

Future Studies: Dimensions and Components in the Educational System of a University of Medical Sciences

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Abstract

Background: One way to make change in the field of education is through future studies. Considering the role of future studies in building a better future for the country's medical education and health system, the establishment of the required bases in medical education is necessary.

Objectives: The present study aimed to investigate the dimensions and components of future studies in the educational system of a university of medical sciences.

Methods: In this grounded-theory study, the statistical population included expert and knowledgeable faculty members with an experience of delivering services as directors, principals, and deputies of the faculties of Babol University of Medical Sciences, Mazandaran, Iran. In-depth and exploratory individual interviews were held through a questionnaire containing six standard items within October and December 2018. The interview process was completed based on the data saturation law, and the required conclusion was drawn with 10 samples.

Results: A questionnaire with 50 components in three main dimensions, including infrastructure (25 components), management and faculty members (9 components), and outputs (16 components), was designed. Moreover, the validity and reliability of the questionnaire were confirmed.

Conclusion: It is time to build necessary capacities for future studies in the universities of medical sciences and provide the possibility for extensive participation and support of researchers and faculty members in future studies programs in the field of medical education and health research in Iran. The dimensions and components obtained from this study can be helpful in this regard.

Keywords: Future Studies, Dimensions, Components, Universities, Education, Medical, Science

Background

Humankind is experiencing the early years of the third millennium while the world is full of new uncertainties, opportunities, and threats. The trend of various human evolutions and developments indicates that the future is not similar to the past, and the way to prevent neglecting and lagging behind others is to think about the future and move toward building the future intelligently (1). Future studies is a relatively new interdisciplinary field that is dramatically developing methodological topics (2).

The first activity of future studies was carried out by a group of researchers led by Ogburn in the United States during 1930-1933 in the form of scientific analysis. Subsequently, since the mid-1940s, a German professor named Ossip coined the term futurology (3). The

modern future studies was officially recognized within 1950-1960 with the publication of "The Image of the Future" by Polak in 1951 and "The Art of Guessing" by Vattal in 1964. Afterward, international futuristic research centers and institutes were established (4). Japan's futuristic processes began in 1970 (5). Germany implemented the "Technology on the Brink of the 21st Century" program in the early 1990s and the "Future" program in 2001 (6). Sweden in the 1990s (7), South Africa since late 1995 (6), and Turkey in 2003 (7) have launched their projects.

The French had a substantial impact on the global future studies movement by publishing the "Perspective" journal. In the light of the efforts of Jouvenel et al., the future is no longer considered a field only for scientists (8). The history of future studies in Iran backs to half a

century ago; however, coherently, only a 10-year history can attribute to it. The field of future studies in our country should be organized according to the existing behavior (2).

Future studies is the knowledge that teaches man how to face vague futures, face the slightest difficult in this confrontation, and get the most benefit (1). Future study is a transdisciplinary study that can affect all sciences (9). Through using past experiences, analyzing the future problems of the health system, and reviewing upstream documents, the evolution and innovation program in the medical sciences education was developed with a preventive and futuristic approach. This program aimed to solve the future problems of the health system through the implementation of responsive education and human resources training according to the future needs of Iran's health (10).

Future studies are the knowledge that informs the organization of probable future events, opportunities, and threats, reduces its ambiguities, doubts, and concerns, and increases the ability to make intelligent choices (11). The education system requires a type of evolution in its structure and content. Educational systems work to achieve specific goals. In the meantime, educational indicators have a unique role as a tool in further cognition (12). A part of the field of future studies in universities has been devoted to the future study of higher education itself, which is mainly observed in the fields such as student number forecasting, financial forecasting, future forecasting of academic disciplines and majors, and university marketing (13).

Objectives

In the first step, it is necessary to consider proper organization according to the need to pay attention to the concept of future studies in universities. By paying attention to these dimensions and components, it is possible to get closer to the result (i.e., the institutionalization of this concept in the academic context by applying the concept of future studies in universities). Therefore, the present study aimed to investigate the dimensions and components of future studies in the educational system of Babol University of Medical Sciences, Mazandaran, Iran.

Methods

A grounded-theory study was conducted aiming to investigate the dimensions and components of future studies in the educational system through in-depth and exploratory individual interviews within October and December 2018. It was initially analyzed in a specific classification using a documentary study and historical approach and the course of developments and conceptual dimensions.

In the next stage, for the identification of the fundamental factors, the necessary qualitative data were collected through interviews with scientific experts and the management group, including directors, deputies, and

faculty members, who had been purposefully selected due to their positions in decision-making regarding the educational system. Then, concepts, categories, and primary and secondary factors were identified and analyzed using a coding process based on the systematic design of the grounded-theory strategy and the content analysis method as a research technique.

