

Navigating the Complexities of Undergraduate Medical Curriculum Change: Change Leaders' Perspectives

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Abstract

Purpose

Changing an undergraduate medical curriculum is a recurring, high-stakes undertaking at medical schools. This study aimed to explore how people leading major curriculum changes conceived of the process of enacting change and the strategies they relied on to succeed in their efforts.

Method

The first author individually interviewed nine leaders who were leading or had led the most recent undergraduate curriculum change in one of the eight medical schools in the Netherlands. Interviews were between December 2015 and April 2016, using a

semistructured interview format. Data analysis occurred concurrently with data collection, with themes being constructed inductively from the data.

Results

Leaders conceived of curriculum change as a dynamic, complex process. They described three major challenges they had to deal with while navigating this process: the large number of stakeholders championing a multitude of perspectives, dealing with resistance, and steering the change process. Additionally, strategies for addressing these challenges were described. The authors identified an underlying principle informing the work of these leaders: being and

remaining aware of emerging situations, and carefully constructing strategies for ensuring that the intended outcomes were reached and contributed to the progress of the change process.

Discussion

This empirical, descriptive study enriches the understanding of how institutional leaders navigate the complexities of major medical curriculum changes. The insights serve as a foundation for training and coaching future change leaders. To broaden the understanding of curriculum change processes, future studies could investigate the processes through alternative stakeholder perspectives.

Renewing an undergraduate medical curriculum is a regularly recurring process at medical schools around the world. Enacting curriculum change is a complex endeavor¹ involving multiple organizational structures (e.g., university and affiliated hospital[s]), each housing multiple departments and a variety of staff, faculty members, and doctors in training.¹ Curriculum change thus involves many stakeholders, all with

a uniquely vested interest in the new curriculum.² Successfully spearheading such a complex process requires strong leadership skills. Although there is a body of literature studying leadership roles in medical education, little research has focused on these leaders' roles in curriculum change processes.^{3,4} Little scholarly attention has been paid to how institutional leaders enact and direct undergraduate medical curriculum change processes. This leadership work requires much more research attention because curriculum reform is a high-stakes undertaking, requiring significant human and financial resources. Curriculum change leaders must be adequately prepared to overcome the challenges they will inevitably face. If we knew more about the processes and the techniques that leaders employed to overcome these challenges, we could better support future leaders to successfully bring about curriculum change.

understand the multifaceted nature of the processes and contexts in which change occurs⁵⁻⁷; organizational change literature (to investigate the tools used to enact change)⁸; and within this organizational change literature, the literature on change leadership (to understand the role of the individual who is leading and managing the change process).⁹⁻¹⁴ Although all three subjects can inform research into curriculum change, we are interested in better understanding the complexity of medical curriculum change from the *leader's perspective*, exploring how that individual navigates this complex context and deals with change-related challenges. Thus, we build on the change leadership literature.

This literature emphasizes the role of change leaders in bringing about organizational change.⁹⁻¹⁴ We define a change leader as the individual primarily responsible for renewing or significantly changing an undergraduate medical curriculum. A limited amount of medical education research directed specifically at studying change leaders is available. Bland et al⁹ state that leaders of medical curriculum change fulfill a critical role

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because they “control or substantially influence nearly all the other features essential for success.”^{9(p592)} They identify important change leadership behaviors as including “assertive participative and cultural/value-influencing behaviors, to be ‘flexible,’ to view the organization through a variety of perceptual frames and to mobilize others to maintain the change momentum.”^{9(p580)}

Recent empirical studies about change leaders in medical education have predominantly been conducted at single medical schools^{3,4,15,16} and were not focused on major undergraduate program revisions. To gain a better understanding of the challenges faced by leaders across different institutions, our study focuses on insights from curriculum change leaders at multiple medical schools. We wanted to know how curriculum change leaders conceive of the process of enacting change, and the strategies they relied on to succeed in their efforts.

