

Thinking Styles "In Light of Sternberg's Theory" Prevailing Among the Students of Tafila Technical University and Its Relationship with Some Variables

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Abstract

The study aimed to recognize The Thinking styles "in light of Sternberg's theory" prevailing among the students of Tafila Technical University and its relationship with some Variables. The sample consisted of (800) students (male and female) chosen in stratified, clustered and random method. The researcher used a list of methods for Sternberg and Wagner (1991) for the instrument of the study. The results indicated that the common thinking styles came mid in general , it also indicated that there are no statistically differences on level of ($\alpha = 0.05$) attributed to the variable of gender in all the styles except the legislative and judicial style, the differences came to the favor of males. The differences of the executive style came to the favor of females.

Key Words: Thinking, Sternberg and Wagner, styles

Theoretical framework

Thinking is considered the mental process in which the learner develops through mental interaction processes between the individual and the experiences that he acquires to develop structures of knowledge and access to new assumptions and expectations (Qatami, 2001). Thinking includes making many mental and knowledge processes, such as attention, cognition, memory, classification, reasoning, analysis, comparing and generalizing, and synthesis, (Abou El-Maati, 2005).

Sternberg defines the 'Thinking Styles' way of thinking as the individual's preferred thinking style when doing business, and describes how the individual uses or exploits the capacities that he owns (such as knowledge) which is not an ability but it is located between the character and capacities (character - ways of thinking - capacity) (Sternberg, 2002).

Sternberg (1988, 1993, 1997) classified individuals according to their ways of thinking into thirteen way of thinking, and distributed it into five main categories each of which comprises a variety of methods, namely:

First: the ways of thinking in terms of the form:

1. Monarchic style, individuals are characterized by going towards a single goal all the time, they are flexible, and able to analyze and think logically is low. They prefer works that highlight their individuality. (Sternberg, 1994).
2. Hierarchic style: the owners of this method tend to do many things at one time. They put their goals in the form of hierarchy depending on their importance and priority. They are realistic, logical and organized in solving problems and decision-making. (Sternberg & Wagner, 1991).
3. Anarchic method: they tend to adopt a method of random and non-compliant in a particular order to solve the problems, their performance is better when the tasks and positions that are assigned to them are disorganized, and they are confused (Sternberg & Wagner, 1991, 2006, Tayeb, 2006).
4. Oligarchic style: these individuals are characterized by being nervous, confused and they have many conflicting goals, all of these goals are equally important for them. (Sternberg 2006 , Grigorenko & Sternberg, 1995).

Second: The ways of thinking in terms of function:

1. Legislative style: they prefer the problems which require them to devise new strategies and to create their own laws and they enjoy giving commands (Abu Gado and Nofal, 2007; Monthly, 2006, Zhang, 2004).

2. Executive style: The advocators of this method prefer to use the ways that already exists to solve problems, and the application and implementation of laws. They do not start work until they know when? Why, and Where? And Who? ... If he gets these answers, he will be able to start work. (Obeidat and Abu Assameed, 2007) (Grigorenko & Sternberg, 1995).
3. Judicial style: The advocators of this method care about the assessment of the stages of the work and the results. They often ask questions such as: Why? What is the reason? What is assumed, (Bernardo et al., 2002). They analyze the main idea in the scientific stance and hate experimentation, evaluate the work of others, and hate to be evaluated by others. They prefer problems that allow them to analyze and evaluate the existing objects and ideas (monthly, 2006; Obeidat and Abu Assameed, 2007).

Third: Methods of Thinking In Terms Of Level:

1. Global style: They prefer to deal with broad , abstract and relatively large and. high-level concepts. They prefer change and innovation, and vague positions. They often ignore the details.
2. Local style: The advocators of this method characterized by being attracted by the practical situations. And described by Sternberg (Sternberg) as subjective because they are putting an account of everything and they do not leave anything to chance or luck. (Sternberg & Wagner, 1991, Sternberg, 2002).

Fourth: The ways of thinking in terms of the trend:

1. Liberal style: The followers of this method tend to go beyond the laws and measures, and the tendency to be ambiguous and unfamiliar positions. They are seeking through the tasks undertaken by them to bypass laws that imposed upon them, whether at work or in school in order to bring the biggest possible change (Sternberg2006, Bernardo et al, 2002).
2. Conservative style: they prefer situations that are familiar in life, and they are characterized by diligence and order, they follow the rules and procedures that exist, and they refuse change and would prefer the least possible change. (Abu Hashim, 2007).

