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A Study on the Relationship between Problem Solving Skills and Academic Achievement

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Abstract

The Indian academic system is not any exception to societal pressures for progressed student performance; hence, school leaders in Indian frequently look for approaches of assembly the needs of an ever-changing society. Research on an organizational climate reveals that there are many methods wherein climate is described and operationalize. 384 students (95% confidence interval and 0.05% margin error) in Tirunelveli district has been selected for the purpose of simple random sampling. This study offers a framework for use by way of educators to scrutinize their students problem solving skills and academic achievement.

Introduction

Education has a very strategic position in constructing human sources (Brewer & Brewer, 2012). As an attempt to comprehend the strategic role of training, training device that capable of shape and produce the whole person is vital. This education system should place the first-rate of training as the principle aim of all country wide training implementation manners. Thoughts and hopes, while faced with current conditions of education in Indonesia, it appears still a ways from the expectancies that exist. It is said that due to the fact the truth indicates that till now the positive of schooling in Indonesia remains being questioned, due to the fact the outcomes or graduates from various tiers and sorts of training from high college as much as college stage has not been according with the demands of the working global or moreover create jobs, that consequences on growing unemployment (Banuri, 2013).

Review of literature

Problems and challenges of life in 21st century require readiness in dealing with problems in the real world which involve high-level thinking skill, creativity, communication, innovation, collaborative, critical thinking and problem solving skill. [Davis, J.P.], [Brynjolfsson, E.; McAfee]. In order to train and prepare the skill to face challenges in 21st century, learning activity needs to be improved and developed. Skills that need to be mastered include life and career skill, mastery of technology and information skill, innovation skill [Gainsburg], social and cross-cultural skills, and leadership and responsibility [Brynjolfsson, E.; McAfee]. All skills can promote by changing learning process in school. Teacher-centric learning should start to switch to student-centric learning. The student-centric learning offers bigger chance for students to be more active. Learning by memorizing is no more used and switched to learning which encourage students to collaborate, open dialog, and encourage them to have critical thinking through effective behavior modeling [Davis, J.P.]. One of the skills in 21st century that needs to be mastered is problem solving skill. Problem solving is a basic skill that needs to be developed and trained to students in 21st century [OECD]. Problem solving is a precise of clever and rational cognitive manner, as a result, it provides a reasonable reason behind solution of the hassle [Ananiadoui, K.; Claro,

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M.], [EC. COM] in different phrases, and concept begins with the problem and ends with the answer [EC. European Skills]. Problem solving may be performed with the aid of the use of senses and mind. That student can enhance the system (way of questioning) of trouble solving is the maximum essential element in training [EC. European Skills]. The technique of hassle solving desires numerous capabilities inclusive of planning, decoding facts, the usage of methods, checking outcomes [Battelle for Kids (Ed.)], trying alternative method [NRC] and inclined to simply accept help from others and colleagues [ATC21S]. Problem fixing method has four steps, which might be: know-how and representing the problem, planning and determining answers to resolve the hassle, applying a hassle plan, and comparing the steps of problem solving [AES]. Based on the interview with technology teachers in junior excessive faculty, students can answer the question in keeping with the idea; however, they may have trouble whilst answering questions about concepts utility in life. Then, on this problem, students recognize the technological know-how principles which have been taught but they have problem in making use of science concepts in day by day lifestyles. According to analyze carried out by way of Sugiarto, college students have issue in applying principles in each day existence that's the answer of the hassle [Binkley]. Based at the definition of trouble solving, it is able to be concluded that aspects and indicators of trouble solving used to examine player talents.

Mayer (1983, p. 3) affords the usually widely wide-spread view that "a hassle takes place when you are confronted with a given state of affairs... And you need every other state of affairs.However there is no obvious manner of carrying out your purpose." Problem solving, he states, is the process or collection of intellectual operations used in transferring from the prevailing scenario to the preferred purpose. The National Council of Supervisors of Mathematics states that "hassle fixing is the procedure of applying formerly received know-how to new.And unfamiliar conditions." (NCSM, 1977, p. 2). They move on to country that mastering to clear up troubles is the primary purpose for reading arithmetic. Similarly, the National Council of Teachers of Mathematics (1980) states that "Problem Solving should be the focal point of school arithmetic within the 1980's." Huggins (1966, p. Iv) defines hassle, fixing as "a disposition in the direction of inquiry which has as its goals the development of latest ideas based upon older ones." And George Polya states that problem fixing is "finding the unknown means to a notably conceived stop." (In Krulik, 1980). In How to Solve It rolya (1957) is going on to outline 4 steps in trouble fixing. His 4 steps include: 1. Understanding the hassle 2. Devising a plan for fixing the problem. 3. Carrying out the plan. 4. Looking back or comparing the answer. Although Polya's 4 steps are perhaps the maximum regularly quoted method for trouble solving, they are never the only established approach to this issue. Dewey in How We Think (1909) postulated five steps inside the trouble fixing procedure: 1. a felt difficulty 2. Its location and definition. 3. Suggestion of feasible answers 4. Development by reasoning of the bearings of the suggestion. 5. Further observation and experiment leading to its attractiveness or rejection, this is the conclusion of perception or disbelief. The difference between the four steps of Polya and the 5 of Dewey is ° inside the initial art of information and defining the trouble. In the rest of this paper, the author have adopted Polya's four step version for reasons of parsimony. But ‘it is. Important to keep in thoughts the need of the problem definitions. A number of different writers (Suydam and Weaver, 1977; Weiss et al., 1980; Shailcross',, 1971; merwin, 1977) have suggested other systems for coming near problem fixing, ranging from three to as many as twelve steps, but Polya's four steps seem like the best. Commonly applicable and most regularly used in defining the essential methods worried in problem solving. From these problem solving steps, a number of strategies for solving problems emerge. LeBlanc (197:7: suggests that there are two types of strategies that can be utilized in the problem solving

