

Evaluation of the Academy's International Industry-Academia Linkage Programmes

Overview

An evaluation of the Academy's international industry-academia linkage programmes was commissioned by the Royal Academy of Engineering and completed by Technopolis Group Ltd¹ in December 2016. The evaluation's overall objective was to assess, and where possible quantify, the extent to which the Enriching Engineering Education Programme (EEEE)² had been effective and represented value for money for the Academy. It further aimed to provide guidance for the design and implementation of an upscaling of the programme (now known as HEP SSA, Higher Education Partnerships in sub-Saharan Africa) and the Academy's international industry-academia programmes more broadly.

Main evaluation findings

Relevance of EEEP

- The aims and objectives of EEEP are seen as highly relevant by all stakeholders consulted.
- There has been a shared recognition of the need for change and clear understanding of the strengths and weaknesses of the universities current procedures and systems.
- The most important needs identified by the stakeholders are for better trained graduates, increased relevance of the curriculum to industry, upskilling of university staff, better access to equipment and resources, and improving the quality of education in line with international standards.
- Engineering students are aware of the importance of problem-based learning, access to up-to-date equipment, the development of 'soft skills' and entrepreneurial mind-set.
- Project participants are motivated and enthusiastic about EEEP, had realistic expectations of the programme, the hubs universities motivations reflected well on the overall programme objectives, and spoke universities primarily saw their participation as an opportunity to learn about new practices and teaching methods.
- For seconded university staff, the programme offered an opportunity to acquire industry-relevant knowledge and to give back to industry.
- Among industrial partners, there was a recognition of their role and responsibility in contributing to upskilling teaching staff, discussing mutual expectations and needs as well as providing resources to make this possible due to the long term impact of highly skilled graduates.

¹ <http://www.technopolis-group.com/about/>

² <http://www.raeng.org.uk/grants-and-prizes/international-research-and-collaborations/higher-education-partnership-sub-saharan-africa/past-activities>

Efficiency and effectiveness of EEEP

- The hubs are able to tailor the project's implementation as needed due to the project autonomy granted by the Academy.
- The hubs emphasised different activities, and delivered different outcomes. Both hubs met the targets for the programme, but the Southern African hub significantly overachieved in this respect, delivering 17 secondments and seven workshops in addition to other activities.
- Some of the spoke universities took on a larger role, especially in the Eastern hub, however spoke universities expressed strong interest in having more active engagement.
- The workshops were widely appreciated by all involved, as it provided an opportunity to build networks. However, the long terms effect of these networks are uncertain without follow up support.
- Secondments benefitted those individuals seconded and were highly valued by all stakeholders. There is room for increased dissemination of knowledge gained, and more interaction between the project activities to enhance the overall benefits.
- An extended project timeframe of 3-5 years was suggested for greater flexibility to align project implementation and provide the opportunity to ensure sustainability of the programme.
- There is a need for more Academy support including the involvement of the Academy's steering groups and fellowship's expertise.

Impacts of EEEP

- EEEP delivered clear short term impact on teaching methods, curricular and behaviour with the stakeholders involved. Workshop attendees reported increased awareness of alternative teaching and learning models, adopting new teaching methods and tools, new materials used for teaching, and changed curricula.
- Secondments enriched teaching delivery and content, enhanced individual skills and established ongoing working relationships with industrial partners. EEEP increased networking and knowledge-sharing between universities nationally and internationally.
- Individuals are inspired and willing to make changes, but for transformation to happen at an organisational level, further support would be needed.
- In many cases, the secondments paved the way for creating new links and began a process of trust building between universities and industry.
- The programme also brought about broader cultural and organisational changes in industry academia relations. The programme resulted in increased awareness of the benefits of collaboration and contributed to increased liaison between the universities and their partners.

Lessons learned

- The economic and social framework conditions in partner countries pose a barrier to the sustainability of the programme results due to limited resources available locally to support changes initiated through the programme.
- Many institutions lack capacity to transparently manage the financial aspects of international projects.
- Due to the lack of harmonisation and international accreditation between countries in the region, student and staff mobility is a challenge.
- More communication from the Academy on project objectives is necessary.
- There is a perceived mismatch between interests of industry and academia and a clear value proposition is required to convince companies of the benefit from participation in EEEP.
- A 'project champion' can be a key success factor, engaging an individual with the authority to take the project forward can further enhance the relevance and sustainability of the programme.
- Teaming up with other initiatives can help multiply the project's effects and share the costs involved.

