

THE DEVELOPMENT OF EPISTEMOLOGICAL BELIEFS OF UNDERGRADUATES IN COLLEGES OF EDUCATION IN JORDANIAN UNIVERSITIES

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Abstract: This study aims at examining the epistemological beliefs of undergraduates in the colleges of Education at Jordanian universities. It also investigates the presence of significant differences in these beliefs with the changes of level, gender and university.

The researcher has modified the Epistemological Beliefs Questionnaire of Schommer, which consists of 66 items divided into five domains: quick learning, certain knowledge, Omniscient authority, innate ability and simple knowledge. The validity of the questionnaire has been substantiated by submitting it to a set of experts. Reliability is ensured by using test-retest method.

To answer the questions of the study, means and standard deviations of students' scores on each domain of the questionnaire and on the whole questionnaire were inspected. After that both MANOVA and ANOVA tests were conducted to find out the effects of the independent variables on each domain of the questionnaire and on the whole questionnaire.

The results of analysis indicated that:

*The epistemological beliefs of the students were half way between naïve and more developed

*There were significant differences due in epistemological beliefs to gender and academic level but not due to the university. Concerning gender, there were differences on the first domain (quick learning) in favor of females. On the fourth domain

(innate knowledge) the differences were in favor of males.

Concerning the academic level there were significant differences on the first domain

(Quick learning) and it appeared that 1st, 2nd and 3rd year students were less simplistic than 4th year students and showed clear development. There were also significant differences on the third domain (Omniscient authority) as indicated by the fact that 1st and 2nd year students had more complicated beliefs in the Omniscient authority of knowledge than 3rd and 4th year students. On the whole instrument there were significant differences due to the academic level indicating that 1st and 2nd year students had more epistemological development than 4th year students. There were no significant differences due to gender and university.

Keywords: epistemological beliefs, quick learning, certain knowledge, Omniscient authority, innate ability and simple knowledge.

I. INTRODUCTION

Epistemological beliefs occupy the attention of researchers since the late eighties; however, no common definition of this term has been reached yet. According to Hofer [2], the Epistemological beliefs refer to the concepts of individuals about the nature of knowledge and the nature of the learning process, and reflects the viewpoint of the individual about what and how

knowledge can be acquired and the degree of certainty, determinants and criteria used to determine and define knowledge. Also it works towards facilitating the changes in process of learning and teaching and improving it in the attitudes of teacher training.

Therefore, educators have tried through this belief to study how the students gain knowledge, and how the nature of knowledge relates to their learning, and how student's epistemological beliefs give the notes for the classroom teaching in specific areas and courses. The epistemological beliefs studied for the first time by William Perry[7], his longitudinal study, which depends on studying these beliefs have shown more sophisticated techniques, where Perry classify these beliefs in four dimensions, namely: (Dualism - Multiples- Relativism - commitment).

According to Perry, individuals who have dual ideas about the nature of knowledge believe that the facts are absolute "right or wrong". It is transferred to the individual by an expert or authoritarian hand. On the side, Individuals who are aware of knowledge in a poly- manner see that there are, in addition to the existence of absolute truths, also things that cannot be known with great accuracy. They believe that knowledge consists of personal opinions and absolute truths. Their main reliance is on personal opinions. They rarely depend upon authoritarian.

The third position which forms a major shift in Epistemological Beliefs is the position of individuals who have relative ideas. This is because the individuals consider that generating knowledge is personal. Absolute truths cannot exist because the truth is considered to be something relative in the interpretations of an individual's personal experiences and the experiences that he passed.

Individuals, who perceive knowledge in a commitment manner, see that in addition to the presence of relative thinking there are certain specific beliefs that are more valuable than others and adhered to in a flexible manner.

Epistemological beliefs have been criticized for that they develop in stages of a single dimension and methodology. Therefore, Schommer [8] noticed that these beliefs are more than a group with one-dimension. She then worked on the description of these beliefs as in the following:

- Quick learning (believing in swiftly in learning).
- Certain Knowledge (believing in certainty of knowledge).
- Omniscient authority (believing in the source of knowledge)
- Innate Ability (believing firmly of knowledge).
- Simple Knowledge (the belief of structure of knowledge).

