The Missing Pieces in the Puzzle of Iranian Undergraduate General Education: Quantitative Findings

Hamid Mahmoudi
Kharazmi University

Keith D. Walker
University of Saskatchewan

Abdolrahim Navehebrahim
Kharazmi University

Hamidreza Arasteh
Kharazmi University

Hossein Abbasian
Kharazmi University

Recommended Citation

Mahmoudi, Hamid, Keith D. Walker, Abdolrahim Navehebrahim, Hamidreza Arasteh, and Hossein Abbasian. (2020) "The Missing Pieces in the Puzzle of Iranian Undergraduate General Education: Quantitative Findings," *Comparative and International Education / Éducation Comparée et Internationale*: Vol. 49 : Iss. 1. [https:// doi.org/10.5206/cie-eci.v49i1.13431](https://doi.org/10.5206/cie-eci.v49i1.13431).

The Missing Pieces in the Puzzle of Iranian Undergraduate General Education: Quantitative Findings

Les pièces manquantes du casse-tête de l'enseignement général de premier cycle iranien (Résultats quantitatifs)

Hamid Mahmoudi, Kharazmi University
Keith D. Walker, University of Saskatchewan
Abdolrahim Navehebrahim, Kharazmi University
Hamidreza Arasteh, Kharazmi University
Hossein Abbasian, Kharazmi University

Abstract

The general education (GE) literature suggests that there is a mismatch of courses offered to students in Iranian higher education institutions such that the needs of 21st-century students are unmet by these curricula. This article points to the missing pieces in terms of learning and content gaps in many of the undergraduate GE programs designed under the influence of policy, values, and politics which originate from both religious and government interests. The article explores undergraduate students' general 21st-century skill requirements and examines the extant curricula for possible gaps. The gap analysis points to the need for up-to-date general skills such as thinking skills, decision-making, research, awareness of international issues, lifelong learning, problem-solving, critical thinking, and it offers that these remedies might be a precious investment in Iran's higher education for the future of that society.

Résumé

La recherche en enseignement général suggère qu'il existe un manque de correspondance entre les cours proposés aux étudiants dans les institutions d'enseignement supérieur iraniennes, ce qui fait que ces programmes ne répondent pas aux besoins des étudiants du 21^{ème} siècle. Cet article indique les pièces manquantes en ce qui a trait aux lacunes d'apprentissage et de contenu dans de nombreux programmes d'enseignement général de 1^{er} cycle conçus sous l'influence de stratégies, de valeurs et de politiques ancrées dans des intérêts à la fois religieux et gouvernementaux. Cet article explore les exigences des étudiants du 21^{ème} siècle en matière de compétences et examine les programmes existants pour y déceler d'éventuelles lacunes. L'analyse des lacunes fait ressortir le besoin de compétences générales actuelles telles que la réflexion, la prise de décision, la recherche, la sensibilisation aux problèmes internationaux, l'apprentissage continu, la résolution de problèmes, la pensée critique, et elle propose que ces remèdes soient un précieux investissement dans l'enseignement supérieur iranien en ce qui a trait à l'avenir de cette société.

Keywords: general education; general skills; higher education; specialized curriculum and life skills

Mots clés : enseignement général; compétences générales; enseignement supérieur; programme spécialisé et compétences essentielles

Introduction

In order to explore the adequacy of 21st-century general education (GE) curricula, we ask:

1. What are the general education goals that are represented in GE courses, communicated to their students (Zeszotarski, 1999)?
2. What are the most important skills for undergraduate students to possess? What ought to be included in general education courses?
3. What are students' understandings of the goals of general education? (Erie, 2013)

4. How might educational systems close the gaps between the purpose of general education programs and the students' experiences with the curricula while enrolled in general education courses (Heller, 2001)?
5. To what extent do students believe that general education courses are worth their time, or not?
6. What general education courses contribute the most to the essential learning outcomes (Laird, et al., 2009)?
7. In general education curricula, to what extent are learning goals communicated to students in course syllabi (Garrison, 2014)?
8. What skills and attributes do students need to meet the overall goals of the GE program?
9. How do educational experts prioritize general education skills and attributes for today's students?
10. To what extent do the general courses in Iranian universities align with the goals of general education in other countries?

The above questions may appear to be simple, but the responses are not as simple as they may first seem to be. These and other questions have been raised by various researchers in universities all over the world. However, in Iranian higher education the undergraduate GE program has been mainly influenced by the political and religious themes. Perhaps an increased or renewed awareness of the need to align the development of general skills and attributes to 21st-century young people's main needs and desires will address any gaps. Furthermore, if one considers students to be the main consumers of GE, then the perceived needs of the students ought to be considered in curricula, including program or course revisions. With these points in mind, educational researchers and curriculum designers ought to work together to ensure that their students' needs are met with revised curricula, and that these initial revisions may be best guided through an inventory of needs and "absent" content.

Around the globe, each higher education program typically includes two separate dimensions. The first dimension which is shared by all students, in all majors, is commonly referred to as general education. The elective requirements vary from university to university and are typically under the influence of contextual policies and other factors. There is also variance from country to country, influenced by diverse elements such as the politics and history of the region. In the case of Iran, general education has been designed under the influence of policies, values, and politics which originate from both religious and government interests. It might be suggested that young people's desires and perceived needs have been and continue to be largely unconsidered. This article points to some of the gaps and missing pieces in matching curricula and students' needs, together with a curriculum that is cognizant of experts' advice in terms of content that ought to be included in GE. We demonstrate this through the students' responses to the questionnaire on general skills. The quantitative part is preceded by a review of literature that provides a form of classification or a schema for the analysis. In this article, the authors point to the connections between GE skills and attributes as these are related to the GE courses being offered in Iran over the last four decades. Gaps and disjunctions are evidenced in this overview. In the 2018, Iran was willingly or unwillingly among countries with the poorest conditions in the world in terms of brain drain with the index 6.2 compared to the global average of 5.46 (American Economic Association, 2018) and this suggested that there was a need for research and analyses. In addition, the world in which today's Iranian students will live and work will be fundamentally different from the one in which their parents and teachers grew up. Rapid economic, technological, and social changes have created a world that is ever more interconnected and interdependent. Globalization of economies, the digital revolution, mass migration, and the prospect of climate instability have triggered new concerns and demand a new kind of graduate (Mansilla & Jackson, 2013).

