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TWELVE TIPS

Twelve tips for applying change models to curriculum design, development and delivery

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ABSTRACT
Drawing primarily from business and management literature and the authors' experience, these 12 tips provide guidance to organizations, teams, and individuals involved in curriculum or program development at undergraduate, postgraduate, and continuing education levels. The tips are based around change models and approaches and can help underpin successful curriculum review, development, and delivery, as well as fostering appropriate educational innovation. A range of tools exist to support systematic program development and review, but even relatively simple changes need to take account of many factors, including the complexity of the environment, stakeholder engagement, cultural and psychological aspects, and the importance of followers.

Introduction

Many educators and administrators are involved in curriculum or course development, its review, implementation, and evaluation at undergraduate, postgraduate, and continuing education levels. However, the term "curriculum" has many definitions, and how development and implementation is undertaken will be determined by how those involved perceive it, and the cultural context in which it is being delivered. The formal, explicit or intended curriculum defines and sets out the course of study (the Latin "currere" means "to run") and enables learning and teaching to take place. It should be underpinned by a clear educational philosophy. The curriculum is also a dynamic, complex process which is continually being constructed and mediated through the interaction between teachers, students, the external world, and knowledge (Knight 2001; Prideaux 2007). Alongside the formal curriculum are extracurricular activities (often led by learners) and the "hidden" and "informal" curricula (Bilbao et al. 2008; Kelly 2009). The curriculum is also a contested space, a "jungle" (Bolman and Gallos 2011) where power struggles between different tribes and territories play out and which leads to topics or perspectives being included or excluded from the curriculum (Becher and Trowler 2001). Given the multifaceted nature of the "curriculum", educators need practical strategies and tools to help them work within this complexity. This article describes change models (ranging from relatively simple, "linear" models useful for project planning and delivery, through those suitable for complex environments or systems) which can be used in curriculum development, implementation, and evaluation.

Tip 1

Identify the purpose and scope of change

Before embarking on any change, it is important to identify the scope and purpose of the change.

Many curriculum changes are part of routine quality assurance (QA), quality improvement (QI), or quality enhancement (QE) activities and are incremental or developmental. They change small parts of the program and often result from internal evaluation (e.g. by external examiners) or external requirements. Here, models such as the Plan, Do, Study, Act cycle (PDSA) or more extensive QI frameworks utilizing both quantitative and qualitative methods can be used (Elassy 2015). Care must be taken however to ensure that such changes do not impact on other parts of the curriculum adversely and that elements of the changed curriculum remain aligned (Biggs 2014), see Table 1.

When moving from an "old" to a "new" curriculum, there will be a period of transition which must be planned for in practical terms, that is, how long will the transition take? What programs will the "old" and "new" students take? Will some elements of the "new" course be introduced before the full program? Even with simple linear changes within a complex system, there is often a "ripple effect" which can lead to unintended consequences.

A major curriculum change (e.g. towards an integrated or case-based model) is a transformational change which typically stems from diffusion of innovation: it has relative advantage; it is compatible with existing values and practices; arises from peer-to-peer networks and conversations, and has observable (possibly measurable) results (Rogers 2003). It is a radical change, not only of curriculum design and structure, but may also involve shifting educational philosophies (e.g. towards a different approach such as more learner-centered) and changes to common practices (e.g. reduction in lectures, shift to small group learning). In health professions' education, such changes typically stem from an accumulation of "Best Evidence" Medical Education (e.g. the BEME collaboration, see www.bemecollaboration.org) which leads to a "tipping point" from which a different way of seeing the world is established as the "new order". Examples of this include the global implementation of the objective structured clinical examination (OSCE) as a key

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Table 1. Elements of the curriculum.

Core elements
- Aims
- Learning outcomes/objectives/competences
- Course content
- Learning and teaching methods
- Assessment
- Evaluation

Supporting elements
- Learning resources: teachers, support staff, funding, library and IT support, teaching rooms, learning spaces
- Monitoring and evaluation procedures and management systems
- Work placement activities
- Recruitment and selection procedures and promotional materials Student support and guidance mechanisms

Table 2. Principles of curriculum design and course planning.