Method

Participants

Study participants were individuals who were currently leading or had recently led a major undergraduate medical curriculum change process in one of the eight university medical centers (UMCs) in the Netherlands. (These are, in alphabetic order: AMC [Amsterdam], Erasmus MC [Rotterdam], LUMC [Leiden], Maastricht UMC+ [Maastricht], Radboudumc [Nijmegen], UMCG [Groningen], UMCU [Utrecht], and VUmc [Amsterdam]. Each school accepts an average amount of ~400 students annually.) We define “major curriculum change” as changes that were not about the yearly, regular adjustments at course level, but were

centrally organized, intentionally initiated change projects that affected the entire curriculum and organization involved in the curriculum. Seven UMCs reported having one individual in this position, and one UMC reported having two individuals in this lead position. Thus, our study is based on data from nine participants, representing all eight UMCs. For timelines of the change processes, see Figure 1 and Table 1.

Within each institute in the Netherlands there are different organizational structures and different names and responsibilities for people in similar or comparable positions, which are summarized in Figure 2.

Each UMC in the Netherlands is governed by a board of directors. On the board, the dean is responsible for research and the undergraduate and postgraduate health professions curricula. At most institutes, hierarchically positioned under the dean, the associate dean of education is responsible for overseeing the health professions curricula as a whole. On behalf of the dean, most institutes have a program director being responsible for further executing and overseeing the undergraduate medical curriculum. Below this position, there are—at a more daily, executive level—usually two coordinators who are responsible for the content, quality assurance, and coherence of one of two parts of the medical curriculum; the bachelor’s coordinator (first three preclinical years undergraduate medical program), and master’s coordinator (last three clinical years undergraduate medical program).

Four participants fulfilled the change-leading role within or in addition to their job as program director, and three as bachelor’s coordinator. The remaining

two participants were professors in the medical education curriculum who did not fulfill a formal position as outlined above but were asked to lead the curriculum change. In all cases, participants were appointed by the dean or the associate dean of education to lead the school’s curriculum change process, and so were accountable to the dean or associate dean. All participants (eight males, one female) had substantial experience—in various positions—within medical education and the medical school, and were still or had been in leading positions in preclinical, clinical, or research departments.

Data collection

Working from a constructivist orientation,¹⁷ one researcher (F.V.) conducted individual face-to-face interviews between December 2015 and April 2016. Three pilot interviews took place with other health professions curriculum change participants (i.e., individuals outside our target population) to refine the interview protocol. The protocol consisted of four parts. The interviews started with two visualizing prompts. The first was a short drawing exercise about how leaders visualized the curriculum change. Second, participants were asked to choose 1 photo card from 52 “briefing cards”¹⁸ that resonated with their feelings about their curriculum change experience. These visual techniques encouraged participants to recall professional and personal experiences with curriculum change. The third part of the interview followed a semistructured interview protocol exploring participants’ perceptions of the change process and context (e.g., involvement of stakeholders, challenges experienced, accelerators and decelerators of the process) and