Literature Review on Curricular Expectations and Inclusions

As indicated earlier, many scholarly works (1945 to 2018) were scrutinized by the authors and the following outline represents the gist of general skills expectations in typical GE programs. The authors derived a list of general skills from the works of numerous educational experts, and these skills were then classified under eight main categories based on the 4H Model: Head (managing/thinking), Heart (relating/caring), Hands (working/giving), and Health (living/being); Figure 1 shows the four themes with subcategories which will be discussed in following pages.

Figure 1: The 21st-Century Skills as Educational Outcomes.

Source: Authors

Managing/thinking, relating/caring, working/giving, and living/being were taken by the researchers as the outcome of educational environments. In Figure 1, interrelationships are displayed and the figure suggests the central role that educational environments play in this linking. Of course, this is just one way that the authors see the themes; the same categories might be constituted and be justifiably interpreted in different ways by other scholars.

Figure 1 reveals that educational environments are able to improve some general skills related to head, heart, hands, and health. These four themes are interconnected and have their own subcategories that are displayed in Table 1.

Table 1: Classification Scheme Borrowed From the 4H Model

	Themes		Subcategories
1	Head	Managing	Resiliency Keeping records Wise use of resources Planning and organizing Goal setting
		Thinking	Service learning Critical thinking Problem-solving Decision-making Learning to learn
2	Heart	Relating	Accepting differences Conflict resolution Social skills Cooperation Communication
		Caring	Nurturing relationships Sharing Empathy Concern for others
3	Health	Living	Healthy lifestyle choices Stress management Disease prevention Personal safety
		Being	Self-esteem Self-responsibility Character Managing feelings Self-discipline
4	Hands	Working	Marketable skills Teamwork Self-motivation
		Giving	Community service volunteering Leadership Responsible citizenship Contributions to group efforts

The classification scheme in Table 1 provides the reader with a brief but comprehensive overview of general education (GE) skills. These are the 21st-century skills proposed in the 4H Model which are placed under four useful categories. The authors based their work on this categorization and included many more skills in this classification.

As indicated, the authors went through 95 academic works (1945–2018) and found 201 skills and attributes in those works for preparing global citizens for the 21st century. The authors then vetted the items and omitted the ones which were alike but expressed with different vocabulary.

Table 2 reveals 100 skills and attributes which could be considered as summarizing the gist of the systematic review to date. Most of the general skills and attributes listed in Table 2 were proposed by multiple scholars; however, only one researcher, commission, or institution for each skill has been recorded under “example.” In Table 2, Freq = frequency and refers to the number of scholars or institutions who mentioned each skill or attribute in their works.

Table 2: Skills and Attributes for the 21st Century

Skills /attributes	Freq	Example	Skills /attributes	Freq	Example
Communication	38	Albert (2011)	Cooperation	3	Astin (2004)
Reading	6	Sellen (2002)	Study skills	5	Aldegether (2015)
Writing	31	Maki (2001)	Life-long learning	17	Ferren & Kinch (2003)
Listening	8	Hachtman (2012)	Self-teaching	2	Albert (2011)
Critical reading	2	Sellen (2002)	Knowledge integration	2	Ratcliff et al. (2001)
Oral Communication	12	Laird et al. (2009)	Integration of learning	2	AAC & U (n.d.)
Interpersonal skills	6	Aloi et al. (2003)	Information literacy	10	Mazer et al. (2008)
Adaptability	4	Albert (2011)	Computer literacy	11	Nolte et al. (1993)
Multicultural sensitivity	2	Clewett (1998)	Cultural literacy	4	Hirsch et al. (1988)
Intercultural communication	3	Zeszotarski (2001)	Scientific literacy	3	Newton (2000)
Problem solving	26	Zai (2015)	Civic literacy	1	Clewett (1998)
Civic engagement	2	Hart (2009)	Historical literacy	1	Clewett (1998)
Teamwork	14	Johnson (2003)	Recreational skills	1	Boyer & Levine (1981)
Social responsibility	7	Heller (2001)	Sense of responsibility for action	1	Aloi et al. (2003)
Composition	4	Warner & Koeppel (2009)	Self-understanding	2	Astin (2004)

Skills /attributes	Freq	Example	Skills /attributes	Freq	Example
Community involvement	1	Hart (2009)	Self-confidence	4	Arasteh (2008)
Analytical reasoning	5	Zai (2015)	Self-efficacy	1	Tsui (2007)
Creative thinking	6	Spellings Commission (2006)	Leadership	9	Toombs et al. (1989)
Critical thinking	52	Arasteh (2008)	Ethical judgment	2	Hachtman (2012)
Meta thinking	1	Clewett (1998)	Creativity	3	Hart R.A. (2009)
Research skills (Inquiry and analysis)	3	AAC & U (n.d.)	Independent work/study	3	Gaff (1983)
General preparedness as global citizen	2	Brustein (2007)	Ability to bridge cultural and linguistic barriers	1	Aloi et al. (2003)
Time management	4	Chickering & Gamson (1987)	Ethical reasoning	7	Mayhew & King (2008)
Self-discipline	3	Goldthwait et al. (1994)	Values identification	1	Ghnassia & Seabury (2002)
Adaptability to diverse cultures	1	Brustein (2007)	Thinking skills	10	White (1994)
Familiarity with the major currents of global change	2	Arasteh (2008)	Prevention of drug abuse	1	WHO (1994)
Openness to diversity	4	Laird et al. (2009)	Innovative thinking	1	Nickerson et al. (2014)
Dynamism	1	National Academy of Engineering (2004)	Logical thinking	4	Zai (2015)
Flexibility	3	Abdolvahabi et al. (2014)	Complex problem-solving	4	Boning (2007)
Business & management	1	National Academy of Engineering (2004)	Critical media literacy	3	Alverman, & Hagood (2000)
Coping with stress	1	WHO (1997)	Conflict resolution skill	2	Clewett (1998)