Fifth: The Ways of Thinking In Terms Of Scope:

1. External style: followers of this method tend to work, interact and collaborate with others within the team, and they have a sense of social contact with others comfortably and easily. (Sternberg & Wagner, 1991, Zhang & Sternberg, 2002).
2. Internal Style: The followers of this style prefer to work individually; they are introvert and tend to be lonely. They are directed toward work or task, and they are characterized by internal focus, and they prefer the analytical and creative problems. (Zhang, 1999).

By reviewing the literature in the area of the ways of thinking, we find a diversity of research and studies. Some of them studied the impact of academic specialization of educational achievement and years of study on the type of the preferred thinking style in the light of the theory of Sternberg. Where the study of Grigorrenko & Sternberg (1997) showed a negative significant correlation between the executive style of thinking and academic achievement. Also the study of Zhang & Sternberg, 1998) showed the presence of a positive significant correlation between styles of thinking (the conservative, hierarchical and internal) and academic achievement. While it found a negative correlation between thinking styles (legislative, liberal and external) and academic achievement. And the results of (Ajwa, 1998) showed that there was no statically significant correlation between styles of thinking and academic achievement with the exception of the hierarchical style of thinking, which positively and statistically significantly correlated with academic achievement, and the absence of statistically significant differences between the students of scientific and literary disciplines in their styles of thinking, with the exception of the Judicial and monarchic styles where the differences were statistically significant for students of literary disciplines.

The results of the study of (Bernardo & et al 2002) indicated the presence of a high positive correlation between the executive style and academic achievement, while there is no significant correlation between the legislative style and the academic achievement. The study of (Sahloul and mohammed, 2009) distinguished students with high performance goals trends in the following styles of thinking (global, internal, Anarchic, Oligarchic, conservative, liberal), while students with low orientation performance objectives with are distinguished by the monarchy style. A study (Zhang, 2002) indicated that there are differences between the sexes in the legislative and liberal styles of thinking in favor of males, while there are no differences between the sexes in the rest of the styles of thinking.

The problem of the study and its importance:

The basic principle in the ways of thinking is to help students make the fullest possible use of the methods of teaching and learning, and to realize the best way to invest their true potentials, and its psychological case of the student. Because the knowledge of the ways of thinking for students helps to guide them in the selection of academic the appropriate disciplines to them. Here we can define the problem of the current study in identifying methods of thinking that are characteristic of university students in light of their achievement levels, their various academic specialties and gender, and this could be achieved by answering the **following questions:**

- 1- What are the prevailing ways of thinking among the students of the University?
- 2- Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of gender (male, female)?
- 3- Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of colleges (Engineering, Science, Arts, Finance, Educational Sciences)?
- 4- Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of the level of the study (first, second, third, fourth) year?
- 5- Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of their aggregate (excellent, very good, good, acceptable)?

Method Sample

The methodology of the study

Study Sample: A stratified clustered random sample was selected, and consisted of (800) students enrolled in the second semester of the academic year 2010/2011 and constitute almost (10%) of the members of the community study and table (1) shows the number of the sample distributed according to the variable study by the intersection of the levels of the study (college, gender, aggregate and study levels)

Table (1) Distribution of study sample according to its variables

Variable		Number	Percentage
Gender	Males	366	45.8
	Females	434	54.2
Specialization	Engineering	130	16.2
	Science	160	20.0
	Arts	156	19.5
	Finance	136	17.0
	Educational	218	27.2
Study level	First	191	23.9
	second	218	27.2
	third	198	24.8
	fourth	193	24.1
Appreciation	Excellent	162	20.2
	Very Good	172	21.5
	Good	307	38.4
	Acceptable	159	19.9
Total		800	100%

Measurement

List of ways of thinking by Sternberg & Wagner (1991) (translated into Arabic by Abu Hashim, 2007). And it measures thirteen of the methods of thinking. The list consists of (65) items at an average of 5 paragraphs for each thinking style.

