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Twelve steps to evaluating interprofessional education

Scott Reeves, PhD [a,*] and Hugh Barr, PhD [b]

[a] Centre for Health and Social Care Research, Kingston University & St George's University of London, London, UK
[b] Centre for the Advancement of Interprofessional Education, UK

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الملخص

تضع هذه الورقة خطة؛ خطوة بخطوة لمساعدة القراء على تصميم وتطبيق وتوزيع تقاييم التعليم المتداخل بين التخصصات نقدم الإثنتي عشرة خطوة التالية التي تعتبر أساسية لهذه العملية: صياغة أسئلة التقييم, والاتفاق على نهج التقييم, واستخدام أطر للتقييم, والاعتماد على خبرات التقييم, ومراجعة الأدبيات, واختيار الأسلوب والتصميم, وتأمين الموافقة الأخلاقية, والوصول إلى البيانات, ومعالجة قضايا العمل الميداني, واستخدام أدوات التقييم, والنظر في الموارد, وخيارات التوزيع.

الكلمات المفتاحية: التعليم المتداخل بين التخصصات؛ التقييم؛ البحث؛ تصميم المنهج؛ إطار التقييم

Abstract

This paper sets out a step-by-step plan to help readers design, implement and disseminate evaluations of interprofessional education (IPE). We present the following twelve steps that are central to this process: formulating evaluation questions, agreeing on the evaluation approach, using evaluation frameworks, drawing upon evaluation expertise, reviewing the literature, selecting a methodology and design, securing ethical approval, accessing data, addressing fieldwork issues, using evaluation instruments, considering resources, and outlining disseminating choices.

Keywords: Curriculum design; Evaluation; Evaluation framework; Interprofessional education; Research

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Introduction

In this paper, we offer a range of approaches to evaluating interprofessional education (IPE) to help design, implement and disseminate an IPE programme in a realistic and manageable manner. The paper outlines twelve key steps to ensure best practices with the evaluation process, such as the formulation of study questions, use of an appropriate evaluation framework, selection of a rigorous evaluation design, use of validated evaluation instruments and ideas for dissemination. In providing this guide, we anticipate that active engagement in robust evaluation will generate high quality evidence that can enhance the future development and delivery of IPE.

Step one: formulating evaluation questions

Your choice of question (or questions) may be determined by the need to establish whether the IPE experience has met the outcome expectations that have been negotiated by relevant stakeholders, e.g., managers, teachers, clinicians and patients. The question(s) may also take into account ways in which your evaluation may address more general concerns about means and ends in IPE or replicate studies by others employing the same methods and instruments. The questions, for example, might be:

* Corresponding address: Centre for Health and Social Care Research, Kingston University & St. George's University of London, London, UK.
E-mail: s.reeves@sgul.kingson.ac.uk (S. Reeves)
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- How was the interprofessional teaching delivered and experienced by the learners?
- Did the learners' skills for collaboration improve after the IPE experience and, if so, how?
- Were the learners' gains in knowledge and/or skills still evident in the months after their IPE experience?
- Did changes in service delivery occur following the IPE experience?

Do make sure that the questions you ask can be effectively answered by employing the expertise of colleagues with evaluation/research experience. Trouble taken at the outset to sharpen questions may spare you frustration and disappointment later.

Step two: agreeing to the evaluation approach

The most appropriate evaluative approach will depend upon the questions that you pose. The approach may be:

- Formative, e.g., helping to understand the initial effects of IPE in order to develop and strengthen the programme
- Summative, e.g., helping to understand the final impact of an IPE activity
- Process-focused, e.g., exploring interprofessional teaching or learning processes
- Outcomes-focused, e.g., examining the varying effects (outcomes) of IPE

These approaches need not be mutually exclusive: you could, for example, undertake an IPE evaluation that is formative and process-focused, or summative and outcomes-focused. The evaluation may be also conducted internally, for example, by the teacher or facilitator; or externally, for example, by someone not otherwise associated with the programme.

Step three: using the evaluation frameworks

You may well find Biggs' presage-process-product (3P) model of teaching and learning to be a helpful framework, as expanded and applied in IPE.[3,15] This model highlights all the elements constituting the educational experience, factors shaping that experience, and the relationship between them.

