

INDIGO: AN INTERNATIONAL DOCTORATE FOR HEALTH SYSTEMS RESEARCH

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Introduction

This article looks at the International Doctorate in Global Health (Indigo), an innovative programme launched in 2009 and coordinated by the Centre for Global Health at Trinity College, Dublin, with partners from Africa, Europe and North America. Indigo aims to produce doctoral-level graduates who have the ability to address global health problems using a systems framework, utilising interdisciplinary research to provide an evidence base that indicates practice and policy-relevant action to improve the effectiveness of public health services, particularly in Africa. By developing the interface between biological science, social sciences and public health, the programme seeks to create more effective and efficient platforms for service delivery, in the context of a region challenged by HIV/AIDS and a range of many other serious health problems.

The programme's distinctive contribution is to strengthen genuine interdisciplinary capacity, rather than to pursue solutions along multiple, albeit sometimes interlocking, disciplinary pathways. While the approach is global, the main focus is currently on sub-Saharan Africa. By working collaboratively with universities in Africa, Indigo seeks to enable them to become regional centres of excellence in interdisciplinary health research, producing research leaders who will develop the evidence base for health systems capable of developing and implementing effective treatment strategies and technologies.

Background

The Indigo programme emerges from ongoing debates around aid effectiveness, academic collaboration between European universities and institutions in low- and middle-income countries and, more specifically, the widely recognised need for health system research strengthening in Africa. Irish health and social science research has played an increasing role within the European research area (MacLachlan & Caball, 2004) and with the Indigo programme it is now poised to assume a greater role in global health research. The Indigo programme

builds on recognised best practice in Ireland and contributes to realising the 2000 Lisbon Strategy's call for a doubling in the number of PhD graduates, an aspiration endorsed by the Organisation for Economic Co-operation and Development's (OECD) 2006 review of the third level sector in Ireland.

The Irish Universities Quality Board's *National Guidelines on Good Practice in the Organisation of PhD Programmes in Irish Universities* (2005) makes a range of recommendations that have shaped the programme. Amongst its most salient recommendations for PhD projects is that students will benefit from experience and training in institutions other than their primary institution. Kirwin (2008) has reviewed doctoral programmes, recommending that the maximum value added will be gained by programmes that are interdisciplinary, inter-institutional and international.

The endorsement of interdisciplinarity and mobility in Ireland is echoed elsewhere. The European Commission's Charter for Researchers notes that 'all forms of mobility should be encouraged' (Statement 11) and that 'the value of mobility needs to be fully recognised in career appraisal and career development' (Statement 12) (European Commission, 2005). A European ministerial meeting in Bergen (2005), part of the Bologna Process, concluded: 'We urge universities to ensure that their doctoral programmes promote interdisciplinary training' (p. 6). Citing this call, the European University Association goes on to stress the importance of developing transferable skills through doctoral training, and of 'bringing together doctoral candidates from different disciplines and different levels to encourage interdisciplinary dialogue and foster creative thinking and innovation' (p. 12). Similarly, the Salzburg Principles provide a consensus statement, adopted by European ministers regarding the future of doctoral education in Europe. Principle 8: 'Increasing Mobility', states that 'doctoral programmes should seek to offer geographical as well as interdisciplinary and intersectoral mobility and international collaboration within an integrated framework of cooperation between universities and other partners'. A recent workshop in Wageningen in 2008 similarly stressed the importance of interdisciplinary PhD research and training involving European and sub-Saharan Africa (ICRA, 2009). Chambaz (2008), Chair of the European University Association's newly constituted Committee for Doctoral Education, has, however, noted that sometimes there is resistance to such programmes, with a 'long tradition of academic conservatism hiding behind claims of excellence'.

These aspirations for more and better doctoral training in Europe interface with current thinking on international aid and development. The Bamako Call for Action on Research for Health (2008), endorsed by ministers of health, education and science and technology, from 60 countries, stresses the need for inter-disciplinarity, inter-sectoral, and inter-ministerial collaboration. In short, the call seeks to scale up the ambition, and deal with the complexity, of research that can connect with the realities and intricacies of a systems-based approach to health promotion and protection.

The Paris Declaration on Aid Effectiveness (2005) stresses the importance of low-income country ownership of development initiatives; the need for wealthy countries to align their aid efforts with the goals of low income countries, and the need for high income countries to harmonise their aid efforts. All of these elements regarding aid effectiveness apply to attempts to strengthen health research systems in low and middle income countries (COHRED, 2007) and all are incorporated in the Indigo programme. Some of the key features of the Indigo programme are aligned with the best practices noted above. These include the promotion of contextually relevant research and the provision of teaching modules by a variety of internationally renowned universities.