Table (2) shows the distribution of items on the ways of thinking:

Table (2) the distribution of items on the list ways of thinking by Sternberg

Methods	Items	Methods	Items
Legislative	1.14, 27, 40.53	Hierarchic	8.21, 34, 47.60
Executive	2.15, 28, 41.54	Monarchic	9.22, 35, 48.61
judicial	3 , 16 ,29, 42 ,55	Oligarchic	10.23, 36, 49.62
global	4 , 17 ,30, 43 ,56	Anarchic	11.24, 37, 50.63
Local	5 ,18 , 31 ,44 ,57	Internal	12.25, 38, 51.64
Liberal	6.19, 32, 45.58	External	13.26, 39, 52.65
Conservative	7.20, 33, 46.59		

To answer the fifth question of the study of the single, analysis of variance to reveal the significant differences in the ways of thinking which are prevalent among university students according to the variable of the estimation, followed by Shave's test for posterior comparisons.

The first question

What are the prevailing ways of thinking among the students of the University?

To answer the question of the study, means, standard deviations, rank and degree were calculated for each method as in table (3).

Table (3) Means , standard deviations, rank and degree for each mode of thinking prevalent among university students

Method	Arithmetic averages	Standard deviations	Rank	egree
Legislative	3.93	0.82	10	Medium
Executive	4.03	0.73	8	Medium
judicial	3.92	1.05	11	Medium
global	4.07	0.38	5	Medium
Local	4.41	0.41	1	Medium
Liberal	4.06	0.53	6	Medium
conservation	4.39	0.63	2	Medium
Hierarchic	3.97	0.56	9	Medium
monarchic	3.82	0.58	12	Medium
oligarchic	3.79	0.53	13	Medium
anarchic	4.03	0.64	7	Medium
Internal	4.32	0.51	3	Medium
External	4.27	1.04	4	Medium

Table (3) shows that the degree of prevalence of common thinking among the thirteen students of the university appeared at a medium degree, where the local style thinking was in the first place with a mean reached (4.41) and a standard deviation (0.41), while the Oligarchic style of thinking is ranked last with a mean that reached (3.79) and a standard deviation (0.53).

Second question: Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of gender?

To answer this question, t-test for independent samples was used and table (4) shows that:

Table (4) T-test results for independent samples to test the significance of differences in the styles of thinking prevalent among college students due to the variable of sex

Skill	Gender	The mean	Standard deviation	Number	Degree of freedom	The standard error	Value (v)	The level of significance
Legislative	Males	4.00	.89771	366	798	.06	2.33	.020
	Females	3.87	.74974	434				
Executive	Males	3.97	.74628	366				
	Females	4.08	.72004	434				
Judicial	Males	4.02	1.23723	366				
	Females	3.84	.85788	434				
Global	Males	4.08	.37834	366				
	Females	4.06	.38168	434				
Local	Males	4.40	.40704	366				
	Females	4.41	.40951	434				
Liberal	Males	4.07	.52582	366				
	Females	4.06	.53540	434				
Conservative	Males	4.40	.66366	366				
	Females	4.37	.59825	434				
Hierarchic	Males	3.96	.55875	366				
	Females	3.98	.56350	434				
Monarchic	Males	3.80	.56742	366				
	Females	3.85	.58716	434				
Oligarchic	Males	3.77	.53388	366				
	Females	3.82	.52972	434				
Anarchic	Males	3.99	.62724	366				
	Females	4.06	.65754	434				
Internal	Males	4.33	.50074	366				
	Females	4.31	.52573	434				
External	Males	4.26	1.06394	366				
	Females	4.28	1.02254	434				

Table (4) shows that there are statistically significant differences at the level of significance ($\alpha \leq 0.05$) between males and females in the legislative, executive and judicial styles of thought, as the values of (t) were $t = 2.33, -2.03, 2.45$, respectively, and that these differences are in favor of males in the legislative and judicial methods, while it belongs to I in the Executive style, and there are no significant differences in other ways of thinking due to the variable of sex.

Third question: Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of specialization?

