Impact of national context and culture on curriculum change: A case study

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Abstract

Background: Earlier studies suggested national culture to be a potential barrier to curriculum reform in medical schools. In particular, Hofstede's cultural dimension 'uncertainty avoidance' had a significant negative relationship with the implementation rate of integrated curricula.

Aims: However, some schools succeeded to adopt curriculum changes despite their country's strong uncertainty avoidance. This raised the question: 'How did those schools overcome the barrier of uncertainty avoidance?'

Method: Austria offered the combination of a high uncertainty avoidance score and integrated curricula in all its medical schools. Twenty-seven key change agents in four medical universities were interviewed and transcripts analysed using thematic cross-case analysis.

Results: Initially, strict national laws and limited autonomy of schools inhibited innovation and fostered an 'excuse culture': '*It's not our fault. It is the ministry's*'. A new law increasing university autonomy stimulated reforms. However, just this law would have been insufficient as many faculty still sought to avoid change. A strong need for change, supportive and continuous leadership, and visionary change agents were also deemed essential.

Conclusions: In societies with strong uncertainty avoidance strict legislation may enforce resistance to curriculum change. In those countries opposition by faculty can be overcome if national legislation encourages change, provided additional internal factors support the change process.

Introduction

The added value of an integrated medical curriculum compared with a traditional, discipline-based curriculum is widely recognised (Dornhorst & Hunter 1967; Schmidt et al. 1996; Gijselaers 1997; Papa & Harasym 1999). Integration between basic sciences (horizontal integration) and/or between basic and clinical sciences (vertical integration) favours for instance the recall of information (Barrows & Tamblyn 1980; Harden et al. 1984). Nevertheless, worldwide only approximately 30% of all medical schools adopted an integrated curriculum (Jippes & Majoor 2011). The same study also showed that medical schools with an integrated curriculum were spread unevenly across countries. This may be due to the change process of a curriculum being affected by cultural characteristics of the country in question. A high score on Hofstede's 'uncertainty avoidance index' in particular appeared to be significantly correlated with a relatively low number of medical schools with an integrated curriculum (Hofstede 2001; Jippes & Majoor 2008; Jippes & Majoor 2011). Hofstede ranked the uncertainty avoidance scores of 76 countries on an index ranging from 8–112 derived of 117,000 surveys from a databank of IBM employees. According to Hofstede (2001), uncertainty avoidance indicates "to what extent a culture programmes its members to feel either comfortable or uncomfortable in unstructured situations". "Uncertainty avoiding societies try to minimise the occurrence of such situations by strict laws and regulations, safety and security measures and on the philosophical and religious level by a belief in absolute truth" (Hofstede 2001). Medical schools in uncertainty avoiding countries may have little room to change their curricula due to strict laws and rules and faculty in these medical schools probably avoid changes as much as possible to prevent uncertain situations (Jippes & Majoor 2011).

Practice points

- Many schools worldwide adopt curriculum innovations successfully; some fail.
- Certain cultural characteristics proved to be unconducive for change.
- We describe how schools in an unconducive environment for change managed to successfully implement an integrated curriculum.
- Opposition was overcome through national legislation encouraging change in combination with a strong need for change, supportive and continuous leadership, and visionary change agents.

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Although factors influencing curriculum change in medical schools have received considerable attention in the literature (Mennin & Krackov 1998; Bland et al. 2000; Genn 2001), little is known about the impact of cultural factors on curriculum change processes (Simunovic et al. 2007; Wong 2011). Some factors influencing curriculum change may be universal. It appears to be increasingly recognised, however, that it is important to consider local context when educational models are being adopted across national borders (Frenk et al. 2010). Because introducing an integrated curriculum is a complex process involving radical organisational change, simply changing the regulations and procedures in a school will not suffice, and careful consideration of the cultural aspects may be a key factor to the success of a change operation (Evans 1996; Guilbert 2001; Prideaux 2004; Gijselaers & Harendza 2006). Although the impact of national culture characteristics on the success of innovation has been demonstrated in different organisations, such as small and medium-sized enterprises adopting a new type of software (Shane 1992; Everdingen & Waarts 2003), we are not aware of any studies addressing this phenomenon in medical schools. Since more insight into factors inhibiting successful curriculum innovation may prevent costly failures of ambitious change projects, we set out to explore the role of national cultural characteristics in the innovation of medical curricula.

