

## Modeling the Effective Implementation of Gardner's Top Five Minds in Education of Student Teachers in Farhangian University, Kerman, Iran

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### Abstract

**Background:** From the viewpoints of the experts of teaching and training, if teachers were acquainted with the model of Five Minds for the Future and were able to apply it in the process of their teaching, they would be able to train more successful students. The current research is done with the modeling purpose of Gardner's Five Minds for the Future in education of the student teachers of Farhangian University.

**Materials and Methods:** This research is done with the approach, mixed with heuristic strategy. The under-study communities in the qualitative stage were all the professors and the student teachers of Kerman's Farhangian University and all the student teachers of Farhangian University, Kerman, Iran, were included in the quantitative stage. The volume sample was 22 subjects for the qualitative stage and 400 subjects for the quantitative stage which have been chosen with random stratified sampling. The instruments for gathering information in the qualitative stage were the semi-structured interview and in the quantitative stage the structured interview.

**Results:** In the aggregate of the gained finding, the qualitative part includes 193 free codes which, after final analysis, were divided into 5 categories and 18 sub-categories. Principal gained findings include posteriori findings of the research, contextual conditions, intervening conditions, the implementation strategies and the implementation consequences. Quantitative Finding: The gained results of the structural equation modeling indicate that the drawn conceptual model has acceptable fitting.

**Conclusion:** Various factors like students' awareness of five superior minds, preparation of university environment, creative course contents, are among the influential factors on teaching Five Minds for the Future to the student teachers.

**Key Words:** Five Minds for the Future, Gardner, Student teachers, Farhangian University.

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## 1- INTRODUCTION

Nowadays, the world is quickly transforming and the teachers' training must also be updated in proportion to the requirements and principles of the new psychology. Here, the point is that the new curriculum and the educational programs, proportionate with the new requirements for the professional developments of the teachers, will make sense. This activity leads to the more professional manner of the teachers (1). One of the factors which aids the professional training of teachers is the combination of theory and practice which is underscored in the accreditation realm of the student teachers in various researches (2, 3). One of the concepts that has been underscored during the previous decades to be conveyed to the student teachers was the subject of Gardner's five multiple intelligences. In recent years, it is believed by the experts of teaching and training that if the teachers were acquainted with the model of Five Minds for the Future with regard to the subject of five superior minds, and were able to focus on them in their classes and use them in their process of training, they would train more successful students (4, 5).

Gardner, for the first time, with the publication of the book *Frames of Mind* in 1983 challenged the traditional view toward intelligence. In his view, the traditional idea considers human intelligence as a simple and one-dimensional essence. According to this, in 2006, he introduced the theory of Five Minds for the Future (6, 7). Gardner (2006) in the book *Five Minds for the Future* has mentioned the 21<sup>st</sup> century issues and asserted that the future world affected by Information Technology with searching databases, social networks, robots, electronic business and new computer systems, will require capabilities which were regarded as voluntary till today. Therefore, it is necessary to foster relevant capabilities as Five Minds for the

Future for encountering this new world (7). Gardner in his book has propounded five minds, as three minds are related to the intellectual issues and two minds to the interpersonal relationships. They are as follows: Disciplined Mind, Synthesizing Mind, Creative Mind, Respective Mind and Ethical Mind. This theory in the educational centers is the extreme center of the focus for the intellectuals of teaching and training (8). As a corollary of the consistent professional development of the teachers, are their professional qualifications (9, 10). Fullan and Steigelbauer (2011) have announced that teaching Five Minds for the Future for the professional development of the teachers is an inevitable necessity. With considering the multidimensionality of the mind and this reality that people have different hemispheres and mental capacities, new and distinctive methods for teaching courses and strengthening learning could be designed to decrease students' inability in learning new courses and concepts based upon mental functions (11, 12).

Gardner (2007) expresses that those students who have proper performance in Five Minds for the Future can succeed in learning the issues of the new era and asserts that one of the symptoms for the incapacities in learning the issues of the new era is the low performance in Five Minds for the Future (5). If in teaching each course, quintet minds of the students are activated, there will appear a kind of coherence between various realms and they can tangibly feel the course functions practically in their daily lives (13, 14). Applying the theory of Five Minds for the Future in the education provides this possibility for the teachers to teach according to the individual differences and to facilitate students' learning and to obviate the educational requirements of the new era (16, 17). Research finding of the classes predicated on five superior minds, will increase learning of the students who

have learning disorders in classes (18), and is associated with the positive impacts on the attitude to learning (19, 20). As it is mentioned, Five Minds for the Future for confronting the new world affected by new advances in the realms of the Information Technology and industry are teachable and this quintet of minds can be taught to the students and one of the duties of the educational centers, is fostering these kinds of minds in the academic environments. From one side, one of the most important and sensitive educational centers in our country is Farhangian University. Because the students of this university after graduation will train the students at schools and if these students are not acquainted with the quintet of minds, they could not succeed in teaching students. According to the researches done in the last decades, teaching according to the intelligence theory and particularly focusing on the theory of Five Minds for the Future for the new educational system is necessary, and paying attention to them can train creative, responsible, ethical students and university students which is very necessary for success in the present world. When the Higher Education System can acquaint teachers with five superior minds, they can proceed with and succeed in flourishing and strengthening these Five Minds for the Future in students, therefore the final purpose for the presented pattern is enhancing students' capabilities in learning the issues students face within the new era. According to this, in recent years in Farhangian University, particular emphasis has been put on implementing and teaching Five Minds for the Future for the student teachers. However, in practice we witness that professors in teaching the student teachers about knowing how to implement Five Minds for the Future were not as successful as expected, and one of the reasons is the absence of a comprehensive, concrete and action pattern in these educational centers for

implementing five superior minds. According to this, presenting a comprehensive and action pattern in Farhangian University is necessary. From the other side, according to the considered literatures, till now such a pattern is not presented in Iran's Higher Education Centers, and this is regarded as a research gap in this domain. Therefore, the current research is done with the purpose of considering the influential factors on implementing Gardner's Five Minds for the Future in education of the student teachers in Farhangian University.

