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SPECIAL CONTRIBUTION

Faculty Development Initiatives at the College of Medicine & Health Sciences, Sultan Qaboos University, Muscat, Oman

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مبادرات تطوير أعضاء هيئة التدريس في كلية الطب والعلوم الصحية، جامعة السلطان قابوس، مسقط، عُمان

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ABSTRACT: Faculty development is necessary to improve and update teaching and learning methodologies. As such, a variety of learning activities have been designed to improve teaching competencies of individual teachers. The College of Medicine & Health Sciences at Sultan Qaboos University, Muscat, Oman, recognised the need for teacher training in order to bring faculty up-to-date in teaching and assessment methodologies. A programme of regular and one-time interventions consisting of short courses, workshops and a series of lectures was offered. Feedback from the participants and facilitators led to programme expansion and enhancement. This special contribution discusses the impact of the programme on faculty and the college.

Keywords: Teacher Training; Medical Education; Oman.

الملخص: يعد تطوير أعضاء هيئة التدريس ضروريًا لتحسين مناهج التدريس والتعلم وتحديثها. وعلى هذا النحو، تم تصميم مجموعة متنوعة من الأنشطة التعليمية لتحسين كفاءات التدريس للمعلمين. وقد أدركت كلية الطب والعلوم الصحية بجامعة السلطان قابوس، مسقط، سلطنة عُمان، الحاجة إلى تدريب المعلمين من أجل تطوير أعضاء هيئة التدريس في منهجيات التدريس والتقييم. فقد تم توفير برنامج يقدم بطريقة منتظمة أو لمرة واحدة ويتكون من دورات قصيرة وورش عمل وسلسلة من المحاضرات. ودلت الآراء الواردة من المشاركين والميسّرين إلى توسيع البرنامج وتحسينه. وتناقش هذه المساهمة الخاصة تأثير هذا البرنامج على أعضاء هيئة التدريس والكلية.

الكلمات المفتاحية: تدريب المعلمين؛ التعليم الطبي؛ عُمان.

It has been long assumed that knowing how to teach is part of content expertise. Even when it was recognised as a separate skill, it was assumed that teaching expertise can be learned through apprenticeship.[1] It is now understood that to develop the art of teaching, teachers require training.[2] Many medical schools have realised the importance of teacher training to improve faculty performance in their academic instructional roles and most schools now offer faculty development programmes to enhance faculty members' teaching and assessment skills. A broad range of topics and learning activities and a variety of approaches which are based on educational theories have emerged to improve teachers' teaching competencies.[1–5] The need for these programmes has emerged as a result of new trends in teaching and assessment, curriculum changes, evolving professional requirements and accreditation and quality assurance bodies.[6] McLean *et al.* summarised the major trends and driving forces in medical education which have potentially influenced faculty development over the years.[7] Theories of student learning, reforms to make learning environments more student-centred, self-directed learning trends, an emphasis on outcome-based education and developing competencies around patient safety and professionalism, a growing interest in evidence-based medicine and changing patterns of healthcare have all led to the evolution of faculty development.[7]

Faculty development programmes are delivered to clinicians, basic scientists, dentists, nurses and allied health professionals, and the interventions in which these practitioners learn are designed to include individual and mixed participation and focus on teaching in classrooms and clinical settings. Topics such as teaching and learning approaches, acquisition of specific teaching skills, assessment, curriculum development, leadership and scholarship are covered. The type of programmes offered as part of these trainings include fellowships and scholarships, short

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courses, seminar series, peer observations, self-study and web-based trainings and objective structured teaching encounters (OSTEs). These experiences are delivered through instructional methods including small group discussions, didactic lectures, role-play, films and videotaped reviews of performance and experiential learning.[8]

Certain features of these faculty development programmes have proven important to enhance faculty teaching effectiveness, including delivering information about principles of teaching and learning using diverse educational methods, as well as providing feedback and supporting these programmes through experiential learning approaches.[9] Prolonged exposure to trainings and longitudinal programmes have been found to be more effective than one-time interventions as well as trainings centring on content relevant to the educational responsibilities of participants.[8,10–12] More recently, there has been a surge in advocacy for faculty development that takes place informally in the workplace environment through communities of practice (COPs). Such training leads to faculty developing specific skills and expertise. This outcome is attributable to the authentic environment and participants' abilities to learn through experience, observation, reflection and feedback.[10,13]