- The curriculum should be clearly linked to organizational goals and employment needs
- It should clearly define aims, outcomes, competences, and standards
- Align teaching, learning and, assessment methods
- Define essential information and content (syllabus)
- Consider the process of learning as well as the product or outcomes
- Utilize appropriate learning resources and modalities
- Ensure faculty/teacher workload is manageable
- Control and rationalize student workload
- Emphasize vocational relevance
- Be designed to encourage reinforcement of learning
- Include and reward opportunities for reflection and opportunistic learning

way of assessing practical clinical skills (Harden and Gleeson 1979) or the more recent introduction of the longitudinal integrated clinical clerkship (Hirsh and Walters 2017).

Major change involves a shift in assumptions by the organization and its members, many of whom may be resistant to the planned change. Lewin's "forcefield analysis" (Lewin 1947) reminds us to proactively consider the drivers (pushing for the change) and resistors (against the change). He suggests that it is more effective to work with the resistors than to simply push more drivers (even if the key driver is an external body such as a regulator). Think of it as a wedge holding a door closed, the more you push on it the tighter it becomes. You have to go round the door and remove it to open the door. In the same way, those pushing for the change need to understand who is resisting and why, then work out how best to change perceptions and involve them.

Tip 2

Create the vision, aligned to mission

The mission is the overarching purpose: what are we here for and what are we trying to do? Collins and Porras (2005) call this the "core ideology", it defines what an organization stands for and why it exists, it is unchanging. In health professions" education, this can be summarized as "we are here to provide the best quality, relevant education we can, to produce and prepare competent, confident, safe, and compassionate health workers for the different contexts in which they might practice".

Our vision is the imagined future: how do we see our organization, curriculum, students, teachers, and impact on healthcare once the change is fully implemented? And how do we want others to describe us? This is where the mission is translated into something that is specific to certain organizations, times, and cultures. In medical education, for example, we can see the influence of educational trends on current curricula, including Flexner's (1911) apprenticeship and university-based model; the Student centered, Problem-based, Integrated, Community oriented, core and Electives, Systematic model (SPICES, Harden 1984); Practice-based, Relevant, Interprofessional and interdisciplinary, Shorter courses in smaller units, Multisite locations, Symbiotic (PRISMS, Bligh et al. 2001); competence-based education (Hodges 2012); longitudinal clinical clerkships (Worley et al. 2016), and interprofessional learning (Reeves et al. 2016), see Table 2. Collins and Porras (2005) note that

the envisioned future requires significant effort to attain, and progress towards it needs to be continually reviewed: at heart however, we must always preserve the core purpose and values enshrined in the mission. This reminds us to always keep coming back to why we are doing what we are doing, and helps us to avoid being over-reactive to educational fads or trends.

Tip 3

Develop a strategy for change involving key stakeholders

Once the high-level mission and vision are clear, the next step is to translate this into a strategy which will provide the template for implementing the change. Kotter (1996) calls the key stakeholders the "guiding coalition". The guiding coalition needs to be representative of all those who will be affected by the change in order to establish ownership and help manage resistance. Whilst we have here referred to a strategy as a "plan", it can also be seen as a ploy (to compete with others for students or placements); a pattern (a way of doing things that is successful); a position (in the marketplace, e.g. a graduate entry curriculum), or a perspective (reflecting the organizational culture, e.g. welcoming risk-taking and innovation, or risk-averse) (Mintzberg 1987). A collaborative leadership approach is required here in order to ensure all the key "players" are involved and minimize potential disconnect between formal and informal activities and the various organizations, teams, and professional groups involved (Albashiry et al. 2016; Levine et al. 2016; McKimm and Swanwick 2017).