## **2- MATERIALS AND METHODS**

### **2-1. Study design and population**

In the current research, the mixed methods with the heuristic strategies (quantitative-qualitative) have been applied. In the manner that, at first, main categories and factors have been identified by the qualitative method and with the inductive approach (grounded theory) with the systematic design of Glaser & Strauss (1990). In the quantitative stage, the conceptual model with the descriptive-survey is derived and its goodness of a fit has been assessed. Statistical community of the section includes all the professors and the students of Kerman Farhangian University, the professors of the Educational Sciences and Psychology Department of Shahid Bahonar University, Kerman, Iran. The applied method for choosing sample was purposive sampling. In a way that, the professors of Farhangian University and Shahid Bahonar University and the student teachers who were studying at Farhangian University were chosen and interviewed purposively, (having criteria for the inclusion in research and having familiarity with five superior minds). In the next step, first the purpose of the researcher is to achieve open codes and the unlimited sampling continues till category formation. With the primary category formation, the researcher

for the completion and the exact description, continued sampling and when the categories were saturated, sampling would come to an end. When the researcher saw the saturation of the categories, the categories were completely formed and the new data did not aid in integrating previous categories or forming new categories and in number, 22 theoretical saturation interviews have been gained, therefore the numbers of interviewees for this research were 22. A small part of the statistical community includes all the student teachers of Kerman Farhangian University in the academic year 2019 to 2020 with the population of 1900, and in this research, structural equation modeling is used. For this kind of analysis, according to the theoreticians, for each variable, between 15 and 25 samples have been considered (21). According to this, sample volume was 400 subjects that have been chosen with random stratified sampling proportionate with the students' gender.

## **2-2. Method**

The instrument for gathering information was the semi-structured interview: in this vein, 12 subjects among the professors of Farhangian and Bahonar University who had research activities in the realm of training and teaching issues and 10 subjects as the student teachers on the verge of graduation who had gained the inclusion criteria for this study, were chosen and interviewed. In this regard, the researcher referred to these universities and chose both the teachers and the students who tended to collaborate, and included them in their studies in order to obtain inclusion criteria.

## **2-3. Inclusion and exclusion criteria**

The inclusion criteria for the professors include: 1-Teaching at Farhangian University, 2- Having research activities in the area of education and teaching, 3-Familiarity with Gardner's Theory of Five

Superior Minds. The inclusion criteria for the students include: 1- Being a student of Farhangian University, 2- Being a student in the senior year of the BA degree, 3-Familiarity with Gardner's Theory of Five Superior Minds. The structured interview questions were posed according to the research purpose, and the professors and the students answered them. Those codes that were not substantiated by the majority (4 subjects or more) were eliminated from the analyses. In the final run, the interviews ended when the theoretical saturation was obtained, in other words, all the proposed topics of the participants were entirely repetitive and for further validation after reaching the theoretical saturation, the interview continued with three participants.

The instrument for gathering data in the quantitative stage was a structured questionnaire which was based upon the gained results of the interviews' coding and the derived conceptual model. This questionnaire has 104 questions with a 5-point Likert Scale which embeds a range from strongly disagree to strongly agree with a score of 1-5. The questionnaire embeds 5 general sub-scales: 1. Posteriori conditions of the implementation 2. Contextual conditions 3. Intervening conditions 4. Implementation Strategies and 5. Implementation Consequences. Content and face validity of this questionnaire was confirmed according to the opinions of five experts with 0.73 coefficient. For considering the construct validity according to the confirmatory factor analysis, structure coefficient is used by AMOS18 software. With regard to the gained statistics in Table 1, the results of the model gained under the structure coefficient, have logical and acceptable fitting. Paying attention to the indices  $\chi^2/Df$  99/0=GFI/56=, 99/0=IFI, 99/0=TLI, 99/0=NFI, 99/0=CFI and RMSEA=0/001 shows that measurement model of the posteriori conditions of the

implementation, contextual conditions, intervening conditions, implementation strategies and implementation consequences of Five Minds for the Future in various dimensions have good fit and construct validity. The total reliability coefficient of this questionnaire is obtained as 0.95, and for each of the categories of the posteriori conditions of implementation, contextual conditions, intervening conditions, implementation strategies and implementation consequences respectively, the reliability coefficient is reported as 0.86, 0.85, 0.90, 0.91, and 0.92 according to Cronbach's Alpha Coefficient.

#### 2-4. Data Analysis

Levels of the qualitative data analysis include open, axial and selective coding. For analyzing the validity of the qualitative data, three methods have been used: a) reconfirmation of the gained data by the interviewees: at this level, the researcher once again will give the transcribed interviews to the interviewees and they will confirm their answers. b) Test of the Rival Hypothesis: according to the proposed techniques by Strauss and Corbin (1998), the researcher has analyzed the rival hypotheses. Dealing with the rival hypotheses achieves a higher reliability of the previously confirmed hypotheses. c) Reliability confirmation of the data by the experts and recoding of the interviews by two juries: after the primary analyses, two

of the experts as jury, will deal with coding of parts of the interviews and the final agreement about the manner of the gained coding with calculating Kappa agreement coefficient). Moreover, the gained codes are confirmed by a group of five experts in the fields of the educational science experts. For analyzing the quantitative data out of the descriptive statistic like frequency and the percentage frequency, medium and standard deviation of the inferential statistic like regression coefficient based upon structural equation modeling, SPSS software version 25.0 and AMOS 22.0 software have been used.