Recommendations for the Higher Education Partnership Programme (HEP SSA)

Technopolis offered eight recommendations for the scaled-up programme, detailed below. The responses are authored by the Royal Academy of Engineering, and approved by the HEP SSA Steering Group.

1. There is a need to develop a programme logic at the funder level to ensure synergies and complementarities among the programme portfolio

The academy should develop an overview of the Industry Academia Support Programmes portfolio of which all stakeholders could subscribe to, alongside a transparent governance structure with declared criteria for selection. From there, all decisions can be guided by common principles.

Response:

- At the Academy, a refreshed international strategy is being developed to help support and coordinate the academy's international portfolio. A full programme logic, including the complementarities with other connected programmes, particularly the Industry Academia Partnership Programme and GCRF Africa Catalyst will be created in the fourth quarter of 2017.
- The Academy will commit to creating an overview of the Industry Academia Support Programmes portfolio in the fourth quarter of 2017.
- Criteria for selection vary based on each individual call and the criteria for selection will continue to be published in the guidance notes of each call.
- Common principles between separate calls and programmes are not always possible as they each have different funders and different requirements, however the Academy will continue to endeavour to be as clear and cohesive as possible, across the portfolio.

2. A well-functioning reporting and monitoring system should be established

To ensure transparency for the donors and efficiency of project implementation, a monitoring system needs to be put into place and allow for change and corrections to be made over time. The pilot phase required bi-annual reporting, which seems a bit hands on, but combined with a reasonable structure and length requirement should be easy to comply with. Providing more clarity on detailed progress reports would also be beneficial, preparing documentation on the different activities and secondments undertaken in a format ready for wide circulation could be turned into useful communication tools for the projects.

Response:

- With regards to reporting and monitoring, the Academy's international team have created a 1-page A4 progress report template and an expenditure and secondment form. In line with the recommendations; the reporting system includes a reasonable structure, word limit and guidelines as well as providing the awardees with Skype calls to support and direct the hub universities in providing beneficial information in a format ready for wide circulation. In addition, the academy has also included an optional 3-minute video to provide more context on the progress as well as encouraging more photographic evidence.
- These reports are reviewed by Academy staff and further detail is sought where it is felt lacking, once content the reports are tabled at the HEP SSA Steering Group meetings with any concerns, or requests for change to the initial proposals tabled for discussion and action.
- A bi-annual report is strongly felt to be appropriate considering the size of the grants and funder requirements.

3. The project length and amount of funding should be reconsidered

For successful change to be implemented, long term commitment is considered more important than resources provided during a short period of time. A new structure should be considered based on a two stage approach. The first stage, the project implementation could incorporate a short 6-month inception phase with the proposals worked out in more detail. The exact timetable of project implementation, reconfirm key stakeholder's involvement and a risk assessment carried out. Thorough planning during the inception phase would create stronger foundations. The project implementation stage would should then last 3-5 years. With a strong timetable, milestones and measurable targets, as well as roles and responsibilities clarified and a timeframe included to reconsider project funding. Fragmented grant provisions without networking opportunities should be avoided unless setting out to address specific problems such as IAPP projects.

Response:

- While a two-stage approach has not been adopted, the gap between an application and a funding decision has been addressed by the introduction of an "Initiation Report" requirement which gives the awardee an opportunity to request changes to their original application. In addition, the Academy offers all awardees the chance to request bespoke changes – a majority of which are approved – on provision of supporting documentation.
- While the project length has remained two years, for some this has included follow-on funding, for example in the case of The University of Dar es Salaam. The second funding call was closed, meaning only those involved in the pilot were able to apply to ensure maximum provision of follow-on support. With increased funding this was opened up more broadly, to new universities, in the third funding call.
- The Academy is actively considering whether parachute payments to support funded universities to transition from full funding to sustainability, in addition to assistance in securing additional funds from government and/or industry to help support sustainability of the programme, will be made available to the awardees.
- Another initiative which is being tested is providing spoke universities with small pots of funding through the hub universities to further include spokes. This is being tested by the University of Botswana with more information to come. Additionally, the National University of Science & Technology in Zimbabwe has also engaged in further knowledge sharing through Hub – Spoke secondments, with more details on the success of this to follow.
- Nine hubs are currently contracted to receive funding, a new call is due to launch in 2018 and the HEP SSA Steering Group will meet before then to review whether the approach is appropriate as the current Hubs mature.