Systematic evaluation of faculty development programmes is important to make sure that intended outcomes have been achieved and to assess whether any aspects of the programme need to be revised before future trainings take place. The Kirkpatrick model is used to evaluate programmes according to participants' reactions and knowledge acquired, their consequential behaviours and the results of the learning.[14] Many faculty development programmes use self-administered questionnaires to evaluate satisfaction with the educational activities and individual sessions (i.e. reaction).[8] Such data, although useful for making changes to a programme and following-up with participants about their planned changes, does not provide the organisers information about the knowledge or skills that participants have gained. Changes in behaviour can be assessed through commitment-to-change statements from participants, follow-up participant surveys or interviews and observations from participants, students, residents, programme coordinators and external evaluators, to learn if any change has occurred.[15–18] The ultimate evaluation would be achieved through hard-to-measure outcomes such as organisational change or changes in student behaviour or patient outcomes that are multiplicative and reciprocal. These types of outcomes are rarely reported.[8,19]

There are several challenges and barriers related to faculty development such as a lack of institutional support in terms of the value assigned to teaching, teachers' misconceptions about their own abilities and benefits of the training and the difficulty of measuring long-term outcomes of faculty development programmes.[7]

The College of Medicine & Health Sciences (COMHS) at Sultan Qaboos University (SQU), Muscat, Oman, recognised the need for teacher training and bringing faculty up-to-date in teaching and assessment methodologies. The overarching objective of making such improvements was to enhance the educational mission of the COMHS. In 2002, the first medical education conference at SQU was held. The conference was preceded by a three-day "train the trainer" course in Health Professions Education that was conducted by internationally renowned faculty in medical education and was attended by many senior faculty. The course was received so well by the college's faculty that the dean at the time decided to institute this as a regular bi-annual activity. As such, the dean appointed a small group of faculty to organise the course on a regular basis. These individuals, who became the core drivers of faculty professional development initiatives, had different departmental affiliations and either formal qualifications or a strong interest in medical education. Eventually, this core group proposed the formation of a medical education unit which was established in 2006 and faculty development activities continued.

This special contribution describes the need for such a programme in the COMHS. This paper presents information on the programme's inception and implementation as well as ways to evaluate its outcomes. The discussion evolved from a teaching/learning framework and learning theories, both of which have contributed to a fundamental understanding of evidence-based practice. Finally, future directions for faculty development in the COMHS at SQU are proposed. It is hoped this information will provide faculty development lessons to institutes with a similar set-up and experiences as the COMHS.

Identifying the Need for Faculty Development in the College of Medicine and Health Sciences

NEW CURRICULUM AND ASSESSMENT

The implementation of an outcome-based curriculum in 2008 followed by an aligned new assessment system created two types of need in the COMHS. First, faculty recognised a need for the development of specific

instructional skills related to teaching and assessment for all those holding teaching responsibilities. Second, the faculty saw a need for leadership skills for curriculum planners and change agents.

The COMHS and SQU Hospital (SQUH) have a total teaching staff number of approximately 336. In addition, there are 204 affiliated faculty from Ministry of Health (MOH) hospitals and health centres, the Armed Forces Hospital (AFH) and the Royal Oman Police Hospital. The faculty needed to be trained regularly to update their knowledge base in tandem with recent advances in educational methodologies. Additionally, they needed to improve their teaching skills and align them with new curricular requirements.

In 2003, a survey of assessment practices in the COMHS demonstrated the need for specialised workshops to enhance the skills of faculty in written, practical and clinical competence as well as professional behaviour assessment and standard setting in examinations. In 2007, another questionnaire was sent to all staff in the COMHS for their input about an area in medical education in which they needed training. In addition, participants who attended different educational workshops held in the college were asked, at the end of each workshop, to prioritise follow-up topics of medical education they wanted to learn more about from a provided list. After analysis of this feedback, these topics were identified as assessment, course and curriculum design, teaching and learning, e-learning and research in medical education.

In 2006, COMHS became a member of the International Databases for Enhanced Assessments and Learning (IDEAL) consortium, an international group dedicated to sharing medical student assessment information. One purpose of this group is to promote research for developing international standards to assess medical competence. To assist in developing these standards, specially designed workshops were needed to increase awareness of current assessment practice.