### RESULTS

#### 3-1. Conceptual Model

In the qualitative stage, completed interviews with the student teachers have been respectively analyzed with recourse to the method of line by line analysis. Finally, 193 free codes were gained that after final analysis, were divided into 5 main categories and 18 sub-categories. Table 1 shows the gained categories along with their sub-categories. As **Table.1** indicates, 5 main categories and 18 sub-categories have been derived out of the interviews. The main categories include posteriori findings of the research, contextual conditions, intervening conditions, the implementation strategies and the implementation consequences.

**Table-1:** Interview codes and their classification.

Main category	Sub-categories	Open codes
The causal conditions of the implementation	Students' approach and viewpoint towards the model	Functional and voluntary process, combinatorial, expertise-oriented, respectful, five sorts of mind and intelligence in humans with different functions, innovative and ethical, cultivation feasibility in universities and work environments, incorporating the creative element, developing a proper understanding of the job and its respective responsibilities, improving intellectual capabilities, feasible to develop in schools and communities, an approach emphasizing the sequential nature of the five minds' emergence and their sequential cultivation as a result, recognizing and signifying individual differences in terms of talents, higher organization of these five minds compared to the multiple intelligences theory, signifying the current communication between the members of the community.
	Reasons for	Developing a better understanding of one's mind and finding the path to living better,

	conduction	transmitting this knowledge to future generations, signifying ethical values in the society.
	The qualities of the susceptible environment	The environment and community's capability of expressing individuals' talents, family and school environments supportiveness, signifying and teaching human sciences in the environment, paying attention to the five minds in educational environments, recognizing the distinction of the individuals and their different talents, providing an environment for free opinion expression and logical reasoning with one another, developing the context for creative expressions among the students.
Contextual conditions	The available environmental facilities	Facility and creativity limitations, lack of adequate facilities for students' flourishing, equipment and facilities being unavailable, non-cooperation of university authorities with students' ideas, the university and its authorities depriving the students of proper facilities and conditions, lack of interaction, students' interests and needs being dismissed.
	Current scientific level	Lack of a favorable curriculum, lack of skill and expertise in terms of the five superior minds, traditional teaching, university goals being mere mottos, professors not being informed on this subject, expertise getting ignored, shortage of philosophical and knowledge-building skills, shallow-mindedness, the courses being theatrical and not applicable, not being informed on how to develop creativity, the insignificant role of creativity in education, students' questions not being answered properly.
	The extent of existing motivation for implementation	Lack of motivation in students for implementation, teachers being unmotivated and uninformed, the authorities having no motivation to conduct the project, teachers' unwillingness to teach about the five minds.
Intermediary conditions	University culture	Disrespecting the students and undermining their self-esteem, lack of a happy and dynamic culture in the university, students getting involved in the arguments between the professors and university authorities, the existence of an atmosphere of hostility and crediting one another while ignoring one's faults, lack of cooperation and unity culture among the officials so that students' needs are addressed, respect for other individuals and attention to ethical and religious values being diminished, no cooperation between the officials aiming to address students' needs, no effective interaction between the faculty and the students.
	University policies	Bureaucracy and educational and administrative limitations, not designing a practical and proper curriculum due to insufficient facilities, traditional teaching, ignoring students' and the future generation's needs and opinions in planning, non-existence of certain instructions for implementing the five superior minds, lack of proper curriculum design addressing the five superior minds, paying attention to individuals' talents and capabilities when hiring them.
	University's financial state	Not having allocated the required budget for programs and plans in this field, having no budget plan or facilities to foster creativity in the individuals.
Strategies for implementation	University strategies	Hiring specialized and superior professors, holding workshops by experienced and specialized professors, allocating facilities to teachers, ensuring job security for the teachers and improving their motivation, training the teachers through holding workshops, holding briefing sessions for teachers and training them on how to implement the project, promoting creativity and dynamicity across the university, coordination with the professors, respecting the students, improving educational facilities, getting more talent-oriented, identifying and supporting talented students, holding seminars on the five minds and encouraging the students to participate in these seminars, employing students in affairs they have talents in and supporting them, using professors experienced in the field of five minds, encouraging and applauding exemplary and top students in the field of the five superior minds as role models, holding exhibitions of works in the field of five superior minds and supporting students' creativity.
	For the Course contents	Providing a context for creativity in education per educational content, designing the courses and contents in compliance with the five superior minds, developing educational packages to teach respect and moral values, developing educational materials regarding the five superior minds.