Presage factors are those that influence and constrain the design and delivery of IPE, such as the political climate, management support, a teacher's experience, and a student's preconceptions.

Process factors are concerned with the delivery of the IPE, such as decision-making, interprofessional interactions, approaches to learning and teaching and levels of learner engagement.

Product factors are concerned with the outcomes of the IPE. You may also find a classification of the outcomes of IPE that we developed from Kirkpatrick's four-point typology of educational outcomes[4] into six categories (see Table 1), which is a useful framework to use.[10]

Another useful framework to consider is Pawson and Tilley's realistic evaluation.[13] This approach also explores how contextual (presage) factors affect teaching/learning activities (processes), which in turn affect the impact (outcomes) produced from an IPE programme. Hollenberg et al. provide a useful example of how the realistic evaluation model was employed in their IPE evaluation.[8]

Table 1: Interprofessional outcomes.

Level 1 — Reaction	Learners' views on the learning experience and its interprofessional nature.
Level 2a — Modification of attitudes/perceptions	Changes in reciprocal attitudes or perceptions between participant groups. Changes in perception or attitude towards the value and/or use of team approaches to caring for a specific client group.
Level 2b — Acquisition of knowledge/skills	Including knowledge and skills linked to interprofessional collaboration.
Level 3 — Behavioural change	Identifies individuals' transfer of interprofessional learning to their practice setting and their changed professional practice.
Level 4a — Change in organisational practice	Wider changes in the organisation and delivery of care.
Level 4b — Benefits to patients/clients	Improvements in health or well-being of patients/clients.

Step four: drawing upon evaluation expertise

If you lack previous experience in evaluating education, do approach experienced colleagues for advice and assistance. Assembling or joining an evaluation team with such experience can be a useful way to draw upon a range of support, creativity and guidance at every stage from developing an interprofessional evaluation, to implementation and dissemination.

Step five: reviewing the literature

Taking note of existing literature in journals, books and reports is important. A literature search normally determines, first, what is known about the type of IPE that you are about to evaluate (e.g., how it has been previously delivered and its reported impact); and, second, about methodological literature to deepen your understanding of designs, methods and analytical tools that have been previously employed.

A careful review of the literature can help ensure that your evaluation adds something new to the academic knowledge base about IPE. (This is especially important if you want to publish your evaluation in a peer-reviewed journal.) The literature can also help you to compare and contrast what others have found with results from similar settings to your own. Such comparisons help to guide future developments as well as promote reflection on the process of evaluation.

The most effective way to locate relevant literature is to use electronic bibliographic databases, such as the following: Medline (focuses on medically orientated research); CINAHL (focuses on nursing and allied health professions orientated research); and ASSIA (focuses on health and social sciences research). We also encourage you to consider searching other

sources, such as reference lists in relevant papers, hand searches of relevant journals, newsletters and websites (e.g., Google Scholar, PubMed) and approach colleagues working in the IPE field for any unpublished reports.

Systematic reviews conducted by others may concentrate the mind in terms of approaches, methodology and outcomes, and find helpful examples that meet the stated criteria.[7,15]

Step six: selecting the methodology and design

A methodology underpins how an evaluation will proceed – its assumptions, principles and procedures. There are a number of methodologies (e.g., experimental inquiry, quasi-experimental inquiry, ethnography, or action research), which can be drawn upon for the evaluation of an IPE programme. Your choice will determine the evaluation design, data collection, and analysis. Particular methods are associated with each methodological approach. For example, experimental inquiry can employ randomised controlled trials and gather quantitative data by means of questionnaires or audit; whereas ethnographic studies can employ case study designs and gather qualitative observation and interview data. Below are a few evaluation designs that can be employed.

Post-course evaluations

Post-course evaluation is where data collection occurs at the end of an IPE activity. Typically, questionnaires are employed, which usually comprise a range of closed and open-ended questions to elicit both numerical and text-based data. This design is inexpensive, straightforward, quick to conduct, and often achieves high response rates, but is considered a 'weak' form of evaluation. As there is no collection of baseline data, it is difficult to account convincingly for reported change relating to an interprofessional course. Nor, as is frequently the case, if data collection occurs in the final session of an interprofessional course, can anything be learnt concerning the longer-term impact of the education on practice. However, data from this approach may well assist in reviewing and revising the interprofessional experience for subsequent intakes.