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process: 1) General strategies which help determine the overall plan to be used to' help solve the problem, and 2) Helping strategies used to carry out the general strategy. Examples of general strategies include trial and error, simplification and working backwards. 'Examples of helping strategies include diagrams, lists and equations.

Research Methodology

This study is Descriptive research. 384 students (95% confidence interval and 0.05% margin error) in Tirunelveli district has been selected for the purpose of simple random sampling. Responses has been recorded and further used for analysis. Both primary and secondary data collection has been used for the collection of data.

CORRELATION ANALYSIS BETWEEN PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

Correlation analysis		PSA	AA
PSA	Pearson Correlation	1	.721**
	Sig. (2-tailed)		.000
	N	703	703
AA	Pearson Correlation	.721**	1
	Sig. (2-tailed)	.000	
	N	703	703

From the calculated Pearson's statistics it can be summarized that as p-value 0.000 < 0.05 there is a significant relationship between problem solving ability and academic achievement. Correlation relationship expressed by r value, r-value is 0.721 (+ve) which shows the positive relationship

MULTIPLE REGRESSION ANALYSIS FOR PROBLEM SOLVING ABILITY AND ACADEMIC ACHIEVEMENT

Coefficients[a]

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	F	Adjusted R Square	Collinearity Statistics

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		B	Std. Error	Beta					Tolerance	VIF
1	(Constant)	1.471	.259		5.687	.000	54.778	.582		
	PSA	.055	.036	.052	1.536	.025			.902	1.109
	AA	.023	.045	.022	.521	.003			.585	1.710

a. Dependent Variable:
Academic achievement

The above table presents the significant results of multiple regressions conducted between problem solving ability and academic achievement. A percentage of large practical effect (R^2 = 58%). PSA (β=0.052,p=0.025), AA (β=0.022,p=003), problem solving ability and academic achievement statements contributed significantly to the variance in total.

Findings of the Study

- The study revealed that problem solving ability had a significant effect on mean achievement scores of high school students. A significant difference found in academic achievement among high, average and low problem solving ability high school students. It further revealed that students with high problem solving ability also exhibited high academic achievement
- Correlation relationship expressed by r value, r-value is 0.721 (+ve) which shows the positive relationship
- A percentage of large practical effect (R^2 = 58%). PSA (β=0.052,p=0.025), AA (β=0.022,p=003), problem solving ability and academic achievement statements contributed significantly to the variance in total.

Conclusion

In the present study, it was discovered that there may be plenty of effect on hassle fixing potential on the educational achievement of students. Hassle fixing is an individualized system, which calls for diverse strategies to address. The classroom teacher can develop a systematic approach to clear up issues that the students are predicted to face in social life. The implication of this examine is that each one scholars can be furnished with an surroundings, that's suitable in line with their behavior in order that their creativity can be flourished. Moreover, domestic & school can play essential roles in developing a positive mind-set for the improvement of creativity among students. Teacher can use pedagogical approach for foster hassle solving capability. The low degree of trouble solving ability is a pointer in the direction of “gaining knowledge of deficiency syndrome” and desires attention of school authority. Consequently, school authority wants to take steps to diagnose the crucial problem regions in basic training. For this reason, the excessive faculty instructors are required to be taught to be used of diagnostic and criterion based totally evaluation approaches to make coaching-getting to know technique extra effective as well as infant focused to decorate degree of problem solving capability. In short, it's been concluded that hassle fixing ability of the scholars help them building robust cognitive capacity, which need to be in a better function to reap the blessings of excessive academic success, enrolled in reliable future career desire and activity availability

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