

EVALUATION OF BBSRC's INDUSTRIAL CASE SCHEME (MAY 2012)

BBSRC's Industrial CASE scheme provides support for postgraduate training and research which is supervised jointly by academic and industrial partners. Industrial CASE studentships are expected to provide PhD students with a first-rate, challenging research training experience within the context of a mutually beneficial research collaboration. At any one time, BBSRC supports over 400 Industrial CASE studentships.

In February 2012, a Review Panel was convened to provide an independent evaluation of the Industrial CASE scheme. The Panel was chaired by Dr Candy Hassall (Wellcome Trust) and comprised experts who are familiar with the issues relating to postgraduate training and academia-industry collaborations. The Panel had expertise from across the BBSRC remit and included representatives from academia and industry (see Appendix 1, p. 11).

The objectives of the evaluation were to:

- assess the quality of the training supported by the Industrial CASE scheme, with particular emphasis on the training provided by industry partners
- assess the outcomes and achievements of the postgraduate training and research
- identify the benefits from supporting postgraduate training through the Industrial CASE scheme in comparison with non-CASE
- examine the drivers and barriers which influence industry, academia and student participation in the schemes
- consider whether the current requirements for financial contributions from industry are appropriate
- comment on the balance and coverage of the Industrial CASE scheme portfolio
- comment on the variety of industry partners that participate in the scheme
- comment on the scheme's application and administration processes
- identify any examples of best practice in the provision of collaborative training with industry
- comment on ways to build on successes and ways to address any identified gaps and issues

The evaluation was focused on studentships with start dates between 2004 and 2010. The Panel's analysis was based on over 600 questionnaire responses which included 334 postgraduate students, 155 academic researchers, 107 industry supervisors, 9 industry coordinators of Industrial CASE Partnership awards, and 19 academic research managers, administrators and professional services staff. Data from BBSRC databases and previous evaluations of BBSRC training and research were also considered. The evaluation examined both variants of the Industrial CASE scheme¹.

¹ There are two variants of BBSRC's Industrial CASE scheme:

- **Industrial CASE (iCASE):** the standard scheme with an annual funding call; it is open to company-led or academic-led proposals
- **Industrial CASE Partnership (ICP):** provides Industrial CASE studentship allocations covering several years' intake to 'Partner' companies. Historically, BBSRC has invited companies to become 'Partners' based on their track record with iCASE studentships.

KEY CONCLUSIONS

The key conclusions from the evaluation are summarised below. The full evaluation report will be published at a later date at www.bbsrc.ac.uk/researchevaluation.

1. The Industrial CASE scheme supports high-quality student training

- Overall, the quality of training supported through the Industrial CASE scheme was good. Students were provided with a variety of research skills, broader science skills and generic professional skills training within academia and this was generally rated highly. Students' and academic supervisors' assessments of the quality of training provision within academia were similar to those reported in the Quota Doctoral Training Grant competition [evaluation](#).
- The quality of training provided by industry partners was more varied than that provided by academia. As expected, the nature of the training differed between individual companies and was influenced by a variety of factors (e.g. company size, sector, research activities). Industry training provision was primarily delivered through the industry placement and, as such, was dependent on student participation in the placement. Industry-led training was often complementary to that of academia and its strengths included the development of technical and practical skills, commercial and entrepreneurial awareness, and generic professional skills. The frequency of meetings between students and industry supervisors was generally appropriate. However, it was worrying that a small proportion of students had never met with their industry supervisor or met with them very infrequently. BBSRC should provide clearer guidance regarding its requirements and expectations for the provision of training by industry. This would benefit students, academic supervisors and industry partners.

2. The industry placement is an essential feature of the Industrial CASE scheme

- The industry placement² is an important mechanism for delivering the 'added-value' from Industrial CASE studentships in comparison with non-CASE studentships. The opportunity for students to participate in a placement is a major strength of the scheme and a strong driver for student participation. It was clear that the placements had delivered numerous benefits to student training and student research projects, as well as to academic and industry partners. A variety of models was used for the provision of placements. The majority consisted of multiple, periodic placements and these were as effective as single, continuous placements.
- BBSRC should provide additional guidance about the purpose of the placement and the nature of the research to be conducted while based at the industry partner, as these were not well understood by the academic or industry research communities. In particular, BBSRC should clarify the extent to which the industry placement should be aligned with the student's research project or the subject of their PhD, and whether the placement is required to be research-based.

² The Industrial CASE scheme requires all students to participate in an industry placement as part of their training. At the time of the evaluation, students were required to spend between six and eighteen months based with their industry partner working on a collaborative training project.

