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

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**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-ec.i.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)

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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 21ième 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 1er 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 21ième 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.

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.
| Themes | Subcategories |
|--------|---------------|
| 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 |
| Heart  | Relating      |
|        | Accepting differences |
|        | Conflict resolution |
|        | Social skills |
|        | Cooperation |
|        | Communication |
|        | Caring        |
|        | Nurturing relationships |
|        | Sharing       |
|        | Empathy       |
|        | Concern for others |
| Health | Living        |
|        | Healthy lifestyle choices |
|        | Stress management |
|        | Disease prevention |
|        | Personal safety |
|        | Being         |
|        | Self-esteem |
|        | Self-responsibility |
|        | Character |
|        | Managing feelings |
|        | Self-discipline |
| 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.

| 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 Assessment Bulletin (1998) | 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) |
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                      | 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.

| 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.

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.
|                         | t     | df   | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference |
|-------------------------|-------|------|----------------|-----------------|------------------------------------------|
| **Test Value = 3**      |       |      |                |                 |                                          |
| Teamwork                | -11.128 | 399  | .000           | -.585           | -.69 to -.48                             |
| Computer literacy       | -8.328 | 399  | .000           | -.473           | -.58 to -.36                             |
| Multimedia literacy     | -18.159 | 399  | .000           | -.905           | -1.00 to -.81                            |
| Media literacy          | -24.474 | 399  | .000           | -1.120          | -1.21 to -1.03                           |
| Entrepreneurship        | -15.714 | 399  | .000           | -.850           | -.96 to -.74                             |
| Independent study/work  | -12.022 | 399  | .000           | -.688           | -.80 to -.58                             |
| Business management     | -23.326 | 399  | .000           | -1.142          | -1.24 to -1.05                           |
| Leadership              | -13.927 | 399  | .000           | -.763           | -.87 to -.65                             |
| Citizenship             | -9.038  | 399  | .000           | -.527           | -.64 to -.41                             |
| Innovation              | -7.617  | 399  | .000           | -.445           | -.56 to -.33                             |
| Social responsibility   | -6.791  | 399  | .000           | -.413           | -.53 to -.29                             |
| Cooperation             | -5.328  | 399  | .000           | -.295           | -.40 to -.19                             |
| Conflict resolution     | -9.739  | 399  | .000           | -.550           | -.66 to -.44                             |
| Adaptability            | -3.127  | 399  | .002           | -.183           | -.30 to -.07                             |
| Openness to diversity   | -4.525  | 399  | .000           | -.277           | -.40 to -.16                             |
| Values identification   | -4.293  | 399  | .000           | -.248           | -.36 to -.13                             |
| Ethical judgment        | -6.643  | 399  | .000           | -.380           | -.49 to -.27                             |
| Openness to criticism   | -6.905  | 399  | .000           | -.390           | -.50 to -.28                             |
| Cultural literacy       | -7.189  | 399  | .000           | -.425           | -.54 to -.31                             |
| Skill                                      | Value | p-value | T-value 1 | T-value 2 | T-value 3 |
|--------------------------------------------|-------|---------|-----------|-----------|-----------|
| Multicultural sensitivity                  | -7.840| .000    | -.462     | -.58      | -.35      |
| Communication                              | -6.232| .000    | -.335     | -.44      | -.23      |
| Listening                                  | -1.705| .089    | -.092     | -.20      | .01       |
| Speaking                                   | -4.015| .000    | -.228     | -.34      | -.12      |
| Giving lecture                             | -7.285| .000    | -.450     | -.57      | -.33      |
| Decisiveness (the ability to say “No”)     | -7.441| .000    | -.458     | -.58      | -.34      |
| Peer pressure                              | -8.067| .000    | -.458     | -.57      | -.35      |
| Recognition of global systems              | -12.094| .000   | -.650     | -.76      | -.54      |
| Awareness of international issues          | -9.692| .000    | -.575     | -.69      | -.46      |
| Premarriage skills                         | -13.585| .000  | -.745     | -.85      | -.64      |
| Study skills                               | -4.227| .000    | -.252     | -.37      | -.14      |
| Critical thinking                          | -3.110| .002    | -.190     | -.31      | -.07      |
| Problem-solving                            | -1.542| .124    | -.087     | -.20      | .02       |
| Thinking skills                            | -4.030| .000    | -.237     | -.35      | -.12      |
| Life-long learning                         | -4.207| .000    | -.248     | -.36      | -.13      |
| Writing                                    | -5.507| .000    | -.322     | -.44      | -.21      |
| Self-teaching                              | .632  | .528    | .040      | -.08      | .16       |
| Foreign language learning                  | -5.780| .000    | -.375     | -.50      | -.25      |
| Historical literacy                        | -14.282| .000  | -.765     | -.87      | -.66      |
| Visual literacy                            | -10.808| .000  | -.625     | -.74      | -.51      |
| Decision-making                            | -6.466| .000    | -.357     | -.47      | -.25      |
| Category                          | Score  | df | p-value | Effect Size | Confidence Interval |
|----------------------------------|--------|----|---------|-------------|---------------------|
| 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                 | -13.150| 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          |
| Skill   | T-value | df | Sig | Effect Size | P-value | Power |
|---------|---------|----|-----|-------------|---------|-------|
| Working | -24.641 | 399| .000| -.82321     | -.889   | -.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.
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