

The Effectiveness of SCAMPER Strategy in Enhancing Gifted Students' Habits of Mind and Achievement Motivation

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We explore the effectiveness of SCAMPER strategy in enhancing certain habits of mind and achievement motivation of gifted female students in the first grade of the secondary school in Qassim, KSA. Participants were 18 gifted female students who were purposively selected and divided equally into two groups: experimental and control. The experimental group was then trained on SCAMPER strategy. For data collection, the Habits of Mind Scale and the Contextual Achievement Motivation Scale (CAMS) were used. Significant difference between the experimental and control groups on the total score of the Habits of Mind Scale and its dimensions occur in favour of the experimental group, and on the total score of the Contextual Achievement Motivation scale and its dimensions in favour of the experimental group. No significant differences were found between the experimental group's habits of mind and achievement motivation post-tests and delayed post-tests. Based on the results, it is recommended that the SCAMPER strategy be embedded in the education of gifted students. This study aimed to explore the effectiveness of SCAMPER strategy in enhancing certain habits of mind (thinking flexibly, managing impulsivity, thinking interdependently, applying past knowledge to a new situation, striving for accuracy, questioning and posing problems, thinking metacognitively) and achievement motivation (situation and behaviour) of gifted female students in the first grade of the secondary school in Qassim, KSA. The quasi-experimental method was

used. Participants were 18 gifted female students who were purposively selected and divided equally into two groups: experimental and control. The experimental group was then trained on SCAMPER strategy. For data collection, the Habits of Mind Scale and the Contextual Achievement Motivation Scale (CAMS) were used. Results showed significant difference between the experimental and control groups on the total score of the Habits of Mind Scale and its dimensions in favour the experimental group, and on the total score of the Contextual Achievement Motivation scale and its dimensions in favour the experimental group. No significant differences were found between the experimental group's habits of mind and achievement motivation post-tests and delayed post-tests. Based on the results, it is recommended that SCAMPER strategy be embedded in the education of gifted students.

Key words: *SCAMPER Strategy, Habits of Mind, Achievement Motivation, Gifted Students*

Introduction

Countries compete in making use of the potentials of their citizens' minds and in identifying talents and creativity in their students in all fields. For this reason, they exert all possible efforts to identify gifted students and provide them with the due care through programs that maximise their potentials. Habits of mind, with their contribution in organising thinking, should receive considerable attention in the education of students, particularly the gifted. Furthermore, gifted students' expectations of their performance and their self-awareness determine the levels of achievement they may attain. For this reason, it is essential to enhance their motivation to maximise their abilities.

Habits of mind partly regulate thinking and creativity, and achievement motivation relates to habits of mind. Thus, programs like SCAMPER that enhance creative thinking, imagination, flexibility, curiosity and thinking skills, can be effective in enhancing gifted students' habits of mind and achievement motivation. In this respect, Costa (2001) asserts that overlooking habits of mind results in poor learning outcomes and poor task performance. Costa therefore alerts us to the significance of the direct teaching of habits of mind in a rich and supportive environment. Adams (2006) suggests that enhancing habits of mind enhances learning skills. Costa and Kallick (2000) view habits of mind as a combination of skills, situations and past experiences that underlie students' preferences for given patterns of behaviours in given situations. They therefore view habits of mind as an educational challenge in preparing students who can persist in the face of problems, manage impulsivity, and deal with situations creatively and flexibility. They also stress the significance of thinking interdependently and remaining open to continuous learning. Overall, habits of mind involve 16 habits: persisting, managing impulsivity, listening with understanding and empathy, thinking flexibly, thinking about thinking (Metacognition), striving for accuracy, questioning and posing problems, applying past knowledge to new situations, thinking and communicating with clarity and

precision, gathering data through all senses, creating, imagining and innovating, responding with wonderment and awe, taking responsible risks, thinking interdependently, remaining open to continuous learning, and finding humour. Equally important is enhancing gifted students' achievement motivation, as achievement motivation is significant in activating and directing behaviour. Achievement motivation is one's avenue to self-achievement. McClelland (1953) asserts that achievement motivation plays a significant role in improving one's performance and productivity in all fields and activities.