Skills /attributes	Freq	Example	Skills /attributes	Freq	Example
Decision-making	6	Pittendrigh (2007)	Public speaking	1	Clewett (1998)
Coping with emotions	2	WHO (1997)	Democratic citizenship	1	Clewett (1998)
Self-awareness	1	WHO (1997)	Moral development	3	Zeszotarski (2001)
The ability to understand statistics	1	Hart R. A. (2013)	Visual literacy	1	Spellings Commission (2006)
Math and quantitative skills	3	Gaff (1983)	Knowledge of the physical and natural world	1	Hachtman (2012)
Understanding literature	1	University of Massachusetts Amherst <i>Assessment Bulletin (1998)</i>	Social awareness and interaction	1	Clewett (1998)
Collaboration	3	Johnson (2003)	Creative leadership	1	Boyer Commission (2008)
Global competence	3	Brustein (2007)	Multimedia literacy	1	Sellen (2002)
Foreign language learning	6	Warner & Koeppel (2009)	Qualitative skills	1	Zeszotarski (2001)
Logical reasoning	3	Conrad & Haworth (1990)	Multicultural learning	1	Orillion (2009)
Scientific reasoning	4	Middle States Commission (2002)	Awareness of international issues	4	Arasteh (2008)
Proficiency in computational skills	4	Johnson (2003)	Learning for self - understanding	1	Wolniak et al. (2004)
Increased appreciation of cultural events	1	Marinara et al. (2004)	Understanding the multiplicity	1	Pittendrigh (2007)
Critical literacy	2	Middle States Commission (2002)	Visual communication	1	Fuess & Mitchell (2011)
Prevention of AIDS	2	WHO (1997)	Civic responsibility	4	Ghnassia & Seabury (2002)

Skills /attributes	Freq	Example	Skills /attributes	Freq	Example
Document literacy	1	Spellings Commission (2006)	Recognition of global systems	1	Zeszotarski (2001)
Prose literacy	1	Spellings Commission (2006)	Entrepreneurship	3	Ashrafizadeh (2002)
Arts	3	Brint et al. (2009)	Scientific thinking	1	Hofer (2004)
Technological literacy	5	Ahmadi & Virjinari (2003)	Gender issues	1	Gaff (1991)

Taken together, these items may be understood to be thematic segments that contribute to the wholesome GE skills and attributes. Although some of the items overlap, each is considered to have discrete forms so that each skill or attribute is studied through the curricula offered by the higher education institutions. There may be some skills and attributes which are seemingly identical; yet they are implicitly distinct; the researchers have retained these to ensure that neither GE skills nor other attributes are left out in the current study. Since ancient times people have been involved in various endeavours to name, to better understand and to prepare citizens with sets of human skills and attributes. In recent times, many scholars have done research related to these skills and attributes. By way of examples, the authors have consulted many of these scholars and have named them along with the skills and attributes that they have brought into focus (Table 2). These scholars are among the many researchers who have been and continue to work on analyzing the requirements of human skills and attributes for 21st-century students. Despite this work, many of the skills and attributes discussed in the literature are under-considered, perhaps neglected, by the curricula decision makers in education and higher education.

General Education in Iranian Higher Education

It is the responsibility of the state to prescribe and provide education and higher education for its citizens. In Iranian universities, the GE courses are defined and limited; this type of variation is likely to depend on several factors (Arefi et al., 2009). As prescribed by the Iranian Ministry of Higher Education, general education consists of 22 courses; these are organized in three main categories. The first category includes courses which deal with religious issues: Islamic Thought 1 (origin and resurrection), Islamic Thought 2 (prophecy and imamate), Humankind in Islam, Social and Political Rights in Islam, Ethics Philosophy (with emphasis on educational issues), Family Ethics, Islamic Ethics (foundations and concepts), Life Theosophy (Applied Ethics), Islamic Practical Theosophy, The History of Islamic Culture and Civilization, Analytical History of Islam, History of Imamate, Thematic Commentary of the Quran, and Nahj al-Balagha's Thematic Interpretation. The second category consists of the courses that are related to political issues, and the third category, nonreligious and nonpolitical, consists of Farsi Language, English Language, Physical Education, Physical Exercise and Knowledge, Family and Population.

At face value, it stands to reason that the first two categories have been included in the GE program to strengthen students' ideology in terms of religious and political issues. In the third group, Farsi language is the official language in the country and is necessary for the program; the second one, English, is the language of international communication, the media, and the internet. Therefore, the students need to hone their English. Physical Education and Physical Exercise are important GE courses which are mandatory for students in all fields of study. The same is true for Knowledge, Family and Population. This is essential for young people because the way they handle their family issues may be quite different

than the ways of their parents, unless they are educated with legacy-parental values. Table 3 displays the GE courses (electives) in Iranian higher education.

Table 3: General Education Courses (Electives) in Iranian Higher Education

Major topics	Name of Lessons	Credits	Hours/trm
Islamic theoretical foundations	Islamic Thought 1 (origin and resurrection)	2	32
	Islamic Thought 2 (Prophecy and Imamate)	2	32
	Humankind in Islam	2	32
	Social and Political Rights in Islam	2	32
Islamic ethics	Ethics Philosophy (with emphasis on educational issues)	2	32
	Family Ethics	2	32
	Islamic Ethics (foundations and concepts)	2	32
	Life Theosophy (Applied Ethics)	2	32
	Islamic Practical Theosophy	2	32
Islamic revolution	Islamic Revolution of Iran	2	32
	Introduction to the Constitution of the Islamic Republic of Iran	2	32
	Political Thought of Imam Khomeini (RA)	2	32
Islamic history and civilization	The History of Islamic Culture and Civilization	2	32
	Analytical History of Islam	2	32
	History of Imamate	2	32
Introduction to Islamic resources	Thematic Commentary of the Quran	2	32
	Nahj al-Balagha's Thematic Interpretation	2	32
General knowledge of Persian language	Farsi Language	3	48
General knowledge of English language	English Language	3	48
Physical education	Physical Education 1	1	32
Physical education	Physical Exercise 1	1	32
Health science	Knowledge, Family and Population	2	32

A major portion of GE skills come from humanities which, according to Albert (2011), prepares students to fulfill their civic and cultural responsibilities, to become familiar with and use the creative ideas from great minds outside of science, to strengthen their ability to communicate and work with others, to gain knowledge of foreign languages and foreign cultures, to move across disciplines more freely, to understand the impact that science, technology, and medicine has had on society, and to understand the future scientific needs of society. Human beings cannot live without humanities (Golshani, 2014). For example, Iranian university students majoring in engineering and basic science need ethics, philosophy, sociology, anthropology courses. An engineer has to do different things which require skills such as technical supervision, managing staff, shaping projects, identifying technical and environmental

problems, and having a wise relationship with their colleagues and their community. Acquiring these skills requires familiarity with knowledge in social sciences and humanities. With these skills they can handle complex life issues better. There is a need for a change in engineering programs so that engineers can think about the social and human dimensions of their work, frame issues and find solutions to help meet human needs (Golshani, 2014). With Iranian program (as of 2018) some of the engineers don't care about other sciences; in this type of thinking, human factors are often neglected. Golshani (2014) concluded that the current attitude towards humanities must be changed in our society such that graduates don't see everything with only their specialized glasses. As an example, Abdolvahabi et al. (2014), in their research on the essential skills of Iranian students in the age of globalization, concluded that the students in Chamran University in 2011 had less skills in communication, problem-solving, flexibility, and computer literacy than was desirable.