Most of Epistemological beliefs range from simple ideas to complex ideas. The simple ideas contain the beliefs that truth is certain and Omniscient and transferable by the Authority. The complex ideas are those which refer to beliefs that the truth is relative and changeable and could be built actively by the individual. Schommer[10] tried to understand the Epistemological beliefs. She realized that sophisticated learners in thinking may believe that there is a large amount of developable knowledge and there is another knowledge that should be explored and a small amount of knowledge is immutable. She also realized that simple-minded learners might believe that a great amount of information is certain, some information should be explored and a small amount of information is subject to change.

RESEARCH OBJECTIVES:

A wide range of researchers assume that students go through stages of development in Epistemological beliefs. The beliefs develop with the development of educational level. They are affected by educational programs in each level. In addition, researchers indicate the importance of these beliefs in some educational situations and their impact on individuals dealing with learning and teaching in different contexts.

This research investigates the validity of these assumptions within the undergraduates of faculty of Education at Jordanian universities. It identifies the level of Epistemological beliefs of the students, and examines the existence of difference in the beliefs of students about the nature of knowledge with the difference in student's gender and university. The researcher applies this study on a sample of students of Faculty of Education at the Jordanian universities. Then, the purpose of this study is to identify the level of Epistemological beliefs for the students of the Faculty of Education at the Jordanian universities in various specializations. The study attempts to answer the following questions:

-What is the level of Epistemological beliefs in undergraduate student of the Faculty of Education at the Jordanian universities?

-Are there statistical significant differences at the level $\alpha \geq 0.05$, in epistemological beliefs for undergraduate students of the Faculty of Education at the Jordanian universities in the light of the difference (level of education) (university) (gender).

SIGNIFICANCE OF THE STUDY

The importance of epistemological beliefs appears in its impact upon the beliefs that are related to learning and teaching in some cases and on the way the individual deals with learning and teaching in

certain cases. This is important to the individuals who prepare teachers and desire to help students in developing accumulating thoughts about teaching and learning. In addition, the students' epistemological beliefs appears at the levels of knowledge participation in classroom academic assignments particularly when the students are keen to continue that assignments. Concerned studies show that academic performance of students is affected by their beliefs about the nature of knowledge.

SCOPE AND LIMITATION

This research is limited to the students of only two universities in Jordan namely yarmouk and Jordanian. This was because of time and financial constraints.

PREVIOUS STUDIES

Schommer conducted a study aimed to identify the development of secondary students' beliefs about the nature of knowledge and learning, or epistemological beliefs, and the influence that these beliefs have on academic performance. An epistemological questionnaire that assesses students' beliefs about simple knowledge, certain knowledge, quick learning, and innate ability to learn was modified and administered to more than 1,000 high school students. Factor analysis of students' responses replicated the factor structure found in previous research. Differences in epistemological beliefs among students across the high school years and between genders were examined. Belief in simple knowledge, certain knowledge, and quick learning decreased from freshman to senior year. Girls were less likely to believe in quick learning and innate ability. Students' GPA was regressed on epistemological factors. The less students believed in quick learning, the higher the GPA they earned [9].

Jehng, Jihn-chang J.; Johnson, Scott D.; Anderson and Richard C, also Examined Epistemological beliefs (EBs) among a sample of university students in the graduate and undergraduate as a function of their educational level and field of study. results has shown that EBs could be represented in terms of 5 factors: quick learning omniscient authority, certainty of knowledge, Simple Knowledge, and innate ability. Ss in "soft" fields had a stronger tendency to believe that knowledge was uncertain, were more reliant on their independent reasoning ability, and had a stronger feeling that learning was not an orderly process than Ss in "hard" fields. Graduate students' EBs differed from those of undergraduates. Ss' EBs about learning is a product of the activity, the culture, and the context in which they were cultivated [1].

Schommer and Dannel had conducted a study aimed to identify the Epistemological beliefs for gifted students in secondary schools and how these beliefs relate to problem solving and academic performance. Sixty-nine gifted high school students first completed an epistemological questionnaire and then wrote solutions to dilemmas presented in the form of Dear Abby letters. Descriptive statistics revealed substantial variability in students' epistemological beliefs. Regression analyses indicated that the more students believed that the ability to learn is fixed at birth, that learning is quick or not-at-all, and that knowledge is unchanging, the more likely they wrote over simplistic and unalterable solutions. Analysis of variance indicated that students performing below academic expectations were more likely to believe that the ability to learn is fixed at birth [11].