Tip 4

Quick visible wins and communication are vital

Kotter suggests that change leaders need to establish and communicate a "sense of urgency" as a key driver for change (Kotter 1996). This "urgency" might stem, for example, from the requirements of regulatory or accreditation bodies; the curriculum looks outdated in comparison with others; university imperatives; student numbers are increasing, or responses to the "professionalism" agenda are needed. Defining the sense of urgency helps to provide a mandate and timeframe for the change, whereas an understanding of organizational resources and the external environment and educational trends will help you to develop a meaningful and realistic strategy (Schwartzstein et al. 2008). Kotter also suggests that it is essential to generate and communicate "quick visible wins" (Kotter 1996),

such as a positive experience of learners on the new curriculum or a new collaboration between a university and healthcare provider.

A communications strategy is an essential part of the overall change strategy and should include the aims and objectives; key audiences and stakeholders; messages; activities and events; resources needed, and timescales. Formal communications should include a curriculum statement which addresses the needs of all those involved in learning: health practitioners, teachers, students, universities, colleges, and regulatory bodies. This is often part of the documentation required for validation, approval, or accreditation. Whilst it might seem time-consuming, bringing all the information together about the curriculum in one place provides an invaluable resource for communications, planning and evaluating learning, teaching and assessment. It also ensures consistent messages are being delivered in presentations and newsletters or at meetings.

Tip 5

Analyze the internal environment and culture

Part of developing the strategy involves an analysis of the internal and external environments, so as to ensure the curriculum changes can be managed within organizational capacity (people, skills mix, teaching and learning spaces, and funding) as well as aligned with external educational trends, expectations, and requirements. Many useful management tools are available. For analyzing the internal environment, two commonly used tools are a SWOT analysis, in which we ask what are our own Strengths and Weaknesses? What Opportunities are available to us? What Threats exist?, and McKinsey's 7S model (Peters et al. 1982). The latter is an integrated way of thinking about change. At its center are "shared values", surrounded by other aspects of the organization or curriculum: staff, skills, style [soft elements], systems, structure, and strategy [hard elements]. Change in any one of these will have impact on other areas, for example, if a new online content management "system" is introduced, then more "staff" may be needed, staff and students may have to learn new "skills" and the way of working and learning might change ("style").

The internal environment can be analyzed fairly objectively in terms of budgets, the people employed, numbers of students, and ways of delivering the curriculum. However, we also have to consider wider cultural influences including the basic assumptions and values that lie at the core of the organization (Schein 2010); the "shadow side" of the organization (Howard 2017); the "organizational iceberg" (French and Bell 1990) and the "hidden curriculum" (Bilbao et al. 2008; Kelly 2009). These influences are not always negative, but they can have a powerful effect on how change processes are perceived and responded to Johnson and Scholes (Johnson et al. 2009) describe the "cultural web" which has at its center "the paradigm" (in this case the curriculum and its values). Around this lie control systems; organizational structures (the more formal elements of the culture) and power structures (which can be overt or hidden) and the stories, rituals and routines, and symbols represent the curriculum or organization (Mossop et al. 2013). Schein (2010) suggests such "artifacts" are underpinned by "espoused values": conscious goals,

strategies, and philosophies that are easy to see, but often hard to understand.

It is important to acknowledge existing parts of the "cultural web", however, as part of the change process (particularly if this is a major curriculum review or new program). It is essential to formally and overtly identify and create meaningful symbolic representations, rituals and routines with which people can identify. These might include symbols, for example, rebranding of marketing materials, art work and statues, or new buildings; rituals and routines, for example, welcome events, graduation ceremonies or prize-giving; and new stories about staff and students. Over time, more symbolic representations, rituals and routines will emerge from the interplay between the formal, explicit curriculum and extracurricular activities, the informal and the implicit curriculum.

Bolman and Deal (2017) suggest that change leaders need to step back and take different perspectives or "reframe", so as to help them see the organization or change process from different people's points of view. Similar to Morgan's (2016) "organizational metaphors", the four frames are structural, human resource, political, and symbolic. Reframing can help explain why things are happening as they are and help leaders devise new ways of working by "looking through different lenses" to view what is happening.