SCAMPER is a collection of techniques for enhancing creativity that emerged in the USA. It is an operational program in which Eberle (2008) focuses on cognition (fluency, flexibility, originality and elaboration) and affection (curiosity, risk-taking, complication and intuition). It enhances creative thinking through imagination by using divergent thinking. It includes a set of 20 games that differ in content and share the way of presentation. Gifted students are a special category of students who deserve care to meet their unique needs, as is the case with other special categories. Hollingworth (in Jarawan, 2004) shed light on gifted and brilliant students, confirming that neither school curricula nor climate meet their needs, since 50 percent of school time is wasted without benefit for students whose IQ exceeds 140.

Based on what was mentioned above, the current study aimed to explore the effectiveness of SCAMPER strategy in enhancing gifted students' habits of mind and achievement motivation.

Statement of the Problem

Thomson (2009) emphasised the importance of enhancing elementary school gifted students' habits of mind, and documented the effectiveness of her program for teaching thinking in enhancing habits of mind. Hojayrat (2013) identified some habits of mind that gifted students need to enhance, such as questioning and posing problems, thinking metacognitively, and persistence. Al-Sabagh and Al-Jaeed (2008) and Al-Thamer (2013) reported that thinking flexibly is the least common habit of mind among gifted students. Furthermore, Al-Shehri (2014) reported moderate achievement motivation among gifted students and revealed a positive correlation between achievement motivation and metacognitive thinking skills. Luftenegger et. al. (2015) documented better achievement in gifted students with high achievement motivation compared with their peers with lower achievement motivation. Al-Qudah (2014) found a statistically significant positive relationship between habits of mind and achievement motivation among college education students.

The SCAMPER strategy was developed to enhance university students' fluency, flexibility and divergent thinking (Buser, Gladding and Wilkerson, 2011) and to achieve generative thinking in science (Hani, 2013). Al-Enazy (2015) used SCAMPER strategy in teaching science to gifted fifth graders and documented its effectiveness in enhancing students'

learning motivation. Sabri and Al-Royathi (2013) reported the effectiveness of SCAMPER strategy in enhancing creative thinking among elementary school gifted female students in Almadinah.

The researchers of the current study noted from the literature review that studies employing SCAMPER strategy are few and that the effectiveness of this strategy in enhancing habits of mind and achievement motivation is still under researched. Furthermore, studies employing SACMPER strategy did not target secondary school students, even though the strategy can be used with various age groups. The researchers also noted that SCAMPER was embedded in school curricula in several Arab studies (e.g., Science and History, Al-Roythi, 2013; Hani, 2013; Al-Ghamedi, 2013). However, SCAMPER was originally meant to be presented independently of school curricula. Accordingly, the current study aimed to explore the effectiveness of the SCAMPER strategy independent of school curricula in enhancing secondary school gifted female students' habits of mind and achievement motivation. More specifically, the study addressed the following question:

“To what extent is SCAMPER strategy effective in enhancing habits of mind and achievement motivation among gifted female students in the first grade of the secondary school in Qassim, KSA?”

Research Hypotheses

In the light of the literature review and previous studies, the following hypotheses were formulated to be tested:

1. There would be statistically significant differences in the habits of mind of the experimental and control groups after the application of SCAMPER.
2. There would be statistically significant differences in the achievement motivation of the experimental and control groups after the application of SCAMPER.
3. There would be no statistically significant differences on the habits of mind post-test and delayed post-test of the experimental group.
4. There would be no statistically significant differences on the achievement motivation post-test and delayed post-test of the experimental group.

Definition of Terms

SCAMPER strategy

SCAMPER is a collection of techniques for enhancing creative thinking. It focuses on finding new ideas humourously. The name SCAMPER is an acronym for seven techniques: (S)

Substitute, (C) Combine, (A) Adapt, (M) Modify, (P) Put to other uses, (E) Eliminate and (R) Rearrange. Operationally, it is a program presented independently of school curricula and composed of games that individuals play with a coach. These games encourage the generation of new ideas through the previously mentioned seven techniques. It would be applied in the current study three times a week with a total number of 22 sessions, each lasting from 30 to 45 minutes.

