



# Analysis of the simple and multifold relationships between entrepreneurial thinking skills and problem-solving capabilities in Kashan University of Medical Sciences

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## ABSTRACT

**Objective:** The purpose of this research was an analysis of simple and multiple relationships between thinking skills with entrepreneurship and problem solving capabilities in students at Universities of Kashan and Medical Sciences. Research type was descriptive correlative. **Methodology:** The statistical population consisted all of students' Universities of Kashan and Medical Sciences in academic year 2014-2015 that by Cocran Formula, 269 ones were chosen by using stratified randomized sampling were chosen. The information gathering tools at were thinking skills questionnaire with 35 items in 5 components, entrepreneurship questionnaire with 31 items in 4 components and problem solving questionnaire with 25 items in 4 components on base 5 likert scales. Questionnaires content validity confirmed by expert. Through Cronbach alpha coefficient, reliability coefficients were obtained equal to 0.83 for thinking skills, 0.79 for entrepreneurship and 0.91 for problem solving. Data analyses were used in level inferential statistics (correlation, t-test, regression) through Spss and software. **Results:** Finding showed mean of thinking skills, entrepreneurship and problem solving capabilities in students are bigger than average. There are positive and significant relationship between thinking skills with entrepreneurship and problem solving capabilities. **Conclusion:** There are not significant difference between thinking skills, entrepreneurship and problem solving capabilities in terms of university type.

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## 1. Introduction

Students are individuals who, due to special circumstances, the transition from one stage to another stage, down. If we are to find solutions for many cultural, technical, local, economic, educational, political, social and industrial problems of our growing world, we will we need creative thinkers. By utilizing creative and flexible thinking, leadership most of the people who are working together can find new ways to solve such issues. Despite thinking skills that will allow people not only to accept change, but they adapt themselves to it, for individuals, the development of thinking skills, problem solving skills and entrepreneurial training are a necessity, not a ritual issue for the organizations to develop the skills of their people and among most innovative individuals and organizations are those whose survival and prosperity have been maintained by the confidence. Throughout life, everyone faces different issues that should decide about. Information plays an important role in making decisions. Arming with the information requires the use of high-level thinking skills (Husseini, 2011). Everyone should be able to apply flexible and different thoughts in combination with each other. At the same time the ability to use these ideas will lead to progress in all areas of human life. This kind of thinking is deposited to the various institutions of all human beings. To make this talent to emerge, they must provide suitable platform. One of the most important contexts is the context of education. The development of today world is thanks to a generous and creative human progress in all areas of life. In other words, armed men by the thoughtscan consider being the greatest asset of any society (Husseini, 2011).

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The most important thinking skills are including positive thinking skills, macro thinking, purposeful, realism and optimistic thinking. Positive thinking is a way of thinking which habitually pursuing the best of the worst occasions. Targeting those thoughts that are being organized based on specific goals and individual goals in mind, also organizes their thoughts, so that the person can be developed step by step process that would lead to achieve the objectives (like solving a math problem or thoughts of the curriculum). A great-looking or holistic thinking is rather than part of the review or atomistic view. Relying on atomistic view destroys the possibility of understanding phenomena. In organizations there is such conditions (Yary, 1999). The realism is attention to reality and objective issues and avoiding dreams and imaginations. The optimism is that people who are optimistic and positive habit to constantly think and talk about their goals. They think and talk instead of the past and where it came from and where it is to go ahead and talk about it. They always look forward rather than back (Yary, 2009).

One of the most important strategies for the development of entrepreneurship among students is the development and promotion of entrepreneurship through promotion, education, support and recognition of talented entrepreneurship. In order to promote entrepreneurship, training capabilities should be provided for people who are prone to develop this way rather than university graduates looking for work, recruit and establish new businesses to them. It is therefore necessary to understand the importance of promoting a culture of entrepreneurship by policymakers and comprehensive planning and the support of government officials and agencies. Entrepreneurship is a creative process that an entrepreneur with new ideas and identify new opportunities and to mobilize resources, engage in business creation and establishment of new companies, new and innovative, and growing its organization, which coupled with the adoption of hazard and risk and the introduction of a new product or service to the community.

