OBESE CURRICULUM: THE MAIN PITFALL IN MOVING LEARNING INTO REAL WORLD PRACTICE

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ABSTRACT

The competency-based curriculum approach has received increasing attention in various disciplines in recent decades and it has become a dominant approach in many countries. We aimed to explore the lived experiences of medical professors and students about the movement from a discipline-based to competency-based curriculum. A qualitative method was used to through selecting participants via a purposeful sampling strategy. The study was conducted at a Medical School in Iran. The results of the research showed that, the development of competencies in the students has been abandoned and this is due to focus on the cognitive domain, isolated and appended curriculum, H-shaped curriculum. An Obese curriculum is introduced to describe such conditions.

Introduction

In many countries, discussions on contemporary higher education led to curricular reforms. A competency-based curriculum has become a necessity rather than an option, and many universities have already gone through the process of changing to a competency-based curriculum or are in the process of making the switch(Frank et al., 2017; Hsu et al., 2022). Medical disciplines have been strongly impacted by this change (Carraccio & Englander, 2013; Ten Cate, 2017), and the development and widespread adoption of competency frameworks, such as Can MEDS(Frank et al., 2015) or Good medical practice(Cumming & Noble, 2010) are good examples.
Learners develop professional competencies when working on meaningful learning assignments.
One reason for the widespread acceptance of this approach is in its merits(van der Vleuten, 2015). Competency-based curricula offer structural, content, and process advantages. Benefits include a focus on learners' outcomes and progress, formative and observation-based assessment, support for flexible learning, and increase in transparency and responsiveness to all stakeholders with a set of shared expectations and common language for learning (Hawkins et al., 2015).Competency development relies on experience and coping with real-world tasks (Vandewaetere et al., 2015). However, many universities still offer a discipline-based curriculum that is similar to the curriculum that Flexner considered more than a hundred years ago. For them, the realization of a competency-based curriculum is not an easy task and has all the features of complex change (Englander et al., 2017). Accordingly, it is necessary to examine the challenges of transitioning from a discipline-based to a competency-based curriculum.
Most education and training lack instructional design approaches; this has led to the implementation of innovations that certainly aim to better prepare trainees to perform tasks related to their work, but the results of the implementation have been far from the desired success (Dolmans et al., 2013). This is because the focus of the education has been on part tasks or separate topics. Simply put, topic integration for students has been ignored. In doing so, often a series of topics or tasks are taught, then students are requested to complete a broader task or problem as the final experience by applying those skills or knowledge related to the components or topics, but students do not succeed in integrating what they have learned with the real world (van Merriënboer & Kester, 2014).
Traditional objectives-driven instructional design models were increasingly criticized because learners often experienced their educational or training program as a disconnected set of topics and courses, with implicit relationships between them and unclear relevance to their future profession. This complaint prompted a new interest in instructional design for integrative goals(Gagné & Merrill, 1990), for example, when complex skills or professional competencies are taught. The traditional atomistic approach, where complex contents and tasks are reduced into simpler elements up to a level where the single elements can be transferred to learners through presentation and/or practice, was replaced by a holistic approach,

where complex contents and tasks are taught from simple-to-complex wholes in such a way that relationships between elements are retained.
For real-life tasks, there are many interactions between different aspects of task performance and their related goals. Integrated goals consider the ability to effectively perform each aspect of a complex task separately and also to coordinate these different aspects while performing real-life tasks (van Merriënboer & Kester, 2014).
The most well-known task-centered learning models are cognitive apprenticeship (Collins, 1991) and elaboration theory (Reigeluth, 1999), and First Principles of Instruction (Merrill, 2012), and the four-component instructional design (4C/ID) model (van Merrienboer & Kirschner, 2017).

Task-centered learning environments provide a good alternative to learning professional competencies in clinical practice(Francom, 2016; van Merrië nboer & Kirschner, 2017).
Iran is one country that revised the curriculum of its medical schools in 2016, marked by a shift in focus from ‘quantity’ to ‘quality’ (Curriculum Committee of MD School, 2017). This quality shift was supported by a description of the competencies medical students need to acquire. The revised curriculum was implemented in 2017 with a specific focus on seven outcomes such as clinical skills and communication skills. (Curriculum Committee of MD School, 2015).

