

## Effects of BBL to Anlyze Competency and Innovation of Studetnts at Secondary Level : A Quan- Qual Study

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### ABSTRACT

Brain-based learning is a set of principles in which the learning process is based on knowledge about brain structure, its function. Brain based learning is advanced technique in modern world but the same is not familiar in Pakistan. Research has been conducted to find out “Brain-based learning and competency in innovation of students at secondary level”. Objectives of the study were; to investigate competency in brain-based learning of students; and to find students competency in innovation. Researcher used QUAN-qual mixed methods design and survey technique was used to collect data for quantitative and interview technique for qualitative data. Population of this study was teachers of Secondary Schools of Tehsil Lawa. Random Sampling Technique was used. Results show that brain based learning was considered as an effective method of teaching by teachers. It is recommended that concerned authorities must take necessary measures to impart quality training to teachers. Furthermore, material should be included in syllabus about this technique and appointment method may be improved accordingly.

**Keywords:** Brain Based Learning, Competency,

### INTRODUCTION

Providing the right type of education, necessary care and opportunities for creative appearance stimulates, motivates and sharpens the creative mind. Superior teachers concerned with improving student achievement are always looking for different ways to do so.

Since imagination is considered as a fundamental quality in training. It is very well shown in homeroom. Treffinger (1985) contended that a feasible objective

of training is to invigorate understudies' inventive reasoning and critical thinking. To cultivate inventiveness, one should give inspiration, practice, association, cooperation with educators and different understudies, and construction (Torrance, 1986). Inventive examples incorporate the cycles of looking at, differentiating, envisioning, deciphering, and critical thinking (Scholl, 2005).

Essential components in imaginative and critical thinking exercises likewise need to support inventiveness in an assortment of instructing that advances numerous choices for handling, securing and communicating information, so all understudies can successfully address their issues (Tomlinson, 1995). Mind-based learning is the dynamic commitment of activity procedures in view of standards of gaining and conduct got from neuroscience. This hypothesis of learning depends on the design and capability of the cerebrum. However long the mind isn't hindered from doing its not unexpected cycles, learning will proceed. Cerebrum based learning has brought forth another discipline currently referred to by some as instructive neuroscience, or by others as psyche, mind, and schooling science (Sosa, 2011). Notwithstanding the assortment of showing techniques in the schooling system, less showing strategies have zeroed in on the design and capability of the cerebrum. The human cerebrum is a mind boggling framework that is as yet utilized in school as a straightforward gadget for putting away and recovering data (Hoiland, 2005).

By using the BBL method to learn, students can improve their math and relational abilities (Sukoco, 2016). BBL assists understudies with learning things that matter (Gozuyesil & Dikici, 2014). BBL is understudy focused discovering that further develops understudies' reasoning abilities and perceives that each student learns in a different way (Duman, 2006). Such learning styles are named because students learn in different ways based not only on how they learn, but also on how smart they are. Students are given the chance to think about their methods so they can understand that the knowledge they've learned can be shown in open learning (Degen, 2014).

The Brain-Based Learning method should be used in the classroom with all of its parts, such as orchestrated immersion, relaxed mindfulness, and processing activation. Orchestrated immersion is a situation in which students can find patterns and solve problems in their own way, so that they remember what they have learned in the long run. The learning activities should help students develop their thinking skills so they can build their knowledge (Hasliza & Wan Emilin, 2012).

### **Objectives of the Study**

- i. To investigate competency in brain-based learning of students
- ii. To find students competency in innovation

### **Significance of the Study**

This will be beneficial for education system at secondary level in particular and other

educational institutions in general, for considering the present level, regarding implementing of brain based learning. Furthermore, this will also be beneficial for the policy makers of school education department regarding the brain based learning as a subject.

## REVIEW OF LITERATURE

### Brain Based Learning

Then again, a few scientists said that BBL is certainly not a straightforward undertaking since it is a finished method for showing in view of how the mind normally learns (Lances & Wilson, 2002). The two specialists likewise found that individuals can learn all alone by utilizing a bunch of learning methodologies that expand on the manner in which individuals normally accumulate data from their environmental factors (Lances & Wilson, 2002). Erlauer, a specialist, characterized cerebrum based learning in 2003. He said that BBL can be considered discovering that is well disposed to ability and is conceivable when it works with both aggregate insight and guidance. Enact. Which makes it simple for individuals to find out about their environmental factors.