For the determination of the samples for the interview, the purposive sampling method was used, which included faculty members with executive experiences at the macro-levels of decision-making in the university as directors, principals, and deputies of Babol University of Medical Sciences, and particularly experts in the field of medical education and research (in terms of both taking managerial responsibility and having authorship). An interview lasted for 30-50 minutes. After 10 interviews, the primary and secondary factors in the previous interviews were repeated (i.e., data saturation).

The valuable opinions of expert professors and several expert graduates in this field were used to ensure the validity of the questionnaire containing six items. Simultaneously, the participants were also asked to help for analyzing and interpreting the data. The items of the questionnaire were as follows:

1. What are the barriers to promoting the culture of looking at the future and future studies among all the stakeholders in the educational system of medical sciences?
2. What strategies do you recommend for strengthening future studies in the country's medical sciences educational system among the policy-makers of the country's medical sciences education (academic level)?
3. What strategies do you recommend for strengthening future studies in the country's medical sciences educational system at the level of administrators of the universities of medical sciences?
4. What strategies do you recommend for strengthening future studies in the country's medical sciences educational system at the level of faculty members?
5. How do future studies affect the promotion of the qualitative indicators of education?
6. How do future studies affect the promotion of the quantitative indicators of education?

During the interviews, the researchers checked the accuracy of their perceptions of the interviewees' statements using guiding questions. In the intervals between the interviews, the researchers analyzed the data to complete the incomplete cases by receiving new information from the participant. Structured processes were used to record, write, and interpret the data to avoid bias and achieve the objectivity index in research. Teamwork was also considered in the analysis of the interviews.

Coding and Analysis Process

In the first stage, the primary categories and secondary components were identified based on the open and axial coding of the data obtained from the

in-depth and exploratory interviews with the experts and the refinement of conceptual codes. Additionally, the priority of each factor was determined based on the frequency of concepts expressed in the interviews. Stratified content analysis and the analytical technique proposed by Strauss and Corbin (2006) were used in this study. The data were analyzed at the sentence and phrase levels for each interview, and conceptual codes were extracted from the transcripts of the interviews. Sometimes, a sentence was related to more than one concept. The concepts were identified by extracting common conceptual codes and refining repetitive cases using theoretical foundations, and comparing some conceptual codes.

In the next stage, the above-mentioned concepts were organized in the form of secondary categories. Moreover, by continuously reviewing these categories and their concepts, primary categories (i.e., dimensions) were temporarily named. The transcripts of the interviews were re-examined, and the categories were carefully reviewed to ensure the proper organization of each concept. From the beginning of the analysis, the boundaries and titles of each category were not definitively determined, and these categories were revised throughout the process. Open and axial coding stopped when a meaningful classification was obtained. After reviewing interview transcripts several times, secondary categories became repetitive, and no new information was found in the transcripts of the interviews; even if new information was found, it was consistent with the existing classification. The performed classification was not the only possible classification with absolute boundaries; however, it can be considered sufficient for the next steps of data analysis and questionnaire design.

Results

Based on data analysis and its compliance with theoretical foundations

simultaneously and according to the approval of the Ministry of Health regarding the criteria and indicators of educational ranking of universities of medical sciences (Ministry of Health, Deputy Minister of Education, Rad project, 2014), primary factors (i.e., dimensions) and secondary factors (i.e., components) of future studies in the university educational system could be classified into three dimensions with 50 components.

1. Infrastructure Dimension

The results of the coding and stratified content analysis of dimensions showed that nine components were present in the infrastructure dimension of future studies (Figure 1). From the participants' viewpoint, it is very important to pay attention to the economic aspects and monitor the use of the budget. Allocating a particular budget to a successful university, along with future studies, is of particular importance. Furthermore, appropriate budget allocation for various fields of education, research, and culture with a fair and equitable

view of educational groups should be considered. Moreover, an adequate budget should be allocated to long-term research (interviews 9, 2, and 8).

Paying attention to the planning and plan forecasting system is a strategy to strengthen future studies in the medical sciences educational system (interview 6). By considering appropriate measures, it is possible to promote the scientific, cultural, and even social levels of stakeholders, especially medical and paramedical graduates, in the community (interview 8). Paying attention to the importance and necessity of future studies, laying the groundwork, providing necessary infrastructures, increasing capacity, and attracting the participation of the desired individuals can be effective solutions to strengthen future studies (interview 10).

