

COMMUNITY-RELATED ISSUES

## **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**

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**ABSTRACT Context:** *A growing number of health professions schools have implemented programmes for community-based education (CBE) for their students. There are indications, however, that particularly in developing countries, CBE programmes are not always optimally implemented or sustained.*

**Objective:** *To test the suitability of an established method for curriculum evaluation, combined with a set of generic objectives for CBE programmes, for evaluation of CBE programmes.*

**Methods:** *As a case study, Coles and Grant's model for curriculum evaluation was applied to the CBE programme of the Medical Faculty of Diponegoro University (MFDU) in Semarang, Indonesia. Document analysis yielded information on the programme on paper; participatory observation and staff interviews on the programme in action. In addition, MFDU's CBE programme was evaluated against a set of generic objectives for CBE programmes recently designed by us.*

**Results:** *MFDU has created great opportunities for its CBE programme in which, however, also significant weaknesses were revealed. (1) In the community, much time was spent on formal teaching; (2) Students' work in the community was not jointly identified with community members regarding the community's felt health needs; (3) There was rarely continuity, and evaluation or follow-up of the students' work in the community; and (4) No systematic programme evaluations are carried out.*

**Discussion:** *This evaluation study showed shortcomings in the implementation of MFDU's CBE programme. The major weaknesses identified point at an underutilization of the opportunities and potential jeopardization of the facilities in the community. On the other hand, more time is needed in the CBE programme to establish the health needs to be addressed jointly with the community and to assess the impact of activities*

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undertaken. A thorough review of the CBE programme, perhaps taking the outcomes of this study into account, could turn MFDU's CBE programme into a fine example for other medical schools in Indonesia and beyond.

**Conclusion:** Coles and Grant's method for curriculum evaluation proved suitable for evaluation of a CBE programme in a developing country. After additional comparison with a reference list of objectives for CBE programmes, reasoned suggestions for programme can be made.

**KEYWORDS** Community-based education, evaluation, case study.

## Introduction

Community-based education (CBE) aims to train undergraduate medical students in the diagnosis, management and, if possible, solution of community health problems (Feletti *et al.*, 2000). CBE activities should take place in a variety of primary and secondary health care settings and, particularly in developing countries, within communities (WHO, 1987; Nooman, 1989; Hamad, 1991). The general objective of CBE programmes is to expand the students' notion of community health problems through their learning, service and research in the community and thereby to improve the health of the community in which the programme is carried out (Magzoub & Schmidt, 2000).

Based on these aims, many medical schools, particularly in developing countries, have implemented CBE programmes. However, these programmes often suffer from negligence of and inappropriate approaches to, actual community involvement (Ezzat, 1995; Williams *et al.*, 1999). Thus, some doubt exists whether CBE programmes are adequately implemented. So as a case study, we have evaluated the CBE programme executed by the Medical Faculty of Diponegoro University (MFDU) in Semarang, Indonesia, using the model of Coles and Grant (1985). According to this model, the "curriculum on paper", the "curriculum in action", and the "curriculum as experienced" by the students are evaluated.

The curriculum on paper includes what is written about the curriculum in documents, committee reports, etc., and what faculty says about the curriculum's aims and goals. The curriculum in action is how the intended curriculum is theoretically implemented in practice. The experienced or actualised curriculum is what students actually do, how they study, what they believe they should be doing, the learning that occurs and the outcome of their learning (Nelson *et al.*, 1992). There can be considerable mismatches between these three curriculum concepts (Remmen, 1999). In this report we compare MFDU's existing CBE programme with its description on paper and a set of generic objectives for CBE programmes recently developed by us (Kristina *et al.*, 2004).

We formulated the following research questions to evaluate the CBE programme at MFDU:

- (1) What is the match between MFDU's CBE programme objectives and the generic list of CBE objectives?
- (2) How are MFDU's CBE objectives implemented in the curriculum?
- (3) Can any recommendations be formulated to improve MFDU's CBE programme?

