

## Development of an evaluation matrix for a community-based interdisciplinary health-promotion course

F Waggie, BSc (Physiotherapy), MSc (Physiotherapy), PhD

*Interdisciplinary Teaching and Learning Unit, Faculty of Community and Health Sciences, University of the Western Cape, Bellville, South Africa*

*Corresponding author: F Waggie (fwaggie@uwc.ac.za)*

**Background.** In order to conduct a thorough and comprehensive evaluation of a curriculum, there must be a framework to guide the process that is needed to evaluate various aspects of the education programme. The Concept-Indicator-Method was chosen and modified as the conceptual framework that steered the evaluation process of a community-based interdisciplinary health-promotion course.

**Objective.** This article draws attention to the development of an appropriate evaluation matrix based on the Concept-Indicator-Method, which served as the organising framework for the evaluation. The focus of the evaluation was on assessing the perceived effectiveness and impact on the stakeholders of the course so as to direct the teaching and learning of health promotion at higher education institutions.

**Methods.** The mixed-methods approach was selected as the most appropriate research design for data collection and analysis. The use of multiple data collection instruments and sources provided a broader perspective and deeper understanding of the core concepts of the evaluation from the perspective of multiple sources.

**Results.** Three core concepts were identified in the evaluation of this community-based undergraduate programme: (i) curriculum; (ii) community-based learning; and (iii) university-school collaboration. Furthermore, associated key indicators for each core concept were developed.

**Conclusion.** The evaluation matrix may be of particular interest to those who are seeking an evaluation tool for evaluating a community-based course.

*Afr J Health Professions Educ 2015;7(1):58-63. DOI:10.7196/AJHPE.432*



A comprehensive approach to curriculum evaluation is deemed an essential aspect of the process of developing healthcare professionals capable of addressing the changing health needs in South Africa (SA) and elsewhere.<sup>[1]</sup> To conduct a thorough and comprehensive evaluation, there must be a framework that serves as a roadmap, clarifying the steps needed to evaluate the various aspects of an education programme. A conceptual framework is therefore a necessary step in evaluation, and its function is to act as a data organiser and to guide the instrument development and data analysis.<sup>[2]</sup>

Over the past few years, a multiconstituency approach has been developed and used in the evaluation of a range of community-based learning activities.<sup>[3]</sup> This approach was referred to as the Concept-Indicator-Method.<sup>[4]</sup> It was initially developed at Portland State University, Oregon, USA, as part of an assessment of their general education programme and designed to assess the impact of service learning on students, lecturers, the institution and the community.<sup>[3]</sup> The Concept-Indicator-Method provides a framework to guide the evaluation, facilitate the data collection and report in a practical way that is true to the aims and objectives of the evaluation.<sup>[5]</sup>

While evaluators are guided by the experiences of using different methods, no single evaluation template fits all curricula, and the peculiarities of each situation determine the evaluation strategy.<sup>[4,6]</sup> The Concept-Indicator-Method was seen as an appropriate framework for evaluating an interdisciplinary health-promotion course offered at the University of the Western Cape, Bellville, SA.

The literature presents many definitions of programme evaluation. For instance, it can be defined as periodic assessment of the relevance, performance, efficiency and impact of a project in relation to the stated objectives,<sup>[7]</sup> and is concerned with the systematic gathering and interpretation of information about a programme. The information is then used to make informed decisions about programme development and management. It is a distinct activity aimed at improving rather

than proving.<sup>[8]</sup> In brief, programme evaluation encompasses a multidimensional approach that involves a process of determination of the merit of a programme, identifying relevant standards of merit, worth, or value (criteria); investigation of the performance of the objects (key concepts) of the evaluation as it relates to these standards; and integration or synthesis of the results to achieve an overall evaluation for the purpose of improving the programme.<sup>[9,10]</sup>

### Context

A community-based interdisciplinary health-promotion course offered at a university in SA presented many challenges to the students, lecturers and educators at the 10 schools where the course was given. The purpose of the course was to create a mutually beneficial relationship in which the school became a site of learning for students, and where the school would benefit through the health-promotion expertise and resources provided by the university. The content of the interdisciplinary health-promotion course includes aspects that contribute to the knowledge base of health promotion, such as the origin and evolution of global health promotion, theory underpinning health-promotion practice, and research, planning and evaluation. It also contributes to the skills competency needed in health-promotion practice, such as professional development, programme planning, implementation and evaluation, communication, interdisciplinary learning, research, facilitation and working with specific target groups. After 2 years it became evident that the purpose of this course was not being optimally met. There was a lack of visible and co-ordinated health-promotion efforts, and initiatives appeared to be isolated and limited to student projects carried out in one semester of the academic year. This indicated that the interdisciplinary health-promotion course had to be reviewed, particularly in terms of the curricular component, teaching and learning approach, roles and responsibilities of all the stakeholders, and sustainability of health-promotion programmes in the schools.<sup>[11]</sup>

