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WEB PAPER

Clinical teaching improvement: The transportability of the Stanford Faculty Development Program

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Abstract

Background: The Stanford Faculty Development Center (SFDC) at Stanford University developed a teaching improvement course for medical teachers that has been widely disseminated using a train-the-trainer model. We were curious to see if cultural factors might influence the applicability and impact of the course when delivered to non-American participants by a facilitator from that culture.

Methods: A Swedish anaesthesiologist at Uppsala University Hospital, Sweden, was trained in October 2004 at Stanford University. From January 2005 to March 2007 he delivered five faculty development seminar series at Uppsala University Hospital to 40 physicians from different departments. Participants rated the usefulness of the seminar series and retrospective pre- and post-seminar ratings were used to assess effects on participants' teaching skills and behaviours.

Results: Participants rated the seminars as highly useful ($M = 4.8$, SD = 0.4). Participants' ratings of their teaching ability indicated significant increases across a variety of clinical and non-clinical teaching settings ($p < 0.001$), and positive changes in teaching behaviours were found for all seven educational categories assessed ($p < 0.001$).

Conclusions: This faculty development model is highly transportable to medical teachers in Sweden, and capable of producing positive results, consistent with those found in the United States.

Introduction

Education is a major mission at every teaching hospital. To provide clinical teachers with necessary teaching skills, faculty development has received increased attention and several different programmes exist. In a recent survey almost half of the teaching hospitals in the United States reported ongoing faculty development in teaching skills, but more than 75% responded that their programmes were in need of faculty development (Clark et al. 2004). The prevalence of faculty development in teaching skills among European teaching hospitals is unknown.

The Stanford Faculty Development Center (SFDC) for medical teachers at Stanford University has developed a teaching improvement course that has been widely disseminated using a train-the-trainer model. The core of this course is an educational framework with seven categories that can be used to analyse and improve clinical teaching. Since 1986 a 1-month 'Clinical Teaching' facilitator-training programme has been delivered at Stanford University School of Medicine to prepare selected medical faculty to serve as in-house faculty developers at their home sites. The participants for this training programme have mainly been selected from institutions in the United States. To date 128 clinicians from 85 institutions have completed the facilitator-training programme and successfully disseminated the teaching improvement course to well over 2000 faculty and residents at their home sites. Evaluation of the home-site seminars delivered by trained facilitators to colleagues at their own institutions across the United States has revealed positive effects on knowledge, skills and attitudes related to teaching (Skeff et al. 1992c). American facilitators have also successfully implemented the course abroad (Wong & Agisheva 2004). Ten facilitators from other countries have returned to their home countries to run the course for colleagues. We were curious to see if cultural factors might influence the applicability and impact of the course when delivered to non-American participants by a facilitator from that culture. Recently it was demonstrated that the instructor-course for trauma care teaching of a standardised American concept revealed significant variations across three continents, although originating from the same course material (Kilroy 2007).

Practice points

- A faculty development programme originating from Stanford University was successfully transported by a Swedish facilitator to physician educators at Uppsala University, Sweden.
- The Stanford series of seven 2-hour seminars resulted in positive changes in teaching behaviours as assessed by participants' self-ratings.

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Although the SFDC curriculum has been disseminated by foreign facilitators for over a decade, a formal evaluation of its cross-cultural applicability has not yet been performed. With the ongoing and growing dissemination of the SFDC teaching improvement course abroad, we sought to document its perceived effectiveness outside the United States.

This study was undertaken to investigate the impact of the SFDC's course on medical teachers from a variety of departments affiliated with Uppsala University Hospital, Sweden. We hypothesised that a faculty development course for clinical teachers developed in the United States could successfully be implemented in Sweden by a Swedish facilitator trained in the United States.

Methods

Description of the SFDC's clinical teaching programme

The SFDC's clinical teaching course is thoroughly described elsewhere (Skeff 1992c). In brief, the general goals of the course are (1) to enhance versatility as a teacher, (2) to improve the ability to analyse teaching using a seven-component educational framework (see below), and (3) to provide a forum for collegial exchange regarding teaching. The seminar series addresses the following educational categories of the teaching process: learning climate, control of session, communication of goals, promotion of understanding and retention, evaluation, feedback and promotion of self-directed learning. Seven 2-hour seminars address one educational category at each seminar. The 2-hour seminars include a brief 'mini-lecture' on the category, analysis and discussions of videotapes re-enactments of clinical teaching interactions, and role-play exercises with videotape review for the participants to practice teaching behaviours. At the end of each session the participants formulate personal goals for improving teaching behaviours regarding the educational category. Subsequent sessions start with a discussion of how the participants succeeded with the implementation of their educational goals. To stimulate further learning, readings related to the educational category are provided at the end of a session.