Habits of Mind

Habits of mind refer to one's pattern of thinking in which s/he employs mental processes when confronted with a new experience or situation, so habits of mind can be effective in producing the best possible responses (Costa & Kallick, 2000). Operationally, they are measured by the score the student gets on the researcher-developed Habits of Mind Scale.

Achievement Motivation

Achievement motivation is a relatively stable predisposition to work persistently with the purpose of achieving success and satisfaction (McClelland, 1953). Operationally, it is measured by the score the student gets on Smith's (2015) Situational Achievement Motivation Scale and its dimensions. That scale, which was developed based on McClelland's theory, was translated into Arabic and validated by the researcher.

Gifted Students

Jarwan (2004: 55) described gifted students as "students who show evidence of high performance in areas of general mental ability, creative thinking, leadership ability, special academic aptitude, and visual and performance arts. They need services and activities that schools do not usually provide for the full achievement of their abilities and aptitudes". Operationally, they were first graders of the secondary school in Al-Badaya Governorate who volunteered or were nominated by their teachers as gifted students within the Talent Program for Identifying Talent. They got 665 or higher on the Measure of Talent and Creativity.

Method

The study followed the quasi-experimental method with pre-tests and post-tests administered to the experimental and control groups. Additionally, the experimental group took a delayed post-test to explore retention of training effects. After the homogeneity of the two groups prior to the experiment had been established, the experimental group of students participated in SCAMPER strategy sessions. The post-tests were then administered to the two groups immediately after the experiment. In addition to this, delayed post-tests were administered to the experimental group two months after the experiment.

Participants

Participants were purposively selected from gifted female students ($N = 18$) in the first grade of the secondary school in Qassim. They passed the Measure of Talent and Creativity (with a score of 665 or higher) in the identification phase during the third grade of the intermediate school. They were divided into an experimental group and a control group, each consisting of nine students. The experimental group students were studying at the Third Secondary School in Al-Badaya Governorate, Qassim, whereas the control group students were studying at the Eighth Secondary School in Buraidah, Qassim. A Mann-Whitney test of homogeneity revealed that the two groups were homogeneous prior to the experiment. No significant differences were found at the 0.05 level between average ranks of the two groups in chronological age, habits of mind and its dimensions, and achievement motivation and its dimensions. Average ranks, sum of ranks and Us for chronological age, habits of mind and achievement motivation were Ex, 93.5, 10.39, C, 77.5, 8.61, U (32.500), Ex, 94.5, 10.50, C, 76.5, 8.50, U (31.500), Ex, 95.5, 10.61, C, 75.5, 8.39, U (30.500), respectively.

Instruments

The Habits of Mind Scale

Surveying a number of scales developed in the light of Costa-Kallick's (2000) classification, which consists of 16 habits of mind, the current researchers developed the Habits of Mind Scale used in the current study. The habits of mind included in this study's scale included seven habits that needed to be enhanced in gifted students and which related to creative thinking. These seven habits were thinking flexibly, managing impulsivity, thinking interdependently, applying past experiences to new situations, striving for accuracy, questioning and posing problems, and thinking metacognitively. To validate the scale, the preliminary version was submitted to ten referees with experience in educational psychology and psychological measurement. They agreed on the scale validity. It was also validated by establishing its internal consistency. It was administered to a pilot sample of 40 gifted female students in the first grade of the secondary school in Buriadah, Qassim. Most items correlated with total scores of their dimensions at the 0.01 significance level and few at the 0.05 level. Pearson correlation coefficients ranged from 0.37 to 0.86. The test-retest method was used to establish the reliability of the scale. The scale was administered to the pilot sample two times with a time interval of two weeks. Pearson and alpha Cronbach correlation coefficients of the two applications were 0.89 and 0.88, respectively. Correlation coefficients by the split-half method were 0.77 for the first part and 0.80 for the second part. The Spearman-Brown correlation coefficient was 0.89. All correlation coefficients were therefore high, indicating that the scale was quite reliable.