To answer this question, unilateral analysis of variance, was used to detect the significance of differences in the ways of thinking prevalent among university students, according to their college and table (5) shows that:

Table (5) Unilateral analysis of variance to detect significant differences in the ways of thinking prevalent among university students for the variable of college

Method	College	The mean	Standard deviation	Number	Sum of the squares	Degree of freedom	Means of squares	Value (P)	level of significance
legislative	Engineering	3.91	0.70	130	20.934	4	5.234	7.998	.000
	Science	3.85	0.89	160					
	Arts	4.24	1.13	156					
	Finance	3.93	0.68	136					
	Educational	3.78	0.57	218					
executive	Engineering	3.9615	.84600	130	9.341	4	2.335	4.414	.002
	Science	3.9675	.52408	160					
	Arts	3.9795	.83231	156					
	Finance	4.2647	.80880	136					
	Educational	3.9982	.64027	218					
judicial	Engineering	3.7446	.76757	130	31.467	4	7.867	7.336	.000
	Science	3.7512	.76946	160					
	Arts	4.1615	1.04458	156					
	Finance	3.7206	.77909	136					
	Educational	4.1165	1.40984	218					
global	Engineering	4.0554	.38500	130	1.289	4	.322	2.244	.063
	Science	4.0937	.37729	160					
	Arts	4.1256	.40079	156					
	Finance	4.0721	.39827	136					
	Educational	4.0138	.34667	218					
local	Engineering	4.4138	.40169	130	.279	4	.070	.418	.796
	Science	4.4300	.40388	160					
	Arts	4.4231	.42073	156					
	Finance	4.4074	.39208	136					
	Educational	4.3807	.41780	218					
liberal	Engineering	4.0400	.53896	130	1.241	4	.310	1.102	.354
	Science	4.1350	.52584	160					
	Arts	4.0756	.51674	156					
	Finance	4.0279	.53120	136					
	Educational	4.0367	.53842	218					
conservative	Engineering	4.6062	.87300	130	8.143	4	2.036	5.259	.000
	Science	4.3900	.53072	160					
	Arts	4.3115	.55147	156					
	Finance	4.3471	.53679	136					
	Educational	4.3266	.60179	218					
hierarchic	Engineering	3.9662	.58780	130	.223	4	.056	.176	.951
	Science	3.9675	.56475	160					
	Arts	3.9833	.53035	156					
	Finance	4.0015	.55109	136					
	Educational	3.9532	.57395	218					
monarchic	Engineering	3.8554	.58668	130	3.152	4	.788	2.373	.050
	Science	3.7475	.59240	160					
	Arts	3.7705	.56833	156					
	Finance	3.8103	.58995	136					
	Educational	3.9101	.55515	218					
oligarchic	Engineering	3.8385	.54280	130	2.638	4	.659	2.346	.053
	Science	3.7600	.52929	160					
	Arts	3.7141	.54102	156					
	Finance	3.7765	.54599	136					
	Educational	3.8670	.50483	218					
anarchic	Engineering	4.0246	.66590	130	2.705	4	.676	1.634	.164
	Science	3.9700	.61805	160					
	Arts	3.9756	.63990	156					
	Finance	4.0132	.66897	136					
	Educational	4.1165	.63406	218					
internal	Engineering	4.3462	.53282	130	.310	4	.078	.292	.883
	Science	4.3400	.49082	160					
	Arts	4.3103	.49268	156					
	Finance	4.3162	.52015	136					
	Educational	4.2945	.53424	218					
external	Engineering	4.1169	.95764	130	19.300	4	4.825	4.530	.001
	Science	4.1750	1.02540	160					
	Arts	4.2103	1.06844	156					
	Finance	4.1882	.90391	136					
	Educational	4.5174	1.12359	218					

Table (5) shows that there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) in the following methods (global, local, liberal, hierarchic, monarchic, oligarchic, anarchic and internal), as the value of $t = (2.244, 0.418, 1.102, 0.176, 2.373, 2.346, 1.634, 0.292)$, respectively, While there are statistically significant differences at the level of significance ($\alpha \leq 0.05$) observed in the following methods (legislative, executive, judicial, conservative and external), as the value of $t = (7.998, 4.414, 4.336, 5.259, 4.530)$, respectively. And to

find out the direction of differences, Post Hoc Test (Scheffe) was used for posterior comparisons and table (6) shows that:

Table (6): The results of Scheffe test for posterior comparisons of the differences in the ways of thinking prevalent among college students depending on the college

