

A Design Thinking Approach to Disentangle the Wicked Problem of Re-Curriculation during a Pandemic

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Abstract

Covid-19 continues to cause major disruptions and unique challenges in the higher education sector. Some of the most profound disruptions are in health sciences where students depend on current, up-to-date information, interdisciplinary collaboration, and work-integrated learning to acquire the needed skill set to become proficient clinical practitioners. Combining the Covid-19 pandemic with emergency remote teaching and an outdated 25-year-old non-responsive, fragmented curriculum created the perfect storm for a wicked problem. (A problem that is almost impossible to solve due to incomplete, contradictory, and changing requirements that are often difficult to recognise.) In this article, the authors share their journey-in-process of design thinking disentanglement to solve this current and wicked problem. Shortly before the start of the pandemic, the specific medical school under study embarked on a re-curriculation process—a process that was rudely and abruptly distorted and tangled by the pandemic. However, despite the initial setback, they continue with this mammoth task, basing their activities on “design thinking” principles. They purposively approach this task from within a human-centred, value-based, solution-focused, action-orientated and systematic reasoning process. The five intertwined, non-linear design thinking phases of empathise (stake-holder analysis and data collection), define (data analysis and problem

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statement), ideate (possible solutions), prototype (integrated draft curriculum) and test (stake-holder feedback and input) were adopted as a method to facilitate and expedite the re-curriculation process. The process discussed in this manuscript has value beyond the health sciences. The approach to storyboarding, creating, and unpacking a new curriculum is applicable to all disciplines in multiple educational settings.

Keywords: curriculation; design thinking; solution-focused; value-based curriculum; wicked problem

Introduction

The world is filled with wicked problems such as global warming, poverty, terrorism, hunger, inequalities, and many issues related to (and partially addressed by) education and educational design. At its most basic, a wicked problem is a “social or cultural issue or concern that is difficult to explain and inherently impossible to solve” (Hendricks 2022). It is an issue that plagues governments, communities, and society as a whole (Hendricks 2022).

Wicked problems are, per definition, not new concepts. Half a century ago, in 1973, Rittel and Webber coined the term (Rittel and Webber 1973) with its subsequent 10 defining characteristics, and in 1992 Buchanan suggested that one can use design thinking to solve wicked problems (Buchanan 1992). And since educational design, and per implication curriculum development, is a wicked problem, this article will reflect and showcase how design thinking as a methodology is applied to navigate this wicked problem and structured the process of re-curriculation at a medical school at the University of Pretoria, a large research-intensive university in South Africa. As authors, we are sharing our lived experiences, metacognitive thought-processes, successes, and frustrations with the readers in an attempt to allow others to follow or replicate our design and process. For the purpose of this article as well as for the reporting to have relevance to a wider audience, the focus here is primarily on process and praxis and less on product-outcome.

Embedded in the process of curriculum development, we incorporated sustainability, since it is one of the institution’s strategic goals and a current 2022–2026 key priority (UP 2022). The “triple bottom line” (TBL) approach was applied throughout our curriculum development process. The TBL concept, as coined by John Elkington in 1994, refers to sustainability in business (Elkington 1994). A higher education institution’s (HEI) sustainability rests on the same three pillars of economy (prosperity or financial equity), people (or social impact), and environmental realities (planet). And even though as a parastatal government-funded structure in South Africa the institution is exempted from profit-making, accountability and sustainability remain of paramount importance (Kappo-Abidemi and Kanayo 2020). To warrant the reputational legitimacy and the viability of the new programme, we needed to ensure that as a committee we

identify the relevant stakeholders and their influence in and on the proposed new curriculum/programme and then meet their realistic needs in a socially responsible way (Klein et al. 2023; Saeudy 2015). However, before we describe our process, we need to describe the “wickedness” of our current situation in order to contextualise the situation for the reader. Our quick background sketch touches on various aspects and the need to start the re-curriculation process.

Background and Study Context

The curriculum under review (existing University of Pretoria Bachelor of Medicine and Surgery [MBChB] curriculum) was first implemented in 1997 (School of Medicine 2019). At the time, the curriculum was designed to host 200 students. This number of students has gradually increased over the past 25 years and in 2019, the profession-specific education and training quality assurance body (ETQA) the Health Professional Council of South Africa (HPCSA) accredited the (MBChB) programme for an intake of 300 students. In their accreditation, provision was made for a possible future increase to 400 students—pending a formal clinical teaching platform visit in 2021. The increased student numbers and the concurrent strain it placed on the existing teaching and clinical training platforms necessitate a review of the (UP MBChB) curriculum.

Developments in educational practices and curriculum strategies over the past 25 years further call for a review and alignment of current facilitation, teaching and assessment practices. Tertiary education is moving towards a hybrid teaching approach with a competency and inquiry-based learning focus coupled with authentic assessment strategies, while a further emphasis is placed on self-directed and self-determined life-long learning skills (National Academies of Sciences, Engineering, and Medicine 2018). There is also a need to develop a well-rounded graduate who can function within the Fourth Industrial Revolution (Penprase 2018), someone who is digitally fluent, and who has acquired transferable skills such as critical thinking, communication, and collaboration within a team (Frank, Snell, and Sherbino 2015).

