

# Medical educators' Beliefs about Alignment of Learning goals, Teaching and Assessment in the Context of Curriculum Changes

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## Research article

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# Abstract

**Background:** Achieving changing needs, advancing knowledge, and innovations in higher education require constant changes of medical school curricula and brings greater clarity to the influence of the core beliefs held by medical educators. The purpose of this study was to describe medical educators' beliefs about alignment of learning goals, teaching and assessment in the context of curriculum changes.

**Method:** A qualitative method was used to this goal by selecting faculty participants in a purposeful sampling strategy. For the individual interviews, we invited both professors of basic sciences and clinical professors who had worked with medical students for at least five years.

**Result:** Findings showed that gaps between theoretical contents and real world settings caused ignorance of the core competencies in learning and assessment processes. It also indicated gaps between what students learn in class and what they need to know and, especially, do in hospitals. Furthermore, the current beliefs of teachers need to be further changed to realize more integrated learning in the future.

**Conclusion:** A change towards more active teaching methods and a whole-task approach to teaching and assessment is needed in order to help students acquire desired competencies. Thus, a shift from a discipline-based to a competency-based approach to teaching and learning is needed.

## Background

Changes in education, including the curriculum and modes of teaching and learning have been a major focus of higher education. Society's changing needs, advancing knowledge (Khan, Khawaja, Waheed, Rauf, Fatmi 2006) and innovations in education (Dagher, Atieh, Soubra, Khoury, 2016) require constant changes of medical school curricula (Bland et al., 2000; Cerimagic, 2018). In line with these changes, problem-based curricula and, more recently, competency based curricula have become common. Previously, curricula were often subject- or discipline-based (Midlöv et al., 2015) but nowadays, they often focus on problems or tasks that make an appeal on to-be-developed competencies. This curriculum change has significant implications for teaching and assessment which requires that teachers engage in more complex practices (Fives & Buehl, 2016). Meanwhile, since learning can be seen as a social and subjective process in which the learner construct meaning, it is important to investigate the way that learners obtain a better understanding of complex learning (Welnik, et al, 2020). Teachers, as the main agent in educational change, play a vital role in the successful implementation of new curriculums (Fullan, 2007). They, responsible for enacting curriculum decisions, hold beliefs that can support or undermine how learners experience these decisions and their activities are shaped by their beliefs (Ahsan & Anjum, 2012). Accordingly, teachers' beliefs have been viewed as a key issue in the context of most educational reforms (Hoy et al., 2006). One possible explanation for incomplete implementation of the ideal curriculum may be found in teachers' beliefs (Cerimagic, 2018). Therefore, research on teachers' beliefs is seen as a key area that needs to be addressed in the context of educational reforms (Hoy et al.,

2006). Konings, Brand-Gruwel and Merriënboer (2007), for example, examined the connection between successful implementation of an educational reform and teachers' beliefs regarding their teaching roles. In their study, the purpose of the reform was to provide a powerful learning environment that increased students' learning and problem-solving skills. The results indicated that the success of the reform was dependent on the coaching and facilitating roles that teachers assumed.

Teachers, as all humans do, hold beliefs about a variety of topics, relationships, and processes (Fives & Buehl, 2012). Their beliefs shape real behavior towards their learners (Aflalo, 2012; Hargreaves et al., 2012). Beliefs play a significant role in determining how educators organize knowledge and information and it means 'represent the most stable and least flexible aspect of a person's perspective on teaching' (Taylor et al., 2007). Teachers' beliefs refer to an integrated system of judgments that relate to teachers' classroom work (Peck & Herriot, 2015). They can help students to convey their experiences more explicitly (Sukhato et al., 2016; Siemens, Punnen, Wong, Kanji, 2010).