The final version of the scale consisted of 42 items of the five-point Likert scale type, where "Strongly agree" was assigned a point value of 5 and the response "Strongly disagree" a point

value of 1. Items with negative statement were reverse coded so that higher scores indicated higher self-efficacy. An individual's score in the questionnaire is the total of all the items.

The Contextual Achievement Motivation Scale (CAMS)

The CAMS developed by Smith (2015) based on McClelland's (1961) theory was used in the current study. Its validity and reliability were established using student groups from different educational stages (elementary, intermediate, secondary and university) nationally (in the USA) and internationally. This scale was adopted in the current study for its being appropriate for participants, recent, valid and reliable. It was translated and re-validated on a pilot sample from the study population.

In order to adapt the translated scale to the Saudi environment, it was submitted to ten referees with experience in education and psychology from some Saudi and Arab universities. The items relating to work were omitted since participants were all students. The agreement of the ten referees on the scale validity was 80 percent. The internal consistency of the scale was established by administering it to a pilot sample of 40 gifted female students in the first grade of the secondary school. Most items correlated with their dimensions, with Pearson coefficients that ranged from 0.35 and 0.77, all significant at the 0.05 level. Some items that had insignificant correlation with their dimensions were omitted. The reliability of the translated CAMS was then established by the test-retest method with an interval of three weeks between the two applications. Pearson and alpha Cronbach correlation coefficients of the two applications were 0.89 and 0.91 respectively. Correlation coefficients by the split-half method were 0.83 for the first part and 0.84 for the second part. The Spearman-Brown correlation coefficient was 0.92. All correlation coefficients were therefore high, indicating that the CAMS was quite reliable.

The final version of the CAMS consisted of 33 items of the five-point Likert scale type, where "Always" was assigned a point value of 5 and the response "Rarely" a point value of 1. Items with negative statement were reverse coded so that higher scores indicated higher self-efficacy. An individual's score in the questionnaire is the total of all the items.

SCAMPER strategy

The SCAMPER strategy was developed by Eberle (1997). It consists of 20 games that trainees play under the supervision of a coach to enhance their creative thinking through imagination. It focuses on two dimensions: cognition (originality, fluency, flexibility and elaboration) and affection (curiosity, risk-taking, complication and intuition). It allows for freedom and creativity on the part of the coach to add and modify games and activities. SCAMPER includes seven techniques: substitute, combine, adapt, modify, put to other uses, eliminate, and rearrange (Eberle, 2008). It includes questions and activities that urge trainees



to use imagination and to generate unusual ideas within game situations and through interaction with the coach. It was applied in the current study in the school year 2017/2018 in 22 sessions, with three 45-minutes sessions a week.

Research Procedures

Related literature was reviewed, the Habits of Mind Scale was developed and the Achievement Motivation Scale was translated and adapted. The validity and reliability of the scales were established on a pilot sample of 40 gifted female students. The games derived from the SCAMPER strategy were then arranged. Participants were selected and divided into an experimental group and a control group. After establishing the homogeneity of the two groups on the Measure of Talent and Creativity and chronological age, the SCAMPER strategy was applied only to the experimental group. The post-tests were administered to the two groups and the delayed post-tests were administered only to the experimental group two months after the experiment to explore retention of training effects. Data were statistically analysed using the SPSS program. Statistical tests used were Mann-Whitney and Wilcoxon Tests. Finally, results were interpreted and discussed.

Results

A Mann-Whitney test was used to test the hypothesis that *there would be statistically significant differences on the habits of mind post-test average ranks of the experimental and control groups after the application of the SCAMPER strategy*. These results are presented in table 1 below.