In our quest to be locally relevant and globally competitive, we need to transform our curriculum to serve the needs of the local community while responding to global initiatives aligned to the World Health Organization’s (WHO) Sustainable Development Goals (WHO 2018) to achieve a better future for all. Higher education should be the catalyst for wider transformation of society and as such, our curriculum should reflect the changes in our society (Du Preez, Simmonds, and Verhoef 2016). The UP Faculty of Health Sciences curriculum transformation policy (UP 2019) speaks to curriculum transformation aimed at epistemological diversity and a renewal of pedagogy. A new curriculum will afford the opportunity to respond to these calls for transformative learning to develop students into change agents.

The quest for transformative learning resonates in various calls for medical education reform worldwide (Department of Health 2017; Meara et al. 2015). The Lancet

Commission on Global Surgery (Meara et al. 2015) recommends that general practitioners should be trained to high and clearly defined standards with competency-based curricula. They advocate for transformative education within the cultural context of the community. The triennial maternal mortality report *Saving Mothers 2014–2016* (Department of Health 2017) recommends improved health professional training in perioperative care and it specifically suggests that medical schools should invest in training students in ethical behaviour and attitudes as well as reviewing the curricula.

Institutions should determine the required levels of competency of doctors for their local context. Stakeholders need to agree on expected standards of practice for doctors, which in turn should inform educators (HPCSA 2018). The Collaboration for Health Equity through Education and Research (CHEER) examines strategies to increase the number of health professional graduates who choose to practise in rural areas in South Africa (Reid and Cakwe 2011). They advocate training in rural settings and assessment of knowledge, skills and attitudes relevant to practising in rural and under-served areas. Some of the medical schools in South Africa have responded by introducing rural attachment programmes in their curricula (UKZN 2019). A UP MBChB re-curriculation would offer the ideal opportunity to introduce a similar initiative.

It has become necessary to revisit the UP MBChB programme in order to prepare for an increasing number of students, to remain relevant in educational content and pedagogical practices, and to affect transformation to ultimately produce competent independent practitioners able to serve the South African population.

From the start of the project, we decided to frame and manage it as a research project. It is not always a natural inclination to combine curriculum development with the Scholarship of Teaching and Learning (SoTL) and we hope that this might provide other academics with suggestions on how to combine these various activities into a SoTL-output as well.

Research Design and Methodology

During 2019, a special interest group formed a core curriculum committee. This committee had a specific interest in redesigning a new curriculum for the UP School of Medicine. The members were all volunteers, and the majority of the members were medical clinicians employed by the Department of Health, but who were teaching in the current medical programme. Lecturers from basic sciences, a curriculum specialist (the education consultant) and the former deputy dean for teaching and learning also joined the group. A research project was registered (Ethics number: 75/2020) and the project started. This is a longitudinal project that is still in progress.

Study Design

This is an exploratory cross-sectional qualitative study with the aim to:

- Review the current University of Pretoria undergraduate curriculum.
- Perform a needs assessment to determine the competencies expected of students upon graduation to meet the requirements for internship, community service, and future healthcare delivery in a rapidly changing world.
- Design a LEAN, person-centred, responsive, and relevant curriculum with the identified competencies as objectives and align it with modern teaching and authentic assessment strategies.

From the above, we identified specific objectives that would allow for a phased approach. These objectives are to:

- Review and revise the current University of Pretoria MBChB teaching philosophy.
- Map the current MBChB curriculum and evaluate the taught curriculum.
- Evaluate the current experienced curriculum and identify areas for improvement.
- Undertake a needs analysis to assess the local disease burden.
- Map the current clinical training platform to identify challenges and opportunities for work-based training.
- Determine the competencies required of South African undergraduate students and align these with the documented HPCSA competencies.
- Evaluate and benchmark against undergraduate curricula of other South African universities as well as developing (BRICS) countries and those of leading international undergraduate programmes.
- Develop a comprehensive and appropriate MBChB curriculum for the University of Pretoria to prepare graduates for independent practice.

The specifics of the various steps will, where appropriate, be mentioned in the remainder of this article, but as stated earlier, the focus of this article is not on the outcome and research result, but more on the *process* that we followed to address the wicked problem of re-curriculation—and why we consider this a wicked problem.

A Wicked Problem

Provided the backdrop to our problem—the outdated and content heavy curriculum—we will now continue to link this “dilemma” to our initial description of a “wicked” problem. It may be important to clarify that we use “wicked” here not in the sense of cruel or malicious, but rather as a tricky and “unsolvable” problem, and something that needs constant revisiting and attention. This then baits the question of how to recognise a wicked problem. What makes a problem wicked? We will use Rittel’s 10 characteristics of a wicked problem (Rittel and Webber 1973), as expanded on by

Erasmus University Rotterdam (Partnerships Resource Centre 2016) and as illustrated in Figure 1, to support our notion that curriculum, whether revising it or creating it, is indeed a “wicked” problem. The characteristics entail the following features:

Interrelated: There is no definitive formulation of a wicked problem.