In sum, teachers' beliefs and practices play a key role in curricular reforms because they are the performers of educational change (Hall & Hord, 2015; Rogers, 2010) and policy makers, university leaders, department heads and teacher educators must attend to teachers' beliefs as part of any change effort. Despite the growing trend of recognizing the importance of teaching beliefs, little substantive research exists specifically in medical education about how medical educators make meaning of beliefs in relationship to curriculum change. This lack of research is problematic for at least two reasons. First it is common for medical faculty to have little if any preparation in their role as teachers. Usually, their development as teachers is through a series of 'trial by fire' experiences with lectures, tutorials, and clinical teaching. Little time is spent reflecting on underlying beliefs about teaching. Second, educators in a competency-based curriculum have different responsibilities. Their beliefs and practices should be aligned with learning goals and in order to reach those goals, educational interventions for teaching complex tasks are needed (Tondeur et al., 2017). In problem-based and competency-based curricula, learning goals are concentrated on competencies that students must be able to apply in the real world context, and teacher practices should thus require students to develop competencies necessary to complete meaningful tasks and to solve problems (Dolmans et al., 2013). Such complex tasks typically make an appeal on a variety of competencies, that is, they require the integration of multiple objectives (van Merriënboer & Tjiam, 2013). Whole-task approaches to teaching (Francom & Gardner, 2014; Van Merriënboer & Kester, 2008) provide an appropriate model for the development of educational programs that help students learn and transfer professional competences to an increasingly varied set of real-world contexts and settings. It also helps students in their future career endeavors (Achi, 2020). The competencies to be learned are introduced as early as possible through different learning tasks that make an appeal on those competences (Susilo et al., 2013). The final attainment levels are often described in terms of standards that must be reached for each of the to-be-acquired competencies (Van Merriënboer & Kester, 2008).

Thus, the purpose of this study was to explore teachers' beliefs on learning goals, teaching methods, assessment methods and their interrelationships and how these beliefs make meaning of their practice in

the context of curriculum change. Specific questions guiding the study include: Do teachers believe that current teaching methods help students acquire desired competencies? Do teachers believe that current assessment methods are suitable to assess the competencies that students are expected to acquire? Do the teaching methods and the assessment methods match each other and the realization of desired competences?

## Methods

This qualitative study was undertaken using in-depth, semi-structured interviews with 10 medical educators of general medicine program, Medical School, Mashad, Iran. To identify and select participants, a purposeful sampling strategy was used as shown in Table 1. For the individual interviews, we invited both professors of basic sciences (such as biochemistry, physiology and anatomy) and clinical professors (professors of externship and internship) who had worked with medical students for at least five years. .

Table 1  
Characteristics of the participants

<b>Educators(N = 10)</b>	
<b>Characteristic</b>	<b>Description</b>
men	8
women	2
Professors of basic department	5
Professors of clinical department	5
Work Experience	More than 5 years
Age	40–60

## Study Context

This study was conducted in a Medical School in Iran. In 2015, Iran's Ministry of Health and Medical Education (MHME) announced that institutions of higher education must ensure that all graduates of the medical programs must demonstrate professional commitment, decision-making, and problem solving (clinical skills) as well as communication skills, sensitivity for caring for patients, self-regulated skills for individual development or continuous learning, and improving community health. Recently, with an emphasis on expanding the role of family doctors, the re-design of the programs for preparing the medical doctors has become more critical in the medical education system in Iran. Therefore, to meet new educational aims, new curriculum was modernized in 2017 by introducing 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 is conducted in the medical school curriculum revised in 2017–2018.

# Data Collection

Professors were informed collectively about the interviews and invited for individual interviews with one of the researchers. The interviews with professors of basic sciences were conducted in the department of medical education at Mashhad University of Medical Sciences and interviews with clinical professor were conducted in Imam Reza hospital. Each interview lasted for 45 to 60 minutes. All interviews were recorded and transcribed verbatim. All data was kept confidential and was accessible to the investigators. All Participants signed informed consent forms. Two departments were involved in the data collection: we interviewed 10 professor (5 from basic sciences department and 5 from clinical department). After each individual interview, we checked whether new information had emerged. Interviewing continued until saturation was reached.

# Data Analysis

Three successive phases were used for analyzing the interviews based on Miles and Huberman's theory (2003) about qualitative data analysis: data reduction by coding, data structuring by categorization, and data interpretation by discussion. NH imported all interview transcripts into the MAXQDA software package and coded all items. The codes were used as a first coding dictionary. MK revised the coding dictionary by removing code duplicates and discussing the codes. MK and JvM structured the codes and discussed their structures in order to identify dimensions of learning goals, teaching and assessment. Data interpretation by discussion was the connecting activity throughout the whole analysis process and during the decision-making process about relevant quotes.