Table 1. Mann-Whitney test for differences between the two groups on the habits of mind post-test

Variable	group	N	Average Ranks	Sum of Ranks	U	Sig.
Total habits of mind	Exp.	9	13.56	122	4.000	**0.00
	Cont.	9	5.44	49		
Thinking flexibly	Exp.	9	12.33	111	15.000	*0.02
	Cont.	9	6.67	60		
Managing impulsivity	Exp.	9	12.28	110.5	15.500	**0.01
	Cont.	9	6.72	60.5		
Thinking interdependently	Exp.	9	12.11	109	17.000	*0.03
	Cont.	9	6.89	62		
Questioning & posing problems	Exp.	9	12.17	109.50	16.500	*0.03
	Cont.	9	6.83	61.50		
Applying past experiences to new situations	Exp.	9	13.61	122.50	3.500	**0.00
	Cont.	9	5.39	48.50		
Striving for accuracy	Exp.	9	12.11	109	17.000	*0.03
	Cont.	9	6.89	62		
Thinking metacognitively	Exp.	9	12.50	112.50	13.500	**0.01
	Cont.	9	6.50	58.50		

It is obvious from table 1 that there were statistically significant differences in the habits of mind post-test of the experimental and control groups after the application of the SCAMPER strategy. Mann-Whitney U was significant at the 0.05 level for total habits of mind and their individual dimensions in favour of the experimental group. Thus, the first hypothesis was supported.

Mann-Whitney test was used to test the hypothesis that *there would be statistically significant differences on achievement motivation post-test average ranks of the experimental and control groups after the application of the SCAMPER strategy*. These results are presented in table 2 below.

Table 2. Mann-Whitney test for differences between the two groups on the achievement motivation post-test

Variable	group	N	Average Ranks	Sum of Ranks	U	Sig.
Achievement motivation	Exp.	9	13.39	120.50	5.500	**0.00
	Cont.	9	5.61	50.50		
Situation	Exp.	9	12.22	110	16.000	*0.02
	Cont.	9	6.78	61		
Behaviour	Exp.	9	13.17	118.50	7.500	**0.0
	Cont.	9	5.83	52.50		

Data in table 2 reveal that there were statistically significant differences on the achievement motivation post-test of the experimental and control groups after the application of the SCAMPER strategy. Mann-Whitney U was significant at the 0.05 level for total achievement motivation and its individual dimensions in favour of the experimental group. Thus, the second hypothesis was supported.

A Wilcoxon test was used to test the hypothesis that *there would be no statistically significant differences between the experimental group's habits of mind post-test and delayed post-test*. Table 3 below presents these results.

Table 3. Wilcoxon test for the differences between experimental group's habits of mind post-test and delayed post-test

Variable	Ranks	N	Average Ranks	Sum of Ranks	Z	Sig.
Total habits of mind	Negative ranks	3	3.83	11.5	-	0.670
	Positive ranks	4	4.13	16.5	0.426	
Thinking flexibly	Negative ranks	3	3.33	10	-	0.480
	Positive ranks	2	2.5	5	0.707	
Managing impulsivity	Negative ranks	3	3.67	11	-	0.334
	Positive ranks	2	2	4	0.966	
Thinking interdependently	Negative ranks	4	3.75	15	1.000	0.317
	Positive ranks	2	3	6		
Questioning & posing problems	Negative ranks	3	2	6	-	0.102
	Positive ranks	0	0	0	1.633	
Applying past experiences to new situations	Negative ranks	3	3.33	10	-	0.480
	Positive ranks	2	2.5	5	0.707	
Striving for accuracy	Negative ranks	1	1.5	1.5	0	1
	Positive ranks	1	1.5	1.5		
Thinking metacognitively	Negative ranks	1	1	1	-	0.655
	Positive ranks	1	2	2	0.447	

It can be seen from the above table that the Z-value for the difference between the experimental group's habits of mind post-test and delayed post-test is not statistically significant, which indicates retention of the training effect. That is, training proved to have long-term positive effects on habits of mind. The third research hypothesis was therefore supported.

The Wilcoxon test was used to test the hypothesis that *there would be no statistically significant differences between the experimental group's achievement motivation post-test and delayed post-test*. This statistic is presented in table 4.