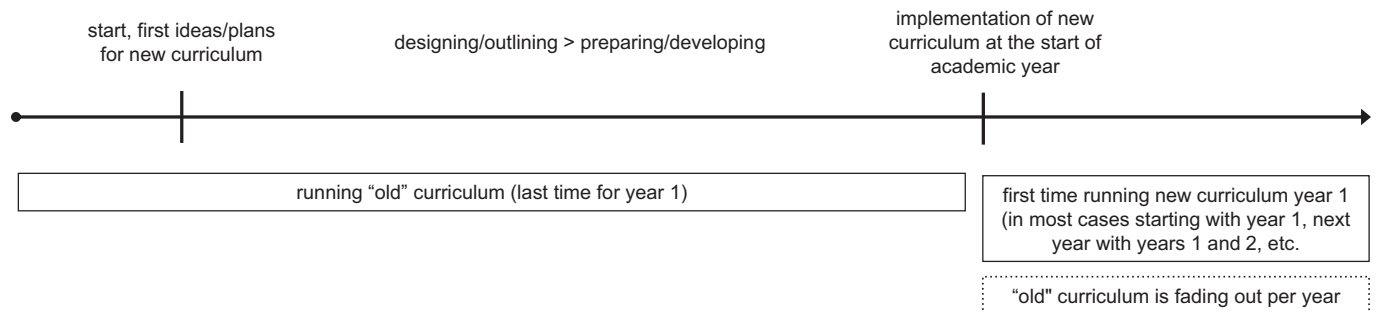


Figure 1 Schematic timeline of most of the curriculum change processes at eight university medical centers, from a study of leaders’ perspectives on undergraduate medical curriculum change, the Netherlands, December 2015–April 2016.

Table 1

Timeline Information About the Curriculum Change Processes of All Eight University Medical Centers, From a Study of Leaders' Perspectives on Undergraduate Medical Curriculum Change, the Netherlands, December 2015–April 2016

University medical center (random)	Start of the process; first plans/ideas about new curriculum	Actual implementation of new curriculum (first year) ^a at the start of academic year (September)
A	First half of 2013	September 2016
B	Second half of 2009	September 2012
C	First half of 2013	September 2014
D	First half of 2009	September 2011
E	Second half of 2012	Not applicable ^b
F	Second half of 2012	September 2015
G	First half of 2014	September 2015
H	First half of 2012	September 2015

^aUsually most university medical centers first implement year 1, next academic year they implement year 2, etc.

^bException, no central implementation; several subprojects are being and will be implemented.

the leaders' experiences as leader of the curriculum change effort (e.g., preparation, personal drives, support, lessons learned). In the fourth part of the interview, participants were asked to select another photo card that depicted the story of curriculum change; this was used to wrap up the interview. Interviews lasted 1.5 to 2 hours. All interviews were audio-recorded and

rendered anonymous in the transcription process. The visuals (i.e., drawings and selected cards) were photographed but were not incorporated into the analysis for this study. They were simply meant as a prompt for the conversation rather than additional research material. To give readers an impression of the type of pictures chosen and the accompanying explanations, see Supplemental Digital

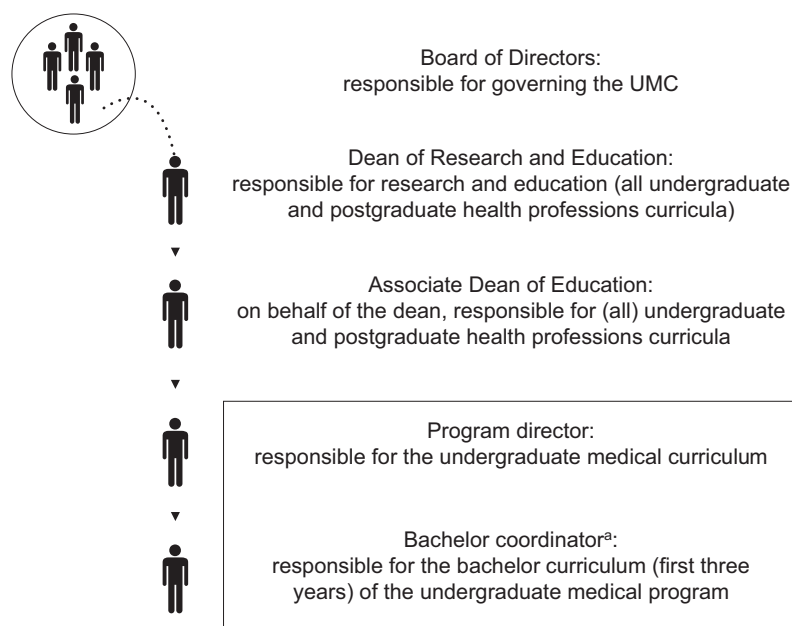


Figure 2 Schematic overview of hierarchical structure at eight university medical centers, from a study of leaders' perspectives on undergraduate medical curriculum change, the Netherlands, December 2015–April 2016. Most participants were in the last two positions. Exact names of functions and responsibilities will vary across institutes.