Methods

Design

As the object of study we selected a country presenting the intriguing situation of a high score on Hofstede's uncertainty avoidance index combined with nationwide adoption of integrated medical curricula. The selected case was Austria, where all four medical schools recently implemented integrated curricula in spite of Austria's relatively high score of uncertainty avoidance of 70 on Hofstede's index (range 8–112) (Figure 1) (Jippes & Majoor 2011). This case was deemed to offer a fine opportunity for exploring mechanisms underlying curricular change in a country where the national culture may not be particularly conducive to change. We looked for (cultural) factors that could explain how medical schools managed the transition from discipline-based to integrated curricula. We explored this question by interviewing faculty members who had been actively involved in the curriculum change process ('key change agents') and by analysing relevant documents from various sources.

Setting and sampling

A non-probabilistic, snowball sampling approach was used (Goodman 1961). Faculty members from the medical schools of Innsbruck, Salzburg, Graz and Vienna were asked to have an interview if faculty members from the same or another Austrian university indicated that this person had been actively involved in the curriculum change process in their school ('key change agent'). Subsequently, existing study subjects were asked for possible future subjects ('snowball sampling'). After completion of the interviews the newly founded private

university of Salzburg was excluded, because it had not experienced change from a traditional to an integrated curriculum as it started an integrated curriculum from scratch. The first author (MJ) was responsible for data collection and analysis. In the four Austrian medical schools 23 individual interviews with key change agents were conducted in March 2011 (Table 1). In order to collect more contextual information also four experts on Austrian history, society and culture were interviewed, leading to a total of 27 interviewees. Although the sample appeared larger than necessary to reach saturation, its size enabled detection of consistent patterns across the universities and bolstered confidence in our understanding of the Austrian curriculum change process.

Interview lay-out

The semi-structured interviews lasted one to two hours and were conducted in English, which all respondents spoke fluently. Interview questions addressed factors influencing curriculum change as described by Bland et al. (2000) and possibly underexplored factors as described by Kanter (2008), including 'need for change', 'history of change' and 'barriers to implementation' (Appendix A). The interviews started with 'critical incidents': interviewees were asked to describe a negative and a positive critical incident during the change process in their school (Flanagan 1954). Documents on the curriculum change process, including reform proposals, articles and reports, were gathered from interviewees and the Internet.

Analysis

All interviews were audiotaped and transcribed verbatim. Transcripts were subjected to thematic analysis using Miles and Huberman's approach (Miles & Huberman 1994). Each interview was analysed line-by-line using open coding to explore factors influencing the change process with specific attention to cultural factors. After five interviews had been coded in Atlas-ti, similar or related first level codes were clustered into master codes. A codebook was drawn up containing cluster codes, sub-codes and code definitions, which was then used for coding of all transcripts. If deemed necessary, new codes were added and existing codes were extended or merged. In an iterative process the second author (ED) also coded three interviews. Divergent codings were discussed until consensus was reached. Eventually, all transcripts were reviewed again using the final codebook. Finally, cluster codes were combined in themes and a cross-case analysis was performed to compare themes within and between the three medical schools (Miles & Huberman 1994). Background documents were analysed for elaboration of the outcomes of the interviews. Final conclusions were drawn after the full analysis was concluded. To ensure representative results only factors described by multiple interviewees were used. The request to all interviewees to comment on a summary of the results led to minor corrections only, confirming the representativeness of our results.
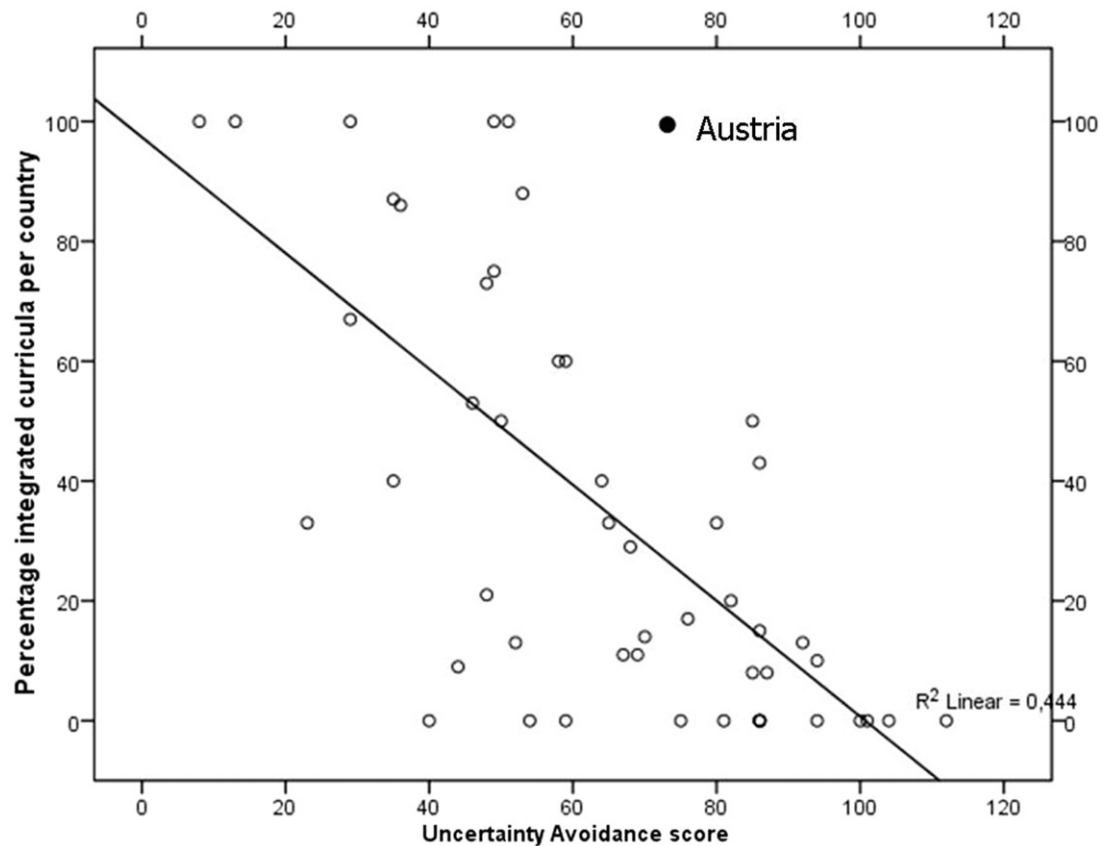
Figure 1. Position of Austria as a country with a high uncertainty avoidance score of 70 where all medical schools have an integrated curriculum (100%). Data derived from Jippes and Majoor (2011).