Intervention

From January 2005 to March 2007 five seminar series were conducted at Uppsala University Hospital, Sweden. Each seminar series was presented over a 7-week period and held during weekday evenings. The set up and design of the seminar series was faithful to the original SFDC course content and process. The course was held in Swedish, but all handouts, readings, and videotaped re-enactments of clinical teaching were not translated from the original course material from Stanford in English.

Facilitator

A Swedish anaesthesiologist (JJ) at Uppsala University Hospital (Department of Surgical Sciences), Sweden, was trained in October 2004 at the 1-month SFDC facilitator-training programme at Stanford University to become a facilitator for faculty development in clinical teaching. With the exception of the training at Stanford, the facilitator had no other history of participation in faculty development. The same facilitator conducted all five courses.

Participants

Seminar participants were recruited from several different departments within the hospital and participation was voluntary. Participants were recruited through e-mail invitations, announcements at institutional and departmental meetings, and letters. A maximum of eight participants per seminar series was allowed and priority was given to faculty with substantial involvement in clinical teaching. Participation in at least four out of seven seminars was considered mandatory for course completion.

Evaluation of programme effectiveness

We collected two types of evaluation data: (1) participant ratings of the seminars' usefulness and the seminar leader's performance were obtained using a post-seminar questionnaire, (2) participant assessment of the effects of the seminars on their knowledge, skills and attitudes toward teaching were obtained with post-intervention questionnaires, with items requesting quantitative ratings and open-ended responses. Retrospective pre- and post-seminar ratings of 29 different teaching behaviours related to the seven educational categories were used to assess effects on participants' teaching behaviour. These self-report ratings of teaching performance were collected immediately following the seminar series (post-seminar). Participants were asked to rate their teaching performance on a 5-point scale (1 = strongly disagree, 5 = strongly agree) 'currently' (i.e., post-intervention) and 'before the seminars' (i.e., pre-intervention, but retrospectively). The retrospective pre- and post-intervention design was used because we believed this comparison provides a more sensitive and valid measure of the changes associated with this type of training than the traditional pre- and post-intervention comparison (Skeff 1992c).

Data analysis

Quantitative data were analysed using SPSS; p-values of ≤ 0.05 were considered statistically significant. Scores for each of the seven educational categories were calculated by averaging ratings across the clusters of items related to each category. Ratings are presented as means (SD). Paired t-tests were used to compare participants' retrospective pre- and post-seminar means for self-ratings of the different educational categories and of overall teaching performance. Unpaired t-tests were used for comparisons related to sex and institutional affiliation (surgical vs. non-surgical). For age and years of teaching experience, participants were divided into terciles, and groups were compared for each of the seven educational categories using ANOVA. Age terciles included 29–39, 40–49, and 50–60 years. Years of teaching experience were divided into 1–7,

Table 1. Departmental affiliation of seminar participants ($N = 40$).

Department	*N*
Anesthesia[a]	9
Internal Medicine	5
Orthopedics[a]	5
General surgery[a]	2
Gynecology	3
Psychiatry	3
Vascular surgery[a]	4
Neurologic surgery	2
Radiology	2
Thoracic Surgery	2
Urology[a]	2
Plastic Surgery[a]	1

Note: [a]Surgical departments.

Table 2. Seminar participants' mean ratings of the seminar leader ($N = 40$).

	M (SD)*
Made sessions interesting and comfortable	4.90 (0.30)
Made efficient use of time	4.74 (0.44)**
Made goals of sessions clear	4.78 (0.70)
Explained concepts clearly	4.59 (0.79)**
Adequately assessed participants understanding of the material	4.33 (0.69)
Provided effective feedback on participants' comments and role-play performance	4.60 (0.67)
Stimulated your interest in learning further about topics in education (medical or general)	4.75 (0.49)
Overall	4.67 (0.35)

Notes: *Scale: 1 = low, 5 = high.
**$N = 39$.

8–14, and 15–20 years. Open-ended responses regarding anticipated barriers to implementing personal teaching goals were analysed qualitatively by coding and content analysis for identification of themes.