Given the widespread use of the Internet, the educational needs of university graduates have naturally varied but they acquire the necessary skills in this regard. Among the skills needed are technological, communication, and computational skills; critical-thinking and problem-solving skills; and skills that deal with personal and social relationships (Ahmadi & Virjinari, 2003). Obviously, education for these skills plays a key role in any changes related to information and communication technology, but they also constitute what human beings need as they seek to deal with themselves, others, and the world around them. As time passes, demands for skills and attributes change and humans need to acquire new ones in order to get along in the new and emerging world. People cannot live in today's world with outdated skills and attributes nor are they able to live with none at all. The pervasive rise of problems in the world means that those who are not equipped with the most appropriate skills and attributes will be disadvantaged when they are required to sustain their personal life chances and collective lives. These skills and attributes are not necessarily specialized; but rather, when practised, they contribute to safeguarding and sustainability of our world and thriving of all people in their communities. According to the WEF Annual Survey (Global Shapers Community, 2017, n. p.), "50% of the world's population is under the age of 30. While [those in this demographic] have a powerful voice, they are not being listened to by decision makers." Our point is that this young generation of "global shapers" needs to be educated and equipped for their necessary intelligent engagement in the issues that face the world, now and into the future. The top 10 most concerning world issues from the WEF Annual Survey (2017) were cited as follows:

1. Climate change / destruction of nature
2. Large scale conflict / wars
3. Poverty
4. Inequality (income, discrimination)
5. Religious conflicts
6. Lack of education
7. Government accountability and transparency / corruption
8. Food and water security
9. Safety / security / wellbeing
10. Lack of economic opportunity and employment

With these concerning world issues in mind, the role of higher education institutions continues to be of great significance in equipping students to face these challenges as the world seeks to develop better citizens. In its efforts to renew GE curricula, the Iranian Ministry of Higher Education will want to align the development of general skills and attributes to the 21st-century young persons' needs and desires.

Research Questions and Methodology

The research question that guided this study was as follows: In undergraduate program in Iranian higher education, which general skills may have been neglected according to students' responses? The study proceeded along the following path in answering this key question.

Research Methodology

First, a review of 95 works was conducted with the primary result of 201 skills and attributes filtered and reduced to 100 skills and attributes by the present researchers, and in the form of a questionnaire given to 15 educational experts, its content validity was measured (Delphi Technique). The experts were asked to review the items first. Of 100 items, 69 remained after two rounds and the rest were discarded resulting in a 69-item questionnaire. In this questionnaire the skills were classified into eight categories using the 4H Model; the questionnaire was then given to 400 senior BA students in Tehran, the capital city of Iran, and the primary data were gathered and analyzed with the help of SPSS and PLS-2. One sample T-test was run to determine the skills which are considered to be neglected in the Iranian higher education curriculum design.

Population and Sampling

The statistical population for this study included all students in state universities in Tehran. The efficient method of determining the sample size was found by referring to Morgan Table, according to which for large population of one million people, a sample of 384 is required to be sufficient.

Cluster sampling was used in this study because Tehran is a metropolis with many different higher education centers. Four universities were selected as a sampling frame; the researchers then used systematic random sampling to choose colleges from those universities.

Instrumentation and Data Collection

The data contained in this study came from two different sources: as indicated, the secondary data were obtained from books, articles, and documents, and primary data were obtained from questionnaires. The questionnaire included 69 questions which were set as items with a five-point scale (Likert Scale); the choices ranged from “*Not at All*” to “*Very Much*” so the researchers were able to gain a holistic view of the participants' opinions. The Likert scale included a midpoint which was “undecided” for those who were neutral on the item subject matter.

Research Scheme

As shown in Figure 2, this study began with a review of related literature with the purpose of obtaining secondary data from which a questionnaire was developed based on Delphi Technique (described earlier). The next step was collecting and analyzing data before reaching a conclusion.

Data Analysis

SPSS and PLS2 were used to analyze primary data collected through the questionnaire. Descriptive statistics such as mean, standard deviation, and standard error mean were calculated for eight main themes of general skills borrowed from the 4H Model (Table 4).

Figure 2: Research Scheme

Table 4: One-Sample Statistics

Main themes	N	Mean	Std. Deviation	Std. Error Mean
Working	400	2.1768	.66817	.03341
Giving	400	2.4631	.89854	.04493
Caring	400	2.6433	.81612	.04081
Relating	400	2.4491	.72082	.03604
Thinking	400	2.6883	.79924	.03996
Managing	400	2.7889	.79132	.03957
Being	400	2.4028	.85471	.04274
Living	400	2.4253	.82694	.04135

Structural Equation Modelling

Structural equation modelling with partial least squares approach was used to evaluate the fit of the proposed model using Smart PLS-2 software. Internal consistency, convergent validity, and discriminant validity must be assessed in order to evaluate the fit of the measurement model. Composite reliability was used to evaluate internal consistency, the reliability of individual indices was used to evaluate convergent validity, and lastly the cross-factor loadings and the Fornell-Larker criterion were used to evaluate discriminant validity.

1. Composite Reliability

The method of interpreting the composite reliability was similar to Cronbach's Alpha (i.e., in exploratory research, the value was 0.60 to 0.70 and in advanced stages of research, the values were higher than 0.70). As shown in Table 5, the composite reliability of each of the present themes was higher than 0.7.

