Advanced level will have sufficient depth in the three disciplines
3. consider the explicit inclusion of Mathematics or at least make it more clearer and meaningful regarding the treatment of mathematics within the Diploma
4. consideration of the inclusion of psychology within the topics
5. theme titles need to reflect and indicate future drivers of scientific research and development

6. the presence of a clearer conceptual framework (as per perhaps the current programmes of study) may help to better indicate intended relationships and links between the themes and topics
7. there are perhaps opportunities to expand within the introduction the way scientists work, as this may help more fully illustrate the working practices, knowledge, understanding and skill needs of scientists
8. define/explain certain terms so that subsequent participants in consultations can fully understand the nature of what is being described and presented
9. it may be worthwhile to conduct a review of the vision and proposed topics for the Diploma in Science so that they reflect any appropriate links to Grand Challenges projects