Michael and Charles examined the differences in the epistemological beliefs of college students across major fields of study. Beliefs in fixed ability, simple knowledge, quick learning, and certain knowledge were assessed for 290 students attending a large urban public university. Major fields of study were classified in domains of study according to the hard-soft and pure-applied dimensions of Biglan's well-known classification of academic fields. Additional analyses examined the effects of gender, age, year in college, and GPA. Results indicated that students majoring in pure fields were less likely than those in applied fields to hold naive beliefs in simple knowledge, quick learning, and certain knowledge, and students majoring in soft or pure fields were less likely than others to hold naive beliefs in certain knowledge. Gender, age, and GPA were also related to students' beliefs. The results of this study suggest that students' beliefs about the nature of knowledge and learning are related to the disciplinary contexts in which students select and experience their specialized coursework in college [5].

Francisco conducted a study to analyses the change in epistemological beliefs and learning approaches in secondary students as they progress through their studies. The second aim is to examine the effects of epistemological beliefs on learning approaches, and learning approaches on academic performance. The sample consisted of 1,600 Spanish students; boys and girls, from several secondary schools took part in the study. They were between 12 and 20 years old and their average age was 14.79 years. The results showed that it is throughout secondary education epistemological beliefs undergo change, becoming more realistic and complex, and deep-approach scores decline significantly. It was

shown that, as predicted, epistemological beliefs influenced academic achievement directly and also indirectly via students' learning approaches [1].

Paulsen and Feldman examined the conditional and interaction effects of each of four dimensions of the epistemological beliefs of college students on six measures of the motivational components of self-regulated learning strategies (intrinsic goal orientations, extrinsic goal orientation, task value, self-efficacy, control of learning and test anxiety). The sample has been selected of (502) student at the University Urban, (61%) of female students, and (39%) of male students. The results indicated that Students with more sophisticated beliefs about the nature of knowledge and learning were more likely than their peers to use educationally productive motivational strategies in their learning. Beliefs about one's ability to learn and the structure of knowledge had the most significant and substantial effects on students' use of self-regulated motivational strategies. Although a student's belief about the stability of knowledge by itself had a statistically significant effect on only one motivational strategy, this belief did have four statistically significant interaction effects with beliefs about ability to learn and the structure of knowledge. Implications of these findings for theory, research, policy and practice are examined [6].

Lvar and Helge conducted a study to examine of epistemological beliefs and implicit theories of intelligence to students' adoption of mastery, performance-approach and performance-avoidance goals in two different academic contexts, business administration and teacher education, in the short as well as the long term. The results showed that epistemological beliefs about the speed of knowledge acquisition predicted achievement goals. Students who believed that learning occurs quickly or not at all were less likely to adopt mastery goals and more likely to adopt performance-avoidance goals. In addition, students who believed in stable and given knowledge were less likely to adopt mastery goals. Differences in predictive patterns across the two contexts concerned the prediction of performance-approach goals and gender differences in goal adoption. Epistemological beliefs played a more important role in goal adoption than implicit theories

of-intelligence.[4]

II. METHODOLOGY

Quantitative is used based on research questionnaire. The researcher has developed the questionnaire of epistemological belief to adapt to Jordanian context through referring to concerned experts in Jordanian universities. A pilot survey was carried out in order to make adjustments. The survey was planned to cover 5% of the faculty students.

A Research subjects:

The community study is chosen from all undergraduate students in the Faculty of Education, Jordanian universities. Number of students studying in the Faculty of Education at the Jordanian universities reaches (6145) students (1327) male (4818) female. The sample consisted of (1327) students (233) male, (1094) female. the researcher randomly selected the research sample out of this community.

B. Data analysis:

In data analysis, average and MNOVA and ANOVA are used to examine the existence of differences in epistemological beliefs of undergraduates at faculty of education with the differences in specialization, gender and educational level. In addition, Tukey instrument is used to know whether there is development in student's beliefs or not according to their educational levels.

C. Instrumentation:

Researcher used Schommer scale for Epistemological beliefs (Epistemological Questionnaire) which consists of (66) paragraphs distributed in five dimensions, namely: (Quick Learning, knowledge, Certain Knowledge, Omniscient authority, innate ability, simple knowledge).

III. RESULT

The researcher calculated the arithmetic mean and standard deviation for dimensions from the study dimensions as it is shown in Table 1

Table 1 Arithmetic means and standard deviation of study sample.