## **CBE in MFDU's Curriculum**

MFDU has a six-year medical curriculum. The first two years emphasize basic sciences and years 3 and 4 clinical sciences. In those four years, lectures and practicals are the dominant educational formats. Some elements in this part of the curriculum may be relevant for the preparation of the students for their CBE programme, e.g. lectures on community medicine, epidemiology, occupational health, infectious diseases, and nutrition, as well as lectures and practicals on microbiology and parasitology. The last two years of the curriculum are predominantly devoted to clinical clerkships. CBE has two slots in the curriculum. In year 4, students study family health problems in an urban area for two weeks. In year 6, students participate in a 10-week programme referred to as the CBE clerkship.

## **Methods**

The model of Coles and Grant to evaluate curricula was adopted for this study. The CBE programme in action was evaluated against its description on paper and against a set of generic objectives for CBE programmes (Kristina *et al.*, 2004).

This study exclusively used qualitative methods, because we aimed to gather detailed information on various aspects of the CBE programme, including its structure, faculty roles and student activities. Triangulation of methods was applied to increase the validity of our observations (Harris, 2002). To describe the curriculum on paper, written documents were analysed (Patton, 1990). Primary sources were the MFDU's study guide, which includes an outline of the CBE programme (Soejoenoes, 1989)<sup>1</sup>, and a report on the last meeting of the planning group for the CBE programme (CBE Planning Group, 1991)<sup>2</sup>. Complementary information was provided orally by faculty involved in the execution of the CBE programme.

To study the curriculum in action, the first author conducted participatory observations with 4th year students during their home visits and with 6th year students in the full ten-week CBE clerkship programme. To increase the

<sup>1</sup>SOEJOENoes, A. CBE curriculum in MFDU. Workshop report, 1989.

<sup>2</sup>Report on a meeting of the CBE Planning Group, 1991.

reliability of the collected data, two cohorts of final year students (25 and 30 students) were observed (Adler & Adler, 1994). The observer passively participated in all activities of both cohorts and observed all student activities, and students and staff were aware of the purpose of the observer's presence. Observations were recorded in field notes, complemented with statements made by supervisors during activities and by heads of Primary Health Care (PHC) centres in informal interviews.

The following steps were taken to analyse the records: linking student activities observed with related statements by supervisors; coding observations and statements as key points; organizing the key points into categories; and extracting themes with respect to execution of the CBE programme (Dignan, 1989; Miles & Huberman, 1994).

To increase reliability of this data analysis, a volunteer (a psychologist acquainted with qualitative studies) was asked to code the field notes and staff comments pertaining to students' work in the community (weeks 4 and 5 of the CBE clerkship, see below). Coding by the first author was compared with coding by the volunteer and differences emerging were discussed to reach consensus.

## **Results**

### *Programme on Paper*

The single objective of the CBE programme for 4th year students states that the students should be able to manage health problems of urban families. The students are supposed to be supervised by faculty from six departments. A checklist was provided to monitor student activities.

The objectives of the CBE clerkship in year 6 are listed in Table 1. In week 1 of the CBE, clerkship students should be trained to deal with emergency cases through Advanced Trauma Life Support (ATLS). In weeks 2 and 3 students are assigned to study the management of a PHC centre. Students stay in a Rural Health Professions Training Centre (RHPTC) and visit one of three rural PHC centres. Students should participate in the centre's primary care programmes executed in the community. This training is supposed to be supervised by faculty from seven departments. In weeks 4 and 5, students stay in a different RHPTC to identify and solve health problems in a rural community. In weeks 6–8 students are posted in two municipality secondary hospitals. Students are expected to work in the hospital's emergency room, to provide health services in the outpatient department and to study the management of the secondary hospital, including the referral system. In week 9, students are posted in an urban district health office to study implementation of the national urban health programme. Week 10 is reserved for final examinations. All students should be submitted to oral examinations by lecturers of the department of Community Medicine. There are no written guidelines for these examinations.

Furthermore, the description of the CBE programme does not refer to any format of programme evaluation.