3. The Industrial CASE scheme's requirements for student participation in industry placements are not being met for all studentships

- A lower than expected proportion of students had participated in a placement with their industry partner and a very low proportion had participated in a placement which met the six-month duration requirement. The guidance provided by BBSRC should make it much clearer that the provision of, and participation in, industry placements are mandatory requirements of the scheme. BBSRC should also develop a mechanism to monitor Industrial CASE student participation in industry placements (see point 8).
- The research community was confused about the minimum placement duration for BBSRC's Industrial CASE studentships, particularly as the six-month minimum requirement is longer than for other CASE studentships funding. BBSRC should lower the minimum placement duration to three months. This would be consistent with other BBSRC and Research Council CASE studentships and may be a more realistic expectation for many industry partners. While longer placements can be very beneficial and should be encouraged, it should be clear what the minimum requirement is.
- The failure to provide an industry placement was often due to changes in the industry partner's circumstances. For smaller companies or under particular circumstances, it may not be possible for the industry partner to arrange an alternative placement. However, for larger companies, especially ICP 'Partners', there should be an expectation that an alternative placement will be provided.

4. The outputs, outcomes and achievements arising from Industrial CASE studentships are generally good

- The overall performance of the studentships and the associated student research projects was good, although there was considerable variation between individual studentships. Many studentships were good or very good, and a few were excellent; others were disappointing and a small proportion had not met the expected standard. There were no specific data available for Industrial CASE studentship thesis submission rates, but the overall rate for all BBSRC-funded studentships was over 80% which is very good.
- Many students had published an original research article as a result of their studentship and there were examples of papers in prestigious, high-impact journals. However, the Panel was concerned with several aspects of the student publications data including mean number of publications per student, proportion of students who had a first author paper, and the level of industrial co-authorship. There are additional constraints on Industrial CASE studentships which may delay publication of students' research. Nevertheless, there should be a very strong expectation that all students should publish the research conducted during their studentship; a good quality publication is needed to obtain subsequent employment in academia or industry.
- The first destinations of Industrial CASE students were impressive. A notably higher proportion of Industrial CASE students pursued research-related careers in industry compared with other BBSRC-funded students. Several students were employed by their industry partner after their PhD ended.
- The interaction with industry partners and the participation in industry placements encouraged many students to pursue a career in industry. Conversely, a small number of students were discouraged from working with industry by participation in the

Industrial CASE scheme. Both these outcomes are positive; they indicate that the scheme has enabled students to identify which type of career is most suitable for them.

- In partnership with industry, the Industrial CASE scheme has delivered highly skilled workers and this is a very positive achievement. The scheme has enabled industry to influence student training and this has helped to ensure that the training meets the needs of industry and the wider UK economy.
- Students, academic supervisors and industry supervisors reported a wide variety of achievements arising from the studentships and the associated student research projects. These included benefits to students, academia, industry, the UK economy and the wider public good. A small number of Industrial CASE studentships resulted in new intellectual property or the commercialisation of research findings. However, this was not common and it is important for BBSRC to manage industry partners' expectations in this area.

5. The extent to which the outputs, outcomes and achievements arising from Industrial CASE studentships were dependent on the industry partner was variable

- Many of the outputs, outcomes and achievements arising from Industrial CASE studentships were dependent on industry partners. Industry contributed to the studentships' achievements in a number of different ways, including: the provision of additional training opportunities; access to data, equipment, expertise, facilities, materials, resources, technologies and tools; knowledge exchange; and additional funding to attend scientific conferences.
- However, many of the outputs, outcomes and achievements arising from Industrial CASE studentships were generic to a successful PhD and it was likely that they would also have been realised through non-CASE studentships. The Panel was concerned that for some Industrial CASE studentships the training experience or the associated outputs were not sufficiently different from those of non-CASE studentships.
- The extent to which individual Industrial CASE studentships provided a distinctive experience compared with non-CASE was influenced by the level of engagement of the industry partner and the strength of the academia-industry collaboration. BBSRC should place greater emphasis on ensuring that Industrial CASE studentships are distinct from non-CASE. In this context, providing academia and industry with additional guidance on the aims of the scheme would be beneficial. There is also a risk that the specific aims of the Industrial CASE scheme may get sidelined during the four-year period of a studentship. This risk could be reduced by better planning of studentships at the outset.