Results

Forty faculty members participated in this study. Twenty-one (52.5%) were males and 19 (47%) were females. The average age was 41.6 years (SD: 7.0, Range: 29–60 years) and the mean length of teaching experience in medicine was 8.4 years (SD: 5.0, Range: 1–20 years). Participants represented a broad spectrum of surgical and non-surgical departments (Table 1); 23 (57.5%) participants were affiliated with surgical departments and 17 (42.5%) with non-surgical departments. Fourteen (35%) had previously participated in faculty development activities. The vast majority described their participation as voluntary (24 of 29 respondents or 83%); 5 of 29 respondents (17%) indicated their attendance was required. All participants completed the seminar series, and the average attendance at a seminar was 90%. The response rate to the post-seminar questionnaire was 100%.

Evaluation of seminar usefulness and seminar leader performance

Participants in all five seminar series rated the seminars as highly useful (*M*: 4.82, SD: 0.39; Scale: 1 = definitely not, 5 = definitely yes). Their ratings of the seminars' anticipated usefulness ('prior to the seminars') were significantly lower (*M*: 3.95, SD: 0.60; $p < 0.001$). Participants indicated they would highly recommend the seminar series to their colleagues (*M*: 4.73, SD: 0.51; Scale: 1 = definitely not, 5 = definitely yes). They gave high ratings to the seminar leader's performance (overall *M*: 4.67, SD: 0.35; Scale: 1 = strongly disagree, 5 = strongly agree) (Table 2).

Evaluation of seminar impact on teaching behaviour

Immediately after the seminars, participants rated their own teaching performance on the seven educational categories taught in the seminars as they perceived it to be 'currently' (i.e., post-seminars) and 'before the seminars' (i.e., retrospectively). Statistically significant retrospective pre/post differences were found for all seven educational categories ($p < 0.001$) (Table 3). These significant differences represented changes in a positive direction, that is, towards improved teaching performance.

Table 3. Seminar participants' mean self-ratings of teaching performance by educational category ($N = 40$).

	*Before *M* (SD)**	After *M* (SD)	*t*-test	*p****
Learning climate	3.61 (0.64)	4.14 (0.42)	7.74	<0.001
Control of session	3.04 (0.58)	3.68 (0.50)	7.52	<0.001
Communication of goals	2.60 (0.70)	3.74 (0.50)	14.77	<0.001
Promotion of understanding & retention	3.26 (0.66)	3.81 (0.50)	7.79	<0.001
Evaluation	2.80 (0.61)	3.60 (0.47)	12.77	<0.001
Feedback	2.62 (0.58)	3.55 (0.41)	11.59	<0.001
Promotion of self-directed learning	2.68 (0.75)	3.53 (0.52)	8.60	<0.001
Overall	2.96 (0.40)	3.73 (0.29)	15.23	<0.001

Notes: *'Before' indicates retrospective-pre-rating made post-seminar.
**Scale: 1 = strongly disagree, 5 = strongly agree.
***p-value for two-tailed paired t-test.

Participants' ratings of their teaching ability indicated significant retrospective pre- to post-seminar increases across a variety of clinical teaching settings, including inpatient, outpatient and lecturing ($p < 0.001$) (Table 4). Differences in pre- to post-intervention mean ratings of teaching behaviours were independent of sex (p-values for independent t-tests ranged from 0.131 to 0.792; $N = 40$: $n = 21$ men, $n = 19$ women), surgical science departmental affiliation (p-values for independent t-test ranged from 0.216 to 0.732; $N = 40$: $n = 23$ surgical science departments, $n = 17$ other departments), age (p-values for 1-way ANOVA ranged from 0.489 to 0.906, $N = 40$: $n = 17$ aged 29–39 years, $n = 16$ aged 40–49 years, $n = 7$ aged 50–60 years), and years of teaching experience (p-values for 1-way ANOVA ranged from 0.146 to 0.839; $N = 33$: $n = 18$ for 1–7 years, $n = 9$ for 8–14 years, $n = 6$ for 15–20 years).

Table 4. Seminar participants' mean self-ratings of overall teaching performance across settings ($N = 40$).

	*Before *M* (SD)**	After *M* (SD)	*t*-test	*p****
Overall teaching ability	3.26 (0.55)	3.92 (0.35)	7.86	<0.001
Clinical teaching (inpatient)	3.35 (0.59)	4.00 (0.47)	7.33	<0.001
Clinical teaching (outpatient)	3.16 (0.64)	3.81 (0.40)	5.91	<0.001
Teaching as a lecturer	3.28 (0.75)	3.88 (0.61)	6.96	<0.001

Notes: *'Before' indicates retrospective-pre-rating made post-seminar.
**Scale: 1 = low, 5 = high.
***p-value for two-tailed paired t-test.