**Table 1. Aim and objectives of the evaluation**

The aim of the evaluation was to assess the perceived effectiveness and impact on the stakeholders of the interdisciplinary health-promotion course to develop an appropriate framework to guide the teaching of health promotion at higher education institutions in South Africa

The objectives of the evaluation were:

- To describe the process undertaken in the design and implementation of the interdisciplinary health-promotion course
- To explore the perceptions and experiences of the key stakeholders, i.e. the university students, lecturers, supervisors and school educators involved in the interdisciplinary health-promotion course in relation to the course curriculum, including the community-based learning approach to teaching and learning
- To explore the nature and extent to which collaboration between the university and participating schools were pursued
- To explore how the interdisciplinary health-promotion course could be strengthened or improved to better achieve its goals
- To develop a framework that is most appropriate for teaching community-based health promotion to an interdisciplinary group of health sciences students in school settings

This article provides a detailed description of the development of an evaluation matrix that represents the organising structure for evaluating the impact of the interdisciplinary health-promotion course on multiple stakeholders. The evaluation was designed to answer the questions relating to the perceptions and experiences of the interdisciplinary health-promotion course and its impact on various stakeholders in the university and primary schools situated in disadvantaged communities.

## Conceptual framework

The Concept-Indicator-Method approach provided a framework that guided the evaluation in this study; it also enabled the researcher to clearly present the structure for the evaluation, and facilitated data collection and reporting in a practical way that was true to the aim and objectives of the evaluation.<sup>[5]</sup> The Concept-Indicator-Method approach involves four primary questions: (i) ‘What do we want to know?’ This helps the evaluator to articulate the aim of the assessment; (ii) ‘What will we look for?’ This leads the evaluator to identify core concepts that are derived from the objectives of the evaluation; (iii) ‘What will we measure?’ For each core concept, relevant measurable indicators are specified that will enable the evaluator to measure change or status; (iv) ‘How will we gather the evidence to demonstrate what we want to know?’ At this stage, the evaluator identifies or develops appropriate methods and tools by which to collect the information for each indicator, and identifies sources of data.

To understand the complex nature of this community-based, interdisciplinary course and the nature of the university-school collaboration, the Concept-Indicator-Method,<sup>[5]</sup> as described above, was modified and adopted as the conceptual framework for the evaluation of the interdisciplinary health-promotion course. The Concept-Indicator-Method approach was modified to consist of five instead of four components,<sup>[5]</sup> i.e. (i) core concepts; (ii) key indicators; (iii) criteria; (iv) methods; and (v) source of information. The last component was added to the evaluation matrix as it directs the researcher towards where to access the information. The development of an evaluation matrix framed the evaluation plan, guided the development of the evaluation instruments, and structured the data analysis and reporting. The following section describes how the evaluation matrix was developed for a community-based interdisciplinary health promotion course.

## Developing the evaluation matrix

The *first step* in the development of the evaluation matrix, was to clearly articulate and clarify the aim and objectives of the evaluation (Table 1). This involved answering the first question: ‘What do I want to know?’

**Table 2. Core concepts and key indicators**

Core concept	Key indicator
Curriculum	Course design
	Faculty staff
	Assessment
	Teaching and learning interaction
	Learning materials and resources
	Course administrator service
	Course impact
Community-based learning	Philosophy and principles
	Faculty and student interaction
	Sensitivity to cultural diversity
	Co-ordination of community-based learning
	Role/s of stakeholders in community-based learning
University-school collaboration	Personal and professional development of stakeholders
	Nature of the collaboration

The *second step* in the development of an evaluation matrix, was the identification of the core concepts of the evaluation. The following question guided the development of the core concepts: ‘What are the major areas that this evaluation addresses?’ The core concepts are broad topic areas that are derived from the aim and objectives of the evaluation. These concepts formed the foundation of the evaluation in terms of the discussion and elaboration on how this evaluation aims to affect each concept. In an effort to be comprehensive in identifying the core concepts, indicators and criteria for the evaluation of the interdisciplinary health-promotion course, three policy documents<sup>[12-14]</sup> and a number of other related articles in the literature were consulted.<sup>[8,15-20]</sup> Based on the aim and objectives of the evaluation, and the relevant documents and literature consulted, the following three core concepts (Table 2) were identified in the evaluation of this undergraduate programme, i.e. (i) curriculum; (ii) community-based learning; and (iii) university-school collaboration. (University-school collaboration refers to the collaboration between the university and primary schools where the students conducted their fieldwork.)