6. The interactions between students, academia and industry can create additional challenges for Industrial CASE studentships

- The majority of academia-industry partnerships supported through the Industrial CASE scheme were successful. However, a moderate proportion of academic and industry supervisors identified issues which affected the success of the interaction.
- A common issue reported by academic supervisors was a change in the priorities or circumstances of the industry partner. Such changes could affect the success of a

studentship, for example, if an industry placement was not provided or if the industry partner was no longer able to provide resources which were essential to the research project. In particular, the recent restructuring of large companies within the UK pharmaceutical sector has had a negative impact on some Industrial CASE students. Industrial CASE studentships were generally able to overcome issues associated with changes in the priorities or circumstances of the industry partner, although many effectively became non-CASE studentships as a result. There is limited scope for BBSRC to address these issues, which are an unavoidable consequence of working with industry. The impact of industry staff changes might be reduced by requiring studentships to have an industry co-supervisor in addition to the main industry supervisor where possible.

- Industry partners cited issues with individual CASE students as a factor which affected the success of the academia-industry interaction (e.g. quality, performance). Greater involvement of industry partners in the student recruitment process would help to address this. It may also be helpful for academic institutions to provide training in student supervision to industry supervisors.

7. It is beneficial for Industrial CASE studentship research projects to be developed jointly by the student, academic supervisor and industry partner

- The most successful Industrial CASE studentships tended to be those where there was a genuine partnership between the student, academic supervisor and industry supervisor. BBSRC should encourage all parties involved in the Industrial CASE studentships to meet at the outset and develop a clear plan for a *joint* student research project. For Industrial CASE studentships to be successful, all parties need to 'buy in' to the aims of the scheme. A jointly developed project plan may also increase the industry partner's commitment to the studentship and reduce the risk of problems arising during the studentship.

8. BBSRC should monitor Industrial CASE studentships more closely

- There is currently limited monitoring associated with the Industrial CASE scheme and there is no end of award reporting. As such, BBSRC cannot routinely determine whether the requirements of the scheme are being met and cannot capture the outcomes and impacts of its investments in the scheme.
- The limited monitoring and reporting is not acceptable considering the substantial amount BBSRC invests in studentships and the scheme as a whole. BBSRC should introduce a system of reporting for Industrial CASE studentships. Academic supervisors should be required to report on the outputs, outcomes and achievements of the studentship, either through a light-touch end of award report or through the new Research Outcomes System. At minimum, the reporting should cover: whether the thesis was submitted; whether the PhD was awarded; the student's publications; other outcomes and achievements; and whether the industry placement was completed. Companies with an ICP allocation should also report on their studentships and this information could feed into the renewal procedure for ICP awards.
- A minimum duration requirement for student industry placements will not be effective unless compliance is monitored and enforced. It is not possible for BBSRC to compel the provision of, or participation in, industry placements at the individual studentship level. However, where there is a repeated lack of provision or participation, BBSRC

might consider imposing sanctions on the industry or academic partner as appropriate. The track record of ICP 'Partners' in providing placements should be considered as part of the ICP renewal process. The provision of placements should also be discussed at annual meetings between BBSRC and ICP 'Partners'.

- Academic supervisors or institutions should be required to inform BBSRC of any significant changes to the industry partner's circumstances or participation in the studentship, especially if these are likely to affect the success of the studentship.

9. There is scope to broaden the range of industry partners who participate in the Industrial CASE scheme

- The Industrial CASE scheme has supported training and research from across the BBSRC remit. Nevertheless, the portfolio is very health-oriented which reflects the strong participation of companies in the 'health and pharmaceuticals' sector in the scheme (both in iCASE studentships and as ICP 'Partners'). A few studentships appeared to be within the remit of MRC rather than BBSRC. While it is important that students are able to follow their own research interests and explore the most promising research directions, out-of-remit studentships are a potential concern.
- A large number of industry partners had participated in the Industrial CASE scheme and there was a good variety of companies represented (e.g. industry sectors, company sizes). However, for some sectors (e.g. industrial biotechnology), industry participation in the scheme was limited or predominantly through a very small number of companies.
- There is therefore scope to broaden industry participation in the scheme, particularly within certain sectors. The most straightforward approach would be for BBSRC to support new ICP 'Partners' from outside the 'health and pharmaceuticals' sector and BBSRC should consider modifying the criteria for ICP 'Partner' status to assist with this. BBSRC should also work with other organisations, such as the Knowledge Transfer Networks, to broaden participation in the scheme. Efforts to increase the variety of industry companies participating in the scheme should not be at the expense of existing partners. The restructuring of large pharmaceutical companies and the closure of associated UK sites may offer an opportunity for natural rebalancing of the portfolio. The recent changes to the eligibility criteria for non-academic partners are a positive development which may also help to widen participation.
- There are risks however, with encouraging wider industry participation in the Industrial CASE scheme. It is vital that new industry partners understand the purpose of collaborative doctoral training. Different companies or industry sectors are likely to have different cultures or drivers for participation in academia-industry collaborations and Industrial CASE studentships will not be appropriate for all companies or sectors.
- The Industrial CASE scheme has primarily supported academic researchers who have previous collaborations with industry. This is to be expected and demonstrates that the scheme is valued by this part of the research community. However, BBSRC should consider how it might encourage wider academic participation. It can be very difficult for academics who do not have a track record of working with industry to identify potential CASE partners. While it is not realistic to expect BBSRC to broker partnerships between industry and academia, there are a number of activities which BBSRC could consider to assist this process (e.g. conferences or 'dating events', a database of potential partners, providing contact details for ICP 'Partners'). BBSRC should aim to