Programme details

The design of the Indigo programme has emerged through discussions among partners since 2005 and continues to evolve in the light of early practice and experience. The main elements of the Indigo programme, including its structure, management, taught components, research and capacity building activities are described below.

The programme partners Trinity College Dublin, the Mailman School of Public Health at Columbia University, Harvard Medical School and the United Kingdom (UK) Cochrane Centre in Oxford with four universities in sub-Saharan Africa: Addis Ababa (Ethiopia), Ibadan (Nigeria), Makerere (Uganda) and College of Medicine (Malawi). The programme also works collaboratively with South Africa's Human Sciences Research Council's (HSRC) Social Aspects of HIV/AIDS & Health (SAHA) group and the Council on Health Research for Development (COHRED), based in Geneva.

Initial discussion about the Indigo programme took place between the international partners and with potential funders, and focused on the

recruitment of African students based in partner institutions in Africa, especially junior academic staff. Over time, however, this emphasis has shifted to include the direct recruitment of students who do not come on to the programme through a partner institution in Africa but aspire to spending part of their study period at an African university. What follows here relates largely to the first category, albeit with some reference to the latter.

Establishment of the programme

Between 2005 and 2008, the partners in the Indigo School undertook an intensive period of consultation, which included meetings of representatives of the partner institutions in Dublin in September 2006 and in Kampala in February 2008. Detailed planning was undertaken for the establishment of a joint degree programme with a strong capacity-building element. A funding proposal was developed and submitted under the Programme of Strategic Cooperation between Irish Aid and Higher Education and Research Institutes (2007-2011). This proposal, part of a wider Trinity programme of Doctoral Training for Development in Africa, was awarded funding for a three year period, beginning in October 2008. This is sufficient to fund two intakes of three African doctoral students (each funded over a four year period), the employment (from February 2009) of a programme coordinator and half-time administrator, and certain ancillary activities. This funding ensured the participation of a core of African students but also provided a platform for the recruitment of additional, independently-funded, students.

The target group of students entering the Indigo programme includes suitably qualified health professionals and emerging researchers from either the biomedical or social health sciences, wishing to conduct research that contributes directly to addressing Africa's pressing health challenges. Within this group, particular emphasis is placed on junior staff within African universities who have not yet had the opportunity to study at doctoral level but are in a position to make a direct contribution to health research and training within their home institutions.

Indigo admitted its first students in September 2009 – three African bursary holders and one self-funded student – two of whom registered as doctoral students in Trinity College Dublin's School of Medicine and two in the School of Psychology. Six to eight additional students are expected to register in September 2010.

Structure of the programme

Indigo is managed through a nested structure involving all partner institutions. Overall responsibility for the programme rests with the International Doctoral School in Global Health, comprising representatives of every partner institution, which meets in person once a year and communicates electronically as required between meetings. Each university at which students can register for the programme has a local Indigo Steering Committee which coordinates activities within their respective institutions. Day-to-day coordination of the programme is in the hands of a three-person team based at the Centre for Global Health at Trinity College, comprising the Programme Director, Programme Coordinator and Programme Administrator. A part-time administrator has recently been appointed at the Human Sciences Research Council in South Africa, part of a strategy to transfer all programme management and administration functions to the African continent over the next three years.

While the aim of Indigo is to establish a full joint degree among all the partner universities, this has yet to be approved by the respective institutions. As an interim measure, students register as PhD students at Trinity College in the conventional manner. During periods when students are physically based in African universities, they register as 'Occasional Students', which entitles them to academic supervision and use of university facilities such as library and internet. Once a Memorandum of Understanding (MOU) has been approved by all the partner universities, students will register during their first and fourth years at Trinity College Dublin and for their second and third years at an African partner university. Minimum requirements to be met in each participating university will be set out in the MOU. Examination and defence of doctoral theses can take place in any of the participating universities, but it is expected that this will occur in the African university where the student has spent most time (i.e. the student's 'home' university). Graduates will be awarded a single PhD degree bearing the crests of at least two participating universities.