Similarly, BBL is a legitimate arrangement of philosophical and neuro scientific establishments that are important for brain compatible learning. It was characterized. It was tracked down that is a devoted behaviorist whose thoughts regarding mind based learning spread the word. He said that BBL is "discovering that occurs through how every individual's mind is normally made. It is a multidisciplinary methodology that depends on how every individual's cerebrum is constructed and the way in which it works" (Jensen, 2005). A few current thoughts regarding mind based learning are like more seasoned thoughts, and this is on the grounds that this learning hypothesis depends on the possibility that training will keep this inclination in the event that understanding is definitely not an ordinary piece of it. The issue shouldn't be visible.

Teachers who are happy often use activities. Following the way they have always taught in their own classrooms. The most common old-fashioned things that teachers used to do were to tell students to take notes orally, to involve students as little as possible in making the class schedule, and to present new ideas with both new and old students. It was without tying the ideas together in any way. Teaching is a part of learning.

### Mind Based Learning

Researchers (Clement & Lovat, 2012) have said that neuroscience is the foundation of education and information about the links between neuroscience and education has been used to make learning better. By the 1990s, people paid more attention to and accepted mind-based learning, and degrees in the mind, brain and education were linked to the field of cognitive science. Journals and books that have been reviewed by experts. Students got better at critical thinking by putting together new

ideas with information from neuroscience. They also used multimodal learning and environmental stimulation to pay more attention in class and take part more (Dijon, 2014).

There were two different fields of neuroscience research and instructions before the trans disciplinary development. At this moment, both fields are much related with each other. Educators and researchers explored this amalgamation and defined it more easy to understand for incorporation of new knowledge to deal with issues in the homeroom and for the overall training (Tokuhamma-Espinosa, 2011). According to Rees et al., (2016) educators and researchers need to be in cooperation with each other. Individuals as experts from different areas must work together in coordination for mutual development and good results.

Vyas & Vashishtha (2013) said that mind-based learning makes a difference students do better in school, and Urick and Bowers (2014) said that teachers' perceptions of students innovative skills are a direct indicator and influence of those skills. As leaders of learning in the classroom, teachers need to have skills that improve learning and achievement. For these skills, teachers need to pay attention to how they teach (Sisman, 2016) and know what they need to do to help the school reach its goals in terms of innovation. Relevant studies are looked at to find out what teachers think of mind-based learning and how it affects how well their students do in school.

The basic role of mind-based theory is to help us understand how the mind works on its own. Many cognitive psychologists have given thought-provoking explanations of the idea of mind-based learning theory. They have done this in different ways. All of the following parts of brain-based learning are based on the natural strengths and weaknesses of the brain. The definition that came out of Seth's work in 2000 was that learning only happens when the brain is not stopped from developing normally and when it is properly organized and helped along. BBL is the name for this change.

## **Conceptual Learning**

Conceptual learning, like brain-based learning, helped to replace rote learning. BBL is an operative learning method that improves the learner's awareness by using the brain's natural abilities and helps people strengthen their spatial memories can do. It was also found that BBL is seen as a collection of controversial ideas that shape how we think about reason in the context of reform (Karen, 2005).

It was found that cerebrum based learning is important for various approaches to educating and learning, so each person has a different way of learning on the coast of BBL. BBL theory is what was found to be the most common way people learn and remember new information (Jasinski, 2008). It can also mean how brain-based learning helps people adapt to the real complexity of learning, growing, and getting a good grasp of things. With this background, the learner can easily

understand the problems and figure out what the new concepts mean. Melton's research on mind-based learning, which he did in 2009, was a big part of how this explanation came to be.

## METHODOLOGY

### Research Design

Quan-qual research approach and mixed methods research design was used. Survey technique for quantitative and interview method for qualitative data was used to collect the data.

### Population of the Study

The population in research was all the teachers of Secondary Schools of Tehsil Lawa. Total number of schools including male and female were eighteen (18). Total number of secondary school teachers was one hundred ten (110) of Tehsil Lawa. Random Sampling Technique was used to select the sample of 88 teachers. For qualitative results purpose 10% of data was collected through interviews which was 9.

### Sampling Technique and Sample Size

Random sampling technique was used to draw the sample size of the study for quantitative data and 10% out of total sample size of population (88) was selected for interview to collect data for qualitative results, which is 9.