Method	College (A)	College (B)	The mean of differences	The standard error	The level of significance	
Legislative	Engineering	Science	.0512	.09552	.991	
		Arts	-.3374*	.09607	.016	
		Finance	-.0203	.09922	1.000	
		Educational	.1218	.08964	.764	
	Science	Arts	-.3886*	.09102	.001	
		Finance	-.0715	.09435	.966	
		Educational	.0706	.08421	.951	
	Arts	Finance	.3171*	.09490	.025	
		Educational	.4592*	.08483	.000	
	Finance	Educational	.1421	.08839	.630	
	Executive	Engineering	Science	-.0060	.08589	1.000
			Arts	-.0179	.08638	1.000
Finance			-.3032*	.08922	.022	
Educational			-.0366	.08061	.995	
Science		Arts	-.0120	.08185	1.000	
		Finance	-.2972*	.08484	.016	
		Educational	-.0307	.07572	.997	
Arts		Finance	-.2852*	.08534	.025	
		Educational	-.0187	.07628	1.000	
Finance		Educational	.2665*	.07948	.025	
judicial		Engineering	Science	-.0066	.12228	1.000
			Arts	-.4169*	.12298	.022
	Finance		.0240	.12702	1.000	
	Educational		-.3719*	.11475	.034	
	Science	Arts	-.4103*	.11652	.015	
		Finance	.0307	.12078	.999	
		Educational	-.3653*	.10780	.022	
	Arts	Finance	.4410*	.12149	.011	
		Educational	.0450	.10860	.997	
	Finance	Educational	-.3959*	.11316	.016	
	conservative	Engineering	Science	.2162	.07346	.071
			Arts	.2946*	.07388	.003
Finance			.2591*	.07631	.022	
Educational			.2795*	.06894	.003	
Science		Arts	.0785	.07000	.869	
		Finance	.0429	.07256	.986	
		Educational	.0634	.06477	.916	
Arts		Finance	-.0355	.07299	.994	
		Educational	-.0151	.06524	1.000	
Finance		Educational	.0205	.06798	.999	
External		Engineering	Science	-.0581	.12186	.994
			Arts	-.0933	.12255	.965
	Finance		-.0713	.12658	.989	
	Educational		-.4005*	.11436	.016	
	Science	Arts	-.0353	.11612	.999	
		Finance	-.0132	.12036	1.000	
		Educational	-.3424*	.10743	.039	
	Arts	Finance	.0220	.12107	1.000	
		Educational	-.3072	.10822	.091	
	Finance	Educational	-.3292	.11277	.075	

Means that it is significant at the level of significance ($\alpha \leq 0.05$)

Table (6) shows that the differences in the legislative style between the students in the specialization of Arts on one hand and the rest of the specializations on the other hand except the Educational Sciences, where there are no differences between the students in the specialization of Arts, and the students who are majoring in educational sciences in the style of legislation, and it was found that the differences are in favor of the specialization of Arts. As for the Executive style, it is clear that the differences between the specialty of Finance on the one hand and the rest of the specializations on the other, and that the differences are in the benefit of the specialization of Finance. It is evident that the differences in the judicial method are between the specialty of Arts and the rest of the majors except the specialty of Educational Sciences, where there are no differences between Arts and the specialization of Educational Sciences, and it has been shown that the differences are in favor of the specialty of Arts. Also it has been proved that there are differences between the educational sciences and engineering and these differences are in favor of the specialization of Educational Sciences. And in the external style, there are differences between the specialization of Educational Sciences and both of the specializations of engineering and science and in favor of the educational sciences. But for the conservation method, it is clear that the differences are between the specialty of engineering and the rest of specializations except the specialty of science, and that the differences are in favor of the specialty of engineering.

Fourth question: Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of the level of the study?

To answer this question, unilateral analysis of variance was used to detect single significant differences in the ways of thinking prevalent among university students according to the variable of academic level and table (7) shows that:

Table (7): Unilateral analysis of variance to detect significant differences in the ways of thinking prevalent among university students according to the variable of the academic level