Abbreviation: UMC indicates university medical center.

^aResponsible for the master's curriculum (last three years) of the undergraduate medical program. Most medical schools have a master's coordinator.

Appendix 1, available at <http://links.lww.com/ACADMED/A528>.

Data analysis

We employed qualitative content analysis, which has been described as a “dynamic form of analysis (...) oriented towards summarizing the informational contents of that data.”^{19(p338)} Data analysis occurred concurrently with data collection, with themes being constructed inductively from the data, resulting in a detailed descriptive summary¹⁹ of participants' conceptions of the process of curriculum change and their strategies for successfully carrying out that change.

Data analysis began with three members of our research team (F.V., H.D., and A.J.) discussing each transcript after the interview. Once all data were collected, four researchers (F.V., L.V., H.D., and A.J.) participated in several team discussions and constructed an initial set of data themes, which were used as a starting point for coding the data in Atlas.ti software, version 7 (ATLAS.ti Scientific Software Development GmbH, Berlin). One team member (F.V.) led the coding process and regularly discussed the evolving ideas and changes to the coding structure with two others (H.D. and A.J.), who also reviewed data samples and contributed to refining themes and interrelations. These meetings were systematic checks to ensure accuracy and to reach agreement. Because the interviews were conducted in Dutch, one of us (L.V.) was not able to participate in the coding of the raw data. To reach agreement with the whole team, we held regular team meetings to discuss the process and our evolving interpretations. We especially relied on L.V.'s input (e.g., asking questions about the code definitions and their scope of inclusion; about possible connections between codes, etc.) to link individual codes into major, overarching themes. Throughout the entire process, the lead researcher (F.V.) noted developing reflections and analysis memos. These notes were reviewed and vetted during team discussions. One researcher (E.H.) joined the team at this later stage and reviewed the coding processes and analyses. To enhance the trustworthiness of our interpretations, E.H. read the transcripts and helped refine the codes and overarching themes.

Team composition

The research team consisted of one junior (F.V.) and four senior researchers in medical education (L.V., E.H., H.D., A.J.). One (F.V.) has a background in social psychology and was trained by L.V. in the techniques and processes of conducting research interviews. One (L.V.) is an associate professor and an experienced qualitative researcher in the health professions education domain. One (E.H.) is an elderly care physician and medical educator with expertise in qualitative research. One (H.D.) is a senior educationalist chairing a task group on education innovation during a major curriculum change process, and one (A.J.) is a professor in health professions education.

Translations

Portions of each transcription were translated to English by one of our team (F.V.). Two researchers (E.H. and A.J.) reviewed the translations to confirm these. In case of doubt, a bilingual colleague was consulted. When working with quotes used in the report, one team member (L.V., a native English speaker) edited the manuscript several times, checking and offering suggested changes to the text including the quotes. One of us (F.V.) always verified these changes to ensure that the new phrasings accurately reflected the original Dutch transcripts.

The Dutch Association for Medical Education ethical review board approved this study (number 592).

Results

To support anonymity, all participants are referred to in the masculine gender. Illustrative quotations are attributed by respondent number.

Participants described curriculum change as a dynamic, complex process involving many interacting factors. As one participant stated when describing the picture he chose of a railroad crossing: “[This card] shows the complexity of the process; very many things need to converge to lead to something” (R5) (see Supplemental Digital Appendix 1, at <http://links.lww.com/ACADMED/A528>). Participants reported that the experience of enacting change was challenging. Participants experienced curriculum change as a

collaborative exercise in which a lot of information had to be processed and decisions had to be made at many levels and via various channels.

We identified three core challenges faced by all participants, and several associated strategies for resolution. The central challenge was dealing with a large and diverse group of stakeholders. The other two challenges were contending with stakeholders’ resistance and steering the change process. Participants mentioned other challenges but did not describe strategies for addressing those challenges. Therefore, these other challenges are not described in this report.

