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RESEARCH PAPER

Effects of Brain-Based Learning on Students' Competency of Innovation at Secondary Level

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ABSTRACT

Innovation has never been considered and prioritized in educational system. Likewise competency of innovation among students by using brain-based learning approach has also not been focused. Objective of the Study was to find out the effect of brain-based learning on the competency of innovation of students. Study was descriptive in nature, survey technique and random sampling method was used. Population in research were teachers and students of Secondary Schools of Tehsil Lawa. Two questionnaires were used to collect the data. Data was analyzed by using simple linear Regression. It was found that, Effect of brain based learning, on the competency of innovation of students with respect to the capability of innovation of students was not observed, as they are not conversant, at secondary school level. Conclusion shows that BBL is not taken as an effective method of teaching by teachers. It is recommended that, teachers should be imparted training, related to brain based learning at different levels by educational and administration authorities. HEC and Text Book boards may take special measures to include the curriculum of brain based teaching for teachers and learning for students.

KEYWORDS Brain Based Learning, Competency, Innovation

Introduction

Innovation has never been considered and prioritized in educational system. Likewise competency of innovation among students by using brain-based learning approach has also not been focused. To investigate all that, it is also important to investigate teachers perception about BBL and its Effect on Students' Competency of Innovation at Secondary Level.

This study was carried out, in the main foremost motive to investigate teachers' perceptions about brain-based learning and its effect on students' competency of innovation at secondary level. This study also measured the level of competency of students at secondary level. Difference between teachers' perceptions about BBL and its effect on students were also measured. Survey questionnaire was got filled from teachers and students separately and analysis was done on SPSS version 24 to evaluate the competency level of students.

Brain-based learning (BBL) is a method to learn which is based on the function and structure of the brain because BBL is not a be-all-end-all learning formula and can be recycled to develop schemas along with current developments in the learning process (Kristanto & Pradana, 2021).

Inventiveness is a somewhat new field of logical exploration. Guilford, director of the American Mental Relationship during the 1950s, led early exploration on imagination. Up to that point, inventiveness had been a "dismissed region" of logical interest (Petrowski, 2000, p. 305). As per Petrovsky (2000), brain science's overall indifference toward imagination is on the grounds that it is viewed as a profound instead of a logical subject. Albeit the point has been disregarded by analysts, Guilford imagines logical exploration on imagination and

offers a few clarifications for its obvious nonappearance in the present writing (Gardner, 1993).

Despite the fact that innovativeness is by and large thought to be a natural, innate capacity or ability, it resists a "generally acknowledged definition" (Jones, 1972, p. 5). As Fishkin (1999) makes sense of, imagination as "an enchanting mix of peculiarities" can't be caught in a "solitary definition" (p. 5). Usually acknowledged meanings of innovativeness comprise of two significant measures: fittingness and curiosity (Atkinson, 2000; Mayer, 1999; Starko, 2005). As per this models, Dineen, Samuel, and Livesey (2005) proposed inventiveness as "a cycle that creates a result that is novel/unique and significant/important" (p. 155).

In Pakistan, different examinations investigated, viability of mind based learning. Be that as it may, there is no single understudy who investigates the effect of brain put together learning with respect to understudy advancement abilities at auxiliary school level. Thusly, analyst needs to occupy the dark space. This examination is imaginative in the Pakistani setting that explores the viability of brain based learning (BBL) on cooperation, understudies' inventiveness and critical thinking abilities at the auxiliary level.

Literature Review

Many studies have been done on academics and psychology, but the world of neuroscience is interesting to many people in education because of the ideas of cognitive neuroscience and neurobiology that are still developing and coming to light (Deagan, 2014). (Hruby, 2011). Bringing neuroscience and education together in a way that helps both fields is a new idea. Both institutions have a big effect on the academic field because of the debates and research they do (Tommerdahl, 2010). Along with research on learning processes and brain functions, there is now research on how the brain learns (Degen, 2014). This movement to bring the two fields together made it possible for research to be shared between them and for educational neuroscience to be used in educational reform (Zadina, 2015).