	For the Professors	Presenting creative and new educational materials to the students, fostering creativity in the students, specialized training for the professors, respecting work ethics and moral values, research and application of technologies, mastering the knowledge on the five superior minds and teaching it to the students through practical methods, assigning more responsibilities to the students, respecting and valuing the students, fostering a happy class environment while following the professor's particular rules, professors ensuring their ethical and model behavior, attempting to transfer the skills to the students, challenging the students to use the content they have learned in actual situations and fostering a context for creativity in students, paying attention to social and ethical aspects of the teaching trainees' behavior, training skillful and committed teachers.
	For the Students	Searching for role models and following up on professional individuals, interest in teaching profession and motivation in achieving it, respecting the principles of work ethics with an emphasis on religious ethics, participation in classes held by exemplary professors, research and taking advantage of one's creative mind, learning practical topics, research on up-to-date knowledge in one's major, fulfilling one's responsibilities and commitments, cultivation of one's creativity, studying beyond the bare minimum level required and not suitable for academic topics, being active, attempting to apply the gained knowledge, improving one's skills in the field of work and teaching other students, gaining diverse knowledge in various fields, respecting educational and ethical regulations, developing capabilities such as articulation techniques, acquiring communicational and behavioral skills for leading a more moral life, fostering a critical spirit without disrespecting others, creating and maintaining motivation for learning contents on the five superior minds and putting them to practical use.
	For other institutions	Respecting ethics and laws in administrative relations, cultivating a coordinated and mutual relationship between the school, family, media, and the department of education, development of a suitable budget by the government to educate the students better. Also, institutions such as the Ministry of Education (selecting proper contents for school books, staff training and paying close attention in hiring teachers, adapting classroom activities to the five superior minds and holding competitions in this regard), media such as broadcasting (making educational animations and movies regarding the five superior minds), kindergartens, higher education centers, research centers, and educational counseling centers are effective on fostering the five superior minds.
Implementation consequences	Individual	Development of a philosophical spirit, improvement of one's creativity level, acquiring sufficient self-knowledge, putting more value on ethics and respect, high hopes for the future, developing a feeling of responsibility in one's job, achieving peace of mind, innovation and creativity, developing skills, raising awareness, improved self-confidence and self-esteem.
	Societal	Higher respect for ethical values, putting cooperation, empathy, and liaison at the forefront, development of a feeling of respect and sympathy for one another, favorable impacts on the economic, social, political, and religious aspects of the society.
	Cultural	Higher significance of respect and ethics across the society, familiarization with cultural differences and developing respect for the traditions of each town, respecting ethical codes, achieving moral virtues and avoiding moral vices.
	Educational	Emphasis on expertise, training successful and creative students in the scientific and educational environments, the model being embraced by the students in case of proper implementation, teaching one's students in better and more efficient ways, respect and attention to all the aspects of student training, hiring creative teachers, a higher feeling of responsibility in teachers towards their job, greater attention of the teachers to students' capabilities and talents, preparing teaching trainees to teach the students better.

### 3-2. Conceptual Model

Generally, the conceptual model which is gained out of the findings' interview is as follows (Figure.1). Posteriori conditions lead to the formation of main category

(model implementation) that in this midst contextual and intervening conditions will affect strategies but consequences will be created out of strategies.

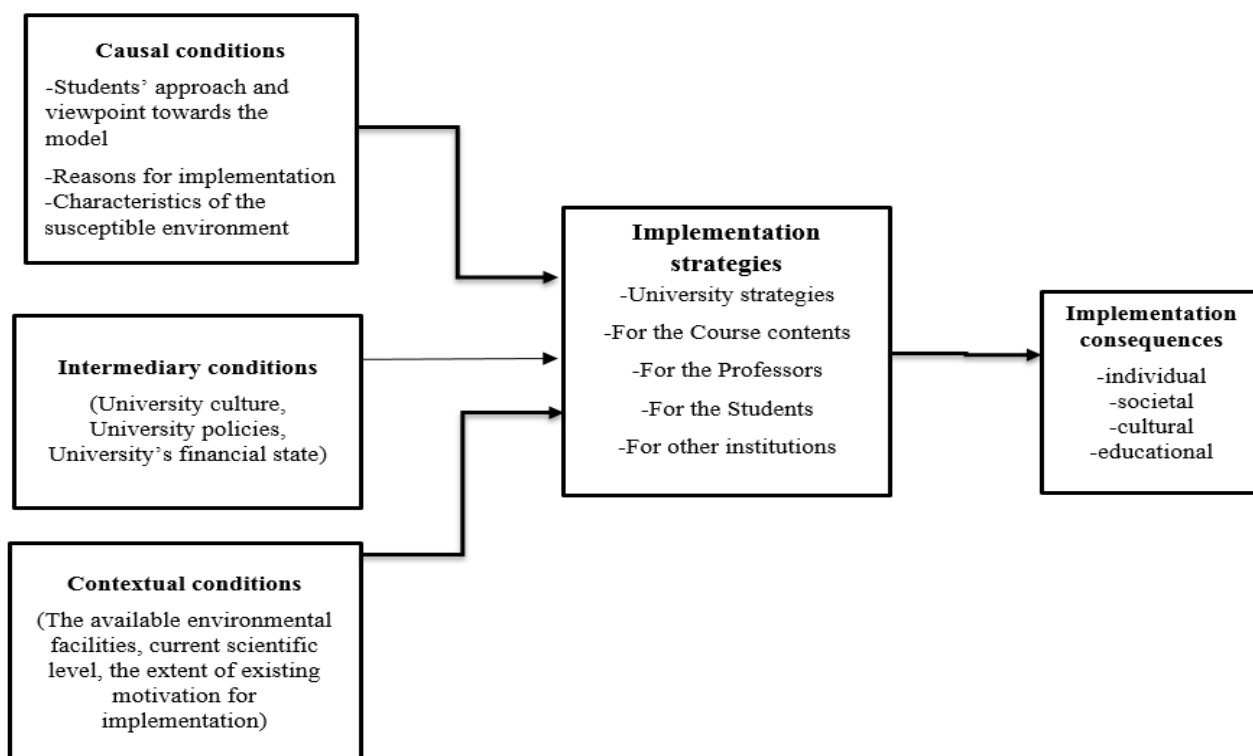


Fig.1. Conceptual model of the present study.

### 3-3. Demographic characteristics

Regarding data analysis, 159 women (39.8%), and 241 men (60.3) men were among the under-study responders (Table.2). Among the respondents, 68 (17%) were 19 years old, 71 (17.8%) were 20 years old, 33 (8.3%) were 21 years old, 18 (4.5%) were 22 years old, 53 (13.3%) 23 years, 66 people (16.5%) were 24 years

old, 50 people (12.5%) 25 years, 22 people (5.5%) 26 years and 19 people (4.8%) 27 years of age (Table.2). Also, descriptive statistics of variables are shown in Table.3. Evaluate the proposed model using structural equation modeling. Figure.2 shows the fitted model of the research.