**Table 3. Core concepts, key indicators, criteria, methods and sources**

Core concept	Key indicator	Criteria	Method	Source	
Curriculum	Course design	The interdisciplinary health-promotion course is designed as an integral part of the faculty's vision and mission	Questionnaire Focus group discussion	Students Lecturers	
		The outcomes of the interdisciplinary health-promotion course meet the needs of all the stakeholders involved in the course	Document analysis	Supervisors Faculty yearbook Student workbook	
		The outcomes of the interdisciplinary health-promotion course meet the needs of all the stakeholders involved in the course	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators	
		The interdisciplinary health-promotion course is intellectually credible	Questionnaire Focus group discussion	Students Lecturers Supervisors	
		The interdisciplinary health-promotion course is coherently designed	Questionnaire Focus group discussion	Students Lecturers Supervisors	
		The interdisciplinary health-promotion course articulates well with other courses in the discipline's specific programmes	Questionnaire Focus group discussion	Students Lecturers Supervisors	
		Faculty staff	The lecturing staff are competent to teach the course and are effective in their teaching approach	Questionnaire Focus group discussion	Students Lecturers
			The assessment competence of the lecturing staff is adequate for the nature and level of the course	Questionnaire Focus group discussion	Students Lecturers
			There is sufficient faculty staff to ensure that all activities related to the course are realised	Document analysis Minutes of curriculum task team	Student workbook
			Assessment	Assessment is an integral part of the teaching and learning process	Questionnaire Focus group discussion
Assessment is recognised as a key motivator of learning to inform teaching practice and improve the curriculum	Questionnaire Focus group discussion	Students Lecturers Supervisors			
Policies and procedures exist for monitoring student progress	Questionnaire Focus group discussion Document analysis	Students Lecturers Supervisors Student workbook			
Policies and procedures exist to ensure validity and reliability of assessment practices and recording of results	Questionnaire Focus group discussion Document analysis	Students Lecturers Supervisors Student workbook			
Teaching and learning interaction	Teaching and learning methods are appropriate to achieve the purpose and outcomes of the course	Questionnaire Focus group discussion		Students Lecturers Supervisors	
	Interdisciplinary teaching and learning is a key principle in the delivery of the course	Questionnaire Focus group discussion		Students Lecturers Supervisors	
Learning materials and resources	Sufficient, relevant and up-to-date library resources are available to students and staff	Questionnaire Focus group discussion	Students Lecturers Supervisors		
	Learning materials are appropriate to ensuring achievement of the purpose and outcomes of the course	Questionnaire Focus group discussion	Students Lecturers Supervisors		

Continued ...

**Table 3. (continued) Core concepts, key indicators, criteria, methods and sources**

Core concept	Key indicator	Criteria	Method	Source
Community-based learning	Course administration services	The interdisciplinary health-promotion course is co-ordinated by a task team to ensure that course outcomes are met	Document analysis	Curriculum task team minutes
		Efficient administrative service for the interdisciplinary health-promotion course exists	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
		Suitable, sufficient and accessible venues are available	Questionnaire Focus group discussion	Students Lecturers Supervisors
	Course impact	The interdisciplinary health-promotion course succeeded in having an impact on all stakeholders, i.e. students, faculty staff and school community	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
	Philosophy and principles	Community-based learning philosophy and principles are understood by the university students and staff	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
		The community-based learning experience meets the needs of all the stakeholders	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
	Faculty and student interaction	Students and university staff are prepared for community-based learning	Questionnaire Focus group discussion	Students Lecturers Supervisors
		Monitoring and supervision are done systematically and regularly	Questionnaire Focus group discussion	Students Lecturers Supervisors
	Sensitivity to cultural diversity	The students, lecturers and supervisors are comfortable working in a culturally diverse community	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
	Co-ordination of community-based learning	The co-ordination of community-based learning is efficient	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
University-school collaboration	Role/s of stakeholders in community-based learning	The role of the stakeholders in community-based learning is understood	Focus group discussion	Students Lecturers Supervisors Educators
	Personal and professional development of stakeholders	The community-based learning contributes to the personal and/or professional development of all stakeholders	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
	Nature of the collaboration	There is a common understanding of the concept of partnership between the stakeholders, and a partnership exists between the university and the schools	Questionnaire Focus group discussion	Students Lecturers Educators
		The collaboration is beneficial for all stakeholders	Questionnaire Focus group discussion	Students Lecturers Supervisors Educators
	The collaboration between the university and the school is sustained	Questionnaire Focus group discussion	Students Lecturers Educators	