Next, the objectives of MFDU's CBE programme were compared with the list of generic objectives for CBE (Kristina *et al.*, 2004) (Table 1). All but two of MFDU's objectives for its CBE programme matched objectives presented in the generic list of CBE objectives. Conversely, 14 of the 21 generic objectives were not matched by MFDU's CBE objectives.

### *Programme in Action*

*Year 4 Programme.* The first two days of this programme were used for lectures, discussions and introductions to community leaders and the head of an urban PHC centre. Students were divided in groups of 24–25 on the third day, and each group was sent from the PHC centre to one kampong (an urban unit like a block). Through home visits student groups were assigned to identify family health problems using a questionnaire, to analyse their data and write a report.

Large variation in the time invested by the respective group supervisors was observed, and only one out of the four supervisors used the available checklist to monitor student activities. The last three days were used by the student groups to select a priority health problem and to discuss with community members how best to address that problem through a student-conducted health intervention. During these discussions with community members, not all students had a chance to talk. When the senior supervisor was asked what a student's mark for this programme would be based on, he replied:

“A student's score is based on his/her group's activities and report. A student will obtain a high score if he/she proposed a good and new idea to solve a specific health problem or was very active during discussions.”

### *Year 6 CBE Clerkship.*

*Week 1: ATLS.* ATLS took place in MFDU's skills training facility where students attended lectures and trainings conducted by clinicians from various disciplines. In line with the roster for this week, the ratio of time spent on lectures and practicals was 2:1. Assessment was based on four objective structured clinical examination (OSCE) stations conducted on the last day of this week.

*Weeks 2 and 3: Management of a PHC Centre.* In the RHPTC, students were lectured for a total of 32 hours on the management of a PHC centre and related topics. In the first week, students in subgroups of 8–10 were given last year's patients' data of a PHC centre and asked to identify the priority health problems to be tackled by that PHC centre. In the second week, students participated for two days in PHC field programmes. They co-operated with midwives and community health workers to provide simple

**Table 1.** Comparison of MFDU's CBE objectives with the generic list of CBE objectives

| Objectives of CBE programme at MFDU <sup>1</sup>  | Generic objectives for CBE programmes <sup>2</sup>  |
|---|---|
| <p>Year 4 urban programme:</p> <p>Students are able to manage family health problems in an urban area.</p>  | <p>In co-operation with the community, graduates are able to :</p> <ul style="list-style-type: none"> <li>● <i>identify health problems related to the given circumstances</i></li> <li>● determine incidence and prevalence of disease in the community</li> </ul>   |
| <p>Year 6 CBE clerkship:</p> <p>Students are able to manage community health problems in the rural area. For that purpose, students are able to:</p> <ul style="list-style-type: none"> <li>● identify health problems in the community</li> <li>● propose health intervention to solve a problem</li> <li>● implement health interventions to solve a selected problem.</li> </ul> <p>Students are able to perform health education to the community</p> | <ul style="list-style-type: none"> <li>● <i>invent realistic solutions to health problems</i></li> <li>● collaborate with professionals from other disciplines and other related sectors to solve identified health problems</li> <li>● mobilize the community for health interventions</li> <li>● <i>design and implement a health intervention, and analyse results.</i></li> </ul>   |
| <p>Students are able to perform health education to the community</p>   | <p>To provide health education to the community, graduates must have knowledge of:</p> <ul style="list-style-type: none"> <li>● adequate nutrition</li> <li>● life style-related health risks in the community (e.g. smoking, alcohol and drug abuse, promiscuity, lack of physical activities, etc.)</li> <li>● environment-related health risks (e.g. contagious diseases, water and vector borne diseases, pollution)</li> <li>● occupational health, and be able to:</li> <li>● <i>design and transmit health education sessions</i></li> <li>● train community health workers in health education</li> <li>● evaluate the effectiveness of health education</li> </ul> |
| <p>Students are able to:</p> <ul style="list-style-type: none"> <li>● work in a PHC centre</li> <li>● participate in a PHC centre's programmes in the community</li> <li>● manage a PHC centre</li> </ul>   | <p>To reduce inequity in access to health services, graduates are able to:</p> <ul style="list-style-type: none"> <li>● assess availability of health services to the community</li> <li>● identify barriers to health care utilisation by community</li> <li>● monitor effectiveness and efficiency of community health services</li> </ul>  |