For the African university partners, a joint degree of this kind ensures that partnership with leading Northern institutions does not undermine their status in the eyes of potential students, but rather contributes to enhancing the international reputation of the African partner universities through a strong association with internationally-renowned universities. Northern partners also recognise the multiple benefits of a close relationship with leading African academics and institutions, and with emerging scholars with a commitment to building a career in Africa. It is also expected that African universities will

benefit from their association with strong Northern universities, by helping them attract well-qualified candidates who might otherwise seek opportunities abroad but, under this programme, can contribute to the long-term future of the African institutions. A specific objective of Indigo, therefore, is to contribute to an environment that is conducive to retention of staff within African universities and thereby counter the ‘brain drain’ of talent to high-income countries.

International mobility, joint activities and mutual capacity building are at the heart of the Indigo programme. To this end, an ambitious programme of structured training, research under joint supervision and various support activities has been put in place, as outlined below.

Structured training

In a break with traditional research-based PhD training, the first year of the Indigo programme consists of a structured programme of taught courses and a research internship. It is designed to develop core competencies in applying health and social science perspectives to understanding diseases of poverty and strengthening health systems in low and middle income countries. The breadth of expertise offered across training sites is intended to not only provide and debate different perspectives, but also to cultivate an ethos of producing leading edge research.

In their first semester, students are based at Trinity College Dublin where they take up to three taught modules, either drawn from the Masters in Global Health or from their choice of relevant modules elsewhere in the university, the only limitation being timetabling. Students are assessed in the same way as other students on their chosen courses (usually a mix of continuous assessment and written assignment) and, while the marks obtained do not count directly to the award of a PhD, they do appear on the student’s academic record. In this sense, Indigo does not meet the definition of a ‘structured’ doctoral programme, but further movement in this direction may be considered in the future.

In the second semester of the first year, students travel to Columbia University in New York, where they take selected graduate courses at the Mailman School of Public Health. Students chose from a broad range of modules (ranging from classes in ethnography to those in geographic information systems (GIS) and water quality), this choice also being informed by the advice of their supervisors and Columbia-based mentors in order to ensure the optimal selection of modules with regard to their likely future research

needs. One compulsory class ensures that the cohort continues to have a shared experience of learning together. Again, students participate in all aspects of their chosen courses, including assessment. Columbia also offers the students a wide range of experiences in terms of seminars and public lectures, as well as the opportunity to engage with leading scholars in the field of global health working not only on Africa but also on Asia, the Caribbean and Latin America. Coursework at both Columbia and Trinity also provides students with the opportunity to engage with their fellow Indigo students and with a diverse group of students from around the world, thereby helping to overcome some of the isolation typically associated with doctoral study and building social and professional networks that will, hopefully, endure into the future.

Following completion of their study period at Columbia, students return to Trinity for a month, during which there is a particular emphasis on providing training in health-related research methodologies, and on providing individualised tuition to help them develop research skills. This includes a specially tailored module on systematic reviews in health care which draws on experience from the University of Oxford's MSc in Evidence Based Health Care, and a week of intensive Case Studies in Global Health Delivery delivered by staff of Harvard School of Medicine, based on the Harvard Business School style of case study and problem focused learning. These intensive courses are opened up to all Indigo supervisors and international partners and to Irish-based researchers, including PhD students, thereby creating a rich learning environment for the Indigo students while spreading the benefits of the international alliance to a wider audience. This also gives effect to the principle of the school being a shared experience, regardless of geographical location.

The final phase of learning in the first year is a two-month internship at the Human Science Research Council in Pretoria, South Africa. Here students are exposed to the daily challenges of conducting large scale, and often multi-country, health-related research projects. Students also attend modules on communication and ethics, in order to prepare them for their role as research practitioners. While at the HSRC students undertake a reflexive practice assignment which encourages them to critically review their approach to research work and their engagement with other people. Together, these structured elements expose students to a wide range of research environments and international networks, and prepare them for the individual research projects that will lead to their doctoral dissertation.

Research and supervision

Despite the taught components outlined above, high quality research projects remain central to the Indigo programme. Indigo is particularly committed to research that contributes to strengthening health systems in Africa and, in practice, this is being interpreted broadly so as to accommodate a wide range of potential research topics.

Prospective students are required to submit detailed research proposals as part of their formal application to Indigo and develop these further during the first year. Choice of research topic lies largely with the individual student and their lead supervisor (usually Africa-based). The proposal may be worked up jointly between the student and at least one of their supervisors, based on mutual interests, and students are strongly encouraged to conduct research on topics of immediate relevance to their home country. Where students apply directly to the programme for admission – as opposed to coming through a partner institution – the lack of a suitable supervisor in the chosen area is already emerging as a limiting factor, leading to some qualified candidates not being accepted on the programme.