### Research Instrument

- i. Quantitative Approach  
Researcher developed questionnaire for teachers to collect the data.

- ii. Qualitative Approach  
Researcher developed interview Performa to conduct interviews form teachers.

### Data Collection

For quantitative approach, data was collected through self-developed questionnaire, from teachers of the secondary schools of Tehsil Lawa. For qualitative approach, interviews were conducted form teachers of secondary schools of Tehsil Lawa.

### Data Analysis

For quantitative purpose, data was analyzed through frequency, percentage, mean and SD by using SPSS version 24. For qualitative purpose, data was analyzed through themes.

## RESULTS

### Quantitative Results

Table 1: *Results of Brain-Based Learning Of Students*

|                               |          | Low  | Average | High | Very High | Mode | SD   |
|-------------------------------|----------|------|---------|------|-----------|------|------|
| All Learning is Physiological | <i>f</i> | 42   | 9       | 19   | 18        | 1    | 1.22 |
|                               | <i>%</i> | 47.7 | 10.2    | 21.6 | 20.5      |      |      |

|                                                                    |          |      |      |      |      |   |      |
|--------------------------------------------------------------------|----------|------|------|------|------|---|------|
| The Brain/Mind is Social                                           | <i>f</i> | 22   | 22   | 29   | 15   | 3 | 1.04 |
|                                                                    | %        | 25   | 25   | 33   | 17   |   |      |
| The search for Meaning Occurs through Patterning                   | <i>f</i> | 25   | 25   | 17   | 21   | 1 | 1.13 |
|                                                                    | %        | 28.4 | 28.4 | 19.3 | 23.9 |   |      |
| The Brain/ Mind Processes Parts and Wholes Simultaneously          | <i>f</i> | 25   | 25   | 23   | 15   | 1 | 1.06 |
|                                                                    | %        | 28.4 | 28.4 | 26.1 | 17   |   |      |
| Learning involves both focused attention and peripheral perception | <i>f</i> | 25   | 25   | 23   | 15   | 1 | 1.06 |
|                                                                    | %        | 28.4 | 28.4 | 26.1 | 17   |   |      |
| Learning is Developmental                                          | <i>f</i> | 8    | 38   | 22   | 20   | 2 | 0.93 |
|                                                                    | %        | 9.1  | 43.2 | 25   | 22.7 |   |      |

Table 1 shows the overall total response of respondent teachers indicator wise. Highest response of indicator 1 is 'Low', ( $f=42$ , 47.7%), indicator 2 is 'High' ( $f=29$ , 33%), indicator 3 is 'Low' ( $f=25$ , 28.4%), indicator 4 is 'Low' ( $f=25$ , 28.4%), indicator 5 is 'High' ( $f=25$ , 28.4%), indicator 6 is 'Average' ( $f=38$ , 43.2%).

Keeping in view the results, it has been analyzed that competency in brain-based learning of students at secondary school level was 'Low' and the teachers were unaware about the brain based learning.

**Table 2:** *Overall Results - Brain-Based Learning Of Students*

|          | Low   | Average | High  | Very High | Mode | SD   |
|----------|-------|---------|-------|-----------|------|------|
| <i>f</i> | 147   | 144     | 133   | 104       | 9    | 6.44 |
| %        | 27.84 | 27.27   | 25.18 | 19.69     |      |      |

Table 2 shows the overall total response of respondent teachers. Most of the teaching staff response was 'Low', ( $n=147$ , 27.84%) out of total ( $n=528$ , 100%). After that, on the second number of response form teaching staff received was 'Average' ( $n=144$ , 27.27%) out of total ( $n=528$ , 100%). On third position response received, from teachers, was 'High', ( $n=133$ , 25.18%) out of total ( $n=528$ , 100%). In the last response from teaching staff was 'Very High' and that has the lowest figure, ( $n=104$ , 19.69%) out of total ( $n=528$ , 100%).

Keeping in view the results, it has been analyzed that competency in brain-based learning of students at secondary school level was 'Low' and the teachers were unaware about the brain based teaching methods.