Entrepreneurship has various dimensions such as need for achievement, sense of independence, risk-taking and tolerance of ambiguity. The notion of achievement in the vision is to tend to work in high standards for success in the competitive situations. There are people who need success in entrepreneurial activities as an important loss. Sense of independence can be defined "to work for own and mastering in own work". The desire for independence is thus motivating force for modern entrepreneurs and the rewards of entrepreneurship. Liles knew the acceptance of risk as taking risks that could be harnessed through personal efforts that person is likely to receive compensation as a result of the proposed successes before they expose themselves due the messages of failure to put in. Sexton defined the tolerance of ambiguity and uncertainty to accept as a part of life, the ability to survive with incomplete knowledge about the environment and willing to start their activities without having to know whether a person will be successful or not (Ahmdepour Dariani, 2004).

Decision-making process is an essential problem-solving for career development. When people look for similar problems, different solutions are used and find effective solutions, procedures and processes to intelligently pursue different and successful experience after using this solution and gradually formed a style of problem solving, which is then automatically applied to solve the problem (Parsa et al., 2011). Problem solving is an active learning method that consists of five steps: identifying and defining problems, collecting data, preliminary conclusions, and evaluating test results and conclusions (Myers, 2004).

There are several ways to solve the problem: logical way: by gathering the necessary information, we will examine all options and possibilities and according to our purpose our best is accounted for. In emotional approach we are not in bondage to gather information, even if they ignore the most credit to our sense of ourselves. Impulsive way is very fast, it seems to me that the way we choose. Passive avoidance task and in fact do not take a decision or postpone it, or so involved that little hesitation our choices as a result of delays are eliminated to eventually remain an option.

Strengthen problem-solving skills can help us to have more control over our lives and our decisions more satisfaction and confidence we have. Decision-making is a process in which a path among several possible ways to be accounted for. For an appropriate decision we must first know ourselves well, that is aware of our strengths and weaknesses and values. Our values have an important role in determining our priorities and they can track our decision to make it clear. Knowledge of local conditions, opportunities and constraints and other important information may change at the beginning of every important decision that should consider it (Mahdavi, 2009).

In the present study the possibility of evaluating thinking skills makes entrepreneurship and problem solving in the students. To create a thinking man's true beliefs attitudes must be corrected and most common and sharpest vision in the problems should be dubious. Then known facts are understand and analyzed and interpreted them. Thinking skills are one of the life skills necessary for every person in every place of the world and needs to teach these kinds of skills from elementary level to the high-level of education.

### **1.1 Literature review**

Shabani and Mehrmohammadi (2000) demonstrated problem solving for group activities, corroborated feedback and analyzed many scholars of education and their important role in the development of critical thinking skills.

Dabaghian (2005) in his study found that the mathematics' students than other field ones get a higher thinking and significant differences observed between science and literature field of study.

Habibi (2008) indicated that training problem-solving skills can significantly increase general adjustment, emotional and social learning.

Rezaei (2009) in the study of entrepreneurship of students in Islamic Azad University in Darab indicated that the average spirit of entrepreneurship in general as well as all components except higher than risk-taking is in middle level.

Tavanaei (2010) found that the positive thinking are derived from an optimistic attitude to the world and plays an important role in the development of better and more targeted behaviors in humans and provides the context to his success.

Ahmadi (2010) found that happy feeling on various aspects has positive effects such as success in career, marriage, creative thinking, longevity and many other things.

The results of Parsa et al., (2011) indicated that each of the four methods of solving problem has a significant relationship with entrepreneurial characteristics and positive regression results indicated that a rational and pragmatic way predicts 33% of the variance in entrepreneurial characteristics of the students and rational problem solving method share of this amount is 0.56. Other ways of solving problems are unable to predict the entrepreneurial characteristics of students.

Dastgheib (2011) investigated the effect of training positive thinking skills on the creativity of female students indicated positive thinking skills and creativity of each of the following fluid sectors of expansion, innovation and flexibility of the students.

Moghimian (2012) found in a study that however, teaching creative thinking can improve creative thinking but the behaviors or management skills of students need greater time.

### 1.2 Hypotheses

1. The average of thinking skills students is desirable.
2. The average of entrepreneurial skills of university students is desirable.
3. The average of problem-solving skills in students is desirable.
4. There is a relationship between entrepreneurial thinking skills and problem solving skills of the students.
5. There is a relationship between the skills of thinking, entrepreneurship and problem solving of students in Kashan University of Medical Sciences.