Challenge 1: Dealing with a large group of diverse stakeholders

Participants described curriculum change as a collaborative exercise; however, dealing with the large *and* diverse groups of stakeholders (e.g., administrative staff, educationalists, students, teachers, department heads, internal committees, board members) was challenging. These stakeholders had different backgrounds and represented different parts of the organization, each having a stake in the process at different times. Stakeholders had different perspectives regarding the medical curriculum and the process of enacting change. Interweaving these perspectives was a challenge the leaders needed to face:

Curriculum change is a power play in which many people ... think from their own specific expertise. Of course that is very good; however, at some point decisions have to be made and you have to interweave that; not everything one wants is possible.... The challenge is trying to bring people from various backgrounds together, trying to motivate them to make one, joint product. (R4)

Participants employed different strategies to get stakeholders on board with their vision for change. For instance, gaining explicit support of the associate dean, dean, and/or board for their proposals was, for some participants, a necessary precondition for curriculum change:

As always ... the board of directors needs to take a stance, otherwise nothing happens.... Getting the organization with you starts with the board of directors. They have to fully support it, otherwise you can really forget it. They have to speak out loud ... to the entire organization that (a) they think that it is important that this

happens, and (b) if the blueprint* is ready, that they fully support that this is *their* blueprint. And not *my* blueprint. (R5)

Participants emphasized needing the teaching staff, the largest stakeholder group, on board with the curriculum change plans. Some stated that only the core group of teaching staff already numbered 100 to 200 people. Participants developed strategies for including the teaching staff (either hospital-based clinical teachers or basic science teachers) at an early stage in the change timeline, by informing these stakeholders about change ideas and progress:

I thought that was important to do, because you don’t want to drop it like a bomb in the hospital, because then it will not land very well. You have to talk with everybody.... Continuously informing people, checking whether everything is still okay. I think that is the most important. (R6)

Participants organized meetings, created websites, and wrote newsletters in their efforts to keep stakeholders informed. Some emphasized deliberately addressing individual stakeholder groups with tailor-made approaches:

For students I had a different story compared to the formal exam and educational committees, and again another story for coordinators, as well as for teachers. With the idea: Communication should be focused on the target group; otherwise, it does not work well. (R7)

Creating opportunities for stakeholders to participate early on in the curriculum change process was another strategy that leaders employed. Participants talked about organizing large-scale activities to generate discussions about initial plans including, for instance, public discussion meetings (with as many as 150 people in attendance). Early inclusion served two aims: collecting input to build on stakeholder knowledge, and encouraging their committed buy-in. At a later stage, during actual development of the new curriculum, small-scale engagement

*A blueprint is a document outlining the new curriculum on paper. Many schools created a blueprint to map out the ideas and create discussion with stakeholders about what the new curriculum should look like. In many cases it was seen that designing the blueprint of the new curriculum formed an essential part of the change process. After agreement on the final blueprint, the document served as an important guide for actual development and implementation of the new curriculum.

efforts were implemented, such as working groups with a deliberate mix of people to stimulate input from multiple perspectives:

Each working group consisted of people who really had to deal with [the curriculum] in practice.... [A] mix of coordinators, teachers and students. And if necessary, people from the organization: educationalists, assessment experts ... who delivered input from that perspective. Well, and finally, consensus was there. (R7)

As a final strategy, some leaders acted as facilitators of the curriculum change process, explicitly harnessing stakeholders' expertise and perspectives by leaving curriculum content discussions to the professionals. In addition to engaging people in the change process, this strategy helped prevent, or at least diminish, resistance to change.

Challenge 2: Dealing with resistance

When dealing with stakeholders, participants had to contend with resistance. Resistance was triggered by stakeholders' concerns or disagreements about the new curriculum's directions or the change process. More specifically, stakeholder discontent was related to many issues, including concerns about educational jobs, worries about the quality of the new curriculum, and concerns about whether the professions were sufficiently reflected in the new program. Participants managed this opposition proactively by anticipating resistance, and in the moment by actively dealing with resistance.