# Results

In this section, we will describe teachers' beliefs about alignment of learning goals, teaching and assessment. The interview data provided a much more nuanced understanding of participants' beliefs about teaching in medical context, and the result are discussed below:

## Gaps between Theoretical Courses and Practical Periods

Along with an emphasis on content, the medical educators in this study gave a great deal of attention to the topic of how learners learn the content. Participant (B3) indicated in the interview that he emphasizes the importance of learning the content. He stated:

My expectation is students are going to do their best at everything particularly to learn what they need to know. They have to have the knowledge to be current and be well informed.

Furthermore participant (B2) explained:

Theoretical courses should prepare the learners to have integration of clinical knowledge, communication skills, and legal and ethical consideration in a real setting. They should be able to achieve the challenges by contextual factors; however, the current status doesn't show the desired condition in such way.

Virtually all of these clinical and basic science educators emphasized finding ways to help those they teach to learn what they need to know to be effective physicians that was largely related to content. Yet, there was a disconnection between the way knowledge was learned in the class and the way students used it in the real-world context.

#### Limited Learning Opportunities

Learning opportunities may refer to formal courses, projects or assignments cause students to develop competencies, but these are not the only way to learn. Learning opportunities should be aligned with variety ways of learning as role play, problem solving, and core competencies. Most of these medical educators believed learning opportunities are limited; however, they are trying to point out the relevant and important information in the context to facilitate real learning. For example, Participant (C4) stated:

It is impossible to contemplate teaching in isolation from learning. And teachers' beliefs about what learning is will affect everything that they do in the classroom, whether these beliefs are implicit or explicit.

#### Ignorance of the Core Competencies in Learning Processes and Assessment

Learning processes are processes intended student attainment of essential concepts and competencies. Meanwhile, students can be supported by allocation their attention to the competencies (A framework that identifies and describes the abilities physicians require to effectively meet the health care needs of the people they serve). Accordingly, participant (C1) stated:

Education system in medical context is designed in a complex way that many more students educate in one class and in this case, how a teacher can communicate well with all of them in a limited time and how can manage them to acquire core competencies.

Also, participant (C3) recognized that:

Focusing on learning process, there is an important factor that students should understand what they should study. If we consider the core competencies in our teaching process, students will experience the outcomes in the real context. Teachers should change students' attitude toward learning and practicing in the real world setting.

Similarly, participant (C2) stated:

Developing instruction that meets the needs of a diverse population and managing students so each individual learns is a complex process. Learning processes should provide a specific direction on how its information should be applied to solve problems within a specific context.

#### Gaps between Content (Class) and Context (Workplace)

The medical educators revealed a belief that finding ways to fill in the gaps between content and context is important. Participant (B1) stated:

Content is primary and students should be armed with knowledge to apply them in a real world setting. My expectation is students are going to learn what they need to know to be effective physicians.

In addition, Participant (B5) explained:

Most of the students don't know about the philosophy of subjects they are studying; however, some of the chosen content is also not more related with the real world that students will experience in the context. The students study heavy content in their theoretical courses but they do not have enough experiences in acquisition of competencies in their workplace.

Thus, while content is primary, it needs to be put in the context. These educators saw part of their role as help learners discern from vast amounts of content knowledge what to apply to specific cases, and pointed out cues in real situations in order to help learners sort out what is relevant in context.

#### Non-systematic Assessments

Assessment is an essential process of teaching and learning. Beliefs about the importance of assessment were reflected in all teachers' points of views. The analysis of the data collected via the interviews highlighted the following issues:

Assessment is conducted according to the book content and usually we don't take practical tests in the basic courses because applying practical tests in crowded classes are a complex processes. (Participant B1)

Most of medical educators believed that traditional method of assessment is used by most of the teachers. For example, participant (B2) remarked:

I feel that the knowledge of making a test is one way that makes a teacher unique and teachers should consider it. Unfortunately usually, we assess students by taking multiple choices tests because classes are crowded and it is difficult to check 100–150 paper at once; however, from the last year we start to take explaining questions.