Table 4. Wilcoxon test for the differences between the experimental group's achievement motivation post-test and delayed post-test

Variable	Ranks	N	Average Ranks	Sum of Ranks	Z	Sig.
Total habits of mind	Negative ranks	1	1.50	1.5	-	0.102
	Positive ranks	4	3.38	13.5	1.633	
Thinking flexibly	Negative ranks	1	1.5	1.5	0	1
	Positive ranks	1	1.5	1.5		
Managing impulsivity	Negative ranks	0	0	0	-	0.06
	Positive ranks	4	2.5	10	1.841	

Data in table 4 reveal that the Z-value for the difference between the experimental group's achievement motivation post-test and delayed post-test is not statistically significant, which indicates retention of the training effect. That is, training proved to have long-term positive effects on achievement motivation. The fourth research hypothesis was therefore supported.

Discussion

The experimental group students outperformed their control group counterparts on the post-test of these habits of mind: thinking flexibly, managing impulsivity, thinking interdependently, applying past experiences to new situations, striving for accuracy, questioning and posing problems, thinking metacognitively, and in the total score of habits of mind. This supports the effectiveness of the SCAMPER strategy in enhancing gifted students' habits of mind. The program created an environment that stimulated the experimental group students to apply existing knowledge to new situations. It provided them with an organised way of thinking to find new ideas and solutions from their existing knowledge. Though gifted students' habits of mind were above average prior to the experiment, the SCAMPER techniques substantially enhanced some of their habits of mind. This finding supports Thomson's (2009) conclusion that the habits of mind of elementary school gifted students need to be enhanced. It is also in line with Hojayrat's (2013) conclusion that some of gifted students' habits of mind need to be enhanced, such as questioning and posing problems and thinking metacognitively. This finding also concurs with Al-sabagh-Al-Jaeed's (2008) and Al-Thamer's (2013) finding that thinking flexibly is not frequent in gifted students and thus needs to be enhanced.

The researchers believe that the SCAMPER strategy enhanced students' habits of mind because it provided them with an environment where they interacted positively and voiced their opinions without fear of criticism. It directed their thinking in general and creative thinking in particular. This concurs with Costa-Kallick's (2000) contention that habits of mind do not develop once and for ever, rather they need to be practiced repeatedly. This same view is held by Perkins (1993), who conceives of habits of mind as patterns that are often acquired unconsciously as a result of repetition. The researchers observed during the training sessions that imaginative games target flexible thinking in particular. The techniques involved in training seemed to arouse students' enthusiasm. It urged them to use imagination across situations and to generate new and varied ideas. This concurs with Costa-Kallick's (2008) assertion that what should be taught to students is the ability to deal with challenges in unusual ways, care for details and to move easily across situations. This, in their opinion, enhances flexible thinking and a smooth transition from one aspect of thinking to another.

During training, students were repeatedly told that the promotion of thinking is the ultimate aim, not knowledge, per se. Aims of the SCAMPER strategy, as asserted by Eberle (2008), include enhancing trainees' positive attitudes towards thinking, imagination and creativity. It targets thinking skills in general and productive thinking in particular. It also targets attention, the teamwork spirit, curiosity, divergent thinking and generalisation of acquired experiences. The current study's finding concerning habits of mind is also in line with Costa-Kallick's (2000) contention that students' habits of mind can be enhanced by providing them with a supportive environment that is rich in material that they can manipulate and observe. This finding is consistent with other studies that documented the effectiveness of SCAMPER strategy in enhancing habits of mind (e.g., Ramadan, 2014; Mahmoud, 2015; Saleh, 2015). It is also consistent with studies that reported relationships between habits of mind and multiple intelligences (Hojayrat, 2013) and creative self-efficacy (Al-Qudah, 2017). Finally, this finding is line with the studies by Rayani (2012) and Taraad (2012) that reported a positive effect of habits of mind programs on creative thinking.

Experimental group students also outperformed their control group counterparts on the post-test of achievement motivation. This supports the effectiveness of the SCAMPER strategy in enhancing gifted students' achievement motivation with its individual dimensions. This can be attributed to the tasks included in SCAMPER that are arousing and challenging. Such tasks enhance students' achievement motivation. This is a good effect of SCAMPER given that gifted students, as confirmed by Al-Shehri (2014), have moderate achievement motivation. This positive effect on achievement motivation is highly desirable because gifted students need strong achievement motivation (Parker, 2002) to be more productive (Phillips & Lindsay, 2006). Elements in SCAMPER that can explain the increase that experimental students attained in achievement motivation include enrichment, competition, interaction and clarity of training objectives. Clarity of objectives can increase students' motivation to achieve them. This concurs with Young's definition of motivation as a condition of

stimulation and worry that directs behaviour to target objectives (cited in Hamilton, 1983), and with Petri and Govern's (2004) definition of motivation as conditions that make behaviour persist until responses are produced.