**Table 3:** *Results of Competency In Innovation Of Students*

| Indicators  | Results  |         |      |           |      |    |
|-------------|----------|---------|------|-----------|------|----|
|             | Low      | Average | High | Very High | Mode | SD |
| Creativity  | <i>f</i> | 117     | 4    | 121       | 0    | 3  |
|             | %        | 48.3    | 1.7  | 50        | 0    |    |
| Group Study | <i>f</i> | 42      | 83   | 117       | 0    | 3  |
|             | %        | 17.4    | 34.3 | 48.3      |      |    |

|                   |          |      |      |      |   |   |      |
|-------------------|----------|------|------|------|---|---|------|
| Critical Thinking | <i>f</i> | 116  | 7    | 119  | 0 | 3 | 0.98 |
|                   | %        | 47.9 | 2.9  | 49.2 |   |   |      |
| Initiative        | <i>f</i> | 78   | 71   | 93   | 0 | 3 | 0.84 |
|                   | %        | 32.2 | 29.3 | 38.4 | 0 |   |      |

Table 3 presents that in “Creativity” out of 242 students, 117 (48.3%) students responded it low, 4 (1.7%) students responded it on average, 121 (50%) students responded on high, and 0 (0%) responded it very high for ‘Creativity’. However, overall, the majority of responses fall into the high category. It means competency of innovation amongst students’ is at high level in this indicator. The SD value is (0.99).

Table 3 presents that in “Group Study” out of 242 students, 42 (17.4%) students responded it low, 83 (34.3%) students responded it on average, 117 (48.3%) students responded on high, and 0 (0%) responded it very high for ‘Group Study’. However, overall, the majority of responses fall into the high category. It means competency of innovation amongst students’ is at high level in this indicator. The SD value is (0.75).

Table 3 presents that “Critical Thinking” out of 242 students, 116 (47.9%) students responded it low, 7 (2.9%) students responded it on average, 119 (49.2%) students responded on high, and 0 (0%) responded it very high for ‘Critical Thinking’. However, overall, the majority of responses fall into the high category. It means competency of innovation amongst students’ is at high level in this indicator. The SD value is (0.98).

Table 3 presents that “Initiative” out of 242 students, 78 (32.2%) students responded it low, 71 (29.3%) students responded it on average, 93 (38.4%) students responded on high, and 0 (0%) responded it very high for ‘Initiative’. However, overall, the majority of responses fall into the high category. It means competency of innovation amongst students’ is at high level in this indicator. The SD value is (0.84).

It is concluded from the results of Table 3 that competency of innovation amongst students’ is at high level. Students’ competency of innovation was observed in this objective.

## Qualitative Results

**Table 4:** *Summary of Results of Interviews*

| Objective                                                           |     | Theme                                            |  | Questions & Answers | n | Response  |
|---------------------------------------------------------------------|-----|--------------------------------------------------|--|---------------------|---|-----------|
| I                                                                   | i   | All Learning is Physiological                    |  | Number of Questions | 2 | 9 Low     |
| To investigate the teachers’ perceptions about brain-based learning | ii  | The Brain/Mind is Social                         |  | Number of Questions | 2 | 9 Average |
|                                                                     | iii | The search for Meaning Occurs through Patterning |  | Number of Questions | 2 | 9 Low     |

|                                                                            |     |                                                                    |                       |
|----------------------------------------------------------------------------|-----|--------------------------------------------------------------------|-----------------------|
|                                                                            | iv  | The Brain/ Mind Processes Parts and Wholes Simultaneously          | Number of 2 9 Low     |
|                                                                            | v   | Learning involves both focused attention and peripheral perception | Questions 2 9 High    |
|                                                                            | vi  | Learning is Developmental                                          | Questions 2 9 Low     |
| II                                                                         | i   | Creativity                                                         | Questions 2 9 High    |
| To find out the perception about competency of innovation amongst students | ii  | Group Study                                                        | Questions 2 9 Low     |
|                                                                            | iii | Critical Thinking                                                  | Questions 2 9 High    |
|                                                                            | iv  | Initiative                                                         | Questions 2 9 Average |

## FINDINGS, CONCLUSION AND RECOMMENDATION

### Findings

- i) Findings of first objective, in the light of data analyzed by researcher, summarised and overall sum of categorized response by Teachers reveals that, teaching staff is unaware about the brain based teaching methods at secondary level.
- ii) Findings of second objective, in the light of data analyzed by researcher, summarised and overall sum of categorized response by students, it has been found that, the competency of innovation amongst students is Positive.