Table 1. Division of the 27 Austrian interviewees over the four Medical Universities, April 2011.

University	Innsbruck	Graz	Vienna	Salzburg	Other*	Total
Clinicians	1	4	0	2	0	7
Basic scientists	5	2	2	0	0	9
Other	1	3	2	2	4	12
Percent former members of curriculum change committee	67%	67%	100%	75%	Not applicable	77%
Total	6	9	4	4	4	27

*Other includes experts on Austrian history, society and culture.

Ethical considerations

All information collected has been treated confidential, research material had been coded and saved separately from the personal information of the participants and only the researchers had access to the data. After receiving an explanation of the aim and purpose of the study, voluntary participation and the confidentiality of the data, all interviewees gave written informed consent. Participants were handed Dutch syrup waffles as a small token of gratitude.

Results

The medical schools in Graz, Vienna and Innsbruck each changed their discipline-based curriculum into an integrated curriculum in 2002 (Table 2). Integrated curricula were chosen inspired by collaborations and field trips to other schools in Europe that were changing in a similar direction. Furthermore, interaction between staff members from the different Austrian medical schools – in particular at the Austrian medical education conferences 'Graz conferences' – stimulated change in a comparable direction (http://grazconference.at). Simultaneous change in the different schools also negated the previous argument of opponents: 'why would we change, the other medical schools are not changing'. In a curriculum change process several forces are at work, and success depends on driving forces gaining the upper hand over inhibiting forces (Figure 2). As the factors impacting on the reform showed strong similarities among the three schools, results apply to all schools and differences are only specified if relevant. The strongest stimulating forces in the change process were: (1) need for change; (2) political involvement and (3) continuous supportive leadership. The strongest inhibiting forces were: (1) political involvement;