## 2. Materials and methods

The research is a descriptive in the purpose and in terms of implementation is a correlative. The study population is consisted of Kashan University of Medical Sciences in the academic year on the number of people. Since in this study population's variance was unknown, conducted a pilot study on a group of people was done to determine the variance. For this purpose, a group of 30 subjects was randomly selected from the population and the questionnaires were distributed among them and then data extracted from a sample of these responses, estimating population size, the variance of the test, the sample size were done by the Formula at 269 subjects. Sampling method was a stratified randomly compromising the size. Therefore, among 7085 students of Kashan University, 206 and among 2,168 medical students 63 subjects were selected.

A questionnaire was used to collect data in this research:

A) Thinking skill: in the study to measure thinking skills of students in the whole questionnaire was used with Likert five components. The hypothetical average (3) was used as the basis for analysis in the questionnaire.

B) Problem solving questionnaire: Problem Solving in the form of a standard questionnaire of 25 close questions is designed on 5 Likert scales (very high to very low). Including problem solving aspects can be rational, emotional, impulsive and avoidant. The hypothetical average (3) was analyzed as a basis.

C) Questionnaire of Entrepreneurship: it consists of 31 close questions based on the 5 ranks of Likert scale (strongly agree to strongly disagree). Considering that the scale questionnaire to measure job creation was five degrees, the hypothetical average (3) was analyzed as a basis.

To determine the validity of this study, all three questionnaires were delivered to 15 teachers of management, psychology, social sciences and education. The survey was conducted after receiving their views and doing the necessary reforms. Reliability of questionnaire through Cronbach's alpha coefficient for 0.83 thinking skills, 0.79 entrepreneurship, 0.91 problem-solving were estimated to indicate the reliability of the measurement tool.

Data analysis in the inferential statistics (Pearson correlation, regression and t-test) was performed using Spss statistical software.

## 3. Discussion and results

Based on the findings, 57% of female students and 43% of male students and 67% of bachelor's, 23% of master's and 10% of doctorates were selected, 27% were in humanities, 19% in science, 26% in technical, 5% in art and 23% in medical science

**Table 1. Comparison of the average thinking skills of students**

| Variable          | Number | Mean | df  | t        | P     |
|-------------------|--------|------|-----|----------|-------|
| positive thinking | 269    | 3.66 | 268 | 18.89/18 | 0.000 |
| Macro think       | 269    | 3.65 | 256 | 17.45    | 0.000 |
| Targeting         | 269    | 3.89 | 256 | 27.90    | 0.000 |
| Realism           | 269    | 3.51 | 256 | 13.72    | 0.000 |
| Optimism          | 269    | 3.54 | 256 | 14.97    | 0.000 |
| Thinking          | 269    | 3.65 | 256 | 23.68    | 0.000 |

Table 1 indicates that the average of each of the components of thinking skills is larger than hypothetical average criterion (3) and assumption of the researcher claims were approved. The highest average was related to component of targeting at 3.89.

**Table 2. Comparison of the average entrepreneur of students**

| Variable         | Number | Mean | df  | t     | P     |
|------------------|--------|------|-----|-------|-------|
| Achievement      | 269    | 3.79 | 268 | 21.43 | 0.000 |
| Risk taking      | 269    | 3.31 | 258 | 9.23  | 0.000 |
| Obscurity        | 269    | 3.55 | 258 | 11.28 | 0.000 |
| Autonomy         | 269    | 3.47 | 258 | 10.20 | 0.000 |
| Entrepreneurship | 269    | 3.53 | 256 | 16.43 | 0.000 |

Table 2 indicates that the average of each of the components of entrepreneurship is greater than hypothetical criterion (3) and assumption of greater researcher claims were approved. The highest average in the component achievement was 3.79.

**Table 3. Comparison of the average students' problem-solving**

| Variable        | Number | Average | df  | t     | P     |
|-----------------|--------|---------|-----|-------|-------|
| Feeling         | 269    | 3.04/3  | 268 | 1.06  | 0.290 |
| Avoidance       | 269    | 2.81/2  | 268 | -4.27 | 0.000 |
| Impulsive       | 269    | 3.21/3  | 268 | 3.63  | 0.000 |
| Logical         | 269    | 3.22.3  | 268 | 5.69  | 0.000 |
| Solving problem | 269    | 3.07    | 268 | 2.02  | 0.04  |

Table 3 indicates that the average emotional, impulsive and reasonably components was higher than average (3) and avoidance lower than average (3). The highest average of the logical component was 3.22.