Table 5: Composite Reliability

No.	Themes	Composite Reliability
1	Being	.92
2	Caring	.90
3	Giving	.85
4	Living	.88
5	Managing	.89
6	Relating	.89
7	Thinking	.90
8	Working	.83

Figure 3: Factor Load Values of First and Second Order Structure

2. Convergent Validity

For convergent validity to be confirmed, the factor loadings of the first and second level explicit variables must have been at least 0.50.

As Figure 3 reveals, the actual load of some of the indicators were below 0.5; these indicators are shown in Table 6.

Table 6. Subcategories With a Low Load

Major themes	Subcategories	Load
Thinking skills	art	0.463
Relating skills	parenting skills	0.374
	marital conflict resolution	0.490

The subcategories in Table 6 are removed from the model, shown in Figure 3, and the model was re-examined (Figure 4). The actual loads of the rest were above 0.5.

Figure 4: Functional Load Values of Structures in the Second Round

As Figure 4 shows, the actual load of all the indicators is higher than 0.5.

3. Discriminant Validity

In the third step, discriminant validity was examined. Two indices have been proposed for measuring the discriminant validity: cross-load index and Fornell-Larker index. According to the software output table, the indicators of all hierarchical structures have the highest factor loadings with their respective structures only. Also, according to the Fornell-Larker index, the root mean square of the variance extracted for a present variable or construct must be greater than its correlation with the present variable.

Table 7: Discriminant Validity

No.	Themes	Being	Caring	Giving	Living	Managing	Relating	Thinking	Working
1	Being	.75							
2	Caring	.60	.70						
3	Giving	.58	.65	.77					
4	Living	.62	.54	.54	.72				
5	Managing	.60	.67	.61	.54	.71			
6	Relating	.64	.69	.64	.56	.67	.73		
7	Thinking	.58	.64	.62	.51	.68	.67	.71	
8	Working	.56	.54	.59	.50	.56	.57	.68	.70

According to Table 7, the root mean square of the variance extracted was higher than their correlation with other structures. Thus, the discriminant validity was confirmed. According to the results of the measurement model or confirmatory factor analysis, the proposed model of this study had a good fit.

Examining the Status of Skills in the Statistical Population

In inferential statistical area, one-sample T-test was calculated (Table 6). One sample T-test was run to determine the skills which were in undesirable condition among the statistical population. The one sample T-test was calculated with 95% confidence interval of the difference and test value equaling 3 which was a bit above the middle of the continuum for the questions.

At the 95% confidence level, the null hypothesis was accepted where the significance level was greater than the error rate (0.05). If the level of significance was less than the error rate (0.05), then the null hypothesis was rejected and the alternative hypothesis was accepted. In T-tests there were always two lower and upper limit estimates (UCI, LCI). According to the 95% confidence interval level, we can make three statements:

1. If the lower and upper limits were both positive, then the mean was greater than three. In other words, the relevant component in the target population was highly acceptable.
2. If both upper and lower limits were negative, the mean was less than three. In other words, the relevant component in the target population was low and undesirable.
3. If the lower limit was negative and the upper limit was positive, then the mean was three.

According to the relevant component, the target population was moderate and fairly desirable. With all this in mind the result of one-sample T-test which was calculated to examine the status of skills in the statistical population is presented in Table 8.

Table 8: One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Teamwork	-11.128	399	.000	-.585	-.69	-.48
Computer literacy	-8.328	399	.000	-.473	-.58	-.36
Multimedia literacy	-18.159	399	.000	-.905	-1.00	-.81
Media literacy	-24.474	399	.000	-1.120	-1.21	-1.03
Entrepreneurship	-15.714	399	.000	-.850	-.96	-.74
Independent study/work	-12.022	399	.000	-.688	-.80	-.58
Business management	-23.326	399	.000	-1.142	-1.24	-1.05
Leadership	-13.927	399	.000	-.763	-.87	-.65
Citizenship	-9.038	399	.000	-.527	-.64	-.41
Innovation	-7.617	399	.000	-.445	-.56	-.33
Social responsibility	-6.791	399	.000	-.413	-.53	-.29
Cooperation	-5.328	399	.000	-.295	-.40	-.19
Conflict resolution	-9.739	399	.000	-.550	-.66	-.44
Adaptability	-3.127	399	.002	-.183	-.30	-.07
Openness to diversity	-4.525	399	.000	-.277	-.40	-.16
Values identification	-4.293	399	.000	-.248	-.36	-.13
Ethical judgment	-6.643	399	.000	-.380	-.49	-.27
Openness to criticism	-6.905	399	.000	-.390	-.50	-.28
Cultural literacy	-7.189	399	.000	-.425	-.54	-.31

Multicultural sensitivity	-7.840	399	.000	-.462	-.58	-.35
Communication	-6.232	399	.000	-.335	-.44	-.23
Listening	-1.705	399	.089	-.092	-.20	.01
Speaking	-4.015	399	.000	-.228	-.34	-.12
Giving lecture	-7.285	399	.000	-.450	-.57	-.33
Decisiveness (the ability to say “No”)	-7.441	399	.000	-.458	-.58	-.34
Peer pressure	-8.067	399	.000	-.458	-.57	-.35
Recognition of global systems	-12.094	399	.000	-.650	-.76	-.54
Awareness of international issues	-9.692	399	.000	-.575	-.69	-.46
Premarriage skills	-13.585	399	.000	-.745	-.85	-.64
Study skills	-4.227	399	.000	-.252	-.37	-.14
Critical thinking	-3.110	399	.002	-.190	-.31	-.07
Problem-solving	-1.542	399	.124	-.087	-.20	.02
Thinking skills	-4.030	399	.000	-.237	-.35	-.12
Life-long learning	-4.207	399	.000	-.248	-.36	-.13
Writing	-5.507	399	.000	-.322	-.44	-.21
Self-teaching	.632	399	.528	.040	-.08	.16
Foreign language learning	-5.780	399	.000	-.375	-.50	-.25
Historical literacy	-14.282	399	.000	-.765	-.87	-.66
Visual literacy	-10.808	399	.000	-.625	-.74	-.51
Decision-making	-6.466	399	.000	-.357	-.47	-.25