Table 1 shows that the students belief in the (Quick learning) (Certain knowledge) (Omniscient authority) has scored an arithmetic mean ranges between (2.90 to 2.64) While the arithmetic mean for (innate ability) and (Simple knowledge) range from (2.43 to 2.32)

The researcher also calculated the arithmetic mean and standard deviation for the study dimensions with the changes in the study variables as it is shown in Table 2.

Dimensions	m	sd
Quick learning	2.90	.41
Certain knowledge	2.68	.38
Omniscient authority	2.63	.42
innate ability	2.42	.34
Simple knowledge	2.31	.33
Epistemological beliefs	2.55	.26

Table 2 the arithmetic mean and standard deviation for the study dimensions with the changes in the study variables

Independent variable	Levels	Statistical	Quick learning	Certain knowledge	Omniscient authority	innate ability	Simple knowledge	
gender	Male	arithmetic mean	2.614	2.617	2.886	2.357	2.422	
		standard deviation	0.397	0.453	0.465	0.363	0.373	
		The number	233	233	233	233	233	
	Female	arithmetic mean	2.702	2.641	2.908	2.307	2.428	
		standard deviation	0.377	0.415	0.401	0.329	0.337	
		The number	1094	1094	1094	1094	1094	
	Total	arithmetic mean	2.686	2.636	2.904	2.315	2.427	
		standard deviation	0.382	0.422	0.413	0.336	0.343	
		The number	1327	1327	1327	1327	1327	
	university	Jordanian	arithmetic mean	2.696	2.636	2.911	2.296	2.425
			standard deviation	0.410	0.411	0.393	0.341	0.342
			The number	627	627	627	627	627
yarmuk		arithmetic mean	2.678	2.637	2.898	2.333	2.429	
		standard deviation	0.355	0.432	0.431	0.330	0.344	
		The number	700	700	700	700	700	
Total		arithmetic mean	2.686	2.636	2.904	2.315	2.427	
		standard deviation	0.382	0.422	0.413	0.336	0.343	
		The number	1327	1327	1327	1327	1327	
Level of Study		First	arithmetic mean	2.735	2.648	2.969	2.327	2.413
			standard deviation	0.368	0.406	0.408	0.325	0.329
			The number	305	305	305	305	305
	Second	arithmetic mean	2.722	2.657	2.952	2.335	2.445	
		standard deviation	0.373	0.395	0.398	0.350	0.314	
		The number	317	317	317	317	317	
	Third	arithmetic mean	2.689	2.655	2.870	2.309	2.426	
		standard deviation	0.378	0.428	0.424	0.330	0.358	
		The number	415	415	415	415	415	
	Fourth	arithmetic mean	2.604	2.582	2.842	2.296	2.426	
		standard deviation	0.397	0.449	0.405	0.342	0.362	
		The number	317	317	317	317	317	
Total	arithmetic mean	2.686	2.636	2.904	2.315	2.427		
	standard deviation	0.382	0.422	0.413	0.336	0.343		
	The number	1327	1327	1327	1327	1327		

Table 2 shows the existence of statistical differences between the arithmetic means of the study instrument with the changes in the study variables. In order to examine the

significance of these statistical differences, the researcher used MANOVA analysis as it is shown in Table 3

Table3 MANOVA analysis for the study dimensions with the changes in the study variables

Source of variance	Dimensions of dependent variable	ss	df	ms	f	p-value	p-value MANOVA analysis e
gender	Quick learning	1.091	1	1.091	7.620	*0.006	hotilystrace
	Certain knowledge	0.049	1	0.049	0.274	0.601	0.015
	Omniscient authority	0.034	1	0.034	0.202	0.653	0.001*
	innate ability	0.492	1	0.492	4.387	0.036*	
	Simple knowledge	0.007	1	0.007	0.058	0.809	
university	Quick learning	0.043	1	0.043	0.303	0.582	hotilystrace
	Certain knowledge	0.006	1	0.006	0.035	0.853	0.005
	Omniscient authority	0.029	1	0.029	0.172	0.679	0.239
	innate ability	0.457	1	0.457	4.070	0.044	
	Simple knowledge	0.009	1	0.009	0.076	0.783	
Level of study	Quick learning	2.845	3	0.948	6.626	*0.000	Welks' lambda
	Certain knowledge	1.203	3	0.401	2.257	0.080	0.965
	Omniscient authority	3.603	3	1.201	7.131	0.000*	0.000*
	innate ability	0.382	3	0.127	1.134	0.334	
	Simple knowledge	0.165	3	0.055	0.467	0.705	
Error variance	Quick learning	189.061	1321	0.143			
	Certain knowledge	234.822	1321	0.178			
	Omniscient authority	222.446	1321	0.168			
	innate ability	148.273	1321	0.112			
	Simple knowledge	155.842	1321	0.118			
total	Quick learning	193.451	1326				
	Certain knowledge	236.136	1326				
	Omniscient authority	226.190	1326				
	innate ability	149.545	1326				
	Simple knowledge	156.017	1326				