#### Practicing in Hospital instead of Clinics

Finding by medical educators indicated that GPs are practicing in hospitals. This group of medical educators found that practicing GPs in specialist hospital is an important challenge. They believed that GPs need to work in clinics or special labs for their practical experiences. Participant (C1) stated:

The educational system is designed according to MD system for both MD and GP students with the same content. In fact, they study the same content but their work position is completely different. MDs have a good work position in the future with high salary but GPs don't have such a good position.

Similarly, participant (C5) recognized:

On a practical level, working in the particular division can assist students a better understanding and also may assist them in the design of their professional development. Educational system should consider possible ways to prepare appropriate learning orientation for GPs.

#### Clinical work Preference Rather than Teaching

The result of finding by educators' beliefs indicated that teaching competes with many other demands and takes places in a context that has constant distractions outside the control of the attending

physician. Participant (B4) explained:

I feel like I have so much stuff that I just want students to understand, that I want them to through and I don't feel I have the time to do it. Some days I have clinic in the afternoon so I am running back and forth.

Furthermore, participant (C3) stated:

The majority of training takes place in practice. Most of medical educators are experienced doctors and they are engaged in healthcare system. Students should balance asking for feedback on their performance, expressing their learning needs and discussing their expectations about teaching with their teachers.

But in each of these educators' remarks quoted above, there is a treatment preference than planning on teaching. It also should be mentioned that both basic sciences educators and clinical educators believed that the context of medical school is more atomistic rather than to be holistic and there is a disconnection between basic knowledge and clinical sciences.

## Discussion

This study focused in particular on what medical educators believe about teaching, learning and assessment in the context of curricular change and brings greater clarity to the influence of the core beliefs held by medical educators. It was demonstrated that quality of teaching methods is fundamental to students' learning. Based on it, findings showed gaps between the current status in medical school and desired competences of graduated students. Results indicate that teachers' beliefs directly affect their teaching methods and, then, their teaching and assessment methods affect the learning goals they set for their students.

The findings of this study are significant and show that the participants in this study share a set of core teaching, learning and assessment beliefs that shape their practice as teachers.

Meanwhile, medical educators believed that gaps between theoretical contents and real-world settings cause an ignorance of the core competencies in learning and assessment processes. Another barrier could be in basic courses such as physiopathology, anatomy, biochemistry and clinical courses as checkup which seemed to be in the form of H model. More specifically, in this model students pass all their basic course inside the class without getting any experience in practical courses and then go to the hospital as residents. They seemed to ignore the residents' expectations that they show their leadership and expert knowledge and be proactive. Thus, following this model causes gaps between what the students learn in class and what they need to know and, especially, do in hospital. Learning in such educational climate is knowledge-based context rather than competency-based.

It also should be mentioned that the first years usually focus on basic sciences while subsequent years deal exclusively with clinical education and skill training. Learning is believed to be a simple accumulation of knowledge. This fundament of basic science is concentrated in a preclinical phase



usually lasting four years. Every basic science is presented in an isolated course and there is little or no integration across disciplines (Bergman & de Goeij, 2010).

Medical training is inflexible, overly long, and not learner-centered. Clinical education for both students and residents excessively emphasizes mastery of facts, inpatient clinical experience, teaching by residents, and supervision by clinical faculty who have less and less time to teach, and hospitals with marginal capacity or willingness to support the teaching mission. We observed poor connections between formal knowledge and experiential learning and inadequate attention to patient populations, health care delivery, patient safety, and quality improvement. Learners lack a holistic view of patient experience and poorly understand the broader civic and advocacy roles of physicians. Finally, the pace and commercial nature of health care often impedes the inculcation of fundamental values of the profession (D. M. Irby et al., 2010).

Despite their emphasis on content, medical educators believed that learning opportunity is limited which is the consequences of lecture-dominated curriculum. In this approach, learning processes are mainly the result of direct teaching. In a lecture-dominated curriculum with limited or no clinical experiences, students have few opportunities to observe the professional demeanor or actions of practitioners and thus have no role models to emulate. Later, as more laboratories and clinical experiences are introduced, there is still no formal focus on the development of professional competencies and a professional identity.