Topics selected by students in the first year of the programme (2009-2010) covered a broad spectrum of issues in global health: reform of health insurance in Ethiopia, research governance in Malawi, the impact of water and sanitation on people living with HIV/AIDS in Uganda, and human resources for health in Ethiopia. For 2010-2011, proposed areas of research include health informatics, leadership in senior health service managers in Uganda, international migration of doctors from Africa, and health care delivery in urban Nigeria.

While in Dublin during their first year, students attend weekly research seminars where they present a number of drafts of their proposal and have the opportunity to discuss research design and methodology with fellow students and with academic staff from the Centre for Global Health. Similarly, while at Columbia and the HSRC, students are required to continue developing their research plans and to make at least one formal presentation of their proposal to relevant forums at the respective institutions. From the beginning of the second year, students are expected to focus almost exclusively on their individual research projects, but attendance at research seminars and conferences, as well as occasional teaching duties in their African university base, also contributes to the ongoing PhD experience.

Supervision of research students is, in theory, based on an international supervisory panel, drawn from across the Indigo network. In some cases, however, this is turning out to be more of a '2 plus 2' model, with the first two joint supervisors being at the students' 'home' university (typically in Africa) and at Trinity College Dublin, respectively. This pairing of joint supervisors, which is established at the point of admission to the programme, provides intensive support throughout the first year and remains central to the research project up to the point of thesis submission. The third and fourth co-supervisors (if applicable) are appointed at the end of the first year or early in the second year, and are expected to play a more limited role – possibly of short duration – such as the provision of specific technical support in the area of research design, data analysis or skills training. During their first year, students are encouraged to identify potential co-supervisors from any of the institutions they attend or from elsewhere in the Indigo network.

Capacity building

An explicit claim of the Indigo programme is that it is not just training a new cadre of global health researchers but that it is engaged in a collaborative effort that, over time, will build capacity for researcher training in Africa. This is approached from a number of directions, shaped at all times by the expressed wishes of the African partner and based on the principle of parity of esteem in all aspects of the design and management of the programme.

From an early stage it was established that the priority for African academic partners was to provide access for their students to the resources offered by well-resourced universities (e.g. in the global North) without undermining universities in the global South. This is achieved in four main ways: maximising exposure of students to leading universities and academics outside of Africa, especially in the early stages of the programme, while retaining the bulk of study time in Africa; full involvement of African supervisors in all aspects of the programme, especially joint supervision, to be strengthened by regular contact between supervisors and student via tele-conference, video-conference and, where possible, face-to-face contact; selection of research topics of direct relevance to home country needs, with fieldwork to be carried out locally; and specific activities aimed at the professional development of supervisors.

The latter has included the intensive training courses in global health case studies and systematic reviews mentioned above and ongoing collaboration around joint proposals for research funding, joint publications and

international events. Starting in 2011, students will participate in Research Development Symposia for Strengthening Health Systems, where they will share their learning experience with each other and other cohorts in the Indigo programme, present their work and receive feedback from supervisors and peers, receive intensive supervisory input and participate in workshops focused on their stage of research. This annual event will serve to maintain the identity of the Indigo School and bolster the support and camaraderie which will sustain research friendships and collaborations into the future. Every three years, starting in 2012, the Indigo School will also host a high profile conference which will incorporate the functions of the symposia, but go beyond it in terms of inviting high profile speakers and using the international networks of Trinity, Oxford, Columbia, Harvard and COHRED to influence significant multilateral institutions to attend, such as the World Health Organisation (WHO), World Bank, Global Development Network, and Global Forum for Health Research. It is anticipated that these events will constitute an important platform for highlighting future research targets and developing strategies to fund them.

Quality assurance

There is little comparative evidence available on building or strengthening research institutions and systems, especially in Africa. The Indigo doctoral school will provide a mechanism to do this, but not necessarily in the same way in each of the African countries. The Council on Health Research for Development (COHRED) has specific expertise in building and strengthening research institutions and systems in low and middle-income countries. COHRED is a partner in Indigo and has the specific remit to undertake a comparative analysis of how Indigo is contributing to strengthening in each of the four African-university partner countries, as well as how the HSRC in South Africa, and three northern partner universities, are contributing to this process. The intention is for COHRED to provide an ongoing monitoring and evaluation function for the project, but to also actively suggest changes in project management as the project develops. COHRED's comparative analysis will be fed into the project on an ongoing basis and constitute a vital 'action research' component, as well as providing a bi-annual comparative report on progress. An important aspect of this report will be consideration of the extent to which Indigo promotes research utilization. COHRED will also undertake four country case studies that will capture the experience in the first four years and provide analysis for further development of this and similar programmes.