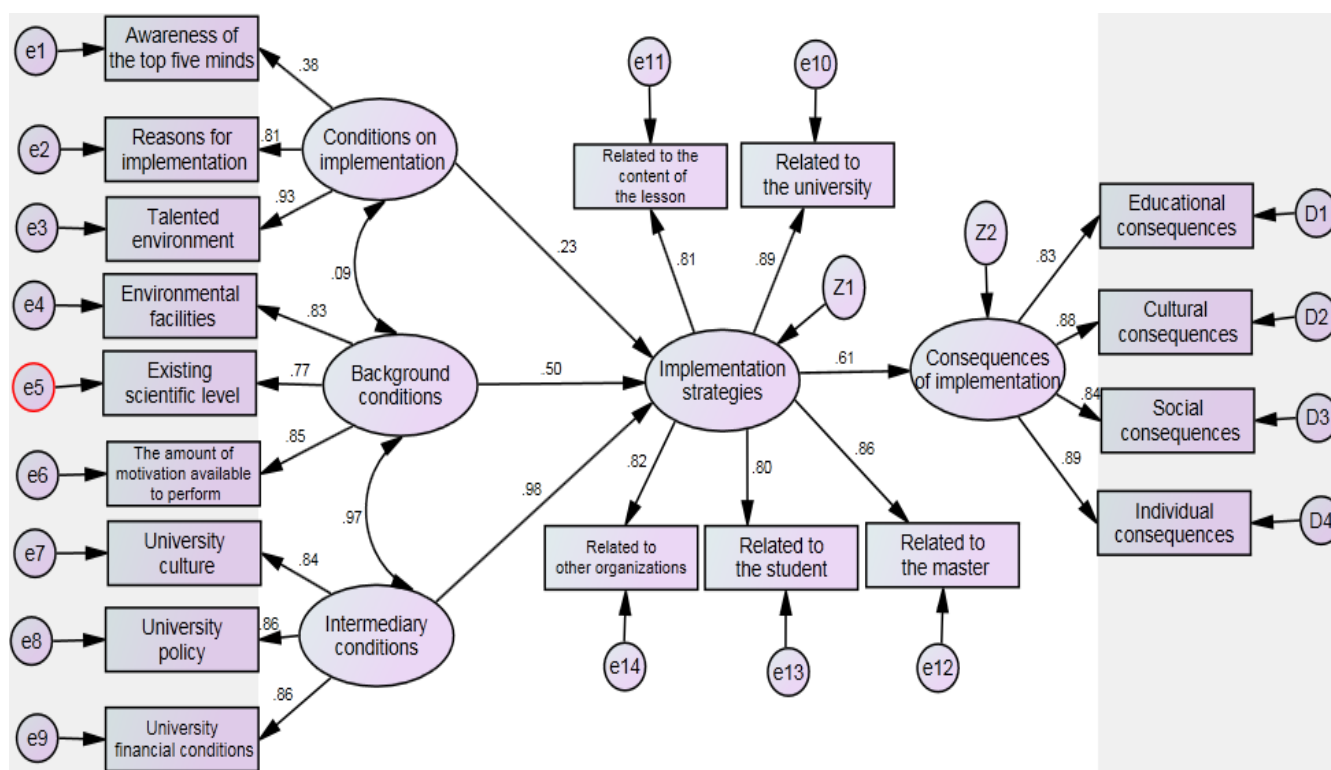
Table-2: Frequency distribution of participants' gender and age.

Variables	Frequency	Percent	
Gender	Female	159	39.8
	Male	241	60.3
Age	19	68	17.0
	20	71	17.8
	21	33	8.3
	22	18	4.5
	23	53	13.3
	24	66	16.5
	25	50	12.5
	26	22	5.5
	27	19	4.8
	Total	400	100.0



**Table-3:** Lists of descriptive statistics (Mean, Std. Deviation, Skewness and Kurtosis).

Variables	Minimum	Maximum	Range	Mean	Std. Deviation	Skewness	Kurtosis
Conditions on implementation	1.52	4.83	3.31	3.506	.615	-.426	-.166
Background conditions	1.53	4.93	3.40	3.886	.676	-.685	-.036
Intermediary conditions	1.23	4.92	3.68	3.933	.638	-.953	.873
Implementation strategies	1.25	4.76	3.51	3.749	.709	-.797	.138
Consequences of implementation	1.35	4.89	3.54	3.589	.95	-.394	-.380
Awareness of the top five minds	1.10	5	3.90	3.290	.811	-.126	-.724
Reasons for implementation	1.33	5	3.67	3.598	.788	-.518	-.222
Talented environment	1.50	5	3.50	3.630	.705	-.413	-.172
Environmental facilities	1.00	5	4.00	3.859	.766	-.753	.180
Existing scientific level	1.20	5	3.80	3.884	.787	-.643	-.359
The amount of motivation available to perform	1.40	5	3.60	3.916	.738	-.720	.105
University culture	1.13	5	3.88	3.876	.717	-.893	.793
University policy	1.43	5	3.57	3.922	.765	-.790	.097
University financial conditions	1	5	4	3.999	.784	-1.055	1.180
Related to the university	1.50	5	3.50	3.716	.777	-.603	-.290
Related to the content of the lesson	1	5	4	3.723	.815	-.731	.225
Related to the master	1.20	5	3.80	3.773	.804	-.747	.041
Related to the student	1	5	4	3.846	.835	-.858	.335
Related to other organizations	1	5	4	3.690	.939	-.747	.001
Individual consequences	1.00	5	4.00	3.607	.885	-.566	-.350
Social consequences	1.00	5	4.00	3.601	.921	-.502	-.343
Cultural consequences	1.14	5	3.86	3.578	.838	-.383	-.429
Educational consequences	1	5	4	3.571	.905	-.381	-.505



X2: 633.75, Df: 129, NPAR: 42, GFI: .906, IFI: .916, TLI: .911, CFI: .916, RMSEA: .075.