Anticipating resistance. Participants tried to anticipate resistance as they were cognizant of the negative effects that such discontent could have on the change process. Some described including the "disruptive individuals," the "utterly conservative people," and the "naysayers" early on in the change process. This strategy was expected to mitigate potential future opposition from those individuals but was also used to profit from their critical voices:

I choose [to engage] people who dare to challenge me; otherwise, it does not help me. (R1)

To retain the buy-in of resisting stakeholders, leaders used strategies similar to those they relied on to get

people on board originally. For instance, in anticipation of resistance, participants sought consensus around specific elements of the curriculum change process (e.g., the new curriculum's blueprint, or the foundation principles shaping the new curriculum). The change leaders achieved this by creating early engagement opportunities and continuous communication with stakeholders. Consensus building seemed to work as a method to increase buy-in, thus diminishing future resistance.

Addressing resistance. Despite efforts to anticipate resistance, participants described facing both direct and indirect resistance from stakeholders. Direct resistance came from those who were opposed to curriculum change ideas and decisions. Strategies for managing this resistance involved seeking dialogue with resisters via one-on-one dialogue; listening carefully to their reasons for resistance; and negotiating to a compromise:

I will talk to these people, to better explain it. To show: This is the idea behind it. "Come ... try to think along, because this is what we are going to do. However, if we have to adjust a bit, then we will certainly do that.... I need you in a way that is realistic, so if I go right, and you will, by definition, go to the left, we are not going to make it. So I ask you to come along with me a bit." Well, and that works very well most of the time. (R6).

Some leaders also faced indirect resistance. This resistance was less visible, described as "hidden counterforces and a mobilizing undercurrent" (R3). In such situations, people were kind to the change leader in person, but "they were cheerfully knocking my feet out from under me" (R3) when he was not present. This indirect resistance also manifested itself when stakeholders bypassed the leader and took their complaints directly to the dean.

When talking and negotiating did not work and resistance truly hampered the change progress, the change leader employed more aggressive strategies. One participant described strategically realigning a situation to his benefit by shifting the context in which resistant individuals were confronted so that those resisters could not publicly hinder the progress of change. In addition, some participants described moving

resisters to the sidelines or out of the change process entirely. Another recurring strategy was to fuel the process by including young and new faculty. As one said:

A few times I have dismissed people from their position who hindered the process, including an [educational committee].... they were merely delaying.... We established a new committee, a generation "underneath" the former, let's say, who had a different perspective on education.... And from that moment on, it started running. (R7)

Finally, some participants sought support from the associate dean, dean, and/or board to overcome resistance. Sometimes these higher-level leaders acted as sounding boards to think through ways of tackling specific problems, or as authorities who could impose their will upon resisters. The importance of the dean or associate dean was also evident when his or her support for the change process was *not* perceived to be helpful by participants (e.g., conflicting beliefs on how to approach resisters), or was not present at all. For example, one participant felt that the associate dean undermined his plans and decisions immediately when critiques were expressed by members of the organization:

There had to be only one person screaming "BOOOO!" and everything had to change again. (R3)

Although the lack of support was hard to solve, participants described dealing with unsupportive leadership by strategically choosing whether or not to involve the associate dean or dean.