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| Date	Event
	Table 2. Time-ordered matrix: major events during the period 1975–2008 affecting Austrian Medical Universities.
1975	Law of 1975: open access to universities. Attempt for more democratic organisation of medical schools with educational committees representing full and assistant professors and students.
1991	Failure of the 'Tuppy' project advocating integrated curricula and more clinical exposure for students.
1995	Preparation for curriculum change. Preparation differed between medical schools and included meetings with external advisory boards, international site visits and discussions within the medical schools. First Austrian conference on medical education (continued annually).
1997	Law of 1997: allowed medical schools to develop their own curricula provided these were implemented before 2002.
2002	2001 Vienna started with pilot group of students in an integrated curriculum. 2002 Graz, Innsbruck and Vienna started with integrated curriculum for all first year students. Law of 2002: Medical faculties were to become autonomous medical universities as of 2004, which preparation started in 2001.
2006	Entrance selection of students allowed. EU court decision in 2005 demanded the subjection of all students to the same entrance rules which led to an application flooding and unbearable situation.
2006–2008	Voluntary accreditation Vienna and Graz.
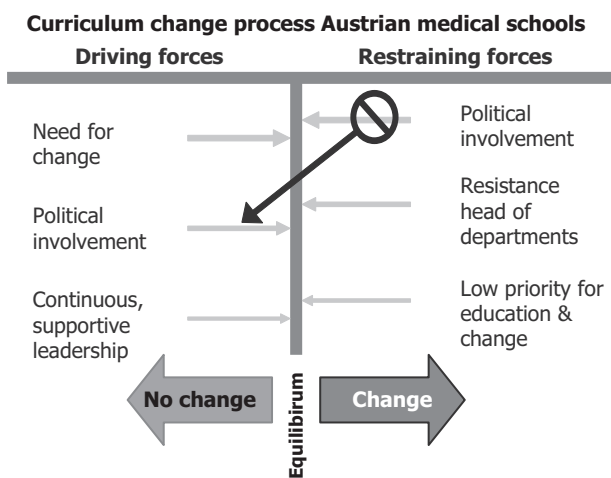
Figure 2. Promoting and inhibiting factors in the three public Medical Universities in Austria during the curriculum change process. Arrow thickness indicates the estimated degree of influence. From 1997 government involvement changed from a restraining to a driving force. Further explanation is described under heading 'political involvement'. Model adapted from Lewin (1951).

(2) resistance from heads of departments and (3) low priority for education and change (Figure 2). From 1997, political involvement changed from a restraining to a driving force, a process described under the heading 'political involvement'. Results are illustrated by quotations from the interviews and where opportune supported by information from documents. The results section ends with a short summary of the main outcomes of the change processes.

Driving forces

Need for change

In Austria by the end of the 20th century, strong dissatisfaction with several aspects of medical education was widespread among stakeholders (teachers, students, patients and post-graduate supervisors). Major concerns were (1) the long time to graduation (average time to graduation 16.4 semesters; nominal time 12 semesters (six years) (Glatz et al. 1992), (2) the high

percentage of drop-outs (on average 50%) (Lischka 2010) and (3) low attendance at lectures, because students learned mostly from books and by attending oral exams of peers. Additional problems were: (4) overload of oral and subjective examinations, (5) overload of theoretical knowledge, (6) limited clinical exposure (preclinical courses required on average 11 instead of seven semesters, and usually less than the required five semesters were spent on clinical courses) (Glatz et al. 1992; Reibnegger et al. 2008) and (7) overcrowding by students (a total of over 3000 first year students in the three medical schools) (Schutz 1998; Rásky 2001). This situation generated growing dissatisfaction with medical graduates' clinical knowledge and social and clinical skills (Glossmann & Peskar 1998; Schober et al. 2004; Reibnegger et al. 2008).

> *'Basically the problem was that we had a lot of new things to do, we had to place more emphasis on the clinical part and reduce this hydrocephalus of the preclinics' (Graz-6).*

Background to the existing problems

Until 2006, Austrian law forbade medical schools to limit admittance. This was due to the highly valued notion of 'Lernfreiheit', meaning: 'freedom to study for everyone regardless of background, grades or financial means' (Table 2). Medical schools responded to the challenge of having to admit increasing numbers of students by setting extremely difficult exams. Because students needed a long time to prepare for some of the exams, duration of studies increased. For instance, students commonly needed one whole year to complete only the anatomy or pathology courses and on average 25–50% of students had to re-sit these exams (Glatz et al. 1992).

> *'So we had the usual 600 entering. According to the study plan they were reduced to 270 after year one' (Innsbruck-1).*

Political involvement – Inhibiting force

The problems described under the header 'need for change' had persisted for a long time, and although more and more people realised that change was necessary, the urgency for change was apparently not strong or widespread enough

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to take action. Several factors may explain this phenomenon. Firstly, respondents explained that Austrians tend to avoid change as long as possible. Secondly, change initiatives were discouraged by the government, which strictly prescribed the curriculum. Indeed, in 1989 the government rejected a serious proposal for changing the medical curriculum, which advocated integrated courses, small group learning and more clinical exposure (Pelikan et al. 1989). The dominant role of the government with regard to the medical curriculum induced an attitude of resignation and an 'excuse climate' (Forster et al. 2011).