Method	Study level	The mean	Standard deviation	Number	Sum of the square	Degree of freedom	Means of squares	Value (t)	The level of significance
Legislative	First	3.9152	.77032	191	3.338	3	1.113	1.647	.177
	second	3.8550	.81229	218					
	third	4.0323	.90063	198					
	fourth	3.9326	.79754	193					
Executive	First	3.9277	.79711	191	7.222	3	2.407	4.533	.004
	second	4.0101	.78140	218					
	third	3.9879	.52651	198					
	fourth	4.1876	.77369	193					
judicial	First	3.8963	.92676	191	15.101	3	5.034	4.611	.003
	second	4.1422	1.41518	218					
	third	3.8020	.78746	198					
	fourth	3.8321	.88082	193					
global	First	4.0775	.37594	191	.327	3	.109	.753	.521
	Again	4.0587	.36913	218					
	A third	4.0960	.40188	198					
	A fourth	4.0415	.37408	193					
Local	First	4.4126	.41020	191	.914	3	.305	1.835	.139
	Again	4.3743	.42468	218					
	A third	4.4626	.39913	198					
	A fourth	4.3886	.39327	193					
Liberal	First	4.0921	.53537	191	.779	3	.260	.921	.430
	Again	4.0899	.50435	218					
	A third	4.0162	.55750	198					
	A fourth	4.0518	.52738	193					
conservative	First	4.3644	.56716	191	3.980	3	1.327	3.386	.018
	Again	4.2853	.61071	218					
	A third	4.4586	.62617	198					
	A fourth	4.4435	.69445	193					
Hierarchic	First	3.9832	.53561	191	1.446	3	.482	1.534	.204

	Again	3.9101	.56665	218					
	A third	4.0263	.56291	198					
	A fourth	3.9762	.57523	193					
monarchic	First	3.7749	.57765	191	1.099	3	.366	1.096	.350
	Again	3.8752	.56782	218					
	A third	3.8081	.56670	198					
	A fourth	3.8332	.60185	193					
oligarchic	First	3.7634	.52125	191	.292	3	.097	.344	.794
	Again	3.8110	.53510	218					
	A third	3.7960	.53921	198					
	A fourth	3.8104	.53414	193					
anarchic	First	4.0178	.62736	191	.167	3	.056	.134	.940
	Again	4.0459	.64351	218					
	A third	4.0091	.65556	198					
	A fourth	4.0342	.65469	193					
Internal	First	4.3047	.49580	191	.347	3	.116	.437	.727
	Again	4.3009	.52976	218					
	A third	4.3535	.50486	198					
	A fourth	4.3171	.52616	193					
External	First	4.2010	1.12886	191	7.440	3	2.480	2.299	.076
	Again	4.4000	1.01926	218					
	A third	4.3000	.98450	198					
	A fourth	4.1523	1.02073	193					

Table (7) shows that there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) in the following methods (legislative, global, local, liberal, hierarchic, monarchic, oligarchic, anarchic, internal and external) due to the level of study, as the value of $t = (1.647, 0.753, 1.835, 0.921, 1.543, 1.096, 0.344, 0.134, 0.437, 2.299)$ respectively, while there are statistically significant differences at the level of significance ($\alpha \leq 0.05$) observed in the following methods (Executive, judicial and conservative), as the value of $t = (4.533, 4.611, 3.386)$ respectively, and to determine the direction of the differences, Scheffe test for posterior comparisons was used and the table (8) shows that:

Table (8): The results of Scheffe test for posterior comparisons of the differences in the ways of thinking prevalent among university students according to the academic level

Method	Level (A)	Level (B)	The mean of differences	The standard error	The level of significance
Executive	First	second	-.0823	.07223	.729
		third	-.0601	.07391	.882
		fourth	-.2598*	.07438	.007
	second	third	.0222	.07154	.992
		fourth	-.1775	.07203	.109
	third	fourth	-.1997	.07372	.063
judicial	First	second	-.2459	.10355	.132
		third	.0943	.10596	.851
		fourth	.0642	.10663	.948
	second	third	.3402*	.10257	.012
		fourth	.3101*	.10326	.030
	third	fourth	.3101*	.10326	.030
conservative	First	second	.0791	.06204	.654
		third	-.0942	.06348	.532
		fourth	-.0791	.06389	.675
	second	third	-.1733*	.06145	.048
		fourth	-.1582	.06187	.089
	third	fourth	.0151	.06332	.996

Means that it is significant at the level of significance ($\alpha \leq 0.05$) Table (8) shows that the differences in the executive style is among the first-year students and fourth year students and in favor of the students in the fourth year. And in the judicial method between the students of second year on the one hand and students of third and fourth year, on the other, and in favor of the students of second year, as well as between students in the third year and fourth year students, and in favor of the third-year students, while in the conservation method, it is clear that the differences between students in the second year and third year and in favor of students in third year.

Fifth Question: Are there significant differences at the level of significance ($\alpha \leq 0.05$) in the ways of thinking prevalent among college students due to the variable of aggregate (excellent, very good, good, acceptable)?