*(continued overleaf)*

**Table 1.** (continued)

| Objectives of CBE programme at MFDU <sup>1</sup>  | Generic objectives for CBE programmes <sup>2</sup>   |
|---|--|
| Students are able to manage emergency cases   | <ul style="list-style-type: none"> <li>● invent realistic strategies to improve community access to health services</li> <li>● <i>work in a variety of community health care settings (e.g. primary health care centres, district hospitals, maternal and child health care units) and to provide preventive, primary curative, and emergency care.</i></li> </ul> |
| <i>Students understand the management of secondary hospital and the referral system</i> | <ul style="list-style-type: none"> <li>● <i>manage a primary care unit and sustain health administration</i></li> </ul>  |
| <i>Students understand the management of national urban health programmes</i>           | <ul style="list-style-type: none"> <li>● <i>judge which patients need to be referred</i></li> <li>● participate in health teams (e.g. with nurses, midwives, community health workers)</li> </ul>  |

<sup>1</sup>Objectives in italics have no corresponding objective in the list of generic objectives.

<sup>2</sup>Objectives in italics are covered by objectives of MFDU's CBE programme.

care and public health-related activities. Students' discussions with the supervisor from the RHPTC were conducted in the evenings, when students received advice on writing their reports. Deviating from the clerkship programme on paper, students' activities were not supervised by MFDU faculty. MFDU staff only came to the RHPTC to participate in the final examination of the students. Students had to give oral presentations on applying their approaches to community health problems identified from the PHC centre's data. Student presentations were assessed by their supervisor, three heads of the PHC centres, and MFDU faculty. When a staff member of Community Medicine was asked whether he felt this training met MFDU's CBE objectives, he replied:

“The objective of this training is that the students should acquire the ability to manage a PHC centre. Therefore, students should work in a PHC centre and in the community to collect data. Instead students receive last year's data as assembled by a PHC centre.”

Thus, the management of a PHC centre was mainly addressed in lectures at the RHPTC. Students did not work in a PHC centre as described in the outline for the CBE clerkship, and when participating in a PHC programme, students just assisted in the daily work of community health workers and health providers.

**Table 2.** Comparison of the CBE programme's objectives and implementation

| Objectives of MFDU's CBE programme  | Curriculum in action  |   |
|---|---|---|
|   | <i>Strengths</i>  | <i>Weaknesses</i>   |
| Year 4 urban programme:<br>Students are able to manage family health problem in an urban area   | Students identified health problems and proposed health interventions<br>Students discussed health problems identified with the community<br>Students implemented health interventions<br>Performance during oral presentations contributed to student assessment   | Large groups of students<br>Variation in supervision time<br>No daily performance assessment<br>No evaluation of impact of students' interventions  |
| Year 6 CBE clerkship:<br>Students are able to manage health problems in the rural community:<br>identify health problems in the community<br>propose health intervention to solve a problem<br>implement health interventions to solve a selected problem<br>Students are able to perform health education to the community<br>Students are able to manage a PHC centre:<br>to work in a PHC centre | Students identified health problems in the community and proposed health interventions<br><br>Students implemented health interventions<br><br>Daily performance and oral presentations contributed to student assessment<br>Students applied various methods of health education in the community<br>Students participated in PHC centre's programmes in the community<br>Students gave oral presentations on the management of a PHC centre | Community work is based on government-determined programmes in a PHC centre<br><br>No interaction with community on health problems identified, and how to tackle those<br>No evaluation of the impact of students' interventions<br>No continuity of students' programmes<br><br>No follow-up by PHC centre on health problems identified by the students<br>Usually no evaluation of the impact of health education<br>Management of PHC centre only addressed in lectures<br>Students did not work in PHC centre |

