

Vol 3 Issue 12 June 2014

ISSN No :2231-5063

International Multidisciplinary
Research Journal

Golden Research
Thoughts

Chief Editor
Dr.Tukaram Narayan Shinde

Publisher
Mrs.Laxmi Ashok Yakkaldevi

Associate Editor
Dr.Rajani Dalvi

Honorary
Mr.Ashok Yakkaldevi

Welcome to GRT

RNI MAHMUL/2011/38595

ISSN No.2231-5063

Golden Research Thoughts Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board. Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

International Advisory Board

Flávio de São Pedro Filho Federal University of Rondonia, Brazil	Mohammad Hailat Dept. of Mathematical Sciences, University of South Carolina Aiken	Hasan Baktir English Language and Literature Department, Kayseri
Kamani Perera Regional Center For Strategic Studies, Sri Lanka	Abdullah Sabbagh Engineering Studies, Sydney	Ghayoor Abbas Chotana Dept of Chemistry, Lahore University of Management Sciences[PK]
Janaki Sinnasamy Librarian, University of Malaya	Catalina Neculai University of Coventry, UK	Anna Maria Constantinovici AL. I. Cuza University, Romania
Romona Mihaila Spiru Haret University, Romania	Ecaterina Patrascu Spiru Haret University, Bucharest	Horia Patrascu Spiru Haret University, Bucharest,Romania
Delia Serbescu Spiru Haret University, Bucharest, Romania	Loredana Bosca Spiru Haret University, Romania	Ilie Pinteau, Spiru Haret University, Romania
Anurag Misra DBS College, Kanpur	Fabricio Moraes de Almeida Federal University of Rondonia, Brazil	Xiaohua Yang PhD, USA
Titus PopPhD, Partium Christian University, Oradea,Romania	George - Calin SERITAN Faculty of Philosophy and Socio-Political Sciences AL. I. Cuza University, IasiMore

Editorial Board

Pratap Vyamktrao Naikwade ASP College Devrukh,Ratnagiri,MS India	Iresh Swami Ex - VC. Solapur University, Solapur	Rajendra Shendge Director, B.C.U.D. Solapur University, Solapur
R. R. Patil Head Geology Department Solapur University,Solapur	N.S. Dhaygude Ex. Prin. Dayanand College, Solapur	R. R. Yaliker Director Managment Institute, Solapur
Rama Bhosale Prin. and Jt. Director Higher Education, Panvel	Narendra Kadu Jt. Director Higher Education, Pune	Umesh Rajderkar Head Humanities & Social Science YCMOU,Nashik
Salve R. N. Department of Sociology, Shivaji University,Kolhapur	K. M. Bhandarkar Praful Patel College of Education, Gondia	S. R. Pandya Head Education Dept. Mumbai University, Mumbai
Govind P. Shinde Bharati Vidyapeeth School of Distance Education Center, Navi Mumbai	Sonal Singh Vikram University, Ujjain	Alka Darshan Shrivastava Shaskiya Snatkottar Mahavidyalaya, Dhar
Chakane Sanjay Dnyaneshwar Arts, Science & Commerce College, Indapur, Pune	G. P. Patankar S. D. M. Degree College, Honavar, Karnataka	Rahul Shriram Sudke Devi Ahilya Vishwavidyalaya, Indore
Awadhesh Kumar Shirotriya Secretary,Play India Play,Meerut(U.P.)	Maj. S. Bakhtiar Choudhary Director,Hyderabad AP India.	S.KANNAN Annamalai University,TN
	S.Parvathi Devi Ph.D.-University of Allahabad	Satish Kumar Kalhotra Maulana Azad National Urdu University
	Sonal Singh, Vikram University, Ujjain	

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.aygrt.isrj.net



GRT COMPARISON OF DEVELOPMENT OF COGNITIVE BELIEFS AND BRAIN HEMISPHERICITY DOMINANCE AMONGST DIFFERENT BRANCHES OF ENGINEERING STUDENTS OF KARJAT AND NEW MUMBAI DISTRICT.