To be able to describe the problems and solutions of all aspects of the new curriculum would require an extensive list of *all* possible problems with *all* possible solutions and *all* linking factors, including *all* possible future diseases and pandemics, treatments, clinical platforms, government policies yet to come, anticipating all possible questions and challenges. This is not possible. Therefore, a continuous feedback and developmental loop needs to be incorporated into the new curriculum. As stated by Rittel, “The formulation of a wicked problem is the problem!” (Rittel and Webber 1973, 161).

Continuous: Wicked problems have no stopping rule.

In other words, these problems lack an inherent logic that signals when they are solved. There is no end to the chains that link the content—there will always be new challenges and diseases within the medical field, and new inventions that need to be incorporated. In 1896 the X-ray machine revolutionised medicine and students needed to be taught how to interpret an X-ray. Now a century later, we have artificial intelligence that interprets the X-rays on our behalf (IBL n.d.). We need to constantly adapt our training. However, when creating a new curriculum, there needs to come a point when the developers say, “This is good enough,” and publish it for implementation (and then continue with revisions—because there is no stopping rule).

Undetermined. No right or wrong: Their solutions are not true or false, only good or bad.

This is especially relevant in negotiating content, credit value and thus time for specific disciplines and specialities within the curriculum. Basically, everyone wants more time, more resources, more prominence of their field in the curriculum, and there needs to be an agreement to reach a compromise where the result will be acceptable to all involved.

Untested. No ultimate test: There is no immediate or ultimate test of a solution to a wicked problem.

There will be waves of consequences after implementation of the new curriculum. There is no litmus test to determine if the curriculum is perfect.

Denial: They cannot be studied through trial and error.

Uncertainty about consequences (due to the lack of a trial-and-error approach) can paralyse role players, making them deny the existence of the problem. We have seen this where lecturers insist that “there is nothing wrong with the current curriculum” (anonymous source).

Because the solutions are irreversible, every trial counts. To know whether the curriculum works, it needs to be implemented. Yes, all precautions and planning can

be done, but one will only know once it is implemented, and the students are in the system. “The effects of an experimental curriculum will follow the pupils into their adult lives” (Rittel and Webber 1973, 163), and in this situation, it will follow the students into their professional lives and impact patients’ lives.

Approach: There is no end to the number of solutions or approaches to a wicked problem.

It is not possible to prove that all possible problems have been identified and considered. New diseases emerge; new challenges with treatments may surface; new research might disprove current practices; the list is never-ending.

Unique: All wicked problems are essentially unique.

Our curriculum might have many similarities in general with other medical curricula, but it will be ill-advised to use a curriculum developed for another context and just implement it in our context. We have, nevertheless, looked at curricula from other low- to middle-income countries and also benchmarked against other leading international medical schools to inform some of our content.

Symptomatic: Wicked problems can always be described as the symptom of other problems.

One should never try to cure only a symptom. When trying to solve one symptom/problem, more problems emerge. When increasing our student numbers, it necessitates change in the way theoretical content is accessed. Increased student numbers also impacted learning opportunities with limited clinical platforms. Changing assessment impacts on human resources, which impacts on delivery of patient care, and so the problems emerge.

Understanding: Explanation determines nature. The way a wicked problem is described determines its possible solutions.

Role players have different worldviews, and their attitudinal criteria guide their focus, choices and input. They choose a rational explanation that suits their ontology and epistemology, and this again is evident when decisions have to be made regarding allocation of resources, time and priority to not only the content of the curriculum, but to the urgency and relevance of the project.

Responsibility: Planners, that is, those who present solutions to these problems, have no right to be wrong.

We, as the curriculum committee, are liable for the consequences of the solutions we generate. The new curriculum will matter a great deal to the people who are touched by it—whether these are administrators, students, lecturers, or patients. This also explains the varying degree of commitment and involvement (or lack thereof) from certain stakeholders. “Stakeholders are often part of the problem as well as part of the solution” (Partnerships Resource Centre 2016, 12).



Figure 1: The 10 characteristics of a wicked problem (Lubbe, Adam, and Cordier 2022)

Given the above descriptions, it should be quite evident why we, as the authors, view curriculum design and development as a wicked problem. And even though wicked problems cannot be solved, they should be attended to, and Buchanan recommended design thinking as an approach during this process (Buchanan 1992). However, for clarity purposes, we provide a quick summary of the current and alternative models that we considered during the re-curriculation process.

Curriculum Design Models

There are many instructional (or learning) and curriculum design models that exist, and the best model for a particular project will depend on the specific needs and goals of the project. As the curriculum design committee, we identified five popular curriculum models and after a comparative analysis (see Table 1), we opted to make use of the **Design Thinking Model**. The five models were:

ADDIE (Analyse, Design, Develop, Implement, Evaluate) is a linear, sequential model that is often used for large-scale projects. It is a good choice for projects where there is a clear need for a specific outcome. (As a committee, we needed a more agile and iterative model, being able to move back and forth between phases.)