4. The implementation model of hub and spoke universities was useful for the pilot phase, but should be reconsidered for any follow-up activities

Hub and spoke is a more pragmatic way of managing programmes from afar. With a larger number of higher education institutions this way forward is questionable to reach goals further than awareness raising and networking. Workshops were instrumental in building a network of universities and a platform for knowledge sharing. Dissemination among beneficiary universities would give a boost to project implementation rather than involving large number of spokes with marginal contribution. Alternative option would be a larger number of universities with some project funding with a non-hierarchical approach to experience exchange. Possibility of fragmentation of funding, however, this would be mitigated through a network of capacity ready institutions working together with common goals and objectives.

Response:

- While we understand Technopolis' recommendation to move away from a hub and spoke model, the Academy strongly feels it should be maintained for this programme, as it allows exponential reach across the continent, with limited resources.
- The Academy has, based on this recommendation, actively encouraged and facilitated increased hub-hub collaboration. This has resulted in hub universities attending other hub university's knowledge sharing workshops, overlapping of spoke universities, incorporation of unsuccessful hub university applicants as spokes, as well as certain hub universities empowering spoke universities with direct funding for mini projects centred around improving engineering education.
- In addition to the passive collaboration of attendance at workshops, consideration must be given as to encourage collaborative projects between hub universities.

5. Managing expectations and contributions of the partners

More time is needed to understand the needs of industry and academic partners to develop long lasting links between them. One challenge would be funding and time to do this. Industry and academia should therefore dedicate funding from their own resources to support the activities. Ensuring understanding between partners is important to build successful partnership

Response:

- The Academy has encouraged the hub universities to work together, collaborating and sharing expertise, knowledge sharing workshops and resources.
- In addition, all hub universities have increased their collaboration with industry, including academic and industry secondments, and developing strong partnerships. This will be further supported by providing resources and coaching on how to engage industry more effectively.
- Encouraging additional funding to be leveraged by academia and industry stakeholders remains a challenge and a priority, and the Academy actively supports the universities in making these cases.

6. Provide guidance to foster the development of successful academia-industry partnerships

For the purposes of the Academy's programmes, collaboration around education and research are of key importance, however they cannot be singled out from the complex relationship universities have with their external partners. Technopolis suggest approaching national, regional and institutional stakeholders to encourage incentivising activities for industry-academia collaboration. Institutions could create performance contracts or awards. individuals can be incentivised to consider participation, and successful programme implementation requires a structure and a clear value generation path.

Response:

- The Academy now has a dedicated member of the team who works directly with the hub universities to, firstly, support the projects, and secondly, foster the development of successful partnerships.
- Through creating links between the first cohort of hub universities and UK academics, the Academy is creating better opportunities and capacity for the hub universities to develop a relationship with industry, regional and institutional stakeholders, as well as with the UK.
- Furthermore, with the new cohort of hub universities under HEPSSA, the Academy maintains regular contact with the industry, hub, and UK partners directly to help foster these relationships.
- The hub universities have increasingly involved professional engineering institutions into their projects (Botswana, Zimbabwe and Tanzania) and this is something we support and facilitate where required.

7. Students should be more involved in the project activities

To meet the goal of reducing the skills gap and increase employability of graduates, then the activities should include students as well. Whilst staff secondments and workshops are beneficial, student placements in industry, international student exchanges, final year student projects, and international accreditation and recognition would create longer term employment opportunities.

Response:

- The Academy has actively encouraged student involvement in the project activities. This has resulted in the first cohort of universities including students in workshops (Botswana), including student issues and welfare into staff knowledge sharing workshops (Tanzania), and encouraging the spoke universities in engaging student and graduate involvement and employment (Botswana). The new cohort of hub universities under HEPSSA, have also been encouraged to further engage students in the projects to create industry ready graduates.
- Improving student learning is of the utmost importance to this programme and to the Academy, however it is strongly felt that by upskilling the staff, there is a multiplier effect as their skills will impact many dozens of students while a student exchange is for them alone. It is a crucial part of their engineering degree, but not a priority for this programme.

8. Provide opportunities to showcase success stories and increase the awareness of the programme

Increased awareness among potential stakeholders, building on successes and stakeholders in relevant target countries is important. These activities do not need to be on a large scale, but can help to revitalise relationships and create bigger pool of candidates.

Response:

- Using the new, media friendly, reporting system and video updates, there are increased opportunities to showcase success stories and increase the awareness of the programme. Moreover, with more Academy involvement, including visiting and documenting the projects, and engaging with the hub and spoke universities more regularly, there are increased opportunities for showcasing and sharing success stories.
- While the budget must be spent wisely, and this being a predominantly grant-funding scheme, consideration must be given to targeted promotion where appropriate and a communications framework will be created to support this.