> *'Employees of the universities tended to refrain from taking responsibility: it was the government's fault that things were going the way they were' (Other-P).*

Political involvement – Driving force

However, serious concerns about the rising expenditure on university education induced the Austrian government to introduce several laws giving the universities more autonomy to promote efficiency (Table 2) (Austria 1997, Austria 2002). The 1997 law allowed universities to design their own curricula within a certain time frame, and this was perceived by many respondents as an important driver of the change process (Figure 2).

> *'If this law had not been introduced, I suppose we wouldn't have had this process' (Innsbruck-3).*

The 1997 law met with a mixed response: on the one hand, respondents appreciated being finally allowed to develop their own curricula, but on the other hand this opportunity aroused feelings of insecurity and fear. Furthermore many people, mistakenly, felt that change was imposed by law (März & Stein 1997). By way of illustration, the law applied to all faculties of the Austrian universities, but none of the other faculties, such as the faculty of Arts and Humanities, undertook such major curricular reform. Even if change had been mandatory, it would not necessarily have meant uniform compliance with the law. Some respondents explained that deliberate evasion of rules is common practice in Austria. Strict regulation seems to go hand in hand with lenient practice.

> *The law alone would not have changed anything' (Vienna-1)*

Continuous leadership

Continuous support from university leaders (deans, vice-deans and heads of educational committees) proved to be a key factor in the change processes in Vienna and Graz. By contrast, respondents in Innsbruck reported that the main complication in their change process had been the frequent change of leadership (Prodinger 2008).

> *'During a period of three years leadership changed four times. This loss of consistent leadership led to a loss of vision and continuity' (Innsbruck-5).*

Interestingly, faculty members with a strong vision of change were not primarily the deans, but rather motivated

people from the 'Mittelbau', i.e. all faculty except the full professors and (especially in Graz) next to the staff members a group of active students envisioned change. The majority of the faculty did not participate in the change process, which might be interpreted as confirmation of the notion that Austrians generally are averse to change or had low priority for the change process (see also under the heading 'low priority for education and change'). The key change agents, who clearly embraced change, were looked upon as odd and, at least initially, were not taken seriously by the majority of the staff.

> *'Most of them did not think these rebellious idiots could be successful. They knew there were some people working on curriculum change but we were laughed at (Innsbruck-4)'.*

Decision-making and conflict avoidance

According to the respondents, extensive curricular reform proved hard to achieve, due to the Austrian habit of avoiding conflict, reflecting the relative high national levels of uncertainty avoidance (Sully 1990; Holzleithner & Strasser 2006). Difficult discussions were postponed for as long as possible and, if taking place, often resulted in compromises. Decisions in the medical schools were made by majority vote in the educational committee, which consisted of elected representatives of the full professors, assistant-professors and students (Table 2) (Burtscher et al. 2006). However, there appeared to be a difference between those with formal and informal power.

> *'...Under the cover of the formal authority of the government strong power groups in the medical faculty did what they wanted. The ministry had no resources to monitor or control processes there. The power did not rest with the formal bodies nor with the dean, but with the informal power structures. Most of the deans were from preclinical departments and to some extent they were formal and symbolic figures, and to some extent they balanced the different power groups at the university. But it was the professors in the clinical departments who were really in power, who had the resources and were in control' (Other-S).*

After the enactment of the 2002 law, the power structure in the medical schools changed, which coincided with the implementation phase of the new curricula (Pecher 2005) (Table 2). More power was given to the rector and the dean which facilitated decision-making during the implementation phase.

Inhibiting forces

Resistance from heads of departments

Initially, department heads had almost total control of the educational activities in their departments (Reibnegger et al. 2008). The change towards a centrally organised, interdisciplinary curriculum reduced their power. Understandably, the strongest opposition to change came from this group.

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'*Complete resistance to any change from the old professors. Because in Austria up to that time the professor had been the one who decided on the content of his discipline; he was the last authority in examinations and there was no control over this power*' (Graz-8).

Resistance to change by some heads of departments had its origin in their fear of losing teaching hours. As the number of lecture hours of a discipline yielded prestige, loss of hours was perceived as loss of power and consequently caused resistance (Reibnegger et al. 2008). One of the aims of the new curriculum was to reduce the average study duration, which meant a loss in teaching hours for many (particularly preclinical) disciplines (Austria 1997).