This important monitoring and evaluation function has not as yet been funded as part of the initial funding start-up support. Given the

complexity of the institutional arrangements within Indigo and the inevitable multiple and interacting institutional agendas it would seem to be essential that there is some 'outside' agency that is encouraging reflexivity among the partners, tracking progress in research capacity building and anticipating some of the challenging issues around dominance, organisational justice and individual and group identities that are sometimes problematic in conventional aid projects (MacLachlan, Carr & McAuliffe, 2010).

Perhaps a successful outcome for the Indigo school would be where its own graduates from partner universities in the global South can out-perform and out-compete graduates from its partner universities in the global North. To what extent are universities in the North committed to this sort of success? To what extent may Northern partners be tempted to use the Indigo platform to simply position themselves better for Southern focused research funding and networking? Appropriate monitoring and evaluation of Indigo's activities could help to address these sorts of questions in a constructive and transparent manner. While the consortium's intention to move the secretariat for Indigo from Trinity to one of the African universities in the first instance, and to then fan out so that similar secretariats can be established in the other partner universities, is promising, again the actual value and contribution of this in practice needs to be monitored and evaluated.

Conclusion

The Indigo programme represents a significant and ambitious departure in international training and capacity building for global health in the context of academic collaboration between the global North and the global South. Early experience confirms the expected demand and enthusiasm for a programme of this sort but also highlights the many challenges associated with it.

Among the strengths that can be identified are the high level of 'buy-in' to the programme evident in all the participating institutions - and the desire to accelerate its development - and the high quality of students coming on to the programme. Key challenges that have emerged to date include: identification of available supervisors in areas directly related to student and African supervisor-selected topics across multiple institutions; establishment of good communication and effective working relationships between supervisors in different parts of the world; identification of appropriate doctoral level courses that address specific needs of individual students; and the difficulty for students

of retaining focus on individual research proposals during a sometimes hectic first year spread across three continents.

A central objective for the next three years is the transfer of programme management to Africa, once the core elements (especially the joint degree and funding) are in place. While this will not necessarily change the fundamental model that guides the Indigo programme, it can be expected to open up a new and exciting phase of research and capacity building for health in Africa, led by a network of African institutions in a strategic alliance with northern partners. A new and overarching theme which we are now concerned with is the development of an ethics of research governance in global health, and in particular the governance of North-South relationships with their asymmetries in funding, status and influence. This latter concern has led us to identify the theme of 'Global Health Governance - The view from the South', as one of our areas for future development within the Indigo School.

References

COHRED (2007) *Are international health research programmes doing enough to develop research systems and skills in low and middle income countries?*, Council on Health Research for Development, Geneva.

European Universities Association (2007) *Doctoral Programmes in Europe's Universities: Achievements and Challenges*, European Universities Association, EUA, Brussels.

International Centre for development oriented Research in Agriculture (2009) *Sharing of experiences between interdisciplinary PhD research programmes related to agricultural and rural development*, report of a workshop held in Wageningen, the Netherlands, 11 - 12 December 2008, ICRA, available: http://www.icra-edu.org/objects/ard-european/Report_PhD_research_workshopERA-ARD.pdf

Irish Universities Quality Board (2005) *National Guidelines on Good Practice in the Organisation of PhD Programmes in Irish Universities*, Irish Universities Quality Board, IUQB, Dublin.

MacLachlan, M & Caball, M (2004) (eds.) *Social Science in the Knowledge Society: Research Policy in Ireland*, Liffey Press, Dublin.

MacLachlan, M, Carr, SC & McAuliffe, E (2010) *The Aid Triangle: Recognising the Human Dynamics of Dominance*, Justice and Identity, Zed, London.

Global Ministerial Forum on Research for Health (2008) *The Bamako Call for Action on Research for Health*, November 2008, Mali.

The European Commission (2005) *The European Charter for Researchers*, European Commission, Brussels, available: <http://www.europa.eu/eracareers/europeancharter>.

The Paris Declaration on Aid Effectiveness (2005), available: <http://www.oecd.org/dataoecd/11/41/34428351.pdf>.

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