¹Jitendra Pendharkar , ²Sheetal Thakare, ³Mahesh Warang and ⁴Anushri Tambe

¹ K J Somaiya College of Science and Commerce, Vidyavihar, Mumbai.

² Lokmanya Tilak College of Engineering, New Mumbai.

^{3,4} Y T Institute of Engineering and Technology, Karjat.

Abstract:-Novice or beginner sees the content of science as isolated pieces of information handed down by authority and disconnected from the world around them. Every learner do carry beliefs about learning a given technical subject and Novice like beliefs affect their learning. It is expected that after going through training under a given course their beliefs should turn in to Expert like beliefs.

This survey intended to compare the change in the Cognitive beliefs amongst engineering students if at all, of two different district that is to say New Mumbai and Karjat district, by well known Maryland Physics Expectancy test (MPEX test). Also their brain Hemisphericity dominance was observed at entry and exit level with the help of Hemisphericity Dominance Test (HDT). There is great difference in the development of these districts. In Mumbai there are many research institutes are available and learner is well informed and research facilities are easily available while Karjat district is yet underdeveloped. This research is an attempt to find change in cognitive beliefs and Hemisphericity dominance present due to this amongst students.

Keywords:Cognitive beliefs, Hemisphericity Dominance.

INTRODUCTION :-

Students believe certain things about what science is and how one goes on learning selected discipline. If one interview lot of people, one finds that their beliefs lie on the scale of Novice to Expert. This research used a survey method with the help of MPEX test (5,6) which can measure where on this scale learners belief lies. It is expected that learners beliefs should be more refined that is more Expert like after completion of study. Physics is the subject used for reference as it is the common subject and the concepts of this subject are used in all the branches at various levels. From the set of questions and from the expert table developed by team (5), one can measure development of six cognitive beliefs. They are as follows:

D1: Independence. (Beliefs about learning physics- Whether it means receiving information or involves an active process of reconstructing one's own understanding).

D2: Coherence. (Beliefs about the structure of physics knowledge- As a collection of isolated pieces, or as a single coherent system)

D3: Concepts. (Beliefs about the content of physics knowledge- As formulas or as concepts that underlie the formulas)

D4: Reality link. (Beliefs about the connection between physics and reality- Whether physics is related to experiences outside the classroom or whether it is useful to think them together)

D5: Mathematics link. (Beliefs about the role of mathematics in learning physics- Whether the mathematical formulation is just to calculate numbers or is used as a way of representing information about physical phenomena)

D6: Effort. (Beliefs about the kind of activities and type of work necessary to make sense out of physics- Whether they expects to think carefully and evaluate what they are doing based on available materials and feedback or not.)

From clusters or domains, one can extract whether their answers were favorable or unfavorable for particular domain

Comparison Of Development Of Cognitive Beliefs And Brain Hemisphericity Dominance.....

that is for a particular cognitive belief, in reference to responses given by experts(5,6). One can gauge whether current status of students are more towards experts or towards novice like. It can be clearly seen that which particular domain was unfavorable and how much. Accordingly it is possible to suggest particular remedy in the novice like belief.

HDT: Hemisphere Dominance test: (7) This is established test comprised of 50 questions with two options. Option A indicates right hemisphere dominance, and option B indicates left hemisphere dominance while selecting both options indicates the integrated hemisphere that is a person is using both hemispheres with equal intensity. It is very important to know the overall distribution of hemisphere dominance amongst students for designing task of teaching and learning.

Definition of Hemisphericity: (7) It is the bias in thinking orientation, behavioral style, and personality resulting from the inherent laterality of one's sole Executive system within the asymmetric bilateral brain. Thus, depending upon which brain side "the one and only you" inherently is located, one is either a left or a right brain oriented person.

Left Hemisphere: This side of brain is the dominant hemisphere where language and speech are produced. It concerns with logical and analytic skills. We will term it as B.

Right Hemisphere: this side of brain is initial receiver of information. It concerns with artistic or creative abilities. These peoples usually want simple answers and prefer to think holistically.