**Table 4. Instruments and sources of data**

Data collection phase	Sources of data			
	University students	Lecturers	Educators	Supervisors
Quantitative (questionnaires)	All the university students who participated in the interdisciplinary health-promotion course during 2006 (N=321)	All the lecturing staff who taught the interdisciplinary health-promotion course during 2006 (N=12)	All the educators at the 10 primary schools who had university students placed in their classrooms for the interdisciplinary health-promotion course during 2006 (N=88)	All the supervisors who supervised the university students in the schools and participated in the interdisciplinary health-promotion course during 2006 (N=6)
Qualitative (focus group discussions)	Purposive sample group of university students from each professional programme who participated in the interdisciplinary health-promotion course during 2006 (n=72)	All lecturing staff who taught the interdisciplinary health promotion course during 2006 (N=12)	Purposive sample group of educators (key informants) at the 10 primary schools who had university students placed in their classes for the interdisciplinary health-promotion course during 2006 (n=10)	All the supervisors who supervised the university students in the schools and participated in the interdisciplinary health-promotion course during 2006 (N=6)
Document analysis	Content analysis was conducted in terms of the criteria that were developed in the evaluation matrix on the following documents: (i) interdisciplinary health-promotion student workbook, 2006; (ii) minutes of the interdisciplinary health-promotion curriculum task team during 2006; and (iii) <i>Faculty of Community and Health Science Yearbook, 2006</i>			

Furthermore, associated key indicators (Table 2) were developed to reflect each core concept evaluated. Indicators are variables that reflect the phenomenon (core concept) that is to be evaluated.<sup>[5]</sup> Table 2 indicates the core concepts with the associated key indicators.

The *third step* in establishing the evaluation matrix, was to develop the criteria associated with each key indicator (Table 3). A criterion is a standard against which judgement may be made.<sup>[6]</sup> Criteria also set broad benchmarks for quality assurance in higher education.<sup>[13]</sup> The criteria were used to examine the specific factors related to each core concept that was evaluated. There is, therefore, a direct linear relationship between each core concept and the related criterion. The questions that guided the development of the criteria were: (i) 'What can be observed that will provide insights into the core concept?' (ii) 'What measures can be explored as evidence of how the core concept is affected?' and (iii) 'What evidence exists to show that the core concepts are being addressed?'

The *fourth step* in the development of the evaluation matrix, was to identify the instruments that would be used to gather the information (Table 3). The following question guided the identification of the instruments: 'How will I gather the evidence needed to demonstrate what I want to know?' To understand the complex nature of this community-based, interdisciplinary course and the nature of the university-school collaboration, the explanatory sequential mixed-methods approach was selected as the most appropriate research design for the data collection and analysis. Three methods were identified to collect the information: questionnaires; focus group discussions; and document analysis. The quantitative data helped to develop a picture of the demography of each stakeholder, to ascertain their perceptions and experiences of the course, to understand their perspectives on community-based learning and the collaboration between the university and the school, and to provide recommendations for enhancement of the programme. The qualitative data further explored the emerging themes from the quantitative data.

Therefore, the qualitative phase built on the quantitative phase, and provided a follow-up in-depth exploration of the quantitative results. Finally, inferences were drawn from both the quantitative and qualitative findings. Table 3 illustrates the complete evaluation matrix that was used to assess the perceived effectiveness and impact on the stakeholders of the community-based interdisciplinary health-promotion course.

The *fifth and final step* in the development of the evaluation matrix, was the identification of the sources from whom or from where the information would be obtained. The following question guided the identification of the sources: 'From whom and from where will I obtain the necessary information?' The use of multiple data collection instruments and sources provided a broader perspective and deeper understanding of the core concepts of the study from the perspectives of multiple sources. Table 4 illustrates the data collection instruments and sources of data.

While there is a direct relationship between the core concepts and related indicators, there is no such relationship between core concepts, methods and sources. Some of the methods were used for a particular criterion, and some of the sources provided data for a particular method, but not all the sources were involved in each method, and not all methods addressed every criterion.