On the other hand several clinical professors worried that the new curriculum and the preparation for it would mean an increase in teaching time (and a concomitant loss of income).

I can perform five procedures, which would earn me so much income, or I can invest the same amount of time in trying to flesh out and write down what aspects are important for a new student of medicine to acquire. Who is going to reimburse me for this loss of income?' (Vienna-3).

Several successful attempts were made to decrease resistance, mainly through involving faculty members in the change process (Table 3). For instance the curriculum change committee in Graz and Innsbruck made each discipline responsible for the coordination of a module, thereby increasing faculty's sense of ownership of the new curriculum.

Low priority of education and change

For the majority of faculty, the change process had low priority compared to patient care and research – a persistent problem that seems universal in medical education (Den Hartog et al. 1999). In addition, the transformation of medical faculties to autonomous medical universities demanded by the 2002 law required a completely new organisation (Austria 2002). Consequently, only a few staff members participated (and resisted) actively in the curriculum reform process, estimated at 5% in the early years and their number only gradually increased during the implementation.

'*The main focus within the university was on building up the new organisation. So they didn't care as much about the new curriculum as they would have done in the old fixed structures*' (Vienna-4).

Outcomes

Obviously curriculum change in the three Austrian medical schools did not solve all the preceding problems at once and continuous adaptations were reported to be necessary. Nevertheless, impressive improvements were made with regards to: (1) reduction of the average study duration to just over 12 semesters, (2) reduction of drop-out rates to about 5–10%, (3) decrease in lecture hours and increase in small group learning, (4) introduction of multiple choice examinations, (5) earlier patient encounters and (6) stakeholders in the hospital reporting the entrance of better prepared students. The number of entering students was decreased after a decision by the European Union in 2005 (Table 2). The EU court demanded all European students to be subjected to the same entrance rules, which led to an application increase to Austrian medical schools from 2000 to 13.000 in 2005. This consequence forced the Austrian government to introduce entrance limitations, to the delight of staff members at the medical schools, but causing severe dissatisfaction by students and social democrats who feared the abolition of the freedom to learn for everyone: the 'Lernfreiheit'.

Discussion

In Austria – a country with an environment less conducive for change – we found that medical schools succeeded in implementing integrated curricula partly thanks to the introduction of a law (1997) that increased the autonomy of medical schools, yielding medical schools an opportunity to design their own curriculum within a certain time frame. When the law was introduced, faculty who were convinced that curriculum change was imperative received strong back-up from this law in overcoming resistance within their schools, partly due to the (unjustified) perception by several faculty that the law was an obligation to change. Nevertheless, top-down pressure for change alone would not have sufficed as many faculty still sought to avoid change: the internally felt need

Table 3.	Effective interventions to involve faculty members in the change process.

Effective interventions to involve faculty members

– Interviews with opinion leaders to ask their vision and air dissent
– Presentations at individual departments
– Newsletters
– Internet forum with updates on the change and possibility for feedback
– Discussion sessions
– Conducting a survey which asks faculty members about deficits and necessary improvements in the current curriculum (Schober et al. 2004)
– Making heads of departments coordinators of integrated modules
– Workshops and open discussions with external advisory board with experts on curriculum change
– Try-out with a smaller group of students to demonstrate feasibility
– External accreditation to demonstrate that the new curriculum follows international guidelines
– Annual medical education conference: 'Graz conference' to create forum where exchange of ideas and strategies can take place
– Involving staff members in the development of a student competency profile (Merl et al. 2000)

for change, visionary change agents and continuous and supportive leaders were generally acknowledged to have made an indispensible contribution.

Several of the factors that influenced the change process in the Austrian medical schools have also been identified in other reports on curriculum change. This suggests that these factors are universal and not specifically related to a country's culture (House et al. 2004). Firstly, we will take a closer look at the factor 'government involvement' because it played a dominant role in the change process. Everywhere, medical schools have to comply with national laws and regulations and indeed 'politics' was mentioned by Bland (2000) as one of the major factors influencing curriculum change. However, national legislation differs between countries and determines the room for innovation in medical schools. In Austria, strict national laws and regulations prescribing the medical curriculum, initially, were a strong barrier to curriculum innovation, which seems to reflect the country's strong uncertainty avoidance as identified by Hofstede (2001) as well as House (2004). This inhibiting force of high national uncertainty avoidance on the adoption of integrated medical curricula confirms previous research (Jippes & Majoor 2011). The strict Austrian laws changed from an obstructive into a driving force after the introduction of a law proposing curriculum change. A similar experience was reported by Hofstede (2001), who found that companies in a country with strong uncertainty avoidance were less innovative but applied a prescribed innovation consistently. Governments in other countries have also proposed or imposed medical curriculum change with varying results. For instance, in Indonesia the government's instruction in 2003 to adopt competency-based education was not immediately acted upon by all medical schools (Claramita et al. 2011). Several explanations may apply. Perhaps Indonesian medical schools felt lower pressure to change caused by the prescribed change due to the lower national uncertainty avoidance score (48) as compared to Austria (70). Another explanation may be the absence of an urgently felt need for change or lack of visionary change agents in Indonesian medical schools.