Tip 6

Consider the external environment, cultural contexts, and political influences

Mintzberg (Mintzberg and Lampel 1998) suggests that it is better to focus on external concerns and trends than be pushed by internal concepts. Change leaders therefore need to scan the horizon and be very aware of external agendas and change drivers, so the curriculum is as future-proofed as possible. In health professions' education, this means considering professional bodies' requirements and standards; shifting policy agendas; expectations from students, employers and healthcare organizations, and international curriculum trends. Many changes are triggered by political influences, often underpinned by economic considerations. A change leader therefore needs to be not only aware of these influences but be able to "translate" or interpret national or organizational policies and strategies in the light of local circumstances and the vision. For example, a university that is very proactive and well-served in e-learning will be more responsive to developing new distance learning programs than one which has a more traditional campus-based approach. A government that takes a restrictive approach to immigration may put policies in place that discourage students, academics, and health workers to study and work. For an organization that relies on or wants to encourage more overseas students and staff, this can lead to difficulties in recruitment and retention, which in turn might lead to being unable to provide planned courses. A useful tool for analyzing the external environment is PESTLE (sometimes called PEST or PESTELI), see Table 3. Using a number of different tools will provide a rich picture of the context in which the change is being planned, identify ways forward and discover things that are not possible (see Useful Resources).

Table 3. PESTLE model.

Political — national, regional, community events, and trends
Economic — world, national, and local trends/situations
Socio-cultural — developments in society, cultures, behavior, expectations, and demographics
Technological — IT applications, materials, products, processes, medical devices, and simulation
Legal — international, EU, national, legislation changes, and prospects
Environmental — global, EU, national, local, pressures, and constraints

From a more global perspective, achieving meaningful curriculum change in different sociocultural contexts can be very challenging. This is often due to differing power relations, cultural norms, stakeholder expectations, and traditions (Brown et al. 2017). Those leading the change must have good cultural sensitivity and intelligence, be willing to compromise, listen to those impacted by the change and be attentive to formal and informal structures and systems (Gibbs et al. 2017).

Tip 7

Choose the right combination of approaches to change

Change leaders "need to balance their efforts across all three dimensions of change:

- Outcomes: developing and delivering clear outcomes
- Interests: mobilizing influence, authority, and power
- Emotions: enabling people and culture to adapt" (Cameron and Green 2015, p. 5)

Change leaders also need to consider the type of change being envisaged (see Tip 1) as their role and strategy will need to be different. For changes that are simple and straightforward, or which affect the whole organization (e.g. producing course materials to a common format set by the university) then they may be directive. The more complex or complicated the change process, they may need to facilitate emergent change, seek new ideas or devolve responsibility to others, accepting that the change may be enacted differently in different contexts. An example of this would be setting a broad set of learning outcomes to be achieved by students in clinical settings, acknowledging that the way these will be taught and learned will be very different.

The change leaders also need to think about their followers: those who need to be brought into and engage with the curriculum development process. Leaders and followers "are two sides of one process, two parts of a whole" (Chaleff 2009 p. 2) with the role of the "leader" being to facilitate and reward followers' self-management; critical thinking; team spirit; positive attitude; meaningful contributions; competences; and ethical stance (Raffo 2013). Leadership and followership is a dynamic process, individuals will step up and lead some activities (e.g. the design of a particular curriculum component or chairing a committee) whereas for others, they may play a followership role. Whilst leader and follower roles are interdependent, one is not inferior to the other, effective leadership needs skillful leadership and active followership (and good management). An effective curriculum leader will therefore understand their team's skills and interests and work with them to identify activities and tasks that best fit their capabilities, interests and career aspirations.

Tip 8

Use project management techniques for operational planning and implementation

The "new" curriculum needs to be locked into a cycle of needs assessment, curriculum design, delivery, review, and evaluation which will result in a curriculum that keeps pace with the evolving needs of all stakeholders. Constructive alignment of aims, learning outcomes, competences, teaching, and learning approaches and assessment methods supports effective student learning (Biggs 2014). Once the broad elements and structure of the curriculum have been agreed, then the detailed planning and implementation stages begin. Linear models of change are therefore the most appropriate for planning and operational aspects, such as Lewin's "freeze/unfreeze" model (Lewin 1951; Cummings et al. 2016) which divides the change process into three steps: current state (unfreeze the current curriculum)—transitional state (run modified course) —desired state (refreeze: the new curriculum is fully in place).