Resiliency	-4.419	399	.000	-.265	-.38	-.15
Flexibility	-4.392	399	.000	-.250	-.36	-.14
Sense of responsibility	-2.258	399	.025	-.135	-.25	-.02
Research skills	-2.338	399	.020	-.140	-.26	-.02
Math and quantitative skills	-3.181	399	.002	-.197	-.32	-.08
Statistics	-1.621	399	.106	-.098	-.22	.02
Time management	-5.126	399	.000	-.297	-.41	-.18
Information literacy	-3.359	399	.001	-.192	-.31	-.08
Scientific literacy	.305	399	.760	.018	-.10	.13
Global citizen	-6.938	399	.000	-.408	-.52	-.29
Coping with stress	-12.573	399	.000	-.678	-.78	-.57
Coping with emotions	-11.748	399	.000	-.625	-.73	-.52
Coping with anger	-11.370	399	.000	-.645	-.76	-.53
Coping with fear	-13.154	399	.000	-.745	-.86	-.63
Self-confidence	-7.687	399	.000	-.453	-.57	-.34
Self-efficacy	-6.383	399	.000	-.368	-.48	-.25
Self-understanding	-7.770	399	.000	-.462	-.58	-.35
Emotional intelligence	-11.012	399	.000	-.635	-.75	-.52
Self-discipline	-6.342	399	.000	-.393	-.51	-.27
Prevention of drug abuse	-9.800	399	.000	-.622	-.75	-.50
Gender issues	-11.092	399	.000	-.678	-.80	-.56
Physical and mental health	-11.169	399	.000	-.625	-.74	-.51
Religious consciousness	-6.766	399	.000	-.433	-.56	-.31
Recreational skill	-11.530	399	.000	-.648	-.76	-.54
Individual and social rights	-11.147	399	.000	-.625	-.74	-.51
Protection of environment	-9.779	399	.000	-.575	-.69	-.46

Working	-24.641	399	.000	-.82321	-.8889	-.7575
Giving	-11.950	399	.000	-.53688	-.6252	-.4486
Caring	-8.740	399	.000	-.35667	-.4369	-.2764
Relating	-15.286	399	.000	-.55091	-.6218	-.4801
Thinking	-7.801	399	.000	-.31175	-.3903	-.2332
Managing	-5.336	399	.000	-.21114	-.2889	-.1334
Being	-13.975	399	.000	-.59722	-.6812	-.5132
Living	-13.899	399	.000	-.57469	-.6560	-.4934

According to Table 8, P-value for five skills (listening, problem-solving, self-teaching, statistics, and scientific literacy) were significantly higher than 0.05. This indicated that the average of these skills was 3. In other words, the status of these skills in the statistical population was evaluated as desirable. Significance value (sig) of the rest of the skills was lower than 0.05, indicating that the average of these skills was lower than 3. On the other hand, high and low levels of all these skills were negative, indicating that their average was lower than 3. In other words, the status of these skills was undesirable in the target population; then the null hypothesis was rejected and this meant that our sample had given reasonable evidence to support the alternative hypothesis that all skills (with the exception of listening, problem-solving, self-teaching, statistics, and scientific literacy) listed in Table 8 were the ones which were evaluated to be undesirable in sampling population.

Discussion of Findings from Exploratory Analyses

With this brief discussion the authors will present their assessment of the degree of alignment between the prescribed Iranian courses and the skills and attributes of 21st-century students, as recommended by educational scholars.

From the foregoing tables, analyses, and findings, it is apparent that the GE courses being prescribed by the Iranian Ministry of Higher Education are missing some major subcategories from the curricular themes. With the missing curricular content, undergraduate students in Iran are not adequately prepared with the skills and attributes commensurate with 21st-century aspirations for their becoming world citizens. The intention here has been to provide a starting place for the analysis of curricula content and its possible revision.

Using the most disciplined processes, the authors of this study have made a conscientious effort to present the most salient challenges and necessities of curricular renewal. It is imperative that the curricula offered to Iranian student-citizens measure up to the well-considered set of skills required for the 21st century. As stated, the findings reveal that there are several missing pieces in undergraduate general education programs in Iranian higher education. These deficiencies are summarized below.

As presented on the Ministry of Higher Education website (2018), within the present GE courses and as BA students revealed with their responses, several skills are unlikely to be acquired through formal courses because these are absent from the prescribed curricula.

According to the students, the following is a long list of skills that don't receive sufficient attention at their universities: multicultural sensitivity, computer literacy, information literacy, self-efficacy, math and quantitative skills, coping with stress, coping with emotions, coping with anger, coping with fear, emotional intelligence, gender issues, physical and mental health, religious consciousness, individual and

social rights, protection of environment, flexibility, resiliency, decision-making, visual literacy, foreign language learning, writing, thinking skills, critical thinking, study skills, pre-marriage skills, awareness of international issues, recognition of global systems, peer pressure, decisiveness, giving lecture, speaking, communication, openness to criticism, entrepreneurship, business management, innovation, openness to diversity, social responsibility, life-long learning, cultural literacy, historical literacy, sense of responsibility for action, self-understanding, self-confidence, leadership, ethical judgment, values identification, research (inquiry and analysis), general preparedness as global citizen, citizenship, conflict resolution skills, teamwork, adaptability, cooperation, recreational skills, independent work or study, self-discipline, time management, and prevention of drug abuse.

As prescribed (till 2018), it may be said that the GE courses offered in Iranian higher education fall short of meeting undergraduate students' needs in as fulsome a manner as might be preferred. This conclusion is in accord with GE educational experts' and students' understandings, based on their experiences. The refreshment of the subcategories of skills and attributes was supported by the literature. The authors have observed and now propose that increased attention and effort be afforded to further include these subcategories across the curricula to enhance students' preparation for the 21st century.

The students completed the questionnaires indicated their perspectives that they have not learned these skills through the curricula presented in their courses. Apparently, those who make decisions about Iran's higher education may have been overly influenced by political and religious issues, and subsequently, sacrificed the philosophy entailed in the provision of 21st-century education for skills.