Table 3 shows that there is no statistically significant difference in epistemological belief attributed to the variable of university, while there is a statistically significant difference attributed to the variable of Gender in the (Quick learning) The arithmetic mean of the females (2.70), while males (2.61) . Also found a statistically significant (innate ability) for males reaching arithmetic mean (2.35), while the arithmetic mean of the females (2.30).

The value of welks' lambda testing (.965) it is the value statistical significant at the level $\alpha \geq 0.05$. Proved the existence of statistically significant

difference in quick learning and Omniscient authority which can be attributed to level of study. In order to identify the study level that was behind this difference, the researcher used Tukey test for comparisons of (quick learning) and (Omniscient authority) this is shown in table 4

Table 4 Comparisons of (quick learning) and (Omniscient authority) by using Tukey test

		Level of study				
		first	second	third	fourth	
Quick learning	Level of study	Arithmetic mean	2.735	2.722	2.689	2.604
	first	2.735			*0.131	
	second	2.722			0.118*	
	third	2.689			0.085*	
	fourth	2.604				
Omniscient authority	Level of study	Arithmetic mean	2.97	2.95	2.87	2.842
	first	2.969		*0.100	*0.127	
	second	2.952		0.082*	0.110*	
	third	2.870				
	fourth	2.842				

It is seen from Table 4 that there is statistically significant difference in (Omniscient authority) in favor of the first, second and third year compared to the fourth year. In addition, it is seen there is statistically significant difference in favor of the first and second year compared to the third and fourth year the researcher also calculated the arithmetic mean and standard deviation for the study instrument with the changes in the study variables as it is shown in Table 5

Table 5 Arithmetic mean and standard deviation for the study instrument with the changes in the study variables

Level of study	Arithmetic mean			Standard deviation			
	Gender			Gender			
	Male	Female	total	Male	Female	total	
university	First	2.59	2.58	2.58	.14	.24	.23
	Second	2.62	2.57	2.58	.20	.23	.23
	Third	2.48	2.54	2.53	.32	.27	.28
	fourth	2.41	2.54	2.51	.39	.26	.30
	Total	2.51	2.56	2.55	.30	.25	.26
Jordani an	First	2.50	2.57	2.56	.36	.23	.25
	Second	2.59	2.58	2.58	.27	.26	.26
	Third	2.64	2.54	2.56	.22	.27	.26
	fourth	2.50	2.53	2.52	.29	.25	.26
	Total	2.56	2.55	2.55	.28	.25	.26
yarmou k	First	2.55	2.57	2.57	.25	.24	.24
	Second	2.60	2.57	2.58	.25	.24	.24
	Third	2.58	2.54	2.55	.27	.27	.27
	fourth	2.46	2.53	2.51	.33	.26	.28
	Total	2.54	2.55	2.55	.29	.25	.260

Table 5 shows the existence of statistical differences between the arithmetic means of the study instrument with the changes in the study variables. In order to examine the significance of these statistical

differences, the researcher used the Three-way analysis of variance as it is shown in Table 6

Table 6 Three-way analysis of variance for the study instrument with the changes in the study variables

Source of variance	Sum of square	Mean of square	df	f	p-value
gender	1.255E-02	1.255E-02	1	.179	.672
university	1.497E-02	.720	1	.214	.644
Level of study	92.337	1.497E-02	3	3.433	.016
Error variance	93.094	.240	132		
total		6.990E-02	6		

It is seen from Table 6 that there is no statistically significant difference in study instrument for variable (gender and university). While there is statistically significant difference for variable (level of study) . In order to identify the study level that was behind this difference, the researcher used Tukey test for comparisons, as it is shown in Table 7

Table 7 Comparisons on the study instrument for level of study by using Tukey test

level of study	Arithmetic mean	level of study			
		first	second	third	fourth
		2.5744	2.5825	2.5521	2.5197
first	2.5744				5.467E-02*
second	2.5825				6.280E-02*
third	2.5521				
fourth	2.5197				