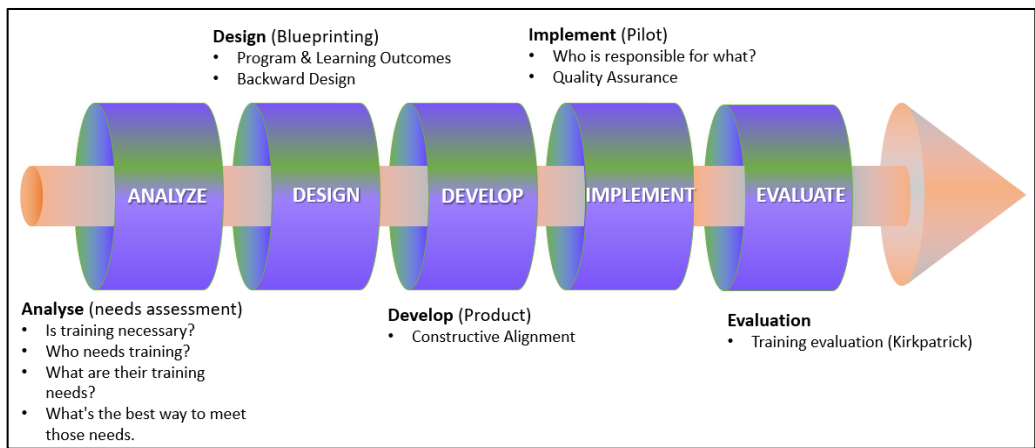


Figure 2: The ADDIE model (Lubbe 2023)

SAM (Successive Approximation Model) is an iterative, agile model that is often used for smaller projects or projects where the requirements are not well-defined. It is a good choice for projects where there is a need for flexibility and adaptability. (Although iterative in nature, this model is not suitable for a curriculum project of this magnitude. It also lacked the human-centredness we wanted to be pivotal.)

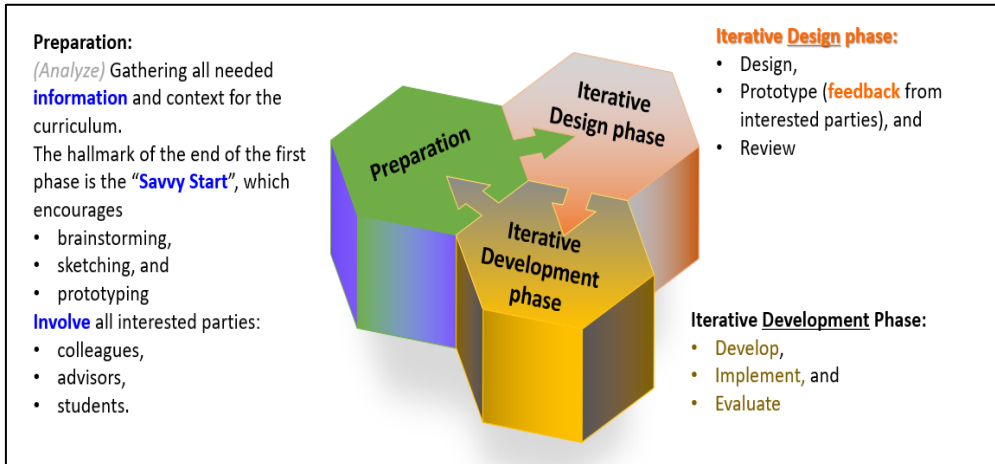


Figure 3: The SAM model (Lubbe 2023)

Design thinking is a human-centred approach to problem-solving that can be used for both instructional and curriculum design. It is a good choice for projects where the goal is to create a solution that is both effective and appealing to the learners. (This model proved to be the most suitable for our project.)

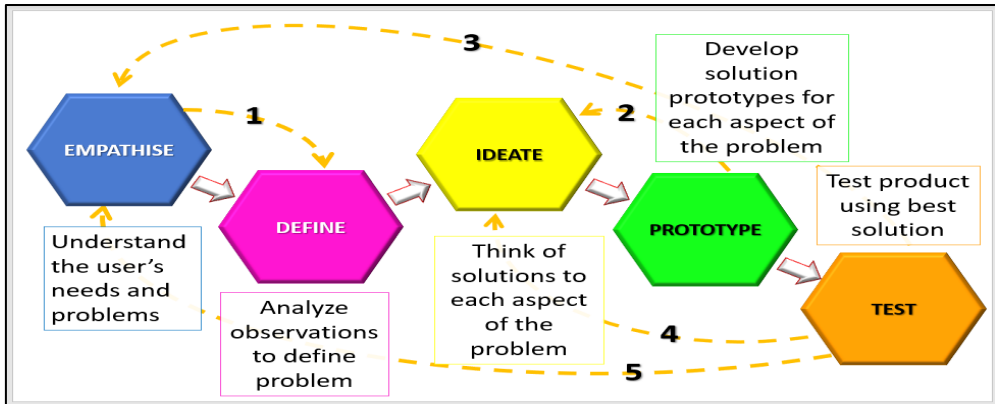


Figure 4: The design thinking model (Lubbe, Adam, and Cordier 2022)

Dick and Carey Systems Approach is a comprehensive model that includes all aspects of instructional design (ADDIE), from needs analysis to evaluation. It is a good choice for projects where there is a need for a systematic and rigorous approach. (Although a good model, as a committee we were not designing the teaching or assessment material. This approach is more applicable when the curriculum is approved, and we move to constructive alignment and piloting the final curriculum.)