Conclusion

The authors of this study make the claim that there are some gaps or missing pieces in the prescribed Iranian undergraduate GE curricula. Against the themes proffered by educational scholars, the Iranian GE curricula contains much that may be commended. However, the observations that there are missing skills and attributes and that there are inadequate representations of many subcategories of skills and attributes suggest that the Iranian Ministry of Higher Education decision makers might best reflect on these preliminary findings to remediate the omissions, strengthen the marginal inclusions of some theme elements, and continue to sponsor the inclusion of content that serves to best educate Iranian young people for present and future world citizenship. In some nations, it is incumbent upon the ministries of higher education to develop and renew old curricular prescriptions. It is a responsibility which is in the best interest of the young people and of the entire state. Through the literature and tables, the authors have provided a form of classification (a schema) to demonstrate the unfortunate exclusions. Of course, any undergraduate course curriculum needs to be examined, refreshed, and remediated with the passage of time. It is highly unlikely that any higher education course curriculum will be a perfect and stable one for all time. Therefore, it is important to commit to developing the necessary policies, assign adequate resources, and to access the required intelligence to engage in ongoing curricular renewal in order to meet the challenges of the 21st century and to attain to the aspirations of the state for a well-educated and prepared citizenry.

To succeed in this new global era (the 21st century), all students in our countries (Iran has been provided as a concrete example) will need capabilities that go beyond just being able to do reading, mathematics, and science. Students will need to be far more well-informed and inspired through their general education, to be curious about other world regions and international issues. Student will need to be familiar with diverse perspectives and be able to communicate across cultures, in other languages. The challenges associated with such an education are daunting but ongoing steps forward must be taken.

References

- Abdolvahabi, M., Roumiani, Y., & Zarif, S. (2014). The essential skills of Iranian students in the age of globalization. *Journal of Research and Planning in Higher Education*, 7, 51–74.
- Ahmadi, H., & Virjinari, M. (2003). *E-learning*. Tehran: Donya-e-eqtesad publication.
- Albert, D. (2011). Ten Important Reasons to Include the Humanities in Your Preparation for a Scientific Career. *Science Mag, May*.
- Aldegether, R. A. (2015). What every student should know: General education requirements in undergraduate education. *World Journal of Education*, 5(3), 8.
- Aloi, S. L., Gardner, W. S., & Lusher, A. L. (2003). A framework for assessing general education outcomes within the majors. *The Journal of General Education*, 52(4), 237–252.
- Alverman, D. E., & Hagood, M. C. (Jan/Feb 2000). Critical media literacy: Research, theory, and practice in new times. *Journal of Educational Research*, 93, 193–206.
- American Economic Association. (2018). Brain drain index in Iran, Retrieved from https://www.theglobaleconomy.com/rankings/human_flight_brain_drain_index/
- Arasteh, H. (2008). Globalization and higher education in a changing world, *The Journal of Rahyaf*, 18(42), 39–45.
- Arefi, M., Ghahremani, M., Rezaeizadeh, M. (2009). Necessity and strategies for improving undergraduate public curriculum from the viewpoints of students and faculty members of Shahid Beheshti University. *Curriculum Studies Quarterly*, 10, 94–129
- Ashrafzadeh, N. (2002). The plan to review the general courses of the bachelor's degree in engineering. *Iranian Journal of Engineering Education*, 4, 1–15.
- Association of American Colleges and Universities. (n.d.). *General education maps and markers*. Retrieved from <https://www.aacu.org/gems/index.cfm>.
- Astin, A. W. (2004). Why spirituality deserves a central place in liberal education. *Liberal education*, 90(2), 34–41.
- Boning, K. (2007). Coherence in general education: A historical look. *The Journal of General Education*, 56(1), 1–16.
- Boyer Commission on Educating Undergraduates in the Research University, Stony Brook, Ny. (2008). *Reinventing undergraduate education: A blueprint for America's research universities*. Boyer Commission on Educating Undergraduates in the Research University.
- Boyer, E. L., & Levine, A. (1981). A quest for common learning: The aims of general education. A Carnegie Foundation Essay.
- Brint, S., Proctor, K., Murphy, S. P., Turk-Bicakci, L., & Hanneman, R. A. (2009). General education models: Continuity and change in the US undergraduate curriculum, 1975–2000. *The Journal of Higher Education*, 80(6), 605–642.
- Brustein, W. I. (2007). The global campus: Challenges and opportunities for higher education in North America. *Journal of Studies in International Education*, 11(3–4), 382–391.
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 3, 7.
- Clewett, R. M. (1998). A general education focus for the coming years. *The Journal of General Education*, 47(4), 265–281.
- Conrad, C. F., & Haworth, J. G. (1990). Curriculum in Higher Education. *The Encyclopedia of Educational Research* (sixth edition). New York: Macmillan.
- Erie, D. J. (2013). *The Role of General Education in the Development of Ethical Reasoning in College Students: A Qualitative Study on the Faculty Perspective*. (Doctoral dissertation, University of Southern of Nebraska).
- Ferren, A. S., & Kinch, A. (2003). The dollars and sense behind general education reform. *Peer Review*, 5(4), 8–11.
- Fuess, S. M., Jr., & Mitchell, N. D. (2011). General education reform: Opportunities for institutional alignment. *Journal of General Education*, 60(1), 1–15.
- Gaff, J. G. (1983). *General education today: A critical analysis of controversies, practices, and reforms*. San Francisco: Jossey-Bass.
- Gaff, J. G. (1991). *New life for the college curriculum: Assessing achievements and furthering progress in the reform of general education*. Vani Prakashan.
- Garrison D. A. (2014). *General Education in the 21st Century: Aspirational Goals and Institutional Practice*. (Doctoral dissertation, University of Southern of Oregon).
- Ghnassia, J. D., & Seabury, M. B. (2002). Interdisciplinarity and the public sphere. *The Journal of General Education*, 153–172.
- Global Shapers Community. (2017). WEF_GSC_Annual_Survey_2017.pdf. Retrieved from <http://shaperssurvey2017.org/static/data/>
- Goldthwait, J. T., Asher, M. A., Lane, K. A., & Meacham, J. (1994). A general education program seen 50 years later. *The Journal of General Education*, 44–58.
- Golshani, M. (2014). Necessity of engineering schools to pay attention to humanities. *Journal of Engineering Education in Iran*, 63, 1 – 9.