One of the most important issues is to recognize the current situation in the field of medical sciences affairs and capabilities and then draw a scheduled future considering demographic information, regional capabilities, and financial capabilities and facilities and make courageous decisions that have sometimes become habits by mistake over the years (interview 5).

2. Management and Faculty Members Dimension

In this dimension, 25 components were considered (Figure 1). For strengthening future studies in the medical sciences educational system, it is required to consider enhancing the participation of all academic groups. Furthermore, it is recommended to interact with influential individuals and institutions regarding intellectual, financial, and executive aspects, along with comprehensive and futuristic goals at the macro-level (interview 4). Paying attention to the planning and plan forecasting system, using the opinions of elites, and forming the committees of experts are good strategies to strengthen future studies (interview 6). Involving all stakeholders in various educational and cultural affairs implementing various programs at the university level and monitoring them, and self-assessment in all field can be good strategies to strengthen future studies (interview 8).

3. Outputs Dimension

This dimension of future studies, with 16 components, is effective in this process (Figure 1). Future studies has a positive effect on the promotion of the quantitative indicators of education, both in terms of faculty members and physical space and equipment (interview 2). The impact of future studies on educational quality is definite. A principal or faculty member, who teaches or manages affairs with a future study approach, provides a specific perspective that drives the entire educational system forward in that direction (interview 3). Future studies leads to increasing scientific productions, technology products, and theorizing and promoting scientific and executive positions at the national, regional, and global levels (interview 4).

Figure 1 displays the coding and paradigm pattern

of the dimensions and components of future studies in the university educational system. This conceptual

model shows how the dimensions and components of the present qualitative study relate to each other.



Figure 1. Results of content analysis and coding and paradigm pattern of dimensions and components of future studies in the educational system of Babol university of medical sciences, Mazandaran, Iran, based on qualitative research findings

Discussion

Based on the analysis of participants' viewpoints, the primary categories and factors (i.e., dimensions) and the secondary categories and factors (i.e., components) of future studies in the university educational system can be classified into three dimensions with 50 components. The significance of the findings in comparison to those of other studies is provided by dimensions in this section.

The Supreme Leader announced the declaration of the second step of the Revolution on the occasion of the 40th anniversary of the victory of the Revolution, and while stating the current situation of the country, with a long-term view, specifies the country's course in the second 40 years of the Revolution. One of the important topics emphasized in this declaration is the development of science and technology (14), which underlines all the three dimensions of infrastructure, management and faculty members, and outputs.

Having the futuristic ability to identify future types and the desired status of scientific authority in medical education and planning to achieve it will be very effective. Teaching to think about the future and to research for is a necessity, and if educational planners do not address this issue using an anticipatory approach today, they will inevitably address it tomorrow (15). This finding is consistent with the findings of the current study regarding the "management and faculty members" and "outputs" dimensions.

The world that is being formed is not only new but also entirely different from the past, and uncertainty is the main determinant of the future of universities (16). Future studies enhances the ability of society to make intelligent choices and allows society to know where it can go (i.e., exploratory futures), where it should go (i.e., normative futures), and through which paths it can more easily reach desirable futures (i.e., strategies)(17). Strong and Bishop argue that relating history to the future facilitates the introduction of tasks(18). Additionally, Bell believes that instead of mere research, we should shape it ourselves, aiming to predict the humanities in the future (19).

In Pour Abbasi's study, an elite panel was formed, and the country's upstream documents were obtained (i.e., mandatory declarations and propositions in the higher health education system and evolution and innovation packages in medical education). Finally, three education-related categories, including achieving scientific authority and promoting national dignity, beneficial science that serves the needs of society and justice in access to facilities, and eliminating deprivation from the content of the resulting declaration and the compliance of evolution and innovation packages with these categories, were examined (20).

Numerous universities try to gain more share of the world's vast market of higher education. This market has been formed in two areas of education and research, and common axes have been defined in their programs (21). Universities need appropriate models and tools for qualitative evaluation and assurance of the

related programs and processes and the efficiency and effectiveness of graduates in the job market to perform their serious tasks and their dynamics and promotion (22). The goal of futurists is to discover, innovate, examine, evaluate, and present a picture of possible, probable, and better futures (23). The findings of the above-mentioned articles are all in line with the findings of the present study regarding the "infrastructure" dimension.

One way to make a change in higher education is through future studies and futurism. Given the issues of scientific authority, future studies, and futurism in recent years, especially in the evolution plan of the country's educational system, the academic community is still at a stage that needs education on future studies and futurism (24). An organization should always consider the circumstances. Awareness of possible trends is one of the first and most necessary steps that should be taken to create a brighter future (25). After examining the terms foresight (i.e., prediction) and future studies, the path used by future studies in the organization should be shown and mentioned as a supporter to portray and create the desired future (26).