Secondly, we will explore the cross-cultural generalizability of the factor need for change. Bland (2000) also identified need for change as a factor influencing medical curriculum change. In addition, this factor resembles the first step in a change process as described by Kotter (1995): 'Create a sense of urgency'. This factor seems to be universally important, however, the severity of the problems requesting change may determine the impact of this factor. In Austria, where dissatisfaction with the existing situation was strong, both within the medical schools and in the ministry, need for change was found to have played a major role.

Finally, the fact that leadership also features prominently among the decisive factors in (medical curriculum) change processes suggests that it may be a universally important factor in a change process (Bland et al. 2000; House et al. 2004). However, which leadership style is most effective depends most likely on a country's culture (Den Hartog et al. 1999; Hofstede 2001; House et al. 2004; Genis-Gruber 2011). For instance in societies with a strong hierarchy, authoritative leadership is likely to be effective because subordinates expect to be given orders. Leaders in less hierarchical societies, on the other hand, should foster egalitarian leadership and participative decision-making (Den Hartog et al. 1999).

In studies into cultural influences the concept of national culture is quite a distinctive factor: it is both interesting and elusive. Difficulties arise with respect to causality: e.g. how to ascertain whether national culture influences curricular change processes in medical schools? Geertz (1973) has argued that culture has no place in a causal explanation. "Culture is not a power. Not something to which social events, behaviours, institutions or processes can be causally attributed. It is a context, something with which they can be intelligibly (that is thickly) described" (Geertz 1973). Even though national culture may not be a power in itself, it permeates the conduct of individuals, groups and organisations, contributing to differences in behaviour between countries. Because behaviour is shaped by other factors beyond national culture, it can be problematic to determine whether a certain type of behaviour is typical of a certain culture (Den Hartog et al. 1999). The striking similarities we found between the change processes in the three Austrian medical schools are suggestive of a national commonality – possibly national culture. Differences between the Austrian medical schools, such as the frequent change in leadership in Innsbruck could also be related to organisational culture. Future studies could focus on the impact of organizational culture on change processes.

A limitation of our study is its exclusive focus on Austria. Although there are indications that several of the factors influencing curriculum change identified in this study may similarly apply in other countries, research should be expanded to explore more cultural settings. Earlier research indicated that once countries are wealthier (a Gross Domestic Product above $20 000 per capita) the relative number of medical schools with an integrated curriculum increases (Jippes & Majoor 2011). Therefore, a country with a GDP below $20 000 and a high score on the uncertainty avoidance index would be another interesting case for future study.

Another limitation could be the reliance on Hofstede's dimensions of national culture, which were based on questionnaires completed by IBM employees, leading to the question whether the same scores apply to medical schools or that perhaps medical schools share a common professional culture (Signorini et al. 2009). Nevertheless, Hofstede's dimensions have been replicated in many other settings and his work is the most frequently cited research that enables the cross-cultural comparison of differences between countries (Kirkman et al. 2006). For instance, the GLOBE study demonstrated similar dimensions based on multiple organisations in different industries (financial services, food processing and telecommunication), including a high uncertainty avoidance score in Austria of 5.16 on a scale of 0–7 on the GLOBE index (House et al. 2004).

Furthermore, a possible limitation is the selection bias of the interviewees, who were selected based on their active participation in the curriculum change process (i.e. key change agents). Possibly this group had more positive memories on for instance the need for change than the average staff members within the medical schools. We deliberately chose to interview these key change agents, because they were

expected to give the most extended and rich information on the change processes, a prediction confirmed in the interviews with some people who had been less involved in the change process: they frequently had difficulty answering the questions.