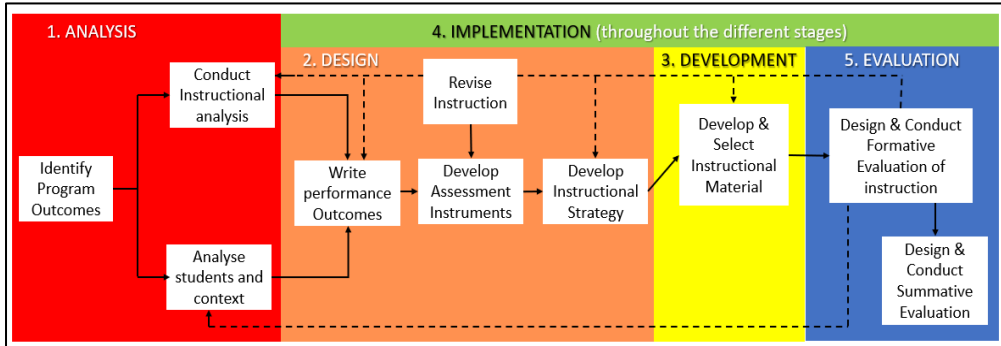


Figure 5: The Dick and Carey Systems Approach (Dulfo 2015)

Cathy Moore’s Action Mapping is a process-oriented model that focuses on creating a clear and concise plan for instruction. It is a good choice for projects where there is a need for a well-defined plan that can be easily implemented. (Again, this process delves deeper into the intricacies and process and will be useful after the initial broad curriculum has been developed and approved.)

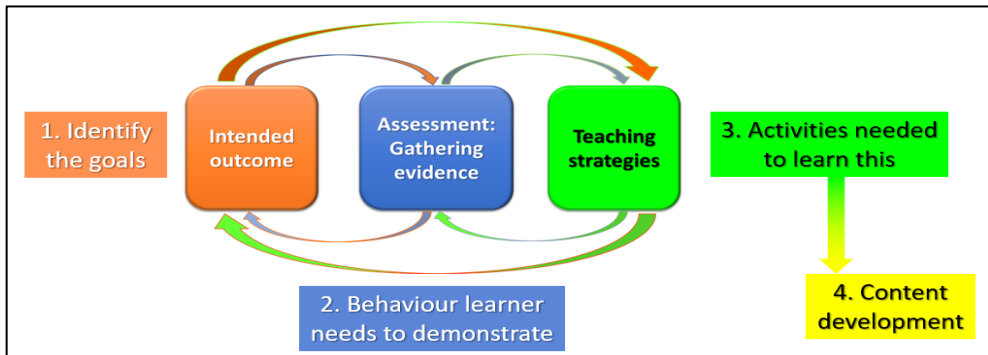


Figure 6: Cathy Moore’s Action Mapping (Lubbe 2023)

For a concise overview of the characteristics and components of the various models, please refer to Table 1.

Table 1: Comparative analysis of learning design models appropriate for curriculum design projects

Model	Description	Focus	Key Steps	Advantages	Dis-advantages
ADDIE Model (Developed by Robert Gagné and Robert Glaser)	Traditional, systematic approach; iterative process	Instructional design	Analysis, Design, Development, Implementation, Evaluation	Clear structure, adaptable, well-established	Can be time-consuming, may not accommodate rapid changes
SAM / Successive Approximation Model (Developed by Michael Allen in 2012)	Iterative and agile approach; focuses on rapid prototyping	Iterative development	Savvy, Analysis, Design, Development, Testing	Quick iteration, adaptable, client involvement	Requires skilled team, not ideal for small projects
Design Thinking	Human-centred approach; focuses on empathy and iteration	Problem solving, creativity	Empathise, Define, Ideate, Prototype, Test	User-focused, encourages innovation, holistic approach	Time-consuming, may lack clear structure
Dick and Carey Systems Approach	Systematic and linear approach; emphasises analysis and design	Instructional design	Identify instructional goals, Analyse learners and context, Design instructional strategy, Develop and produce materials, Implement throughout stages and evaluate	Comprehensive, structured, considers various aspects	May be too complex for smaller projects, lacks agility
Cathy Moore's Action Mapping	Focuses on practical actions and outcomes; emphasises performance	Performance improvement	Identify performance goals, Identify barriers, Define actions, Create prototype, Implement and evaluate	Focus on real-world results, streamlined process	May not suit all learning contexts, limited adaptability

Design Thinking as Process and Praxis

Design thinking, as opposed to many other models and approaches, is not linear in nature (Dam 2022). It can best be described as structured but “messy,” where the process

moves forward, just to backtrack to a previous stage, then again continues to a following stage(s), then backtracks again, and so the process and loop continues—as illustrated in Figure 7. This back-and-forth approach makes the process much more cumbersome and laboured, but it yields better results.