The revised medical education curriculum in Iran is expected to improve the quality of instruction and provide opportunities for medical students to enhance their problem-solving, critical thinking and decision-making skills. In this curricular change, it is important that learning experiences provide students with knowledge and competencies that can be used in real-world situations; however, the reform should be continued because there is still a long way to go.

The use of authentic learning, connecting knowledge to real-world issues, problems, and applications, is a powerful learning strategy. The competency-based approach allows learners to practice seven core skills as clinical skills, communication skills, caring of patients, health progression, individual progression, professional commitment and decision making, reasoning and problem solving (Curriculum Committee of MD School, 2015). For integration of the complex skills has been started during the learning process, learners will be more likely to transfer the skills later on in the real setting. In task-centered learning environments, it is real-world problems or tasks that drive learning (Francom, 2016; Van Merriënboer & Kirschner, 2017).

Integration in medical education is important because medical practice itself requires a great deal of integration. Integration refers to the connection of formally structured knowledge of the basic, clinical, and social sciences with clinical experience in a much more balanced manner than is true today (D. Irby, 2011). Integration promotes the blending of the basic sciences with each other as well as with the clinical sciences. The benefits of integration are attributed to presenting information and problems in a way that mimics how they are encountered in the real world, and presenting facts in relevant, meaningful, and

connected ways. Integration should be viewed as a strategy of curricular design and development and therefore should be considered at the program, course, and session levels (Ilkiw, 2018).

## **Conclusion**

A change towards more active teaching methods and a whole-task approach to teaching and assessment is needed in order to help students acquire desired competencies. Thus, a shift from a discipline-based to a competency-based approach to teaching and learning is needed. Therefore achieving an integrated learning context, the current beliefs of teachers need to be further changed to realize more integrated learning in the future. They should connect the basic sciences and clinical sciences and add core competencies in their lesson plans. Also, academic members of medical school should revise the medical school curriculum by applying inter-discipline approach, holding instructional seminars and analyzing successful consequences to apply them as appropriate interventions.

## **Strengths and limitations**

We used a qualitative method to collect and collate teachers' beliefs on learning goals, teaching methods, assessment methods in the context of curricular changes. To the best of our knowledge, this is the first research in medical education to comprehensively address these issues.

Our study has some important limitations. Firstly, as all participants were from a Family Medicine Department, their beliefs might not be generalized for faculties in other fields and other settings. Due to these limitations, further study should assess whether the perceived benefits and concerns we discovered would be similar among teachers in different settings and fields of practice. Secondly, all teachers participating in this study were Iranian and their expression of feelings may differ from teachers in other cultures. Lastly, the potential for interviewer bias might have influenced the views of participants during the interviews. We attempted to reduce this possibility by limiting their dialogue to questions and clarifications, and by instructing them to avoid expressing opinions.

## **Implications**

Several implications arise from our study. Most of medical educators believed that learning outcomes and assessment methods are not aligned with curricular changes. Learning outcomes and assessment methods must be aligned and therefore integrated learning must be assessed in an integrated manner. Furthermore, a change towards more active methods and a whole-task approach to teaching and assessment is needed in order to help students acquire the desired skills. Finally, teachers should be given ongoing support, including the provision of feedback on individual performance.

## **Abbreviations**

GP  
General Practitioner

MD  
Medical Doctor  
MHME  
Iran's Ministry of Health and Medical Education

## **Declarations**

### **Ethics Approval and Consent to Participate**

This study was carried out in Iran in accordance with the applicable rules concerning the review of research ethics committees and informed consent (The Research Ethics Committee of the Mashhad University of Medical Sciences University).

### **Consent for publication**

"Not applicable"

### **Availability of data and materials**

Data will not be shared due to restrictions stipulated by the ethics committee when approving the study.

### **Competing interests**

The authors declare that they have no competing interests

### **Funding**

Not applicable

### **Authors' contributions**

NH imported all interview transcripts into the MAXQDA software package and coded all items and was a major contributor in writing the manuscript. MK interviewed with all participants and revised the coding dictionary by removing code duplicates and discussing the codes. MK and JvM structured the codes and discussed their structures in order to identify dimensions of learning goals, teaching and assessment. All authors read and approved the final manuscript.

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