Our study shows that changing from a discipline-based to an integrated curriculum is a complex process involving different stimulating and inhibiting forces, several of which appear to be universal and several which appear to be related to national culture (i.e. culture-specific). The existence of unique socio-political forces influencing medical education in every country and the importance of considering these forces was also reported by Segouin & Hodges (2005). Considering potentially inhibiting universal and culture-specific factors before embarking on curricular reform may facilitate the reform's eventual successful implementation. Many resources provide strategies for curriculum change in medical schools (Gale & Grant 1997; Bland et al. 2000; Norman et al. 2002; Prideaux 2004; Bordage & Harris 2011) and strategies for dealing with national culture influences on change (Rogers 1995; Hofstede 2001; House et al. 2004; Trompenaars 2005). Future studies should focus on strategies to deal with national culture differences specifically in medical schools.

Acknowledgements

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Appendix A. Interview outline

At forehand the participants received the following explanation about critical incidents by email. The interview started with these critical incident stories.

Critical incidents

In our meeting you will be requested to tell two critical stories that happened during the process of curricular change in the faculty you were working at. I would like to hear stories that – in your view – greatly impacted on the process of change, in a positive way and in a negative way.

The positive and negative story may include these elements (in any order):

- *What happened?*

- *When did it happen? (stage of change process)*
- *Where did it happen? (for instance formal/informal situation)*
- *Who were involved? (people and level of responsibility in the process/organization)*
- *How did it happen? (facts or characteristics of the people or situation that made it possible)*

I will continue to ask you some questions about: the reasons of the medical school to decide for this change and how the change of the curriculum was implemented and evaluated.

Problem →

1. Why was there a decision to change the curriculum? What were the problems that forced the curricular change?

2(a) Why was there no need to change before? Or why was it now more recognized?

2(b) Had there ever been any change projects before?

2(c) If yes, is there a history of effective change projects?

3. Who came up with recognizing the need for change?

4(a) Is there a cooperative/positive climate for change?

4(b) Was the need for change felt by everyone (all the powerful individuals)?

5(a) Was there a (in)formal network against change?

5(b) How was dealt with disagreements among staff/students?

6(a) Was the organizational structure departmentalized?

6(b) Was there frequent interaction between the disciplines before the change project?

7(a) Who where decision makers of the change process?

7(b) Which formal bodies/decision makers were important during the change (f.i. government/legislation, dean, organizational committee)

8. Did other universities in Austria view the same problems?

Solution →

1(a) Which solutions were available? Why was this particular curriculum chosen and others not?

1(b) Was there a theoretical base for this curriculum (evidence)?

1(c) How was this curriculum developed?

2. Which strategies were used for choosing this curriculum (other universities/external experts)?

3. Do you know of any differences of this curriculum and the change process in comparison to other universities in Austria?

Implementation →

1. What was the timeline for the implementation of this change project?

2(a) How was the change implemented?

2(b) Where there any cross-departmental teams?

2(c) How was participation stimulated (rewards/committees)?

2(d) How was the change communicated?

2(e) How where staff/students prepared for the change (f.i. workshops)?

3. What theories/concepts guided the implementation?

4(a) Was there stable leadership during the change process?

4(b) Which characteristics of leadership were essential?

5(a) Which institutional factors allowed the innovation to work?

5(b) Which institutional factors impeded the implementation?

5(c) Which barriers were encountered and how was dealt with these barriers?

5(d) Where there any unforeseen events?

5(e) Which lessons have been learned from the curricular change?

6(a) How did this change project affect/change the environment (staff, students)?

6(b) Did this change project change thinking or practise of education among staff/students?

7(a) Is there insight in what were the costs of this change project?

7(b) From which budget was the change project paid (external, limited duration)?

8. Has the innovation propelled a project/program/discipline forward?

9. What preconditions are needed to implement this innovation in other settings?

Evaluation →

1(a) Which milestones were used as indicators of progress of this change project?

1(b) How was the change evaluated (accreditation)?

2(a) Was this change project implemented successfully?

2(b) Has there been a performance dip after the implementation? If yes, how was this handled?

3. Do you think that it is a sustained innovation (which instruments have been used to make it sustainable)?

4. Did this change project initiate new innovations?

5. Did this change project identify new problems?

Thank you very much for your time. In case you come up with any other ideas or documents you think may be useful for my research you can reach me by email (see informed consent)

Would you be available for the concept of member checking? (I will send you an outline on which you can comment for irregularities or clarifications)

As a token of gratitude I would like to handle you this traditional Dutch syrup waffles!