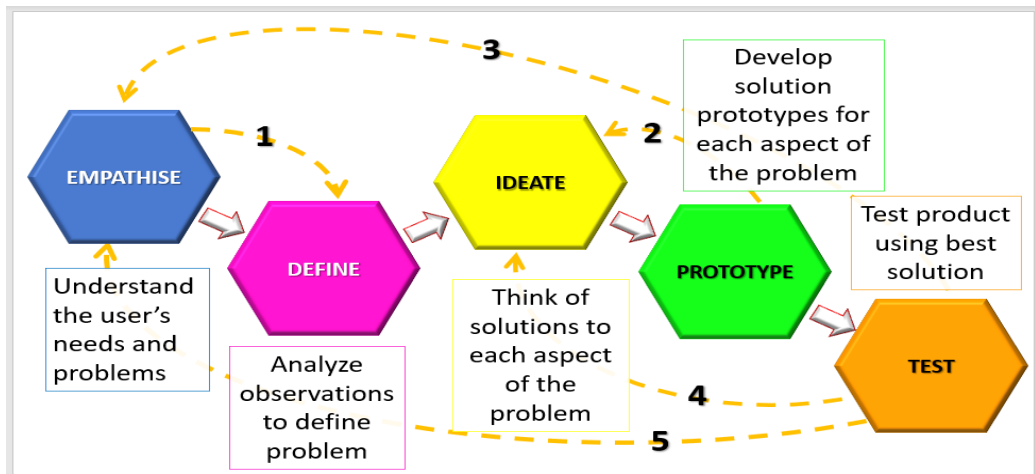


Figure 7: Design thinking process (Lubbe, Adam, and Cordier 2022)

Empathise: Stakeholder Analysis

Embedded in our envisioned curriculum and future programme’s sustainability is the relationship with stakeholders (Saeudy 2015), and that is also the starting point of the design thinking process. It starts with “empathise,” where it is crucial that as researchers and committee members we understood the needs, problems and frustrations of the stakeholders.

Stakeholder theory underpinned our departure point as it provided a theoretical framework for determining whom we should consult with (Kappo-Abidemi and Kanayo 2020). Freeman, from a business ethics perspective, alludes to the various roles our stakeholders play and the prominence they have to take in our businesses, or in our context the higher education landscape (Freeman 2009b). And although Kappo-Abidemi and Kanayo (2020) in their research found that in South Africa HEIs are yet to prove their competence to fittingly identify the stakeholders working with the institution as well as establish the needs of each entity and the level of prominence to accord to each relationship (Benn, Abratt, and O’Leary 2016), we felt confident that we managed to identify all relevant stakeholders and that we will be able to create value for all involved.

Freeman looks at the variety of stakeholders in a business and “stresses the interconnected relationships between a business and its customers, suppliers, employees, investors, communities and others who have a stake in the organization” (Stakeholder Theory 2018), and that together, they can create something that none of

them can create alone, as well as figuring out whether their interests are going in the same direction (Freeman 2009a). Since the “best path to addressing wicked problems is that collaborative, dialogic, and inherently democratic process which brings the relevant actors together in dialogue” (Waddock in Partnerships Resource Centre 2016), we decided early on who and what really counted (Dunham, Freeman, and Liedtka 2006) and then drafted our plans to get them (virtually) in a room (albeit not simultaneously). In Figure 8, we illustrate the sequence of our interactions with the different stakeholders.