(continued overleaf)

**Table 2.** (continued)

| Objectives of MFDU's CBE programme   | Curriculum in action  |   |
|--|---|---|
|  | <i>Strengths</i>  | <i>Weaknesses</i>   |
| participating in a PHC centre's programmes in the community                        |   | Students did not learn tabulation of PHC centre's patient data  |
| Students are able to manage emergency cases  | Practical training in skills lab  | Several lectures about emergency cases overlapped with previous lectures                              |
|  | Attachment in a secondary hospital to address emergencies   |   |
|  | Assessment by OSCE's and oral presentation of emergency cases                                       |   |
| Students understand the management of a secondary hospital and the referral system | Report writing and oral presentation on the management and referral system of municipality hospital | Management of a secondary hospital and the referral system were not addressed by half of the students |
| Students understand the management of national urban health programmes             | Participation on urban health office programmes   | Predominance of lectures on national urban health programmes<br>No student assessment                 |

*Weeks 4 and 5: PHC-related Activities in the Community.* Two MFDU staff stayed with the students at another RHPTC and supervised their training. Student cohorts were divided in two groups of 12–15, and each group was sent to a PHC centre. Small groups of 3–5 students were formed and assigned to a health provider responsible for execution of a governmental PHC programme. Within the programme, students had to identify a specific problem, propose solutions for that problem, and implement one of the proposed solutions. With only one exception, none of the students' programmes included an evaluation of the impact of their interventions.

Student assessment was based on written reports, oral presentations and the supervisors' records of student's attitude in daily activities on the parameters responsibility, discipline and teamwork. After the oral presentations, a head of a PHC centre commented:

“I noticed that the community already gets annoyed with the students' activities. I think if the student's activities were based on the community's felt needs they would be more useful. However, we are assigned to execute the programmes of the government as soon as possible, and by working together with the students these programmes can be finished on time.”

When asked about the continuity of the students' activities, a supervisor answered:

“Due to their perceived urgency, the PHC centres must execute all government health programmes immediately, so hardly any of the students' programmes can be continued, because a next group of students has to work in a new programme. However, there are a few examples of continuity in students' programmes and records of their success.”

Thus, although formally assigned to identify health problems in the community, students had no chance to explore the community's felt needs but had to assist in the execution of government programmes. Usually there was no continuity in the students' programmes, and the outcomes were not assessed.

*Weeks 6–8: Municipality Hospital Service and Management.* For their postings in municipality secondary hospitals, students were divided into two groups of 12–15 students, and each group was sent to a different hospital. Under supervision, students provided curative care in the emergency room, in the outpatient clinic and conducted one or two normal deliveries. Assessment was based on selected emergency case presentations. In one hospital, subgroups of 3–4 students were assigned to write a report on the management and referral

system of a selected hospital unit, e.g. the children's ward. The students collected data from documents, observations and interviews with nurses, doctors and the hospital director. Assessment was based on students' reports and oral presentations in front of the hospital's vice-director, staff and their supervisor. The objective to study the management of a secondary hospital and the referral system was not addressed in one municipality hospital. There was no MFDU supervisor there, and when the vice-director of this hospital was asked why this topic was ignored, he stated he was not aware of this objective in relation to the posting.

*Week 9: District Health Service in an Urban Area.* During the first three days of this week, students were lectured on urban district health programmes and management of a district health office. Students participated in health programmes for the last two days. There was no assessment or evaluation to conclude this week.

*Week 10: Final examination.* The clerkship's final oral exams took place in MFDU's department of Community Medicine. A lecturer commented about this examination:

“We already received the students' marks on their training in PHC centres, in the community, and in the municipality secondary hospitals. If they passed those parts, at this examination they can only boost their score. However, we still have students who fail this exam, and she or he should redo the training or follow a remedial teaching programme.”