- Hart, P. (2009). Trends and emerging practices in general education. Public report sponsored by the AAC& U. Retrieved from http://www.aacu.org/membership/documents/2009MemberSurvey_Part2.pdf
- Hart, P. (2013). It takes more than a major: Employer priorities for college learning and success. Public report sponsored by the AAC&U. Retrieved from http://www.aacu.org/leap/documents/2013_EmployerSurvey.pdf
- Heller, R. (2001). *General Education in an Age of Student Mobility: An Invitation To Discuss Systemic Curricular Planning. The Academy in Transition*. Association of American Colleges & Universities, 1818 R Street NW, Washington, DC 20009
- Hirsch Jr., E. D., Kett, J. F., & Trefil, J. S. (1988). *Cultural literacy: What every American needs to know*. Vintage.
- Hofer, B. K. (2004). Epistemological understanding as a metacognitive process: Thinking aloud during online searching. *Educational Psychologist*, 39(1), 43–55.
- Iranian Ministry of Higher Education. (2018). Iranian GE courses. Retrieved from <https://www.msrt.ir/fa/course/1005725/>
<https://mehrnews.com/news/4031494/>
- Johnson, D. K. (2003). *General education—A National Survey: How general education changed between 1989 and 2000*. [Unpublished doctoral dissertation]. Pennsylvania State University.
- Laird, T. F. N., Niskode-Dossett, A. S., & Kuh, G. D. (2009). What general education courses contribute to essential learning outcomes. *The Journal of General Education*, 58(2), 65–84.
- Maki, P. L. (2001). From standardized tests to: Alternative methods: Some current resources on methods to assess learning in general education. *Change: The Magazine of Higher Learning*, 33(2), 28–31.
- Mansilla, V. B., & Jackson, A. W. (2013). Educating for global competence: Learning redefined for an interconnected world. *Mastering Global Literacy* (5–27). New York: Solution Tree.
- Mayhew, M. J., & King, P. (2008). How curricular content and pedagogical strategies affect moral reasoning development in college students. *Journal of Moral Education*, 37(1), 17–40.
- Mazer, J. P., Hunt, S. K., & Kuznekoff, J. H. (2008). Revising general education: Assessing a critical thinking instructional model in the basic communication course. *The Journal of General Education*, 173–199.
- Middle States Commission on Higher Education, Philadelphia, Pa. (2002). *Characteristics of excellence in higher education: Eligibility requirements and standards for accreditation*. Publications Department.
- National Academy of Engineering, U. S. (2004). *The engineer of 2020: Visions of engineering in the new century*. Washington, DC: National Academies Press.
- Newton, R. R. (2000). Tensions and models in general education planning. *The Journal of General Education*, 49(3), 165–181.
- Nickerson, R. S., Perkins, D. N., & Smith, E. E. (2014). *The teaching of thinking*. London: Routledge.
- Nolte, W. H. (1993). Student success: Implementing a comprehensive general education program for occupational students. 1-17. ERIC (U.S. Dept. of Education). Web.
- Orillion, M. F. (2009). Interdisciplinary curriculum and student outcomes: The case of a general education course at a research university. *The Journal of General Education*, 58(1), 1–18.
- Pittendrigh, A. (2007). Reinventing the core: Community, dialogue, and change. *The Journal of General Education*, 56(1), 34–56.
- Ratcliff, J. L., Johnson, D. K., La Nasa, S. M., & Gaff, J. G. (2001). *The Status of General Education in the Year 2000: Summary of a National Survey*. Association of American Colleges & Universities, 1818 R Street NW, Washington, DC 20009.
- Sellen, M. (2002). Information literacy in the general education: a new requirement for the 21st century. *The Journal of General Education*, 115–126.
- Spellings Commission. (2006). *The Spellings Commission on the future of higher education; It's a start*. University Business, Dec. 2006.
- Toombs, W., Fairweather, J. S., Amey, M., & Chen, A. (1989). *Open to view: Practice and purpose in general education 1988: A final report to the Exxon Education Foundation*. University Park: Pennsylvania State University Center for the Study of Higher Education.
- Tsui, L. (2007). Cultivating critical thinking: Insights from an elite liberal arts college. *The Journal of General Education*, 56(3), 200–227.
- University of Massachusetts Amherst (1998). General Education: Students' Perspectives. *Assessment Bulletin: Office of Academic Planning and Assessment*. 3(1), 1–6.
- Warner, D. B., & Koepfel, K. (2009). General education requirements: A comparative analysis. *The Journal of General Education*, 58(4), 241–258.
- White, C. R. (1994). A model for comprehensive reform in general education: Portland State University. *The Journal of General Education*, 168–229.

- Wolniak, G., Seifert, T. A., & Blaich, C. F. (2004). A liberal arts education changes lives: Why everyone can and should have this experience. *Liberal Arts Online*, 4(3).
- World Health Organization (WHO). (1994, 1997). *Life skills education for children and adolescents in schools. Pt. 3, Training workshops for the development and implementation of life skills programmes* (No. WHO/MNH/PSF/93.7 B. Rev. 1). Geneva: World Health Organization.
- Zai III, R. (2015). Reframing general education. *The Journal of General Education*, 64(3), 196–217.
- Zeszotarski, P. (1999). Dimensions of general education requirements. *New Directions for Community Colleges*, 39–48.
- Zeszotarski, P. (2001). ERIC Review: Issues in global education initiatives in the community college. *Community College Review*, 29(1), 65–78.

Hamid Mahmoudi received his PhD in Higher Education from Iranian Kharazmi University. He has experience teaching in different grades from high school to higher education centres. His educational interests consist of ethics, general education, critical thinking, and spirituality.

Keith Walker has been with the Department of Educational Administration at the University of Saskatchewan for 30 years. His research has focused on organizational, leadership, and spiritual development, with current focus on mentorship, professional and personal well-being, trust and hope. Professor Walker's personal website is: keithdwalker.ca

Abdolrahim Navehebrahim is a graduate of State University of New York in Educational Administration. He has been a full-time professor at Kharazmi University. He has followed administrative steps as department chair, faculty dean, provost, university chancellor and director for educational planning at the Ministry of Higher Education. His major area of executive interest is related to the financing of education.

Hamidreza Arasteh is professor of higher education administration at Kharazmi University in Tehran. His teaching and research interests include higher education issues pertaining to governance and strategic planning.

Hossein Abbasian is an assistant professor of educational administration. He received his PhD in Educational Administration from Shahid Beheshti University of Iran in 2012. He has executive background in business organizations in the field of evaluation and training needs assessment.