**Fig.2:** The developed model of factors affecting the implementation of the top five minds in education of student teachers of Farhangian University in the present study.

For the Fit index of  $X^2/Df$ , point less than five is appropriate and the points closer to zero are indicative of the goodness of fit of the model. For GFI, IFI, CFI and TLI indices, the points close to 0.90 and above will be regarded as an acceptable fit and are indicative of the model goodness. With regard to the index of RMSEA, the points less than 0.10 are suggestive of the goodness of the fit of the model (21). Therefore, concerning the points of the fit indices of the codified model and the

acceptable borders for the points which are mentioned above (**Table.4**), we can say that the presented model in this research is acceptable. Regression coefficient model indicates that the mentioned variables will demarcate well the influential factors on the Implementation of Gardner's Five Minds for the Future in the education of the student teachers of Farhangian University.

**Table-4:** Fitness indicators for the developed models and the final model.

Model	X <sup>2</sup>	Df	X <sup>2</sup> /Df	NPAR	GFI	IFI	TLI	CFI	RMSEA
Default model	589.43	129	4.57	42	.906	.916	.911	.916	.075
Independent model	5332.47	153	36.81	18	.239	.001	.001	.001	.30

The results of the model show that regression coefficients of the impactability of the posteriori conditions implementation of the students' awareness, implementation reasons and exposed environments are respectively 0.38, 0.81 and 0.93 with the suggestiveness less than 0.05, as a result students' level of awareness, implementation reasons and exposed environments are the component variables of the posteriori conditions of the implementation. The regression coefficients of the impactability of the contextual conditions of the environmental facilities, present scientific level and the present motivation rate for implementation respectively equal to 0.83, 0.77, 0.85 with the suggestiveness less than 0.05. As a result of the environmental facilities, the present scientific level and the present motivation rate for the implementation are the component variables of the contextual conditions (**Table.5**).

Regression coefficients of the impactability of the intervening conditions from culture, politics, financial conditions of university respectively equal 0.84, 0.86, 0.86 with the suggestiveness less than

0.05. As a result, the cultural, political and financial conditions of university are the component variables of the intervening conditions. The regression coefficients of the impactability of the implementation strategies related to university, course content, professor, student and other organizations respectively equal 0.88, 0.81, 0.86, 0.80, 0.82 with the suggestiveness less than 0.05. Accordingly, the strategies related to university, course content, professor, student and other organizations are the component variables of the implementation strategies of Five Minds for the Future (**Table.5**).

The regression coefficients of the impactability of the implementation consequences of Five Minds for the Future as the individual, social, cultural and educational consequences respectively equal 0.89, 0.84, 0.88, 0.83 with the suggestiveness less than 0.05, thus, the individual, social, cultural and educational consequences are the component variables of the implementation consequences of five superior minds. The regression coefficients between the posteriori, contextual and intervening conditions with

the implementation strategies of five superior minds respectively equal 0.23, 0.50 and 0.98 with the suggestiveness less than 0.05, so, we can say that there are meaningful relationships between the posteriori contextual and intervening conditions and the implementation strategies of five superior minds. Also, the regression coefficients between the

implementation strategies of Five Minds for the Future and the implementation consequences of five superior minds are equal to the suggestiveness less than 0.05. Therefore, we can say that the implementation strategies affect the implementation consequences of Five Minds for the Future (**Table.5**).

**Table-5:** Structural pattern of routes and their standard coefficients in the final model.

Direction	$\beta$	R <sup>2</sup>	P-value
Terms of implementation- Students' awareness	.38	.14	0.001
Terms of implementation- Implementation reasons	.81	.66	0.001
Terms of implementation- Exposed environments	.93	.86	0.001
Contextual conditions- Environmental facilities	.83	.69	0.001
Contextual conditions- Present scientific level	.77	.59	0.001
Contextual conditions- Motivation rate for implementation	.85	.72	0.001
Intervening conditions- University culture	.84	.71	0.001
Intervening conditions- University policy	.86	.74	0.001
Intervening conditions- University financial conditions	.86	.74	0.001
Implementation strategies- Related to university	.88	.77	0.001
Implementation strategies- Related to course content	.81	.66	0.001
Implementation strategies- Related to professor	.86	.74	0.001
Implementation strategies- Related to student	.80	.64	0.001
Implementation strategies- related to other organizations	.82	.67	0.001
Implementation consequences- Individual	.89	.79	0.001
Implementation consequences- Social	.84	.71	0.001
Implementation consequences- Cultural	.88	.77	0.001
Implementation consequences- Educational consequences	.83	.69	0.001
Terms of implementation- Implementation strategies	.23	.05	0.031
Contextual conditions- Implementation strategies	.50	.25	0.001
intervening conditions- Implementation strategies	.98	.96	0.001
Implementation strategies- Implementation consequences	.50	.25	0.001

#### 4- DISCUSSION

The current research is done with the purpose of considering the influential factors on the implementation of Gardner's Five Minds for the Future in the education of the student teachers at Farhangian University. For this purpose, primarily for the identification of the conditions and the implementation strategies of Gardner's Five Minds for the Future through the research method of the Constructivist Grounded Theory and interview with the experts, and their coding in the quantitative part, accreditation had been conducted. According to the gained results in the implementation of five superior minds, the posteriori and essential conditions include the students' awareness of Five Minds for the Future and their familiarity with this theory, justification of the reasons of Five Minds for the Future and the presence of the exposed environments and facilities at university.