Anticipated barriers to implementing personal teaching goals

We asked participants to describe any anticipated barriers to their implementation of the personal teaching goals they had formulated at the end of each seminar. Three types of barriers emerged from the thematic analysis of 38 open-ended responses ($N = 40$). The most frequently mentioned barrier was insufficient time (50%), followed by personal limitations (21%), and institutional climate or organisational factors (18%). Among the personal limitations mentioned were the following: 'Reluctance to try something new,' 'Old habits,' 'Laziness – going back to bad old ways of teaching,' 'Myself!'. Examples of institutional barriers included: 'The given structure in many lectures,' 'Non-conducive environment – learning climate,' 'Not enough continuity with learners,' and 'Curricula of bad quality.' Eleven percent of the participants anticipated no barriers to implementing their goals to change their own teaching.

Discussion

Our results demonstrate that the SFDC Clinical Teaching course can successfully be exported and facilitated by a non-American facilitator outside the United States. Participation in the course was considered to be highly useful and led to significant changes in teaching behaviours. These changes were independent of gender, departmental affiliation, age, and years of teaching experience.

The SFDC has successfully used a train-the-trainer model to disseminate this faculty development curriculum to thousands of medical teachers across the United States. The training programme at Stanford ensures that every facilitator gets appropriate levels of teaching competence to deliver the course at their home institution (Skeff 1992a; Stratos et al. 1997; Skeff et al. 1999; Berbano et al. 2006). However, when the facilitator brings the course to another country/culture, two risks can jeopardise the effects of the method, (1) the risk of drift and localisation of course delivery and (2) the lack of appropriateness of the method for the new culture. Either issue may diminish the applicability and impact for course participants. A widespread model for trauma care teaching is the Advanced Trauma Life Support Instructor Course (ATLS IC). This course is heavily copyrighted with detailed instructions of how to utilise the teaching materials with regulations set by a central administration, located in the United States. In a recent observational study, it was demonstrated that the ATLS IC had substantial variations in delivery across the continents despite the strict regulations (Kilroy 2007). Thus, when facing a new culture, an exported course might undergo local alterations possibly affecting its impact. When the present SFDC programme was exported, the facilitator tried to be completely faithful to the original concept. We believed that no deliberate change to the content or teaching mode was necessary when transferring this programme because of the many similarities in medical education between the United States and Sweden. This study demonstrates that the SFDC's curriculum can be exported successfully, having substantial impact of the participants' teaching skills. The fact that tailoring was not considered necessary can naturally have positively affected the programme's transportability. In addition, Swedish medical teachers have had extensive exposure to and positive reactions to American concepts in other areas such as trauma (ATLS) and acute medical support (AMLS). Thus, the fact that the present programme in clinical teaching originates from the United States could possibly have positively influenced the degree of acceptance and perceived usefulness. Although the time frame from the facilitator's training at Stanford to delivery of the seminar series in Sweden was relatively short, the results demonstrate that there was a consistently strong impact of the course on the Swedish participants. This course also remained effective across 3 years of implementation and across a variety of teachers.

One possible reason for the success of this method is its non-prescriptive approach to teaching improvement. Although designed to encourage new ways of thinking about teaching and use of specific teaching behaviours, the method relies on, and in fact emphasises, the individual teacher's option to make teaching decisions based on his/her own goals and understanding of the teaching situation in question. The clinical teaching process is complex, and many teachers probably tend to stick to a limited repertoire of teaching behaviours, perhaps tied to successful prior experience or personal preference. To increase their educational effectiveness, most teachers can benefit from considering and making behavioural adjustments, depending on, for example, learner status, the nature of the content being taught, or the context in which the teaching interaction occurs. The SFDC's Clinical Teaching seminars' non-prescriptive approach encourages teachers to enlarge their repertoire of teaching behaviours, considering their own desired educational outcome in their choice of teaching behaviours. Thus, the course content is designed to be useful for all participants regardless of previous level of teaching experience or expertise. This study demonstrates that participation in the course was perceived as highly useful despite the amount of prior teaching experience. This was also supported by very high ratings regarding the recommendation of the course to colleagues. Earlier studies of the interaction of faculty development programmes with participants teaching experience have demonstrated inconsistent results. Baroffio et al. (1999) found that the greatest improvement from their

intervention occurred among inexperienced teachers while Litzelman et al. (1998) demonstrated that teachers with the most experience benefited most from the activity. In this study, the ratings of self-evaluation tests of teaching performance indicate that the seminars resulted in significant improvements in teaching behaviours regardless of participants' teaching experience.