Planning and implementation of a new curriculum or major change requires a project management approach and mind set. This sees the activity as a temporary endeavor; as non-routine; composed of interdependent activities; carried out by people who do not normally work together; with a defined start and end date; involves uncertainties, and is designed to achieve a specific outcome (JISC 2016). Many project management approaches exist (such as PRINCE2™), however a project plan and project initiation document (PID) should all include the following: the business case; key actions and deliverables; responsibilities; timeframe and schedule; budgets and costings; physical and human resources; risk mitigation; stakeholder management; communications; closing and handing over the project, and review (JISC 2016; Gardner 2017). Tools such as GANTT charts; (named after Henry Gantt) critical path analysis; options appraisal; and risk and stakeholder analysis are all useful and readily available online.

Tip 9

Acknowledge the psychological impact of change

There are numerous reasons why people resist change; because of self-interest; misunderstanding; a low tolerance of change; or a different assessment of the situation (Kotter and Schlesinger 1989). All change (even a positive change such as moving house) involves loss, and this must be acknowledged. The psychological response to change has been described as similar to the stages in the loss-grief cycle: immobilization or denial (though fear of threat); frustration, guilt, or disillusionment (as people do not feel part of the change or deskilled); relief that something is happening and gradual acceptance; engagement, development, application, and completion (Fisher 2005; Hay 2011). In the excitement of designing and planning a new curriculum, it can be very easy to forget that a number of those involved will not want to change what they might have

been teaching for many years, or may feel they do not have the skills to adopt new teaching/learning methods. This can lead to an underestimation of possible resistance to or disengagement with the change. The change leader must therefore work empathically and with emotional intelligence (Mayer et al. 2004) to really listen to and address people's worries and concerns, seek ways to tap into their motivation, and ensure that their "followers" feel engaged in the development process. This "people work" all takes time and may require dealing with conflict at times. It is however essential for a major curriculum change, as long-term sustainability will not be provided by a select few "champions", but by a large team of academics, clinicians, and administrators, all of whom need to be on board.

Tip 10

Plan for transition and loss of competence

One aspect of implementing a new curriculum that is often underestimated is that there is a huge loss of competency during transition. This is partly due to psychological responses to change (Tip 9) but is also due to practical issues, such as running a number of different curricula at the same time for various groups of students. From a practical perspective, this is where a detailed project plan including a critical path analysis (which identifies the sequence and timings of the stages of curriculum development and implementation, and which elements are dependent on others) is very useful.

Bridges (2004) describes the transition model which has three zones (similar to Lewin's 1951 "freeze-unfreeze" model): ending, losing, and letting go; the neutral zone, the new beginning. The change leader needs to work differently with people in each of the zones to help them cope with the transition, remembering that people cope with change very differently (Kralik et al. 2006). Some "early adopters" (Rogers 2003) will race towards the new beginning, offering to take lead roles in planning and design, whereas others ("laggards") may struggle to let go of the "old" curriculum. In stage one, the leaders need to acknowledge the loss through listening, empathy, and validation of contributions, but also emphasize that there is a need to let go and move on to the new program. The neutral zone is all about providing consistent information and communicating widely to all stakeholders so that people understand the change and what it might mean to them. It is also about providing a clear structure (of the curriculum and the project plan) so people can see where they fit in and can start to make choices about what to get involved in. When the new curriculum is near to implementation, people can move forward, although faculty still need support in their new roles, successes need to be celebrated and people can slip back into old ways if they feel the change is not working.