The required intervening conditions for the implementation of Five Minds for the Future include the appropriate environmental facilities, university and professor's appropriate scientific level, and the presence of the required motivation and determination among the university professors and authorities. The intervening conditions of the implementation of Five Minds for the Future include the organizational culture of the university, the dominant policies in university and the financial conditions of the university. The implementation strategies of Five Minds for the Future include the strategies which embed the centrality of expertise, creativity, ethics, eclecticism and respect at the level of university, course contents, professors, students and organizations, and the implementation strategies of Five Minds for the Future are elucidatory in four general educational, social, cultural and personal dimensions. According to the gained results, the students' awareness of five superior minds, implementation

reasons and the environment are prone to the posteriori conditions that can affect the implementation of Five Minds for the Future pattern at Farhangian University; this finding is synchronous with the results of the studies by Khandaghi et al. (9), and Namdari et al. (11). The student teachers regard the presence of the reasons and attention to the particular requirements like better recognizing one's mind and consequently finding the path for better living, conveying this knowledge to the next generation, and the significance of the ethical issues in society as the reasons and motivations that, if present at university and in its members, would lead to the implementation of this pattern.

According to the gained results, the environmental facilities, scientific level at university and the motivation rate which exists for the implementation of this pattern, are among the contextual conditions that have significant effect on the implementation of Five Minds for the Future pattern at Farhangian University and these results are unanimous with the conclusions of Beuckelaer et al. (13), Khandaghi et al. (9), Namdari et al. (11), and Khadivi et al. (4).

According to this, we can say that disrespect to the students and hurting their self-esteem, absence of the culture for dynamicity and happiness at university, students' involvement during the course of the authorities and professors' hostility for dealing with the students' needs, inability to learn how to respect because of not being respected at Farhangian University were among the unpleasant cultural factors at university environment which will affect the implementation of Five Minds for the Future pattern. The irrevocable strategies by university include having expert and qualified professors, holding workshops by the experienced and expert professors, giving facilities to the instructors, providing job security for the instructors and creating motivation, instructing

teachers by holding workshops, holding toolbox meeting for the professors and instructing how to implement, increasing the level of dynamicity and creativity at university environment, being synchronous with the professors, respect to the students, enhancing education facilities. Developing resources and the support of faculty members and generally student support were significant strategies that all the participants had a unanimous view of and these kinds of relationships and their effects on the improvement of the education process have been also confirmed in the study by Javadi Boura and Izadi (3). Also, the findings of this section are synchronous with the conclusions of Maleki (10) that divide teachers' qualifications into three parts of cognitive, emotional and skillful.

The strategies which have to be taken by the students are strategies like following the experts as the example, motivation and love for teaching profession, observation of the dignities of the professional ethics with the emphasis on the religious ethics, participating in the classes of the selective professors, doing research and applying one's creative mind, learning functional topics, doing inquiry and research for achieving updated information in one's field of study, doing one's role and responsibility, fostering one's creativity, not restricting oneself to the curricular topics and having further studies, being active, doing activities for presenting the gained knowledge, enhancing expertise in the job domain and practice teaching students. The participants that they themselves were student teachers enumerate the mentioned cases as their limitations for implementing five superior minds. These findings are partly synchronous with the findings of Ramezani et al. (6). Implementing Five Minds for the Future has pleasant personal, social, cultural and educational consequences. The personal consequences

proposed by the participants include having high philosophical spirits, enhancing creativity level, creating sufficient cognition of one's self, giving priority to respect, ethics and creativity, having lots of hope for the future, feeling responsibility in one's job, achieving mental quietude, creativity and innovation, being skillful, increasing awareness, increasing the self-esteem and the spirit of self-confidence that were synchronous with the findings of Beichner (12), Bilgin (14), Own and Wen (20). The social consequences of the implementation of Five Minds for the Future pattern from the viewpoints of the current research participants also include paying attention to the ethical values, giving priority to empathy and collaboration and each other's' assistance, pleasant impact on the economic, political, religious and social dimensions of the society. These findings were also synchronous with the findings of the research by Rahimi et al. (5), and they confirmed each other.

The cultural consequences of the implementation of Five Minds for the Future pattern also include higher importance of ethics and respect in society, familiarity with the cultural differences and respect for the customs and rituals of each city, observation of the moralities, gaining virtues and avoiding moral turpitude which were confirmed by the findings of Basiri et al. (2). The educational consequences relevant to the implementation of Five Minds for the Future pattern from the viewpoints of the student teachers also include paying attention to the expertise, creative training and successful students in the academic and scientific environments, students' welcoming the implementation of this pattern in case of correct instruction, better and more useful training of the students, giving respect and paying attention to all the dimensions of students' training, paying attention to fostering these Five

Minds for the Future in the minds of their students, training more capable teachers and subsequently more capable students flourished in ways commensurate with their aptitude, giving more respect to the student and, the improvement of the university atmosphere, which are synchronous with the researches of Fam (16), Köksal and Yel (17), Bordei (15), and Rahimi et al. (5).

## 5- CONCLUSION

According to the results of the research, the posteriori conditions i.e., essential and basic influential conditions on the implementation of five superior minds, were students' awareness of Five Minds for the Future and their familiarity with this theory, justification of the reasons for the implementation of Five Minds for the Future and the presence of environment and the exposed facilities at university that affect the implementation of five superior minds. The required contextual and intervening conditions for the implementation of Five Minds for the Future include appropriate environmental facilities, appropriate scientific level of the university and the professors and the presence of the required motivation and determination among the university authorities and professors.