TRAINING NEEDS OF THE MEDICAL EDUCATION UNIT CORE GROUP

A small group of faculty members took part in constructing the proposal for what would become the COMHS Medical Education Unit. These individuals were expected to be a core group of trainers who would contribute to the unit's mission of faculty development. It was imperative that these trainers would be formally qualified in medical education. Although it would have been ideal for these individuals to pursue qualifications in medical education (e.g. a certificate, diploma or master's degree), an in-house programme was developed instead. Decision-makers determined that such a programme would provide adequate training, reach a wider audience and support faculty members' development without requiring them to take time off or be away from professional duties for long periods.

DEVELOPMENTS IN MEDICAL INFORMATICS AND USE OF SIMULATORS IN MEDICAL EDUCATION

The establishment of the clinical skills laboratory in 2010 resulted in the realisation of a need for faculty involved in teaching clinical skills to be trained in new teaching and assessment methodologies involving simulators and mannequins, computer-based simulations, virtual reality and simulated patients.

Programme Design

To facilitate these changes to teaching approaches and assessment, it was important to adopt an outcome-based approach as change of behaviour was the intended outcome.[20,21] The programme needed to increase faculty awareness of current trends in medical education, introduce new medical concepts and improve practitioners' current practice. The objectives of the educational activities that would support this change (e.g. courses, workshops, lectures, etc.) were formulated in terms of knowledge, skills and attitudes that participants could acquire and implement as a result of attending these courses. Resources available in terms of funding, facilities and facilitators were identified in addition to the number of participants who could be accommodated. Participation from a variety of specialties was sought because learning in interprofessional teams enables practitioners to work better together.[22] The teaching and learning strategies adopted applied the andragogical principles of social learning and motivation where participants were provided with opportunities to reflect on their practice, design relevant educational activities and receive feedback from their peers.[23]

The target audience were multidisciplinary and interprofessional, so it was important to start with a team who could contribute a variety of skills, subject matter and medical education expertise to ensure the success of the programme.[23] Thus, a small group of faculty with different departmental affiliations who had either a formal qualification or a strong interest in medical education were given the responsibility of organising the programme.

Implementation

The literature shows that faculty development programmes range from longitudinal fellowships to short courses and seminar series, peer observations, self-study, online training and OSTEs.[8] Programmes can be delivered with the support of small-group discussions, didactic lectures, role-plays, films and analyses of videotaped performances as well as through experiential learning approaches.[8] The delivery format should be dictated by the desired outcomes and the research available on the link between the approach used and student learning models.[7] In the COMHS, the format of the faculty development activities ranged from short courses/workshops, half-day activities and a series of lectures. These approaches were chosen because the faculty development aimed to enhance faculty members' general skills in teaching, learning and assessment. Some of these activities were offered on an annual basis while others occurred only once or twice depending on specific needs.

REGULAR COURSES

The Certificate Courses in Health Professions Education

The Certificate Courses in Health Professions Education (CHPE) is a three-day "train the trainer" workshop in Health Professions Education which was originally initiated by the Gulf Cooperation Council Deans' Forum and implemented for the first time in Jeddah, Saudi Arabia. When the first medical education conference was held at SQU in 2002, it had been preceded by the CHPE, which was attended by many senior faculty. The CHPE course was well received, and it was adopted as a regular activity of the college. Since 2002, 17 CHPE courses have been held and approximately 700 faculty have been certified.

The original CHPE covered several competency areas including how to plan and implement an educational activity and evaluate whether learning had taken place. The objectives were that by the end of the course participants would be aware of principles of adult learning and teaching and also of trends in healthcare practice and education. In addition, the course aimed for participants to develop skills in planning an educational activity systematically, communicating with large and small groups, facilitating student learning in cognitive, psychomotor and affective domains and selecting and using appropriate instructional media. The final objective was that participants would become aware of the principles and purposes of student assessment in the three domains of learning.

Day one of the CHPE course included the principles of learning, teaching and curriculum design; day two covered skills in facilitating student learning; and day three focussed on student assessment and teacher evaluation. This content included core principles and concepts that were applicable to a diverse range of participants and was conducted in the format of interactive lectures and small group activities that included micro-teaching, peer teaching, reflection and feedback. Reading material was given to the participants prior to the start of the course to provide background knowledge and enhance learning during the educational activities.