Before and after studies

Before and after studies are where the evaluator collects data shortly before and after an interprofessional learning opportunity, often by gathering questionnaires and sometimes interviews. This design is more robust than a post-course evaluation. It detects changes resulting from an interprofessional course more accurately as there is data collection at two points in time: before and after the course. However, it is still limited in providing a rigorous understanding of change because it cannot say accurately whether the change was attributable to the intervention (in this instance IPE) or some other 'confounding' influence. This is where the use of a control group is helpful (see below).

Controlled before and after studies

Controlled before and after studies are another quasi-experimental technique that is rarely used in the evaluation of IPE. The use of controls can help detect whether a change occurred as a result of an intervention, but identifying suitable control groups can be difficult and adds to time and cost. Controlled before and after studies share the same limitations as before and after studies, namely, an inability to assess whether reported outcomes are sustained over time, and problems may arise in ensuring that respondents complete questionnaires or attend interviews at both time points.

Randomised control trials

Controlled before and after studies (as described above) can be redesigned to become randomised control trials by randomly selecting learners for inclusion in either the intervention or control groups. Randomised control trials can provide a more robust understanding of the nature of change associated with an IPE programme. The randomisation of participants in an interprofessional course means that bias related to selection or recruitment is minimised. Attempts to randomise individuals may, however, encounter objections that one group is being favoured over the other.

Longitudinal studies

Longitudinal design can be employed to assess the impact of IPE over time and to understand how this type of learning translates into clinical practice. Longitudinal evaluations collect data (over months or years) following an IPE programme. They are particularly helpful in understanding the longer-term effects of IPE. Undertaking a longitudinal evaluation can nevertheless be difficult as IPE participants often change jobs and location. Attrition rates can therefore be high. The longer the time period an evaluation seeks to track participants, the higher the attrition rate may be. Moreover, long-term data collection may feel increasingly intrusive or burdensome to participants.

Mixed-method studies

Reliance on a single design inevitably restricts the type and amount of data gathered. In mixed-method evaluation designs different data collection approaches (e.g., documentary analysis, questionnaires, interviews and observations) are used at different points of time and for different purposes. These can provide a more detailed understanding of the processes and outcomes associated with an interprofessional course. Triangulation can be undertaken between the different sources of data, as well as between quantitative and qualitative data sets.

Action research studies

Action research adopts a more collaborative approach than the designs described above, where evaluators work with participants through cycles of action and research to plan change, guide participants through change and evaluate the change that occurs. This approach can help participants to develop, deliver, evaluate and ultimately improve their practice. In doing so, the evaluator is more active and responsive in problem solving during the evaluation than when employing other research designs where he or she simply records problems and reports on them. However, given the combined role of the evaluator as initiator, problem-solver and evaluator of action, employing an action research approach is complex and very time consuming. It requires a wide range of skills and a high level of critical self-awareness from the researcher and is therefore not an approach for the novice evaluator to adopt.

Step seven: securing ethical approval

Nearly all educational evaluation is human-subjects' research requiring formal institutional ethical clearance, but if your evaluation is to gain information for internal course development only and will not be disseminated to external audiences, ethical approval may not be required. Even if the evaluation does not require formal ethical approval, you need to ensure that:

- The evaluator allows people to make an informed choice about whether (or not) they wish to participate in the work
- The evaluator places no pressure, i.e., coercion on people to become involved
- All evaluation data collected are anonymous (so that no one individual can be identified)
- All evaluation data are stored securely to ensure confidentiality

Step eight: accessing data

If an evaluation aims to gather data from students, staff or patients there will be several gatekeepers, e.g., programme leaders, senior physicians, clinical or educational managers, whom you will have to ask for access to '*their*' students, staff and patients. Even if you plan to use documentary evidence, rather than data collected from IPE participants, negotiating access to key documents can be a lengthy process. Where it exists, anonymous archive material may be straightforward to access, but you may also need access individual records, which may be more difficult.