Predicting the future, making desirable changes in the future, and identifying the factors of change are considered the most important effects of future studies on the humanities (27). The dimensions of quality of learning experiences, learning flexibility, content, and professor-student formal and informal relations had significant positive associations with the dimensions of students' future study ability (28).

The innovation and novelty of this research field, misconceptions and unscientific expectations from future studies and appropriate methods of its application, limited familiarity of professors, students, and researchers with this field of study, being time-consuming and having financial cost, and finally, a lack of accumulation of knowledge obtained from the findings of future studies are possible factors affecting the lack of attention to future studies in general and scenario writing in particular (29). Minsky stated that in most cases, world-renowned universities attracted talented students and faculty members from around the world (30). The ultimate goal of numerous future studies in the field of educational management and planning is to help promote educational systems to train capable generations (31).

Implementing future studies and futurism at the national level requires infrastructure, including teaching the methods of future studies and futurism as a scientific mechanism to provide necessary components of decision-making and policy-making at the macro-level (32). Future studies in the field of the country's medical education and health is facing numerous problems and obstacles. Despite the importance of future studies, this type of study is an unfamiliar topic for stakeholders in the medical education field (33). Therefore, it is necessary to prepare a comprehensive plan for the development of future studies discipline and create different courses of future studies as soon as possible (34).

The lack of a clear methodology has exposed the researchers in this field to problems, such as ambiguity in the research method, low credibility, and difficult in defending the results (35).

Abeles states that universities are constantly changing; therefore, research on humanities in universities requires the acquisition of knowledge of the factors creating change (36). All the findings of the above-mentioned studies are consistent with the findings of the current study regarding the “management and faculty members” dimension.

Scott states that it is essential that higher education policies be organized via a comprehensive multilevel approach and that all stakeholders and related institutions be noticed at all levels (37). Altbach says that everyone aspires to a global university; however, the problem is that no one knows what a global university is and how to achieve it (38).

Over the past two decades, research has clearly shown that the performance of perspective-oriented organizations is better than other organizations (39). Futurism is a strategy to respond to the competitive environment, overcome crises, and improve performance at organizational and national levels to help decision-makers create a desired future by gathering information, environmental dynamism, and increasing awareness and insight (40). How to achieve excellence, superiority, and authority at national and international levels has become one of the main issues for policy-makers at the national analysis level and higher education institutions at the institutional analysis level (41).

Masini believes that students’ future study ability can be improved through education during their studies in the university. One of the important variables that can affect the development of students’ future study ability is the quality of learning experiences (42). Freed believes that the skill of thinking about the future and recognizing it should be developed in students; it means that students should be able to imagine the desired future and possible problems and changes and believe in their ability to respond to such a future and make a change in it (43). All the findings of the aforementioned articles are consistent with the findings of the present study regarding the “outputs” dimension.

The view in this study was based on the fact that future studies in the field of medical education is a relatively new and evolving process and is vital for improving the educational system status because educational systems need a practical guide to be more effective and efficient and improve their performance to ensure that they will reach the desired destination with good quality.

Limitations

Since the statistical population of the present study consisted of experts and senior managers responsible for policy-making and management of academic and hospital activities, scheduling appointments for the interview process was performed slowly due to the group’s busy schedule. For this reason and to avoid multiple referrals,

some questionnaires were sent via email. There were also some limitations in this regard that did not include staff and students; therefore, the design and implementation of studies with methodology and other related objectives should be on the agenda.

Conclusion

The dimensions and components of future studies in the educational system can be classified into three main dimensions, including infrastructure, management, and faculty members, and outputs, with 50 components. It is suggested to consider proper organization concerning the concept of future studies in universities; the implementation of these dimensions and components depends on the support of the Ministry of Health and Medical Education. Accordingly, it is necessary to prioritize the revision of course titles of different disciplines to define newly selected courses, add new topics with the above-mentioned content to the currently approved courses, or design and hold training workshops on the topic of future studies.

It is also suggested to run short-term educational courses to explain the concept of future studies to faculty members and administrators. Meanwhile, paying attention to the formation of committees and related working groups should be at the top of the university’s activities. Moreover, university administrators should apply this new concept in the management of educational affairs to optimally show the long-term effects of employing each of the dimensions and components.

Supplementary Material(s): Is available here [To read supplementary materials, please refer to the journal website and open [PDF/HTML](#)].

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