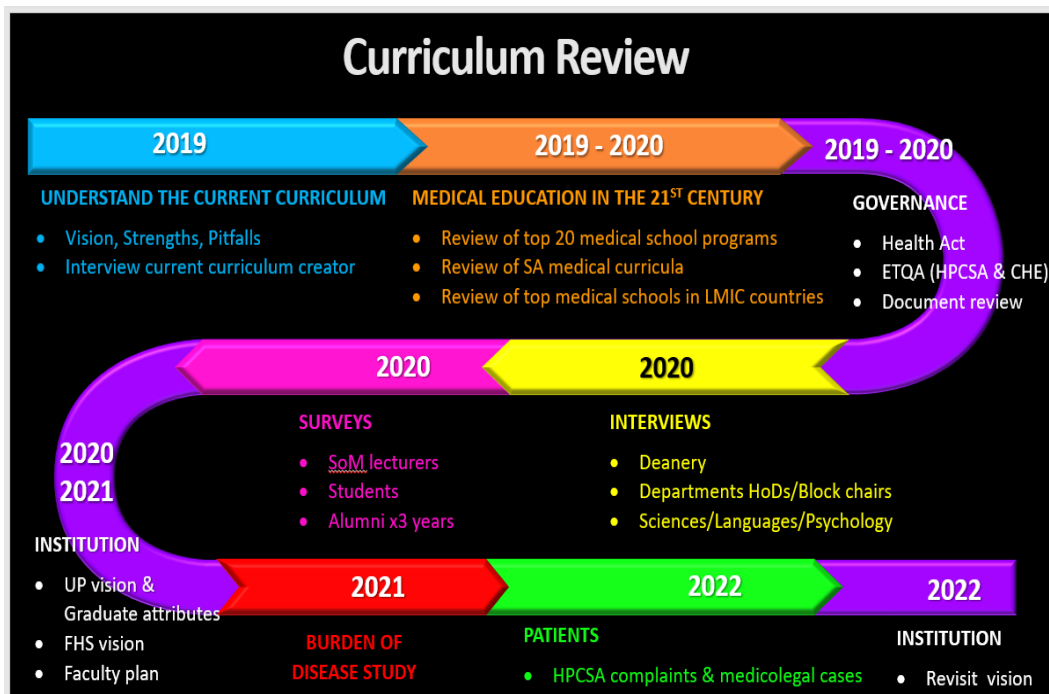


Figure 8: Process and stakeholder analysis

During 2020 (and amidst the Covid-19 pandemic), we conducted one-on-one personal interviews with the following stakeholders:

- Senior management (deans),
- Heads of medical departments and block chairs in the hospital, and
- Lecturers from basic sciences.

We also sent surveys to:

- All the lecturers in the School of Medicine,
- Current students, and
- Alumni of the past three years.

Because it is not realistically possible to interview our current patients, we looked at what they would need in the near future, as well as at what their current complaints were. For that we conducted a study on:

- The burden of disease (to inform content), and
- Complaints lodge by patients (HPCSA) and malpractice suits (to see what we might be missing).

From there we moved to the second phase.

Define

During this phase we analysed our interview and survey data and observations made. This enabled us to define the problem that would lead us to our third step. Although the particulars of the results are not relevant for the discussion in this paper (the focus is on process and praxis, not product), we can mention that the results of those interviews and surveys informed our discussions and decisions regarding content (depth and width), collaboration, integration, scaffolding and constructive alignment.

The survey results as well as the informal personal reflections of the committee members led to an interesting unofficial grouping of the lecturers—as they are a very important stakeholder group. We found that there were two distinct types of communities within this lecturer stakeholder group.

- Firstly, there are the **communities of practice** (CoPs)—a term coined in 1993 by Lave and Wenger. The CoP members have a shared vision and understanding about the necessity of the re-curriculation process. They work eagerly and relentlessly (mostly after hours and over weekends) to drive the process and support one another and contribute greatly to the process.
- Secondly, there are the **virtual advocacy groups**—those opposing the change (Dunham, Freeman, and Liedtka 2006). These are “members” who engage in extensive debate about the why and the how of the required and mandatory change. They can be viewed as passively aggressive in the sense that they do not submit required documents or content despite agreed-upon deadlines. The process is seriously hampered without their contribution.

There is also a third unofficial category within the lecturer group. They are not seen as a community, but rather as the apathetic or “lack-of-interest” group. They are neither energetically involved in the process, nor are they openly opposed to the idea of re-curriculation. They just do not participate.

This alludes to the crucial principle of stakeholder involvement and the importance of a shared vision.

Ideate

During the ideate phase we had to think and dream up solutions to each aspect of the problem. Our departure point here was to unpack the first-day competencies of a newly graduated general medical practitioner. From the deliberations we isolated eight types of competencies. Together these competencies formed the CIRCULAR model for our new curriculum.