It is seen from Table 6 that there is statistically significant difference in study instrument in favor of the first, second and year compared to the fourth year

IV. DISCUSSION

The outcome of the study shows that the arithmetic means of the students' respondents related to quick learning, certain knowledge and Omniscient authority has reached 2.68, 2.63 and 2.9 respectively. These means are moderate. As for the quick learning, the moderate mean can be attributed to absence of fixed criteria for learning method among the students. The respondents are sometimes concerned and concentrate on main ideas which, according the students, carry the most importance. While, the same individuals see that some issues don not require concentration which is conceded by them a pure waste of time.

The moderate mean of the certain knowledge can be considered logic when the student's environment is taken into account. Some issues to the students are changing while some other issues to them are unchangeable.

The moderate mean of the Omniscient authority can be attributed to the education system and educational process which are not built up on solid bases. Some lecturers dictate the information to the students leaving them with no chance to prove oneself or to express own thoughts or to search and be a producer rather than just a listener. Others direct their students to search and read without limiting the students to a specific set of information.

The outcome of the research also shows the presence of simple beliefs regarding net ability and simple knowledge. This can be attributed to the weakness in directing the students by educational institutions which do not improve the student's ability to deal with difficult issues. In addition, it has been found that there are statistically significant differences in the arithmetic means of the quick learning in favor of female students. Female students' fond of education subjects, their efforts to understand the subjects efficiently and their hard working can explain this result.

The significant differences favored male students in the arithmetic means related to net ability. Males usually face more complicated circumstances than males and this consequently push them to search and investigation

Using Tukey Test shows that the first, second and third year students' level in quick learning is higher than that of the fourth year students. In fact, the student finds more freedom in the university environment than what he experienced in secondary education. Instead of utilizing this freedom in leaning the students gives more importance to entertainment. This tendency increases with the increase in the number of years the student spends at the university.

By using Tukey Test it has been found that the first and second year students have more complicated beliefs related to absolute authority than that of the third and fourth year students.

This can be attributed to the fact that the majority of the educational and learning programmers provide the students with ready made knowledge and mainly concentrate on limiting the students into the study plans and the decided courses. On the other hand, the lecturers are very keen to have the supremacy over the students and not to accept the others opinions. This is no doubt contradicting with the development of epistemological beliefs which call for innovation.

REFERENCES

- [1] Francisco, C. (2005). Epistemological beliefs and approaches to learning: Their change through secondary school and their influence on academic performance. *Journal of Educational Psychology, 75(2)*, 203-221
- [2] Hofer, B. & Pintrich, P.R. (1997) the development of epistemological theories: beliefs about knowledge and knowing and their relation to learning, *Review of Educational Research, 67 (1)*, and pp.88-144
- [3] Jehng, Jihng-chang J.; Johnson, Scott D.; Anderson, Richard C. (1993). Schooling and students' epistemological beliefs about learning. *Contemporary Educational Psychology, 18(1)*, 23-35.
- [4] Lvar, B. & Helge, S. (2006). Predicting achievement goals in low different academic contexts: A longitudinal study. *Journal Educational Research, 50(2)*, 127-148.
- [5] Michael B. Paulsen, Charles T. Wells. (2004). Domain differences in the epistemological beliefs of college students. *Research in higher education, 39 (4)*365-384.
- [6] Paulsen, M. B. & Feldman, K. A. (2005). The conditional effects of epistemological beliefs on the self-regulated learning of college students: Motivational strategies. *Research in Higher Education, 46(7)* 731-768.
- [7] Perry, W.G., Jr., (1968). Patterns of development in thought and values of students in a liberal arts college. A validation of a scheme. Cambridge, MA: Bureau of Study Counsel, Harvard University. (*ERIC Document Reproduction Service No. ED 024315*).
- [8] Schommer, M. A. (1990) Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology, 82 (3)*, 498-504.
- [9] Schommer, M.A. (1993) epistemological development and academic performance among secondary schools. *Journal of Educational Psychology, 85 (3)*, pp.4065 11.
- [10] Schommer, M. & Dunnell, P. (1997). Epistemological beliefs of gifted high school students. *Roeper review*19(3) 153 - 156
- [11] Schommer, M.A. & Walker, K. (1995) Are epistemological beliefs similar across domains? *Journal of Educational Psychology, 87(3)*,.424-432.

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