To answer this question, the unilateral analysis of variance was used to detect significant differences in the ways of thinking prevalent among university students according the variable of studying levels and table (9) shows that:

Table (9): Unilateral analysis of variance to detect significant differences in the ways of thinking prevalent among university students due to their aggregate

Method	aggregate	The means	Standard deviation	Number	Sum of the squares	Degree of freedom	Mean of squares	Value of (t)	level of significance
Legislative	Excellent	3.8679	.78342	162	1.787	3	.596	.879	.452
	Very Good	3.9628	.56899	172					
	Good	3.9746	.84807	307					
	Acceptable	3.8818	1.02234	159					
Executive	Excellent	3.9938	.68104	162	7.622	3	2.541	4.788	.003
	Very Good	3.9977	.62762	172					
	Good	3.9622	.67029	307					
	Acceptable	4.2214	.95084	159					
judicial	Excellent	4.0679	1.52024	162	6.223	3	2.074	1.881	.131
	Very Good	3.8128	.83299	172					
	Good	3.9440	.94709	307					
	Acceptable	3.8616	.84403	159					
global	Excellent	4.0296	.35751	162	.696	3	.232	1.609	.186
	Very Good	4.1186	.40393	172					
	Good	4.0606	.37414	307					
	Acceptable	4.0679	.38506	159					
Local	Excellent	4.3667	.44204	162	.953	3	.318	1.914	.126
	Very Good	4.4686	.37674	172					
	Good	4.3961	.41285	307					
	Acceptable	4.4113	.39184	159					
Liberal	Excellent	4.0679	.52047	162	.240	3	.080	.283	.838
	Very Good	4.0395	.55087	172					
	Good	4.0814	.52445	307					
	Acceptable	4.0478	.53460	159					
conservative	Excellent	4.3469	.70165	162	4.341	3	1.447	3.698	.012
	Very Good	4.5256	.68059	172					
	Good	4.3414	.58852	307					
	Acceptable	4.3572	.54581	159					
Hierarchic	Excellent	3.9852	.51054	162	.102	3	.034	.108	.956
	Very Good	3.9802	.59850	172					
	Good	3.9583	.56507	307					
	Acceptable	3.9774	.56568	159					
monarchic	Excellent	3.9037	.57966	162	2.063	3	.688	2.064	.103
	Very Good	3.7488	.55919	172					
	Good	3.8332	.58125	307					
	Acceptable	3.8088	.58606	159					
oligarchic	Excellent	3.8321	.49840	162	.438	3	.146	.514	.672
	Very Good	3.7605	.56138	172					
	Good	3.7993	.52878	307					
	Acceptable	3.7899	.54088	159					
anarchic	Excellent	4.1802	.64190	162	7.270	3	2.423	5.944	.001
	Very Good	3.8872	.62320	172					
	Good	4.0365	.64370	307					
	Acceptable	4.0050	.64118	159					
Internal	Excellent	4.2012	.52206	162	4.434	3	1.478	5.687	.001
	Very Good	4.4291	.48059	172					
	Good	4.3081	.51845	307					
	Acceptable	4.3396	.51102	159					
External	Excellent	4.0630	1.10795	162	9.079	3	3.026	2.811	.039
	Very Good	4.3500	1.08496	172					
	Good	4.2899	.99738	307					
	Acceptable	4.3459	.98590	159					

Table (9) shows that there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) in the following methods (legislative, judicial, global, local, liberal, hierarchic, monarchic and oligarchic) attributable to the variable of estimation, as the values of $t = (0.879, 1.881, 1.609, 1.914, 0.283, 0.108, 2.064, 0.514)$, respectively, while there are statistically significant differences at the level of significance ($\alpha \leq 0.05$) observed in the following methods (executive, conservative, anarchic, internal and external), where the values of $t = (7.788, 3.698, 5.944, 5.687, 2.811)$ respectively. And to determine the direction of the differences, Scheffe test for posterior comparisons was used and Table (10) shows that:

Table (10): The results of Scheffe test for posterior comparisons of the differences in the ways of thinking prevalent among university students according to the variability of the aggregate