Step nine: addressing fieldwork issues

Numerous factors need to be taken into consideration at the fieldwork stage (data collection) of an IPE evaluation. For example, you need to acknowledge your own influence on evaluations of IPE, i.e., on the choices that you make about paradigm, methodology and methods.

It is important that you are clear whether you are an internal or external (outsider) evaluator. Each has advantages and disadvantages. Teachers and others who develop and deliver IPE often evaluate it as well. As insiders, they can benefit from extensive knowledge of the history and context of the IPE, but that can make it difficult to stand back from the data and interpret it in a neutral manner. Insider evaluators may also suffer from a lack of time and resources to undertake their evaluations. The need to deliver the course or programme nearly always overrides the need for evaluation. Nevertheless, insider evaluators are well placed to feed study findings directly into course development.

In contrast, external evaluators will generally have time and resources dedicated for the purpose. They may find it easier to view the intervention from a more neutral viewpoint and to obtain more candid data from participants. However, they often have to spend time developing an in-depth understanding of presage and process issues related to the activity they are evaluating. External evaluations are often accorded greater weight because they are seen as more impartial and/or authoritative.

Step ten: using evaluation instruments

Given the context specific questions for most evaluations of IPE, they tend to use data collection instruments that are self-developed. However, there are a number of widely used evaluation tools for the evaluation of IPE, for example:

- Interdisciplinary Education Perception Scale (IEPS)[11] – a pre-test and post-test tool that measures changes in learners' attitudes resulting from an IPE course.
- Interprofessional Attitudes Scale (IPAS)[12] – a tool designed to capture healthcare students' self-reported attitudes and beliefs about interprofessional education and collaborative practice.
- Interprofessional Collaboration Scale (ICS)[9] – a self-reported tool that was designed to collect perceptions of interprofessional collaboration linked to communication, isolation, and accommodation factors
- Team Climate Inventory[1,2] – a set of four separate but interrelated scales designed to measure different aspects of a team's collaborative processes.
- Interaction Process Analysis (IPA) instrument[5] – a tool that categorises the socio-emotional and task-oriented nature of interaction within groups or teams.
- Interprofessional Education Collaborative (IPEC) Assessment Tool[6] – a tool that assesses outcomes related to collaborative practice at the healthcare degree programme level through individual student self-assessment.

For further information on other possible tools also see the National US Center for Interprofessional Practice and Education website: https://nexusipe.org/advancing/assessment-evaluation.

Step eleven: considering the resources

It is useful to secure funding for all the above steps in the evaluation process. Substantially more funds will be needed to evaluate larger-scale, longer-term work that can chart a multi-levelled change in complex environments.

Step twelve: dissemination choices

Disseminating findings provides stakeholders and fellow evaluators with important information about the effectiveness of an IPE initiative. It also provides details of your evaluation process allowing others to judge the quality of your work. It may take the form of local feedback, conferences posters or papers, short reports in magazines or journals, peer reviewed papers, book chapters, websites and blogs. Also consider the use of social media, such as Twitter, to expand the reach of your evaluation work. Each dissemination activity has pros and cons. Two or more types of dissemination may optimise impact.

Concluding comments

We have briefly outlined a range of approaches to the evaluation of IPE in this paper to help design, implement and disseminate an IPE activity in a realistic and manageable

manner, and drawn attention to the need for external evaluators to address more complex questions. May you find, such as us, that active involvement in such evaluation sharpens your awareness of IPE, and informs development in which you are directly engaged, hopefully, widening the understanding of what IPE can, does, and might deliver better in the future. Readers interested in knowing more about the evaluation of IPE are directed to our other publication on this subject.[14]

We have drawn on our experience reviewing numerous evaluations for the *Journal of Interprofessional Care* (as it's past and present editor-in-chief), conducting systematic reviews, and our own research in interprofessional education and collaborative practice in healthcare. We are indebted to fellow interprofessional researchers with whom we have collaborated from whom we have learnt much while retaining direct and equal responsibility for the advice given.

Conflicts of interest

The authors have no conflict of interest to declare.

Authors' contribution

SR and HB jointly conceived the article. SR wrote initial and final draft of article. HB critically reviewed and approved the final draft. Both authors are responsible for the content of this article.

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