Before the trans disciplinary development, instruction and neuroscience research were two separate fields. Presently, the two fields are more associated. Researchers and educators found that this coordination made it more straightforward to make new information and tackle issues in the homeroom and in training overall (Tokuhama-Espinosa, 2011). Rees et al. (2016) said that researchers and educators ought to cooperate. Experts from the two fields can cooperate to take a gander at the outcomes and find cross-field advantages to make all the difference for the interaction (Rees et al., 2016).

Center 21st century assumptions have made it essential for pioneers to push for interests in discovering that will assist them with going about their responsibilities later on (Kwek, 2011). How the mind processes, sees, stores, and recovers data is a significant aide for instructional method. It shows how the brain and learning are connected (Vyas and Vashishtha, 2013).

Brain based learning is a technique, through which, teaching and learning process is completed by the use of cognitive approach. This is also called the brain based learning. In this way of teaching and learning, concepts are cleared about any complex issues. This technique was also used 3000 BC, but in modern era, it was re-envisaged in 18th century. Most of the work was done in 19th century and after 20th century it was practiced in a formal way of teaching in many parts of the world. Through this mode of learning, individual as well group level understandings can be increased.

Material and Methods

Research Design

In this study descriptive research design has been used and quantitative method was used to gather the information. Such type of studies, related to topic and descriptive nature have also been conducted by:

Research Instrument

Researcher developed two questionnaires separately for teachers and students to collect the data. Respondent answered each item using a 5-point rating scale, separately for Teachers and students. Quantitative method of research was adopted due to compiling of data from various Secondary Level.

Analysis to find out the effect of brain-based learning on the competency of innovation of students

Analysis has been done from the available research data attained by applying a simple linear regression method in the SPSS version 24.

Results and Discussion

Table 1

Model Summary of 'Effect of BBL on the competency of innovation of students'

Model Summary					Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	0.129[a]	0.017	0.005	15.55902	0.017	1.459	1	86	0.230

Table 1 states that, there is 1.7% variation in competency of innovation of students due to brain based learning of teachers.

Table 2
An ANOVA - Effect of BBL on the competency of innovation of students

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	353.218	1	353.218	1.459	0.230[b]
Residual	20819.146	87	242.083		
Total	21172.364	88			

Table 2 states that the F-value is insignificant for 'Effect of brain-based learning on the competency of innovation'. As the consequences of ANOVA displayed F (1,87) = 1.459, p (0.230*)* > 0.05), it is insignificant. It was found that competency of innovation' is insignificant.

Table 3
Values of Coefficients of effect of BBL on the competency of innovation of students

Coefficients					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**		
	B	**Std. Error**	**Beta**	***t***	**53 *Sig.***
(Constant)	53.561	10.134		5.285	0.00
Overall Total SUM TeachersP1	0.168	0.139	0.129	1.208	0.230

Y= 53.561 +0.168 *

Table 3 states that, t-test value is t (5.285), P (0.000 < 0.01) , which is noteworthy as P (0.230) < 0.01. Based on beta coefficients is, 0.168%, as well as value of t is likewise noteworthy. So H_1 is accepted i.e. there is significant effects of brain-based learning on the competency of innovation of students.

This study focus on the brain based teaching and learning. This equally focus on the teaching methods adopted by teachers and its effects on students. Further, this encompasses the competency of innovation among students and the effect of brain based learning on the competency of innovation in students. According to the results, teachers were unaware about the brain based teaching methods, therefore, its effect on the competency of innovation of students were also not observed and was insignificant.

Conclusion

It was concluded on the basis of results of all variables, Coefficients, Annova test and analysis of all other data of this study, it has been found that, as the Teachers are not aware about BBL and their perception is not clear and are unfamiliar, therefore, effect of BBL on the competency of innovation of students was also not observed.

Recommendations

- Teachers should be imparted training, related to brain based learning at different levels by educational administration authorities. Educational seminars and workshops should be organized as an interim measure to fill the gap of knowledge in the teachers existing deficiency about the brain based teaching. Duration of training may be sufficient to fulfil the requirements of training objectives and not only to make a paper effort.
- Curriculum may be revised for educational degrees to accumulate their existing knowledge of teaching. Higher Education Commission and Text Book boards may take special measures to include the curriculum of brain based teaching for teachers and learning for students. Teachers may be emphasized to enhance their scope and attitude for teaching.

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