Method	Level (A)	Level (B)	The means of differences	The standard error	The level of significance
Executive	Excellent	Very Good	-.0038	.07975	1.000
		Good	.0316	.07074	.978
		Acceptable	-.2276	.08132	.051
	Very Good	Good	.0355	.06938	.967
		Acceptable	-.2237	.08014	.052
	Good	Acceptable	-.2592*	.07117	.004
conservative	Excellent	Very Good	-.1787	.06849	.079
		Good	.0055	.06075	1.000
		Acceptable	-.0103	.06984	.999
	Very Good	Good	.1842*	.05958	.023
		Acceptable	.1683	.06882	.113
	Good	Acceptable	-.0159	.06112	.995
anarchic	Excellent	Very Good	.2930*	.06990	.001
		Good	.1438	.06200	.147
		Acceptable	.1752	.07128	.110
	Very Good	Good	-.1493	.06081	.111
		Acceptable	-.1178	.07024	.422
	Good	Acceptable	.0315	.06238	.968
Internal	Excellent	Very Good	-.2278*	.05582	.001
		Good	-.1069	.04951	.199
		Acceptable	-.1384	.05691	.117
	Very Good	Good	.1209	.04856	.103
		Acceptable	.0894	.05609	.468
	Good	Acceptable	-.0315	.04981	.940
External	Excellent	Very Good	-.2870	.11360	.095
		Good	-.2269	.10076	.167
		Acceptable	-.2829	.11583	.114
	Very Good	Good	.1209	.04856	.103
		Acceptable	.0894	.05609	.468
	Good	Acceptable	-.0315	.04981	.940

* Means that it is significant at the level of significance ($\alpha \leq 0.05$)

Table (10) shows that the differences in the executive method are between the estimates of good and acceptable and in favor of the estimate of acceptable, and in the conservative method between the two estimates of very good and good and in favor of the estimation of very good, and in the anarchic method between the two estimates of Excellent and Very Good and in favor of the estimation of excellent, and also in the internal method the differences were between the two estimates of very good and excellent, but in favor of the estimate of very good .

Discussion of the results

The results show that the degree of the publicity of thinking styles among the thirteen students of the University came at a moderate degree.

The researcher believes that it was moderate because of teaching students in a traditional manner, and the lack of interest in the ways of the development of thinking in the curriculum, or the inability of teachers to use methods and procedures that develop thinking among students. Also, the results show that the local style of thinking came in first place, and the owners of this method are characterized by their orientation towards practical situations. And they are described by (Sternberg) as objective because they put an account of everything and does not claim anything to chance or luck,. (Sternberg & Wagner, 1991, Sternberg, 2002,) and the results of this study differ from those of the study of Zhang and Sternberg (Zhang & Sternberg, 1998) (Shalaby, 2002) and study (Bernardo & et al, 2002), and the study of (Abu Hashim, 2007). The researcher explains this result ,from his own point of view, that this university is technical and engineering and teaches scientific materials that are based on facts, concepts and theories, which require such a method to deal with them. And the nature of this method is closer to the nature of teaching school courses.

And there are statistically significant differences between males and females in each of the legislative, executive and judicial mode of thought, and these differences are in favor of males in the two modes - the legislative and judicial. While it is in favor of the females in the Executive method. Where the owners of the legislative method prefer innovation, design and planning to solve the problem, and this is consistent with the result of the study by (Shalaby, 2002), and the study by (Zhang 2002), and (Abu Hashem, 2007), and this result differs from the study of (Abu Hashem et al, 2008).

And there are statistically significant differences in the following methods (legislative, executive, judicial, conservation and external) due to the variable of specialization, where the differences in the legislative style are due to the specialty of Arts, and in the Executive for the benefit of the specialization of Finance, and the external method for the benefit of the specialization of Educational Sciences. As for the conservation method, the differences in favor of the specialty of engineering, and the results of this study are consistent with the results of a study by (Sahloul, 2009), and with the study of (Zhang and Sternberg, 1998), and differs from the study of (Bernardo & et al 2002).

The (Executive) way of thinking is distinctive for students of the (fourth) school year, and the(the conservation) method of thinking is distinctive for students of the(third) school year, and the judicial method of thinking is distinctive for students of the (second)school year. The results of this study agreed with the results of a study by (Ajwa, 1998) (Shalaby, 2002) (Abu Hashem, 2007), while this result differ from the study of (Sahloul, 2009).

For the variable of grading, the Executive method is distinctive for the estimation of (accepted), and the conservation method to estimation of (good), and the local method for the estimation of (very good), and the internal method for the estimation of (very good), and the anarchic method for the estimation of (excellent).

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