Challenge 3: Steering the change process

The third challenge participants faced had to do with difficulties related to steering the change process. The steering process was difficult because the route to the desired curriculum changed and the precise end goal of the change was often evolving throughout the curriculum change process:

I also don't know exactly where this is going or how it has to be done. However, I do have something in mind and that is approximately the margin, and then you have to navigate.... I mean, that is part of the process, it is not a predetermined route.... I know roughly where I want to go to, and [that] is of course getting more concrete ... I mean, right now I know that

more precisely than a year ago. With that uncertainty I have to be able to live. (R5)

Additionally, participants struggled with the need to find a balance between being responsible for the process and therefore actively willing to direct the change process, and at the same time providing enough freedom to stakeholders for them to direct change and so feel invested in the success of the process. Safeguarding a good process in the organization was emphasized to be important:

I hope people did not experience me as too decisive.... That you have given enough room to everyone, I hope I did that.... People may feel insufficiently listened to. I hope not ... I wish people have experienced [enough room]. [That is important] because that benefits the process. If you have the idea that I push something through, while somebody might have come up with a very good idea, then that is not good for the process. (R4)

The strategies participants employed for directing the curriculum change process included selecting the “right” people to work together:

What you are constantly doing is bringing those people together that will make things happen. (R1).

The “right” people were, for example, those who could collaborate with the same enthusiasm for the new curriculum, and those with new and fresh ideas. Given this focus on the power of bringing the right people together, some participants spent considerable time investing in relationships:

I know my teachers and I’m consciously looking for young talent. I ask for suggestions from department heads, then I get a list of names of young staff or newly appointed professors with whom I’m scheduling an appointment. So I just have a list available of young talent, as well as emeriti and senior teachers.... [When] we have to develop the new program I know exactly who I need. (R1)

Another strategy participants used was making sure to have an overview of the change processes:

[The challenge is related to] creating commitment, retaining commitment, and monitoring the process.... We have to monitor that the old curriculum is not secretly returning in disguise. We want to get signals if the development drifts away from what was actually intended. (R9)

Participants sought to be attuned to the development of new curriculum content and to the organization’s changing processes. In relation to curriculum content, regular “alignment sessions” were organized between the leader, the curriculum change team members, and various working groups to ensure a coherent curriculum. To stay up-to-date about the changing processes in the *organization*, leaders kept “feelers” out at all levels of the organization, talking regularly with people and committees, listening carefully for signals of problems or resistance:

I think, getting insensitive to signals from the organization is the greatest danger because you are so busy with getting the organization on the move to reach September.... You always have to keep on listening carefully.... If you don’t do that you will go blindly in the wrong direction. You need to be willing to keep on adjusting, while still having the final goal in mind. (R5)

Managing challenges and implementing strategies strategically

Change leaders relied on several strategies to bring about curriculum change. Although we described the challenges separately, in reality they interacted, taking place simultaneously, along with multiple other emerging issues.

In managing this complex and continually evolving process of leading curriculum change, the leaders needed to remain aware of what was going on across stakeholders and the change processes. Creating this awareness of evolving situations and individuals’ reactions enabled leaders to modify their strategies to suit changing circumstances:

You have to be aware that a lot more can be playing a part than you possibly think if you only think very ... let’s say systemically from A to B, like process based. Sometimes things ... do not work because you apparently did not push the right button.... If it does not go well you have to say, “And now we are going set things right.”... However, the situation determines how much space you have to give freedom or that you have to be more direct [and make decisions].... Flexibility is, in any event, important in this kind of large organization. (R2)

Discussion

In this study, we developed an understanding of how change leaders

conceive of the process of enacting curriculum change and the strategies they relied on to succeed in their efforts. These leaders talked about curriculum change as a complex process, fraught with several challenges. Three challenges of particular note were dealing with the large and diverse groups of stakeholders; contending with resistance; and steering the change process. To manage these challenges, leaders relied on several different strategies. To successfully apply these strategies, change leaders tried to remain aware of the evolving contextual situations and adapted their strategies accordingly to bring about curriculum change.

Our empirical study—conducted across all eight UMCs in the Netherlands—supports and extends the idea that the process of curriculum change does not unfold as a linear, orderly, and predictable process.⁸ Instead, enacting curriculum change in a medical school and its affiliated hospitals is an emerging, complex process. Our study enhances the work of Bland et al⁹ about how to succeed with medical curriculum change by providing a more detailed, empirical description of the main challenges faced by change leaders and the strategies they harnessed to deal with it.