encourage the best researchers in academia to work with the best researchers in industry.

10. The requirement for industry partners to make contributions to Industrial CASE studentships is appropriate

- In general, the requirement for industry companies to make financial contributions³ to Industrial CASE studentships is appropriate and these contributions demonstrate the industry partner's commitment to the studentship. Moreover, industry partners often make substantial contributions above the minimum requirement (either in cash or 'in-kind') and the provision of the industry placement is also a significant contribution. The 'in-kind' contributions from industry are very valuable and BBSRC should examine whether they could be considered as part of the application assessment process.
- There was only limited evidence that industry contributions to the increased student stipend had helped attract the best students to Industrial CASE studentships. In general, students indicated that the opportunity to participate in an industry placement and an interest in bioscience industry were more influential drivers for their participation in the scheme. Industry contributions to studentship project costs were appreciated by academic partners, but most respondents noted that the minimum contribution was too small to make a notable difference to the quality of research projects.
- The Industrial CASE scheme represents good value for money for industry and industry partners can realise many benefits from their participation. The minimum industry contribution now represents a smaller proportion of BBSRC's investment in each studentship than in the past; the minimum contribution has remained the same for many years, whereas BBSRC's contribution to each studentship has increased (e.g. through higher student stipends and the increased Research Training Support Grant). It would not be appropriate to increase the level of industry contribution at this time; this would work against efforts to broaden participation, particularly in the current economic climate. It would be helpful to re-emphasise that the focus of the Industrial CASE scheme is student training and this is why the majority of the funding is provided by the public sector.
- The requirement for industry to make financial contributions to Industrial CASE studentships is a barrier to participation in the scheme for some companies (e.g. small and medium enterprises (SMEs), particular industry sectors, companies with low profitability). This is a complex issue, but BBSRC could consider lowering the level of contributions for such companies to encourage their participation within the scheme. The Panel noted that the Medical Research Council's (MRC) Industrial CASE scheme covers the costs of the financial contributions for SMEs. It is not ideal for different Research Councils to have different approaches to financial contributions and further harmonisation in this area should be encouraged.

³ At the time of the evaluation, industry partners were required to make the following financial contributions to Industrial CASE studentships:

- minimum £1,400 per annum to the costs of the student research project
- minimum £2,500 per annum to supplement the student stipend
- all additional expenses, such as the costs of travel and accommodations, incurred by the student as a direct result of attendance at the premises of the company or organisation

11. The Industrial CASE scheme's application and assessment processes are generally effective, but there is scope for improvement

iCASE studentships

- The majority of academic and industry supervisors were satisfied with the iCASE studentship application and assessment processes. It is positive that applications can be made by academia and industry, and important that industry is involved in the assessment of iCASE applications.
- The success rate for iCASE studentships is very high compared with other BBSRC funding. While it is important for industry-facing schemes to have success rates which encourage industry participation, there is a risk that this could result in lower quality studentships being funded. The number of applications to the Industrial CASE scheme is expected to increase following the introduction of the new [Doctoral Training Partnerships](#) (DTP) programme, which funds fewer studentships compared with the previous Quota DTG competition.
- The provision of individual iCASE studentships is useful and such studentship can be very successful. However, this can work against BBSRC's other objectives for studentship funding (e.g. cohort identity, flexible use of funding, ensuring institutions are accountable for the use of the funding).