Methods

This qualitative study was undertaken, using in-depth, semi-structured interviews with the six medical educators and seven student of the general medicine program at the Medical School of Mashhad University of Medical Sciences, Mashad, Iran. We used a phenomenology research method for this study.
This study was conducted at a Medical School in Iran. In 2015, Iran's Ministry of Health and Medical Education (MHME) announced that the institutions of higher education must ensure that all graduates of the medical programs can demonstrate professional commitment, decision-making, and problem solving (clinical skills), as well as communication skills, sensitivity to caring for patients, self-regulated skills for individual development or continuous learning, and the ability to improve community health. Recently, with an emphasis on expanding the role of family doctors, the re-design of the programs to prepare medical doctors has become more critical in the medical education system in Iran. To meet the new educational aims, a new curriculum was developed in 2017 by introducing the core competencies. Mashhad University of Medical Sciences is one of the best universities in Iran which has 25 clinical and 19 basic departments. The research was conducted on the medical school curriculum revised in 2017-2018.
To identify and select the participants, a purposeful sampling strategy was used. Given the goals of the current research and the revised curriculum characteristics,

the interview statements were developed. Then, we conducted a pilot study on three participants to examine the content validity. The participants were informed about the interviews and the reasons and interests of the researcher of the study. Then, they were invited for the individual interviews. All interview were conducted by first author who is a professional expert at curriculum studies. Moreover, no relationship was established between the interviewer and the participants prior to the study.

The interviews with the students and professors of the basic sciences were conducted in the department of medical education at Mashhad University of Medical Sciences and the interviews with the clinical professors were conducted in Imam Reza hospital. All interviews were conducted using the face-to-face method and no one else was present besides the participants and researcher during the interviews. Each interview lasted for 45 to 60 minutes. Notes were taken by the researcher and all interviews were recorded and transcribed verbatim. None of the interviews were repeated. The transcripts were returned to the participants for the comments and corrections. All data were kept confidential and were only accessible to the investigators. The participants signed the informed consent forms. All professors and students who were invited agreed to participate (participation rate of 100%). After each individual interview, we checked whether new information had emerged. Interviewing continued until saturation was reached.

Three successive phases were used to analyze the interviews based on the Miles and Huberman's theory (2003) about qualitative data analysis. In other words, data reduction by coding, data structuring by categorization, and data interpretation by discussion. MK imported all interview transcripts into the MAXQDA software package and coded all items. The codes were used as the first coding dictionary. MK revised the coding dictionary by removing the code duplicates and discussing the codes. MK and JvM structured the codes and discussed their structures to identify the dimensions. During the analysis process, sub-themes were created and/or reduced by merging them, thus allowing the analysis to reach internal homogeneity and external heterogeneity. The questioning and challenging of the emerging themes continued in an iterative process via the thematic analytical model by going back and forth between the researchers' assumptions, ideas, questions and explanations and, then, a validation of these themes through comparing them with the interview texts. The analysis was continuously discussed and re-evaluated by authors(MK and JvM) to enhance the reliability of the analysis through the exploration of different aspects, the contradictory information, and the interpretations. The participants were not asked to provide feedback on the findings. The data interpretation via discussion was the connecting activity throughout the whole analysis process and during the decision-making process about the relevant quotes.

Results

In this section, we will describe the professors and students' experiences.

Focuses on Cognitive Learning

The medical professor believed that the value of the contents is not well appreciated by the students because they have not been given the opportunities to put what they have learned into practice immediately.

> *"In different courses, we try to use the main up-to-date resources that are comprehensive and contain a lot of content, in teaching. It is very difficult to present all these materials during the semester sessions and, therefore, there is no opportunity for other learning activities."*

Appended Curriculum

From the students' point of view, basic courses seem unnecessary because they have no specific connection with the clinic. Student F stated:

> *"Basic science courses, anyone we ask says, are not important courses; they are useless because they have a series of lessons that have very little to do with the clinic in terms of content, and those parts that are related to the clinic, students do not understand the connection."*

Isolated Curriculum

Students believed the curriculum prevents learning to diagnose and treat diseases in connection with the real clinical environment. Student D described her experience as:

> *"The physiopathology course is an intensive and difficult course in which a lot of things are told to students in a short time. Professors do not guide us how to link our knowledge to clinical skills to have effective outcomes to use in our workplace."*

Accordingly, Professor B stated:

> *" The students study complex contents in their theoretical courses, but they do not have enough opportunities to acquire the needed competencies in their workplace."*

H-Shaped Curriculum

Students expect the knowledge they have gained over the years will act as a bridge helping them to transfer from university to the real therapeutic (medical) environment; however, they feel that the bridge is broken. For example, student G stated:

> *"We expected all the different courses we took in college to prepare us for real-life issues in the workplace, but our experience does not show that at all."*

Discussion

This study focused on analyzing the lived experiences of general medical students and professors about a curriculum that is in a process of change, from discipline-based to competency-based. The findings of this study are significant and show that experiences of our participants reflect the challenges of designing a learning environment that helps students develop medical competencies. Understanding the unique environment of clinical education and how it affects learning and performance brings greater clarity to the students' lived experiences of the medical curriculum. These finding and inclusion of trainees in these research can drive conversations on future curriculum change. The remainder of the takeaways are interesting and beneficial for the field.

The students' lived experiences of taking basic courses show that they consider these courses as being unnecessary because, in their perception, they have nothing to do with the clinic. This experience can be a natural result of a discipline-oriented curriculum that focuses more on academic disciplines than anything else (Ornstein & Hunkins, 2018).

In addition, students stated that taking basic science courses in the classroom without being associated with the clinical setting reduced their motivation. One of the disadvantages of the disciplinary approach is the separation of the curriculum into pre-clinical and clinical sections, which makes the student in the first academic years have no experience of being in the environment and seeing real patients, and this deeply frustrates students(Papa & Harasym, 1999; Sivapragasam, 2016). In addition, the results of research show that a lack of integration of anatomy courses with the clinic prevents near and far transfer of learning(Cheung et al., 2021). All physicians need knowledge of the basic sciences, although this level of need varies between different specialties. Balancing clinical and basic sciences and, especially, fully integrating them in a way that best serves the competency development of medical students is an issue that needs to be the focus of many future innovations (Bandiera et al., 2013; Irby et al., 2010).

The obese curriculum and can be good concepts to describe these experiences of students because, on the one hand, the curriculum is full of courses that have no clear relationship with medical competencies and, on the other hand, in this type of curriculum, the quantity of knowledge taught in each lesson is emphasized. Developing professional competencies requires a lean curriculum; a curriculum that is outcome-oriented and the mission of each course in the curriculum is to help students develop specific and core competencies. At the level of courses, the role of each learning activity, students' assignments, and assessment methods should be aligned with the expected outcomes of the course, which is to educate and assess competencies.

In the obese curriculum, theoretical courses are considered separately from practical courses, and each course is considered completely separate from the other courses, which we call an isolated curriculum, which leads to the formation of an H-shaped curriculum(Wijnen-Meijer et al., 2009). Nonetheless, the lean curriculum is

interdisciplinary and integrated and has a Z-shaped structure(Wijnen-Meijer et al., 2015). These features cause some imbalances in content, learning experiences, teaching methods, and assessment in the obese curriculum, which we call appended curriculum, while the lean curriculum will be a balanced one. Table 1 compares the obese and lean curriculum.

Table 1. *The obese and lean curriculums' characteristics*

	Obese Curriculum	**Lean curriculum**
Outcomes	Knowledge, skills, and attitudes in different compartments	Competencies
Organization of contents	Atomistic	Holistic
Main Approach	Discipline-based	Task-centered
Vertical organization	H Shape	Z shape
Continuity	Linear	Spiral
Learning environment	Classroom and practicals	Simulation and real-life learning environment
A beginning Starting point for design?	Subject matter that might - eventually – help to perform real-life tasks	Real-life tasks that require particular subject matter
Learning	Retention	Transfer
Teaching	Individual Professors	Teaching team
Curriculum development	Faculty	Co-creation by a multidisciplinary team
Integration	Isolated	Integrated
Coherency	Appended	Balanced
Accountability	Social	Organizational

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