Based upon the other results of the inquiry, organizational culture of university dominant policies at university and the financial conditions of the university as the intervening condition can affect the implementation of five superior minds. For the implementation of five superior minds, various strategies must be applied at different levels as the university must anticipate strategies like centralizing expertise, identifying and fostering dream aptitudes and centralizing creativity. Also, other organizations like Education Department, Supreme Council of Cultural Revolution, Broadcasting and Research Centers must have a strategy for

strengthening and implementing Five Minds for the Future at Farhangian University and at schools. According to the results of the inquiry, implementing Five Minds for the Future for the student teachers and students will entail various individual, social, educational and cultural consequences like learning special expertise and strengthening skills in a particular realm, preparing university students and students for the employment after their graduation, preparing the student teachers for better instruction to their students; fostering and strengthening ethics at schools and universities. As the traditional method in education could not be responsive to all various needs of the student teachers and this issue is associated with bearing problems for the country's education system, therefore paying attention to the educational strategies of the Multiple Intelligence Theory can create active and effective education conditions in the learning level of the student teachers. Also, such a theory can take into account the required educational content embedding cultural bedrocks in the curricular program and according to this, will facilitate learning conditions of the student teachers.

**6- CONFLICT OF INTEREST:** None.

## 7- REFERENCES

1. Gusky TR. Evaluating professional development. Thousand Oaks, CA: Corwin Press. 2000.
2. Basiri B, Nasr A, MirshahJafari E, Mehrmohammadi M. Need Analysis and Explanation of Cultural, Educational and Social Needs of Faculty Members of Farhangian University (In Accordance with the objectives set by Fundamental Educational Development Document. religion and communication. 2015; 21(46):71-104.
3. Javadi Boura MA., Izadi S. A Model of Effective Teaching at Teacher-education University: A Teacher-student Supportive Approach. Journal of Curriculum Research. 2018; 7(2):145-66.

4. Khadivi A, Seyyed Kalan SM, Hossein Pour T, Ahmadi H, Tareh Bari H. Affecting Factors on Teaching and Education Quality in Farhangian University (Case Study: College of Ardabil). *Journal of Instruction and Evaluation*. 2018; 11(42):161-85.
5. Rahimi M, Zarooj Hosseini R, Darabian M, Taherian AA, Khosravi A. Teacher Evaluation by Students: A Comprehensive Approach. *Strides in Development of Medical Education*. 2012; 9(1):34-45.
6. Ramezani S, mehni O, Azizi N. Investigate the barriers and influencing factors of Science production at the Farhangian University: Grounded Theory Approach. *Journal of Management and Planning in Educational Systems*. 2018; 11(2):27-50.
7. Gardner H. frames of mind: the theory of multiple intelligences. new York: basic books. 2011.
8. Zarei E, Zainali pour H, Behruzi A. The Examination of the Evolution of Gardner's Theory from Intelligence to Mind: Five Minds for the Future. *Research Journal of Foundations of Education*. 2017; 7(1):126-41.
9. Khandaghi MA, Marghani A, Shabani Varaki B, Mosapour A. Rethinking on Paradigms for Curriculum Implementation: The Linkage between Teachers Theoretical and Practical Knowledge. *Research Journal of Foundations of Education*. 2016; 6(1):46-68.
10. Maleki H. Qualifications of the teaching profession. First edition. Tehran: school; 2015.
11. Namdari Pejman M, Mirkamali M, Purkarimi J, forsatkah M. Identify effective components in quality assurance in preparing of student-teachers at the Farhangian University: A Qualitative Approach. *Journal of New Approaches in Educational Administration*. 2019; 10(38):1-34.
12. Beichner RA. The Relationship between students' academic self-efficacy and teachers' multiple intelligences instructional practices [Ph.D. dissertation]. [Washington, USA]: Education Teacher Leadership Faculty, Walden Univ; 2011.
13. Beuckelaer AD, Lievens F, Bücker J. The Role of Faculty Members' Cross-Cultural Competencies in Their Perceived Teaching Quality: Evidence from Culturally-Diverse Classes in Four European Countries. *The Journal of Higher Education*. 2012; 83(2), 217-48.
14. Bilgin EK. The effect of multiple intelligences based instruction on ninth graders chemistry achievement and attitudes toward chemistry [M.Sc. dissertation]. [Ankara, Turkey]: Secondary Science and Mathematics Education Faculty, Middle East Technical Univ; 2006.
15. Bordei S. Aspects of the application of theory of multiple intelligences in Romanian school with students between 10 and 14 years old. *Procedia-social and Behavioral Sciences*. 2014; 128, 269-74.
16. Fam MM. The effect of multiple intelligences strength on school performance [Project Summary]. [California, USA]: California state science fair; 2008.
17. Köksal MS, Yel M. The effect of multiple intelligences theory (MIT)-based instruction on attitudes towards the course, academic success, and permanence of teaching on the topic of "respiratory systems". *Journal of Theory and Practice*. 2007; 7(1):231-39.
18. Xie J , Lin R. Research on multiple intelligences teaching and assessment. *Asian Journal of Management and Humanity Sciences*. 2009; 4(2-3):106-124.
19. Saricaglu A, Arıkan, A. A study of multiple intelligences.foreign language success and some selected variables. *Journal of Theory and Practice in Education*. 2009; 5(2):110-22.
20. Own Z, wen LK. Integrating the Theory of Multiple Intelligences in the Chemical Equilibrium Course to Improve Students?. In: Association for the Advancement of Computing in Education (AACE). Montreal, Canada: learntechlib; 2005.
21. Comrey AL, Lee HB. A first course in factor analysis, 2nd ed. Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc; 1992. xii, 430 p. (A first course in factor analysis, 2nd ed).