Although participation in the course was not mandatory for SQUH or COMHS faculty, as is the case in the majority of faculty development programmes, it was strongly recommended by the dean of the college.[8] Attendance to this course, however, was required for affiliation with the college for teachers who were coming from other health institutes in Oman. Most participants were SQUH clinical faculty followed by the COMHS's academic faculty and finally by MOH hospitals and institutes as well as the AFH. The fact that the bulk of the trainees for that first training came from SQUH and COMHS is likely because the course was held at the COMHS and was easily accessible to the SQUH and COMHS faculty. Participation was limited to 40–45 participants due to resource considerations and number of facilitators available.

The original CHPE course was conducted by three invited international faculty in medical education, two of whom had designed the course. These were professors of anatomy, surgery and family medicine as well as professors of medical education. A core group of local faculty were selected based on their qualifications, expertise, service on relevant educational committees and strong interest in medical education to support the international faculty. This core group consisted of faculty (i.e. associate professor, assistant professor, senior consultant, consultant, senior registrar) who had departmental affiliations in biochemistry, anatomy, child health, medicine, surgery and radiology. Some held formal teaching qualifications, including masters or postgraduate diplomas in medical education. Eventually, this group of 'local experts' expanded to include interested members from other departments, and the group became trained to the level at which they could replace the international faculty who had originally conducted the CHPE course.

Student Assessment Workshop

Following feedback from participants of the CHPE about an area of medical education that needed

further development, a three-day workshop devoted exclusively to the topic of student assessment was designed and conducted for the first time in 2004. The workshop became an annual activity attended by approximately 350 faculty who had previously attended the CHPE. The competencies covered were principles of student assessment including the characteristics of a good test, skills in designing newer methods of student assessment and skills in using test scores for making educational decisions, particularly in relation to setting standards.

The first day of the workshop covered principles of student assessment, characteristics of a good test and testing higher cognitive skills. The second day focused on testing psychomotor, communication and professional skills. Finally, the third day covered setting and maintaining examination standards and making decisions based on test scores. As with CHPE, the topics were delivered in the format of interactive lectures and small group activities.

One-time interventions

Table 1 shows short courses (1–5-day duration) that were conducted as one-time activities to reinforce the topics introduced in CHPE and Student Assessment Workshop (SAW) and provide in-depth training to faculty. Table 2 shows focused, half-day activities, that addressed a particular issue.[24] Some courses were offered once, while others were available to interested parties more than once. The short courses were conducted by internationally renowned facilitators in medical education while the half-day activities were conducted by local experts. Participant numbers ranged were 20–100 college, hospital and affiliated faculty.

Table 1: Short courses conducted at the College of Medicine & Health Sciences at Sultan Qaboos University, Muscat, Oman, from 2006–2015

Course	Duration in days	Year conducted
IDEAL Train the Trainer	3	2006
Curriculum Development and Assessment	2	2009
Continuous Assessment of Clinical Skills and Professional Behaviour	1	2010
Designing Integrated Questions	1	2010
Team-based Learning	5	2011
Advances in the Assessment of Clinical Competence	3	2012
Clinical Teaching and Feedback	2	2012
Facilitating Small Group and Simulation-Based Learning	2	2015

IDEAL = International Databases for Enhanced Assessments and Learning.

Lecture series

In 2011, a lecture series in medical education was initiated. The series consisted of one-hour presentations that offered information on new topics or acted as refreshers on certain aspects in need of consolidation [Table 3]. Attendance to this activity, however, was not satisfactory, perhaps because the topics covered were not perceived as being as important as those offered during courses or workshops.

Programme Evaluation and Outcomes

Evaluations of faculty development activities in the COMHS (i.e. CHPE, SAW and short courses) were collected via self-reported data. The participants' responses showed a high level of satisfaction (unpublished data). The majority of participants rated the courses as very good, agreed that attending these courses/workshops would help them in their responsibilities as teachers and indicated their

Table 2: Half-day activities conducted at the College of Medicine & Health Sciences at Sultan Qaboos University, Muscat, Oman, from 2007–2018

Activity	Year conducted
Item analysis workshops	2007 and 2008
Instructional design for online courses	2010
How to design a poster using PPT	2010
Using aspects of medical informatics to assist with research	2010 and 2011
Moodle workshops	2010, 2011
IT workshops	2009, 2010, 2011 and 2012
Use of IDEAL databanks	2007, 2008, 2009, 2010 and 2011
Editing and manipulating images for medical purposes	2012
Data analysis using SPSS	2012 and 2013
Academic advising	2014
Online medical education resources	2014
Constructing and grading a mini-CEX	2015 and 2016
Team-based Learning	2017 and 2018

PPT = PowerPoint; IT = information technology; IDEAL = International Databases for Enhanced Assessments and Learning; SPSS = Statistical Package for the Social Sciences; CEX = clinical evaluation exercise.