**Table 4. Relationship between entrepreneurial thinking skills and problem solving skills of the students**

| Variable                             | Number | Relation | The coefficient of determination | Significance level |
|--------------------------------------|--------|----------|----------------------------------|--------------------|
| Thinking skills and entrepreneurship | 269    | 0.71     | 0.50                             | 0.000              |
| Thinking and problem-solving skills  | 269    | 0.25     | 0.063                            | 0.000              |

Correlation coefficient indicated that there is a significant positive relationship between entrepreneurial thinking skills and problem-solving skills of students. That is the higher thinking skills of students, the higher level of entrepreneurship and problem-solving skills among students.

**Table 5. Regression coefficients of thinking factors in explaining entrepreneurial skills**

|                   | B    | Beta | SE   | t    | P     |
|-------------------|------|------|------|------|-------|
| Constant          | 0.41 | -    | 0.19 | 2.18 | 0.03  |
| positive thinking | 0.14 | 0.15 | 0.05 | 2.73 | 0.007 |
| Macro think       | 0.06 | 0.07 | 0.04 | 1.30 | 0.19  |
| Targeting         | 0.27 | 0.26 | 0.05 | 64.4 | 0.000 |
| Realism           | 0.10 | 0.12 | 0.05 | 2.12 | 0.03  |
| Optimism          | 0.27 | 0.30 | 0.05 | 37.5 | 0.000 |

The table indicated that among components of thinking skills expect macro think (B= 0.06 and P=0.19) the other components of entrepreneurship among the students are predictable and can be included in the regression model.

**Table 6. Regression coefficients of the components of thinking skills in explaining the problem solving**

|                   | B     | Beta  | SE    | t     | P     |
|-------------------|-------|-------|-------|-------|-------|
| Constant          | 1.77  | -     | 0.305 | 5.81  | 0.03  |
| positive thinking | 0.10  | 0.096 | 0.08  | 1.22  | 0.222 |
| Macro think       | 0.046 | 0.047 | 0.074 | 0.62  | 0.535 |
| Targeting         | 0.16  | 0.14  | 0.09  | 1.76  | 0.08  |
| Realism           | 0.05  | 0.053 | 0.08  | 0.65  | 0.52  |
| Optimism          | 0.081 | 0.08  | 0.08  | 1.009 | 0.314 |

The table indicated none of the components thinking skills are not predictable in problem solving of the students and cannot be in regression model.

**Table 7. Comparison of thinking skills, entrepreneurship and problem solving of students from Kashan University of Medical Sciences**

| Variable         | Number          | Average | t    | Average |
|------------------|-----------------|---------|------|---------|
| Thinking Skills  | Kashan          | 3.67    | 0.55 | 0.58    |
|                  | medical science | 3.64    |      |         |
| Entrepreneurship | Kashan          | 3.55    | 0.62 | 0.54    |
|                  | medical science | 3.51    |      |         |
| Problem solving  | Kashan          | 3.06    | 0.21 | 0.83    |
|                  | medical science | 3.08    |      |         |

Independent t-test indicated there is no significant difference between the skills of thinking, entrepreneurship and problem solving in Kashan University of Medical Sciences. In other words, thinking skills, entrepreneurship and problem solving are the same among the students of Kashan University of Medical Sciences.

Results from various studies in this area have indicated that one of the effective factors in creativity, entrepreneurship and problem solving, thinking skills of people. Creative thinking in students resulted in recognizing better their own strengths and weaknesses and understanding how their strategies in

decision-making and problem-solving can expand which can reduce the wrong decisions. The aim of this study was to analyze the relationship between entrepreneurial thinking and problem-solving skills of students from Kashan University of Medical Sciences.

Table (1) indicates that the average of each of the components of thinking skills was more than the hypothetical average. It indicates that the students do not think about the wrong and no value things and always they think about the progress, always learn new things at work by thinking, make simple working techniques and keep away negative thinking people. They make motivation and hope in their work team and do not work without a goal, they believe that success is impossible without knowing the plan, benchmark on the positive acute or negative phenomena and imitate successful experiences and are always solving the problems with new ideas.