## **Comparison of the Programme on Paper and in Action**

We labelled aspects of the implemented CBE programme that contributed to the realisation of MFDU's objectives as strengths and aspects that may not be supportive in that regard as weaknesses (Table 2). Based on the latter and on the comparison of the objectives of the CBE programme at MFDU with the generic set of CBE objectives (Table 1), the following important weaknesses of MFDU's CBE programme were identified:

- (1) Much time is spent in community sites on instruction (e.g. lectures) that also could have been given at MFDU.
- (2) Students' work in the community is not based on joint identification with community members of the community's felt health needs.
- (3) There is rarely continuity evaluation or follow-up of the students' work in the community.
- (4) No systematic programme evaluations are carried out.

## Discussion

We applied the model of Coles and Grant to a case study evaluating the CBE programme of MFDU. Assessment of this programme in action in relation to its objectives and a set of generic objectives for CBE programmes (Kristina *et al.*, 2004) revealed some important discrepancies. In accord with the model of Coles and Grant, we have also gathered data on the students' perception of the CBE programme, which will be presented separately.

Two objectives of MFDU's CBE programme, addressing the management of a secondary hospital and the national urban health programme, had no counterpart in the generic list of objectives. We feel the management of a secondary hospital does not fit a CBE programme, and we suggest addressing this objective elsewhere in the curriculum. The Indonesian national urban health programme focuses on environment and occupational health. Thus, students working on this programme may address objectives 9 and 10 in the list of generic objectives (see Table 1).

About two-thirds of the objectives in the generic list were not recognized in the objectives for MFDU's CBE programme. Some of the objectives specified in the generic list may, however, be addressed by the programme in action, even if there is no specific objective in MFDU's programme outline. For example in week 3 of the CBE clerkship, students co-operated with midwives and community health workers. This activity could be interpreted to match generic objective 21 referring to participation in health teams. In a case like this, MFDU would be advised to adopt a similar objective for its CBE programme, which would secure future inclusion of the corresponding activity in the CBE programme. Other objectives from the generic list may be addressed in the non-CBE curriculum of MFDU. Some lectures and practicals in years 2–4 are likely to be relevant to prepare the students for their CBE programme. However, the current objectives of the CBE programme do not certify that these topics are revisited and applied when the students are posted in the community.

The major weaknesses identified in MFDU's CBE programme point at an underutilization of opportunities and potential jeopardization of the facilities in the community. On paper, 12 weeks in MFDU's curriculum are earmarked for CBE, but in practice only about half of that time is used for learning in the community. The rest is taken for lectures and activities in facilities remote from the community. On the other hand, more time is needed in the CBE programme to jointly establish the health needs to be addressed with the community and to assess the impact of activities undertaken (Mishriky, 1994; Wolff & Maurana, 2001). The current failure to involve the community in directing the students' activities and the lack of continuity and follow-up, may erode the community's interest in receiving MFDU students (Williams *et al.*, 1999).

Finally, we did not find any internal evaluation of MFDU's CBE programme. In line with this, we noted that the CBE planning group had not convened since

1991. We recommend MFDU to introduce programme evaluation for (the respective parts of) its CBE programme and annually discuss these evaluations in the planning group and education committee (Rotem, 1992).

CBE yields great opportunities for medical students to get acquainted with common health problems at the community level and to enter into cooperation with the community and their health providers to address these problems. In developed countries, CBE will often focus on primary health care as offered by general practices and family practitioners (Boaden & Bligh, 1999). In developing countries, the emphasis is usually more on cooperation with community members to jointly tackle their priority health problems (Khan & Baillie, 2003; Omotara *et al.*, 2004). We are impressed by the conditions created by MFDU and its partners for CBE. A thorough review of the CBE programme, perhaps taking the outcomes of this study into account, could turn MFDU's CBE programme into a fine example for other medical schools in Indonesia and beyond.

## Conclusion

Coles and Grant's method for curriculum evaluation proved suitable for evaluation of a CBE programme in a developing country. After additional comparison with our reference list of objectives for CBE programmes (Kristina *et al.*, 2004), reasoned suggestions for improvement of the programme could be derived.

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