Table 3: Lecture series topics in medical education offered at the College of Medicine & Health Sciences at Sultan Qaboos University, Muscat, Oman, from 2011–2016

Topic
Designing study guides
How good is good enough?
Team-based learning
Open access publishing
Tips on how to create the best PPT presentations
OSTE
Edgar Dales learning pyramid
Item analysis of MCQs

PPT = PowerPoint; OSTE = objective structured teaching examination; MCQ = multiple choice question.

willingness to apply what they learned in their workplace. A substantial number of participants who were followed-up after attending CHPE and SAW reported that they reviewed and changed their teaching objectives, wrote new teaching objectives, introduced changes to their teaching methodologies, reviewed and constructed new questions and took steps to evaluate their teaching. This outcome is consistent with what has been reported in the literature.[10] For example, Leslie *et al*. reported that participants of faculty development programmes showed high satisfaction with the content and teaching methodologies and that they acquired knowledge of educational principles and teaching strategies; they also reported changes in their teaching behaviours.[10]

Open comments collected on content, organisation, duration, teaching formats and future needs resulted in introducing slight changes to the regular course over time to suit the needs of the curriculum and the course participants . New topics such as team-based learning were introduced while others were removed and converted to specific learning topics that were offered separately from the regular courses.

Several college outcomes can be attributed, at least in part, to the faulty development programme. In 2013, the COMHS of SQU was fully accredited by the Association for Medical Education in the Eastern Mediterranean Region in cooperation with the World Federation for Medical Education for a period of 10 years.[25] In 2014, it was selected as the best medical college in the Arab world by the Sheikh Hamdan Bin Rashid Al Maktoum Award for Medical Sciences.[26,27] These achievements cannot be attributed to the faculty development programme alone. Curricular changes, a new assessment system and faculty development in the postgraduate programme were occurring at the same time. The faculty development programme, nevertheless, made a substantial contribution.

Other reported outcomes of faculty development programmes were new responsibilities associated with teaching, assessment and leadership positions and increased scholarship and faculty promotion.[10] Most faculty in the COMHS's educational and leadership positions have participated in the faculty development programme. However, it is difficult to link these achievements exclusively to the faculty development programme. Many of the skills required for these positions, however, are developed through such programmes.[10]

Future Directions

Faculty development at the COMHS has concentrated on bringing faculty up-to-date on current trends in medical education and improving their general skills as they relate to the need of the new curriculum and assessment. These skills need to be consolidated and built upon to include focused workshops on topics such as blueprinting, continuous assessment of clinical skills, question banking and teaching and assessment of professionalism as these are the current issues under discussion in the COMHS. To ensure transfer of skills and knowledge into the workplace, a move from workshops to the workplace and taking advantage of experiential learning is being advocated.[19,28] Therefore, accessible and effective faculty development that expands the teaching expertise of clinicians and moves beyond the apprenticeship model is needed.[29,30] Such professional development could include strategies that foster COPs and harness the added value of social and professional networks.[8,10,31,32]

In the long term, an ongoing longitudinal programme leading to teaching certification is needed. These longitudinal programmes have shown to have multiple benefits. Apart from improved teaching performance, participants in such programmes have been found to be more self-aware, acquired new leadership roles and increased their academic productivity. Such programmes also foster the creation of social networks and develop a sense of community.[8]

There is also a need for an ongoing programme which would lead to a degree in medical education for individuals who are interested in such a career. Completing such a programme would link to the expectation that these individuals would play a major part in future curriculum and assessment design, implementation and evaluation and as facilitators in faculty development activities. Implementing a degree in medical education would require institutional

support. Without such support in the form of release time and academic promotion, a change in the organisational culture that fosters and values learning would not be possible.[8]

Conclusion

Implementation of a faculty development programme needs to respond to specific institutional needs. In this article, a programme which responded to the needs of the COMHS has been described. A programme of regular and one-time interventions following the principles of teaching and learning was adopted at SQU's COMHS and was perceived as beneficial based on the feedback from participants and facilitators. The programme had a substantial impact on the college based on improvements witnessed after its implementation.

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