Table 2 indicates that the average of each of the entrepreneurial components was higher than the hypothetical average. The results indicate that students think more about the future than the present and the past, they believe that with enough effort they can be successful, they tend to compare the results of working with others, prefer personal responsibility to solve their problems through their own efforts to undertake work and improve their performance from the criticisms of others, they do not surrender immediately against the problems, think about the new design to solve complex and ambiguous problems that require thinking. They are interested to welcome the changes, believe that intellectual independence is significant in the success and to perform the tasks that have the calculated risk. Rezaei (2009) indicated that the mean of entrepreneurship spirit in general as well as all components in particular except risk taking is higher than average. Table 3 indicates that the average emotional components, avoiding impulsive and reasonably above average and lower than average. The results indicate that students think the different solutions, spend time to attend the comments for or against, if initial efforts failed to resolve the issue, they are not disappointed, they are not disturbed with a difficult problem, upon the face of problems they work out, weigh and compare the results of each choice, compare the systematic approach to their work, no thinking involved with their inner feelings, they do not believe any problem solved and situation analysis and identify the barriers. Habibi's study (2008) indicated that problem-solving skills can significantly increase general adjustment, emotional and social learning.

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#### 4. Conclusion

There is a significant positive relationship between entrepreneurial thinking skills and problem-solving skills. That is that the higher level of entrepreneurship in the students, the increasing trend in problem-solving skills. The table indicated the components of thinking skills to review, the rest of the components of entrepreneurship of the students are predictable and can be included in the regression model.

This suggests that positive thinking that is derived from an optimistic attitude towards the universe plays an important role in the development of better and more targeted behaviors in humans and provide context to his success. Excitements, positive thoughts cause to extent actions and happiness and usual practices of thinking and push people to curiosity and creative limit further. Targeted opinion makes a person able to provide for a step by step process that would lead to achieve the goals. Optimism encourages people constantly to think about their goals and talk about it. When they continuously draw and visualize their goals and ideals they talk about it with a positive way that they feel they have more energy and focus, confidence, creativity and entrepreneurship are more and more of their individual power control and end up being. However, the much greater incentive to be optimistic the higher eager to start and continue will be determined. Tavanaei (2010) found that the positive thinking has better and more targeted role in human behavior and provided the context to his success. Dastgheib (2011) indicated that positive thinking skills and creativity of each of the following fluid sectors, expansion, innovation and flexibility affect the students. The results of Parsa et al., (2011) indicated that each of the four methods of problem solving and entrepreneurial characteristics has a positive significant relationship. Independent t-test indicated the skills of thinking, entrepreneurship and problem solving of the students from Kashan University of Medical Sciences, there is no significant difference. In other words, thinking skills, entrepreneurship and problem solving among the students from Kashan University of Medical Sciences is the same. It indicates the type of university affects in the development of thinking skills, entrepreneurship and problem solving. Dabaghian (2005) also received that math's students than those of other fields have higher thinking; there was no significant difference between the science and literature fields' students.

This study allows assessing thinking skills, entrepreneurship and problem solving, in the students. Confirming the relation of thinking skills, areas of creativity, entrepreneurship and problem solving provide the students to their role as creative and innovative individuals in community development and success in life. Also a variety of training courses, training facilities, management methods and the possibility of carrying out scientific research have increased communication with universities and industrial centers of society, including those that play an important role in enhancing thinking skills, entrepreneurship, problem-solving and creativity of the students.

Also it is recommended that:

- The training programs of the centers and universities should be revised and an interdisciplinary approach of entrepreneurship training courses have to be adopted in entrepreneurship education of universities or a periodical approach has to be used and the structure of the universities should be changed.
- determining the main lessons of entrepreneurship and problem solving in general lessons or courses of university
- teaching the teachers & educational groups interested in entrepreneurship and problem solving workshop or convention for entrepreneurs, university professors and continuous contact that is established at the universities with entrepreneurs in any particular context.
- Among the limitations of this study solely using self-report questionnaires to assess variables, limiting the sample to Kashan University and cross-sectional study and data was collected.

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