## Conclusion

The use of a conceptual framework becomes vital to guide a comprehensive evaluation of an educational programme. The community-based interdisciplinary health-promotion course was evaluated in terms of its content, teaching and learning approach, and the extent to which it has collaborated with other sectors outside the university. However, it needs to be highlighted that the modified Concept-Indicator-Method developed in this study has not been tested against any other evaluative method; therefore, its current efficacy as an evaluative tool is unclear. I have presented the five steps that guided the development of the evaluation matrix for a community-based health-promotion course. It

is important to view the use of this evaluation matrix as a strategy for improving the course; identifying strengths and areas for improvement; identifying deficiencies; providing evidence that will serve as the basis for future planning and enhancements; validating existing knowledge; and providing data to support the continuation of such curriculum activities. Increasingly, multi-stakeholder participation in community-based course evaluations is becoming the norm, while previously much of the literature focused on the impact of community-based education programmes on students as individuals and on their learning.<sup>[3]</sup> This study is therefore particularly valuable in providing a comprehensive framework when seeking to document the effect of pedagogy across stakeholders. The comprehensive framework is vital because it assists in providing strategies that indicate whether the course is making a difference to those involved in pursuing it. However, in this study the interdisciplinary education aspect of the course is not evaluated in any depth. Lastly, the evaluation matrix may be of particular interest to those who are seeking an organising structure for evaluating a community-based interdisciplinary course.

## References

- Musal B, Taskiran C, Gursel Y, Ozan S, Timbil S, Velipasaoglu S. An example of program evaluation project in undergraduate medical education. *Educ Health (Abingdon)* 2008;21(1):113.
- Durning SJ, Hemmer P, Pangaro LN. The structure of program evaluation: An approach for evaluating a course, clerkship, or components of a residency or fellowship training program. *Teach Learn Med* 2007;19(3):308-318.
- Gelmon S. How do we know that our work makes a difference? Assessment strategies for service-learning and civic engagement. *Metropolitan Universities* 2000;11(2):28-39.
- Gelmon S, McBride L, Hill S, Chester L, Guernsey J. Evaluation of the Portland Healthy Communities' Initiative 1996 - 1998. Portland, Oreg.: Portland State University, 1998.
- Gelmon S, Foucek A, Waterbury A. Program Evaluation: Principles and Practices. 2nd ed. Portland, Oreg.: Northwest Health Foundation, 2005.
- Bandaranyake R, Craig P, Wagner R. Multidimensional approach to evaluating a changing curriculum. *Annals of Community Oriented Education* 1992;5:159-166.
- Nutbeam D. Evaluating health promotion – progress, problems and solutions. *Health Promotion International* 1998;13(1):27-44.
- Mertens DM. *Research Methods in Education and Psychology: Integrating Diversity With Quantitative and Qualitative Approaches*. Thousand Oaks, Calif.: Sage Publications, 1998.
- Rotem A. Evaluation to improve educational programmes. *Annals of Community Oriented Education* 1992;5:135-141.
- Rossie P, Lipsey M, Freeman H. *Evaluation: A Systemic Approach*. 7th ed. Thousand Oaks, Calif.: Sage Publications, 2004.
- Waggie F, Gordon N, Brijlal P. The schools, a viable educational site for interdisciplinary health promotion. *Educ Health (Abingdon)* 2004;17(3):303-312.
- University of the Western Cape. Policy for Programme Reviews at UWC. Bellville: University of the Western Cape, 2005.
- Higher Education Quality Committee. *Criteria for Programme Accreditation*. Pretoria: Council on Higher Education, 2004.
- Higher Education Quality Committee. *A Good Practice Guide and Self Evaluation Instrument for Managing the Quality of Service-Learning*. Pretoria: Council on Higher Education, 2006.
- Ruhe V, Boudreau JD. The 2011 Program evaluation standards: A framework for quality in medical education programme evaluations. *J Eval Clin Pract* 2013;19(5):925-932. [<http://dx.doi.org/10.1111/j.1365-2753.2012.01879.x>]
- Velema JP, Finkenflu HJM, Cornielje H. Gains and losses of structured information collection in the evaluation of 'rehabilitation in the community' programmes: Ten lessons learnt during actual evaluations. *Disabil Rehabil* 2008;30(5):396-404.
- Loots A. Programme evaluation: Maintaining quality in higher education. *South African Journal of Higher Education* 2008;22(6):1212-1228.
- Kristina TN, Majoer G, Van der Vleuten C. Does CBE come close to what it should be? A case study from the developing world. Evaluating a programme in action against objectives on paper. *Educ Health* 2005;18(2):194-208.
- Long B, Larsen P, Hussey L, Shirley S, Travis A. Organizing, managing, and evaluating service-learning projects. *Educational Gerontology* 2001;27(1):3-21.
- Shannon C, Baker H, Jackson J, Roy A, Heady H, Gunel E. Evaluation of a required statewide interdisciplinary rural health education program: Student attitudes, career intents and perceived quality. *Rural Remote Health* 2005;5(4):405.