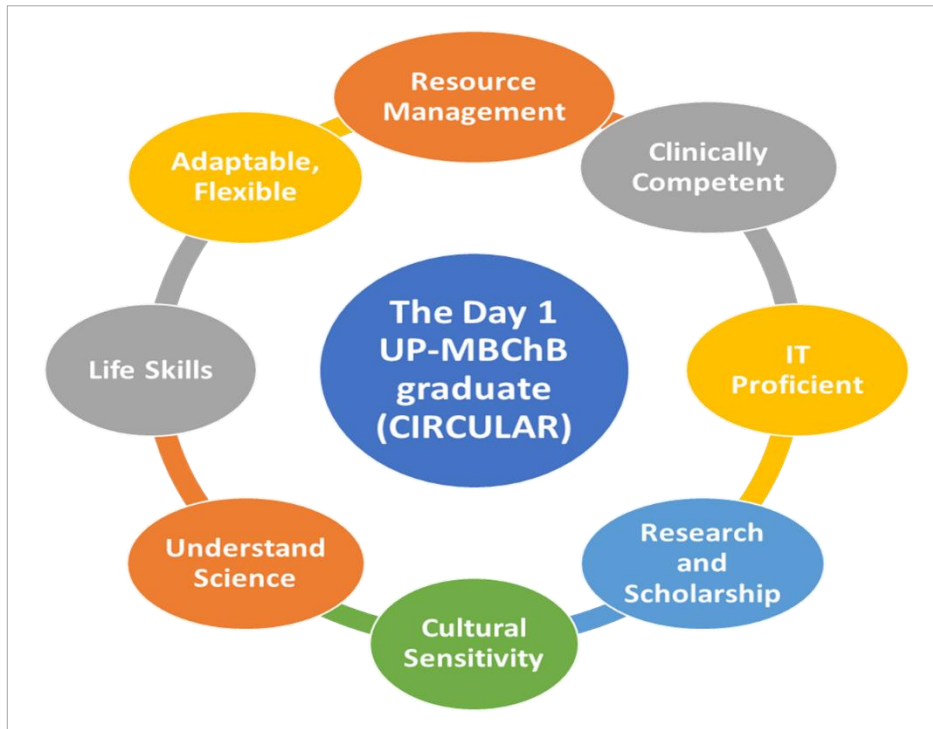


Figure 9: CIRCULAR model (as coined by Prof. Adam)

From there we moved into alignment, discussing how facilitation of and assessment for learning should happen. The discussion was on method and approach and what could be viewed as didactically sound in this curriculum.

For the teaching component (or facilitation of learning), we looked at theoretical as well as clinical teaching with a huge focus on theory-practice integration. Learning outcomes will be clearly defined to ensure relevance (Saeudy 2015). Future teaching will be interactive and engaging and there will be a move away from the one-directional teaching approach, the so-called banking or transmittal model—as described and opposed by Paulo Freire (Freire 1970), towards a hybrid and hyflex approach to teaching.

Assessment will be redesigned with a more authentic and integrated approach, including longitudinal projects. Quality assurance and work-integrated learning was also unpacked. Lecturer training was highlighted for both components of teaching and assessment.

Prototype

During this phase, the focus is on developing solution prototypes for each aspect of the problem. After determining how the new curriculum should “look and feel,” the focus moved to content and how it should be scaffolded to allow for horizontal and vertical alignment to ensure content coverage and to eliminate gaps. The clinical subject matter experts were consulted, and we started to draft an integrated curriculum with clear, measurable and specific learning outcomes, aligned to the new curriculum. New initiatives, such as “One health,” are incorporated that will allow for transdisciplinary collaboration in the curriculum. Although this phase is not yet completed, we are now in the process of moving back and forth to “test” and pilot some ideas for troubleshooting and feedback and soundboard small pockets of solutions against colleagues and stakeholders. The prototype phase of content selection and creation and the various iterations of the draft curriculum will continue into the foreseen future as all stakeholders need to give input and approval.

Test

It is the hope that the curriculum will go through all the relevant approval processes (institution and ETQAs), and that the final curriculum will be piloted during 2025 when best solutions will be identified, and revision made for quality improvement purposes.

Next Steps

The next step is to finalise the content selection, credit allocation, learning outcomes and alignment. From there, we will move towards logistics and resource allocation (human and financial) and final consensus and approval of the new curriculum, to be implemented by 2025 latest.

During these final steps, the content will also be mapped onto digital curriculum-mapping software that will allow for greater content alignment, study guide creation and better reporting. This will ensure that our new curriculum is LEAN without any content gaps or unnecessary overlaps to optimise the time students spend during their undergraduate training and in doing so, deliver a graduate who is a well-rounded, comprehensively trained, safe practitioner who can contribute to better health for all in South Africa.

Take Home Message

Curriculum development is without a doubt a wicked problem due to the multifaceted nature of intertwined challenges. It is complex and messy, non-linear, uncertain, value-laden, and dynamic.

In addition to these challenges, curriculum development is also often a political process. Various stakeholders, such as lecturers, administrators, policymakers, and future employers, may have different agendas and priorities. This can make it difficult to reach consensus on the aspects involved. However, despite these challenges, curriculum development remains an important task. A well-designed and constructively aligned curriculum can facilitate student learning, supporting the acquisition of the skills and knowledge the students need to succeed in life. By understanding the nature of wicked problems, curriculum developers can be more effective in their work without getting discouraged when encountering the various challenges associated with this mammoth task.

Recommendations

It will serve all curriculum developers well to keep the following guiding principles in mind when facing this wicked problem:

- Be clear about the problem you are trying to solve. What are the specific goals of your curriculum? What are the challenges you are facing?
- Involve all stakeholders in the process. Get input from lecturers, administrators, potential employers, and policymakers.
- Be flexible and willing to adapt. The best solutions to wicked problems are often not linear. Be prepared to change your approach as you learn more about the problem.
- Be patient. Wicked problems take time to solve. Do not expect to find a quick fix.

By following these tips, the team can increase their chances of success during the wicked problem (challenge) of curriculum development.

Conclusion

This research project has stretched over four years—and is still not completed—and although the progress was seriously hampered by the Covid-19 pandemic, the process followed and lessons learnt will provide valuable “golden nuggets” for any department or school that wants to embark on the wicked journey of re-curriculation.

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