In general it is important for instructor to have knowledge of brain Hemisphericity dominance amongst students to develop learning experiences for students.

One of the arguments that brain researchers make is that science or technical subjects learning emphasizes and favors left brain learning over right brain learning, as a result it is difficult for right brain Hemisphericity dominance person to develop expert like beliefs in such subject.

Co-relation between cognitive beliefs and brain Hemisphericity was already worked out (1) and found that the cognitive beliefs are Novice like and it may be due to learners are almost showed right Hemisphericity dominance. A lot of research has been done even on science students with the help of these tests (2,3,4) and researchers found similar observation on learners of pure science also at undergraduate levels.

In this survey the difference in cognitive beliefs and brain Hemisphericity dominance is observed amongst students of various branches studying at different Institute at different district. The educative, social environment of these districts is totally different. Hence change if any may be observed.

METHODOLOGY AND TOOLS USED:

The sample selected for this survey was students of Engineering from Karjat and New Mumbai District. The learners of various branches like Mechanical, Electronics and Electronic and telecommunication from each institute from respective district were observed. The cognitive beliefs were measured with the help of MPEX test (5,6) and Brain Hemisphericity was measured by HDT (7).

D's represents domains corresponding to each cognitive belief, as mentioned in the Introduction. If the favorable response is above 80% the said domain may be called as Expert like (5,6). (The addition of favorable and Unfavorable responses may not turn out to be 100% as some students may not produced any responses for that particular domain)

For HDT, A represents percentage of students having right brain dominancy while B represents percentage of students with left brain dominancy. I represent percentage of students with integrated Hemisphericity that is these students can use both the hemispheres with same efficiency.

OBSERVATIONS:

D's: Domain representing Cognitive beliefs (5,6) Also refer Introduction.

F: % of favorable response, U: % of unfavorable response.

A: represents percentage of students having right Hemisphere dominancy.

B: represents percentage of students having left Hemisphere dominancy.

I: represents percentage of students having integrated Hemisphere dominancy.

F Y: Firs year students, B E: Final year students, perusing last year of Engineering.

Total numbers of Engineering students observed from Karjat district were 193.

Total numbers of Engineering students observed from New Mumbai district were 173.

New Mumbai Region										
Branch	Year	D1 F/U %	D2 F/U%	D3 F/U%	D4 F/U%	D5 F/U%	D6 F/U%	A %	B %	I %
Mechanical	F Y	39/41	15/70	35/57	57/15	37/48	72/7	80	13	7
	BE	33/52	14/74	33/52	45/33	33/52	74/12	76	17	7
ETC	F Y	39/41	15/70	35/57	57/15	37/48	72/7	80	13	7
	BE	35/40	19/58	26/63	37/49	33/58	25/8	63	33	4
Electronics	F Y	39/41	15/70	35/57	57/15	37/48	72/7	80	13	7
	BE	31/57	26/62	24/62	52/33	21/60	62/21	74	19	7

Comparison Of Development Of Cognitive Beliefs And Brain Hemisphericity Dominance.....

Karjat Region										
Branch	Year	D1 F/U %	D2 F/U %	D3 F/U %	D4 F/U %	D5 F/U %	D6 F/U %	A %	B %	I %
Mechanical	F Y	37/59	22/70	39/41	41/28	35/59	59/20	70	24	6
	BE	25/57	5/86	9/70	34/23	27/66	80/7	70	20	10
ETC	F Y	37/59	22/70	39/41	41/28	35/59	59/20	70	24	6
	BE	38/54	19/78	16/51	43/27	35/59	76/11	70	14	16
Electronics	F Y	37/59	22/70	39/41	41/28	35/59	59/20	70	24	6
	BE	33/55	14/70	27/64	42/30	29/50	86/8	76	15	9

ANALYSIS AND RESULT:

Development of cognitive beliefs with reference to MPEX test:

D1: the cognitive belief representing Independence, which is related to development of own understanding is found to be Novice like for the students from both the districts. Also there is hardly any development amongst students of all the branches discussed at the entry as well as at the exit level.