Asseri (2006) asserts that gifted individuals have high levels of energy that is evident in their activities, and have internal motives for outstanding achievements. He therefore suggests guiding gifted individuals to creative production and toward persistence for achieving short and long-term objectives. Gifted individuals need to have their mental abilities challenged as they have extra emotional bursts that require challenge. The researchers of the current study think that the combination of habits of mind and achievement motivation had a strong effect on participants. The reason for this is that SCAMPER focuses on enhancing imagination, diversified thinking and monitoring thinking through immediate feedback given to trainees in training sessions. This finding concurs with several studies, e.g., Al-Rabeghi (2007), Al-Qudah (2014), and Al-Shehri (2014). Al-Rabeghi (2007) documented a positive effect of a training program based on habits of mind on achievement performance. Al-Qudah (2014) reported a statistically significant correlation between habits of mind and achievement motivation among King Saud University students. In that study, it was found that achievement motivation could be predicted by scores on the habits of mind scale. Al-Shehri (2014) reported a significant positive correlation between metacognitive thinking skills and achievement motivation. Mejahed (2014) documented the effectiveness of mind maps in enhancing achievement motivation. Finally, Al-Qabali (2009) reported the effectiveness of an enrichment program based on smart games in enhancing brilliant students' problem-solving skills and achievement motivation.

The retention of improvement that the experimental group of students achieved in habits of mind as assessed by the delayed post-test indicates that SCAMPER has long-term effects on habits of mind. These effects last long after training. Students retained their enhanced habits of mind in classrooms and daily interactions. This indicates that practice leads to better retention of training effects. This is consistent with Costa (2000), who suggests that it is possible to promote thinking by believing in students' abilities and by their taking the responsibility of thinking and finding solutions to problems. Costa suggests that it is important to convey to the students that thinking is the aim, not knowledge per se. This concurs with Costa-Kallick's (2008) suggestion that habits of mind stress intellectual behaviours that relate subject matters to real life. It is worth mentioning in this respect that SCAMPER has the long-term objectives of developing thinking, creative imagination and positive attitudes towards thinking, imagination and creativity.

The improvement that students attained in habits of mind had a positive effect on their achievement motivation. This effect lasted two months after training. This again supports the long-term objectives of SCAMPER. In this respect, Ramadan (2014) attributes retention of effects of training on SCAMPER to the active role played by trainees. Trainees do activities,



give ideas, observe results, transfer the effect of training across situations and interact during sessions of cooperative work.

Delimitations and Conclusions

Gifted students receive a lot of care and support and many enrichment programs target them in order to maximise their productive and creative potentials. Researchers working in programs offered to gifted students are concerned with enhancing gifted students' thinking skills and habits of mind. To this end they use several research-based strategies and programs that have proved effective. However, several studies reported that gifted students need to improve some habits of mind, e.g., thinking flexibly, questioning and posing problems, thinking metacognitively and persistence. Several studies also reported the need of gifted students to raise their achievement motivation. This entails conducting further research to promote services and programs targeting gifted students. The results of the current study emphasises the need to vary the content of enrichment programs offered to gifted students. It is recommended that the current study be replicated with larger samples, different cultural contexts and other categories of gifted students, for example, gifted students with learning difficulties. Also, there is a need to attempt other programs targeting gifted students' habits of mind, focusing on programs that enhance students' achievement motivation. Even though the current study supported the effectiveness of the SCAMPER strategy in enhancing gifted students' habits of mind and achievement motivation, it should be kept in mind that the experiment was conducted on a limited number of participants. Furthermore, the use non-parametric statistics affects the generalisability of results to other populations and cultural contexts.

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