We found that central to the process of navigating the complexities of major curriculum change was maintaining awareness of ever-changing contextual situations. Change leaders used a variety of methods to be aware of what was going on, to make decisions about what actions to take in response, and who to involve, at what time, in the process. To make sure the process was going in the desired direction, change leaders adapted their strategies to meet the demands of the emerging situations. This is not to say that the entire process was spontaneous, evolving without thoughtfully created plans. Instead, our analysis demonstrated that simply “planning and executing” curriculum change is not how change is realized. Situations continuously change, requiring the change leader to maintain situational awareness and to adapt strategies to ensure success.

This aligns with the “reflection strategy” described in change leadership literature. Van de Ven and Sun²⁰ advocate the reflection strategy for leaders to bringing about change in organizations, rather

than the more favored “action strategy.” They argue that leaders in organizations are continuously confronted with changing circumstances and situations that could cause “breakdowns” (i.e., situations where what is seen in reality does not align with expectations). This means that change leaders need to examine whether the faced reality (i.e., the emerging situation) still fits with their chosen strategies or whether they need to adapt their strategy to align with the new reality. This stands in contrast to the “action strategy,” where change leaders do not alter their strategies but instead try to change the reality or the people involved. Although the action approach is popular, it often fails to be effective in the face of the complex contexts of change.²⁰ The change leaders’ awareness and goal-directed flexibility also resonates with the concept of “situation awareness.”^{21,22} Central in this concept is the need for an ongoing awareness and flexibility in responding to ever-changing, complex situations.

This points toward the importance of change leaders having an awareness of several organizational change perspectives and strategies to enact change: “It is the interplay between different perspectives that helps one gain a more comprehensive understanding of organizational life, because any one theoretical perspective invariably offers only a partial account of a complex phenomenon.”^{23(p510)} To navigate the complex curriculum change processes, reflecting on and being aware of emerging situations is vital. Carefully adapting one’s broad repertoire of strategies to increase the probability that the intended outcomes are reached is an important approach to realize change.

Strengths and limitations/ methodological reflections

Just one researcher (F.V.) conducted all participant interviews. Her novice status and her position outside all the organizations represented in the study enabled participants to feel unthreatened in the conversation, supporting a frank and open dialogue. However, she does not have personal experiences as a change leader. This limited the scope of her probes, a scope that another interviewer (e.g., one with more experience enacting change) might have explored. This

debate is inherent to qualitative research; different interviewers will gather different data. In this study, we felt that having an interviewer who was naïve to the challenges of leading major organizational change would support open and rich conversations in which participants could share their personal thoughts, feelings, and concerns.

Additionally, there will be a recall bias for people when asked about processes that occurred up to six years ago. An advantage, however, might be that looking back on a process after a while allows for reflection and critical thinking about what was of utmost importance and what was not.

We chose to examine the process of enacting curriculum change from the perspective of the change leader; however, equally valuable insights could be developed by exploring the perspectives of those affected by the curriculum change (e.g., educators). Studying the change processes with other stakeholders would enrich our understanding of the complexities of curriculum change and will be part of our ongoing program of research.

Although one of the strengths of our study is the multi-institutional approach, we cannot assume that the findings will be representative for other medical schools around the world.

Implications

The results of our study could be used in a variety of ways. The insights we developed could serve as resources for training and coaching future curriculum change leaders. In a broader sense, our findings might inform change leaders in other areas related to medical education (e.g., research, health care²⁴). The insights developed through our research should make future curriculum change leaders more aware of the challenges involved in enacting curriculum change, the possible strategies to address those challenges, and the importance of their own reflections and situational awareness while in the process.

Conclusion

The process of enacting medical curriculum change is a complex endeavor in which change leaders are faced with several challenges. To navigate in this

complex process, change leaders rely on several strategies. An important underlying principle common across these strategies was remaining aware of current and newly emerging situations in order to make decisions that further the progress of change.

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