ICP studentships

- The provision of studentship allocations through the ICP variant of the Industrial CASE scheme is very useful. For example, it allows greater flexibility and planning among ICP 'Partners' and BBSRC can develop stronger relationships with 'Partner' companies. However, the process for selecting ICP 'Partners' is not transparent and BBSRC should consider selecting ICP 'Partners' through an open competition.

iCASE and ICP studentships

- iCASE and ICP are both useful variants of the Industrial CASE scheme and should be retained. Applicants' track records with past Industrial CASE studentships should be considered as part of the assessment process. It is recognised that this will be easier for ICP studentships than iCASE studentships.
- BBSRC may wish to consider whether Industrial CASE studentships could be treated as or awarded as part of an institutional BBSRC cohort. In this context, BBSRC could also consider whether academic institutions should meet a training quality threshold to be eligible for Industrial CASE studentship funding (for example, as evidenced by holding a DTP award).

12. There is a need for BBSRC to provide greater clarity regarding the aims of the Industrial CASE scheme

- CASE is a strong and respected brand. However, individual researchers in academia and industry have different perceptions and misconceptions about the purpose of CASE studentships. BBSRC's aims for the Industrial CASE scheme are not clear to the academic and industry research communities, and the lack of clarity over the primary aim of the scheme can create tensions between academia and industry partners. In particular, there was some confusion as to whether the primary aim of the scheme is to

support excellent doctoral training or to support academia-industry collaborations which benefit UK business. These two goals are not mutually exclusive and the most successful studentships were those which were beneficial to all parties. Nevertheless, BBSRC should make clear that the priority of the scheme is student training.

- BBSRC should develop an Industrial CASE studentship ‘user guide’ which is directed at students, academia and industry partners. The guide should describe BBSRC’s aims, priorities and expectations for the scheme. It is important for BBSRC to distinguish between the requirements of the Industrial CASE scheme (which should be mandatory) and other guidelines and advice. It would also be helpful for BBSRC to develop case studies of successful Industrial CASE studentships. These should highlight the specific achievements of the Industrial CASE scheme in comparison with non-CASE, illustrate best practice, and demonstrate the types of benefits which can arise from participation in the scheme. Case studies should also be used to manage the expectations of students, academia and industry.
- BBSRC should encourage academia and industry to use model collaboration agreements (e.g. the Russell Group Studentship Agreement). Links to model agreements should be included in any guidance provided by BBSRC.
- A moderate proportion of Industrial CASE students were not aware of the differences between CASE and non-CASE studentships, or did not know which of the advertised studentships were CASE or non-CASE at the time they were applying for studentships. This is a concern as students need to be aware of what they are committing themselves to at the outset, including the benefits and constraints of CASE studentships.

13. The introduction of Professional Internships for PhD students will create a new context for the Industrial CASE scheme

- BBSRC is introducing Professional Internships for PhD students (PIPS) as part of the new DTP programme. This will alter the training landscape in which the Industrial CASE scheme operates. BBSRC should provide greater clarification about its expectations for CASE and PIPS placements. In particular, BBSRC should ensure that the community understands the distinctions between CASE and PIPS placements. BBSRC should also ensure that there is a consistency of approach between CASE and PIPS.
- PIPS and CASE will be running alongside each other within academia institutions and this may create additional tensions. There is a risk that Industrial CASE students could be provided with a narrower training experience than DTP students (e.g. if the CASE student does not participate in a placement).

14. BBSRC should continue to harmonise its support for CASE studentships with other Research Councils

- There are a large number of different CASE studentship schemes supported by BBSRC and other Research Councils, and these vary considerably in their features (e.g. duration of studentship, duration of industry placement, financial contributions from industry, student stipend, remit, application processes, application forms, application deadlines). The proliferation of different CASE studentship schemes is not helpful to academic or industry research communities. Academia and industry

recognise the CASE brand rather than individual Research Council CASE studentship schemes. In recent years, BBSRC has worked together with other Research Councils to improve understanding of their respective studentship schemes. It is encouraging that BBSRC and MRC now manage their Industrial CASE schemes concurrently and with the same deadline, which allows for the transfer of out-of-remit applications between Councils.

15. BBSRC should continue its support for the Industrial CASE scheme

- The Industrial CASE scheme is an important part of BBSRC's training portfolio. Overall, BBSRC's investment in the scheme has been successful and the scheme is contributing to BBSRC's strategies for training and engagement with industry. Industrial CASE studentships have the potential to deliver a variety of additional benefits compared with non-CASE, including benefits to students, academia, industry and the wider UK economy. The Industrial CASE scheme is also a very useful mechanism through which researchers from academia and industry can establish new partnership links. BBSRC should continue to invest in the Industrial CASE scheme in the future. However, there is a need for BBSRC to refresh the scheme to ensure that it remains effective and distinctive in comparison with non-CASE studentships.

Appendix 1

EVALUATION OF BBSRC's INDUSTRIAL CASE SCHEME

REVIEW PANEL MEMBERSHIP

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