Tip 11

Don't underestimate the complexity

In one sense a curriculum is a complicated, "hard" system that has clear boundaries, can be written down, and its many different elements identified and understood,

however it also has "soft" elements, including the people involved and the customs, rituals, and stories it encompasses. In this sense, it is a complex adaptive system in that there are many "actors" involved who have "agency", that is, freedom to act in ways that are not always predictable and that are interconnected "so that change in the context of one element changes the context for all the others" (Kernick and Swanwick 2017 p. 33). This helps explain the differences between the explicit, formal curriculum and the implicit or hidden curriculum. For example, you may have decided to exclude the skill of using a handheld ultrasound device to locate central lines from the undergraduate curriculum, feeling this is more appropriate at postgraduate level. However, your students disagree, and set up their own weekend education program with a doctor in training. After a couple of years, and much discussion, it is decided that it will be included in the final year clinical skills course.

Bolman and Gallos talk about an academic leader needing to be *"an analyst and social architect who can craft a high-functioning institution where all parts contribute to the whole, a political leader who can forge necessary alliances and partnerships in service of the mission, a prophet and an artist who can envision a better college or university and inspire others to heed its call, and a servant, both to the institution and to the larger goals of higher education and society"* (2010 p. 220). Leaders of curriculum development and implementation need to utilize "cognitive complexity" to help them fully understand the organization, curriculum, and stakeholders. This requires leaders to think in multiple dimensions and relationships; deal well with ambiguity; use systems thinking; connect people, processes and tools to meet goals, and simplify complexity for those they lead (Thornton 2013). Research models such as action research and participatory action research (PAR) are useful in complex change contexts (Lingard et al. 2008), although they can be time-consuming. However, by taking into account the specific cultural and organizational context and group dynamics (structural, individual, and relational) in designing an educational intervention and evaluating its intended outcomes (Wallerstein and Duran 2010), the eventual "success" (e.g. acceptance and smooth implementation) of the intervention is more likely. Through involvement of communities and multiple stakeholders as equal participants, policies, practices, capacity, and readiness for the change can be assessed and appropriate strategies identified which can guide meaningful curriculum change in a specific context (Wallerstein and Duran 2010).

Stacey's (2001) "certainty agreement matrix" describes four domains: simple, complicated, complex, and chaotic. He suggests that the higher the uncertainty or disagreement about something, the more likely we are to be working in the zone of complexity. If we want to make changes, then we need to work with followers to create certainty and achieve agreement. Adaptive leadership is the most helpful when working in the complex zone, recognizing that systems have inherent challenges and political dimensions (Heifetz et al. 2009). The leader's role is to set boundaries and simple rules, and create the conditions where the curriculum and the people involved can "thrive". Depending on the organization and its circumstances, "thriving" may include financial efficiency; meeting the needs of students, the university, employers, patients,

communities; demonstrating core values, or delivering excellent education or patient care. Consideration must also be given to the idea that if certainty and agreement are in place then the sense of urgency may not be there to "drive" the change process initially. This balance is sometimes difficult to achieve.

Tip 12

Celebrate success and the shift from project to "new reality"

It is essential to maintain motivation of those involved in the change, especially if this takes a number of years. Celebrating early "quick visible wins" (Kotter 1996) is important throughout, as is holding a formal launch of the new curriculum or program which should involve all key stakeholders. Activities such as developing a new imprint or "brand" can help make the changes to a new reality more visible and permanent. There should be a conscious move from a project management approach to embedding the new curriculum into the organizational structure and culture. Of course, this needs to be a living curriculum, flexible, and agile enough to respond to internal and external opportunities, feedback, and requirements, but it has to be emphasized that the new curriculum is now "the way we do things round here".

Conclusions

These 12 tips provide different strategies, models, and frameworks within which educators, managers, and administrators can utilize change models to design, develop, and deliver curricula and programs more effectively and efficiently. These, and other, change management principles can be applied at all stages of design and implementation. Thinking ahead and planning with a consideration of the complexity of curriculum change can help identify possible pitfalls and deliver the organization's vision.

Useful resources

Businessballs has free resources for self, career and organizational development: www.businessballs.com (accessed 4 August 2017)

MindTools has many open resources and tools for organizational, self and team development: www.mindtools.com (accessed 4 August 2017)

Skillsyouneed has many free resources for self-development: www.skillsyouneed.com (accessed 4 August 2017)

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