While faculty development programmes are receiving increasing interest, critics argue that the scientific support for their usefulness is scarce. In a recent extensive review, it was concluded that although research on faculty development is laden with methodological limitations, key features characterising effective programmes could be identified (Steinert et al. 2006). These features include the use of experiential learning, provision of feedback, effective peer and colleague relationships, well-designed interventions following principles of teaching and learning, and the use of a diversity of educational methods within single interventions. All these features are characteristics of the SFDC teaching improvement seminars and may be relevant to the success of these sessions. We believe our results provide corroboration that these features contribute to improved effectiveness of faculty development methods. It is not possible, however, to determine the distinct effects of these elements in the method. An additional contributing factor for the high ratings of usefulness could be an overall growing interest for faculty development in Sweden. At Uppsala University Hospital this is particularly true for the last few years, when teaching issues have received increased attention. The Medical School at Uppsala University is at present undergoing major revision, including the introduction of problem-based learning. These changes could have made participants of this study more enthusiastic about changing their teaching behaviour as they faced about faced new daily challenges associated with teaching a problem-based learning curriculum.

In the implementation of the SFDC course at Uppsala University Hospital, course participants have been encouraged to recruit colleagues with key educational roles from the same department to attend the course, in order to possibly achieve departmental teaching improvements. Collegial recruitment was achieved in all but one department, resulting in a network of faculty members sharing the same educational framework as a basis for the ability of teaching interaction analysis. Departmental or institutional teaching improvements, however, were not the primary aim and consequently not investigated in this study. Approximately half of the participants originated from the same department as the facilitator, and former collegial collaboration could possibly influence the impact of a faculty development programme. However, institutional affiliation did not appear to affect the outcome in this study, indicating that this is not a major barrier for implementation of the SFDC course.

This study has several limitations. One limitation is that there was no control group and that the subjects were not randomly selected. The participants were selected due to their important positions regarding teaching, and consequently physicians interested in teaching were most likely to apply for the course. Therefore it is possible that they were more motivated than the average physician to improve their teaching. However, one could also argue that their teaching abilities already before the course were relatively high, and that the potential beneficial effects of a teaching programme would be higher for teachers with less enthusiasm and skill in clinical teaching. Ideally, teachers should be randomised to participate in the programme or not, and teaching skills could be evaluated before and after intervention.

Second, this study lacked delayed post-tests. Thus, the long-term effects on teaching behaviour among participants were not assessed. Although it has previously been demonstrated that participation in the SFDC course results in sustained changes in teaching behaviours (Stratos et al. 1997; Wong & Agisheva 2004), it remains an open question whether a faculty development programme limited to seven 2-hour seminars will substantially and permanently change participants' teaching performance. It is likely that ongoing interest in teaching and the development of teaching skills is crucial for maintenance of skills and further improvements. This seems particularly important in light of the institutional and personal barriers participants anticipated encountering as they attempted to change their teaching behaviour. Consequently, faculty development courses like this one should strive to elicit interest among participants for follow-up faculty development in medical teaching. In this study, the participants gave high ratings to their future interest in learning further about educational topics. In order to respond to this interest, and to keep the Stanford educational framework in mind, annual booster-seminars have been arranged for former participants at Uppsala University Hospital. In addition, due to its initial success, the programme has been repeated in its original structure twice and was also revised into a 2-day intensive course. Data from these seminars show similar positive results.

Third, the effectiveness data rely on self-report. Furthermore, as with the vast majority of papers regarding faculty development programmes (Steinert et al. 2006), this study lacks objective ratings of change in teaching behaviours or learning outcomes. In addition, the self-assessment in this study was performed immediately after the course when participants possibly could have been especially enthusiastic about the impact of the programme on their teaching behaviour. However, earlier studies of the SFDC's teaching improvement course have demonstrated a good correlation between teachers' post seminar self-assessment and students' ratings (Skeff 1992a).

Conclusion

The primary aim of this study was to determine whether the SFDC's Clinical Teaching course is applicable in a foreign culture when facilitated by a foreign teacher trained at Stanford. Our results demonstrate that this faculty development model is highly transportable to medical teachers in Sweden, and capable of producing positive results, consistent with those found in the United States. The design of the study precludes any conclusions as to whether the seminar series result in effects at institutional or student performance levels. Further studies are needed to examine these effects and to further elucidate cross-cultural considerations germane

to the development and implementation of faculty development programmes.

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