### Conclusion

- i) It was concluded on the basis of results, response of respondent teachers that teaching staff is unaware about the brain based teaching methods at secondary level.
- ii) Basing on the research and overall results and analysis, it was concluded that the competency of innovation amongst students is Positive.

### Recommendations

- i) Those teachers who are lacking knowledge about brain BBL may be identified by higher academic authorities through various training stages during the service and they must be trained about the theoretical aspects of BBL principles.
- ii) Brain base learning may be imparted to teaching staff at various levels by different training institutes. Workshops and seminars are the alternative and suitable solutions to enhance the knowledge of existing staff and to highlight the awareness for about the brain based teaching.
- iii) Revision of Curriculum is one of the suggestion that may be incorporated by HEC and respective provinces Text Book boards by including the material

related with brain based learning and teaching.

## REFERENCES

- Al-Khateeb, O. (2020). The Role Which Faculty Members at Al-Hussein Bin Talal University Have the Principles of Brain-Based Learning Theory. *Journal of Education and Practice*, 11(5), 38-48.
- Al-Balushi, K. A. & Al-Balushi, S. M. (2018). Effectiveness of Brain-Based Learning for Grade Eight Students' Direct and Postponed Retention in Science. *International Journal of Instruction*, 11(3), 525-538.
- Adiansha, A. A., Sumantri, M. S., Makmuri. & Asriyadin. (2017). The Effect of Brain Based Learning Model and Creative Thinking about the Ability of Mathematics Concept of Elementary Students. *American Journal of Educational Research*, 5(12), 1195-1199.
- Balyer, A. (2012). Transformational leadership behaviors of school principals: A qualitative research based on teachers' perceptions. *International Online Journal of Educational Sciences*, 4(3), 581-591.
- Degen, R. J. (2014). Brain-based learning: The neurological findings about the human brain that every teacher should know to be effective. *Amity Global Business Review*, 9(1), 15-23.
- Ferrari, M. (2011). What can neuroscience bring to education? *Educational Philosophy and Theory*, 43(1), 31-36.
- Gurley, D., Anast-May, L., O'Neal, M., & Dozier, R. (2016). Principal instructional leadership behaviors: teachers vs. self-perceptions. *NCPEA International Journal of Educational Journal Leadership Preparation*, 11(1), 140-155.
- Handayani, B, S. & Corebima, A, D. (2017). Model Brain Based Learning (BBL) and Whole Brain Teaching (WBT) in Learning. *International Journal of Science and Applied Science: Conference Series*, 1(2), 153-161.
- Kartikaningtyas, V., Kusmayadi, T, A. & Riyadi, R. (2018). The Effect Of Brain Based Learning With Contextual Approach Viewed From Adversity Quotient. *Journal of Physics: Conference Series*, 1022(1), 12-14
- Padron, Y., & Waxman, H. (2017). Investigating principals' knowledge and perceptions of second language programs for English language learners. *International Journal of Educational Leadership and Management*, 4(2), 127-146.
- Rehman, U,A., Malik, A, Mushtaq., Hussain, S., Iqbal, Z., & Rauf, M. (2011). Effectiveness of Brain-Based Learning Theory on Secondary Level Students of Urban Areas. *Journal of Managerial Sciences*, 6(1), 133-22.
- Şişman, M. (2016). Factors related to instructional leadership perception and effect of instructional leadership on organizational variables: A meta-analysis. *Kuram ve Uygulamada Eğitim Bilimleri/Educational Sciences*:

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*Theory & Practice*, 16(5), 1761

1787. <https://doi.org/10.12738/estp.2016.5.0172>

Tokuhamas-Espinosa, T. (2012). What neuroscience says about personalized learning.

*Educational Leadership*, 69(5), 1-4.

Urlick, A., & Bowers, A. J. (2014). The impact of principal perception on student achievement climate and achievement in high school: How does it measure up?

*Journal of School Leadership*, 24(2), 386-414.

Vyas, K., & Vashishtha, K. C. (2013). Effectiveness of teaching based on brain research with reference to academic achievement of secondary school students. *International Journal of Students Research in Technology & Management*, 1(4), 383-397.

Zadina, J. N. (2015). The emerging role of educational neuroscience in education reform. *Psicologia Educativa*, 21(2), 71-77.