D2: the cognitive belief representing Coherence, which related to the forming holistic picture of subject instead of treating it as a collection isolated pieces of information was found to be highly Novice like for the students from both the districts. Also it is found to be more Novice like at the finale year than at the entry level.

D3: the cognitive belief representing Concept, which is related to the understanding of concept lying within formulae is Novice like for the students from both the districts, however for the students of New Mumbai region it was found to be little better than that of students from karjat region. Also it was found to be more Novice like at the finale year.

D4: the cognitive belief representing Reality link, which indicates perception of laws with reality surrounded was found to be Novice like for the students from both the districts. Also it was found to be similarly Novice like amongst students of all branches.

D5: the cognitive belief representing Mathematics link, which indicates consideration of equations, formulae as a way to represent information, observation was found to be Novice like for the students from both the districts. Also it was found to be similarly Novice like amongst students of all branches.

D6: the cognitive belief representing Effort, which represents Beliefs about the kind of activities and type of work necessary to make sense out of physics-Whether they expects to think carefully and evaluate what they are doing based on available materials and feedback or not, was found to be Novice like at the entry level but found to be Expert like at the exit level, for the students from karjat region. But for the students from New Mumbai region there was comparatively less improvement in it.

The percentage of students with right Hemisphericity dominance was found to be more than other possibilities.

Also the percentage of students having left Hemisphericity decreases with years but there is little increase in integrated hemisphere dominance for students of Karjat region. However for students from New Mumbai region percentage of students with right Hemisphericity decreases with years and percentage of students with left Hemisphericity increases.

Thus it was observed that the cognitive beliefs of learners at various branches are Novice like without any development with their years of training, except domain of Effort, for both the districts.

Students are from the group of Right Hemisphericity dominance and hence different learning instructions are expected for the learners.

Further, study of learning styles are recommended, and also use of demonstrations experiments with ICT is also recommended.

BIBLIOGRAPHY:

- Best J & Khan K (2006) Research in education, New Delhi, Prentice hall of India, Eastern Economy Edition (ninth edition).
- Cohen Louis and Manion Lawrence (1994) Research methods in education London, Croom Helm Ltd. (Fourth edition).
- Garret Henry (2006) Statistics in Psychology and education, Delhi, Surjeet publications (first Indian reprint).
- Linn R and Miller M (2008) Measurement and assessment in teaching, Delhi, Kindersley pvt. Ltd.(ninth edition).
- Venkataraman, D. (1996). Education and Hemisphericity. New Delhi: Reliance Publishing House.

REFERENCES:

- J. K. Pendharkar et al 'Review Of Research' Vol.1 Issue IX/June 2012, ISSN No: 2249-894X
- J K Pendharkar Hema Peese, International Journal of scientific research Vol 2/Issue 7/ July 2013.Issn No: 2277-8179 pp: 32-33.
- a Jitendra K Pendharkar, b M N Nyayate 'Golden Research Thoughts', Vol.I, Issue III/September 2011, ISSN No: 2231-

Comparison Of Development Of Cognitive Beliefs And Brain Hemisphericity Dominance.....

5063. PP: 200-205.

4. Veena Khilnani et al 'Indian streams research journal', Vol 2, Issue XI/ December 2012, ISSN No: 2230-7850. PP: 1-3.

5. Maryland Physics Expectancy Group: <http://www.physics.umd.edu/perg>

6. MPEX test tool: <http://www.physics.umd.edu/rgroups/ripe/perg/experts/mpex.htm>

7. Hemisphericity dominance test developed by D Venkataraman (1994).

Publish Research Article International Level Multidisciplinary Research Journal For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper, Summary of Research Project, Theses, Books and Book Review for publication, you will be pleased to know that our journals are

Associated and Indexed, India

- * International Scientific Journal Consortium
- * OPEN J-GATE

Associated and Indexed, USA

- EBSCO
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Database
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Golden Research Thoughts
258/34 Raviwar Peth Solapur-413005, Maharashtra
Contact-9595359435
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com
Website : www.aygrt.isrj.net