ECOLOGICAL INTELLIGENCE AMONG TEACHERS IN KERALA

Najmuddeen P.
Junior Research Fellow (UGC)
Mobile: 9847837143
E-mail: najmuddeen2013@gmail.com

Dr. Santhosh Areekkuzhiyil
Assistant Professor in Educational Psychology
Mobile: 9447847053
E-mail: santhoshclt@gmail.com

Government Brennen College of Teacher Education, Thalassery, Kannur, Kerala, 670101

Paper presented in the
UGC Sponsored National Seminar
On
Mapping New Terrain of
Environmental Psychology in 21st
Century Teacher Education

On 1-2 March 2017

1. Introduction

Life on earth is getting difficult day by day, because of man's interference in the ecology. In a continuous pursuit to make his life on earth more comfortable, he has been actually making it uncomfortable for himself as well as other species. Industrial revolution and technological advancements opened doors to a level of blind exploitation of natural resources which was not foreseen. As the saying goes, 'world can satisfy men's need, but not greed', the world started to show symptoms of the illness caused to it by human beings through extreme exploitation of its resources and disregard for other species and coming generations. Isolated voices were heard forewarning such dangers, but discarded by the majority. But, now people all over the world are aware of the dangers caused due to such thoughtless activities and are considering changes in their lives to make the world more sustainable.

Theories of Intelligence traditionally focused on human beings' ability to use cognitive abilities to solve problems. Majority of the intelligence theories and related tests focused on the cognitive aspects of human brain. Emotional, social and spiritual aspects of human personality were discounted as mere soft skills, which can supplement the major part of intelligence comprising of logical, reasoning and linguistic abilities. But the later part of twentieth century and the beginning of the twenty first century saw some revolutionary changes in this area. Goleman (1995) came up with the concept Emotional Intelligence (EI) and Emotional Quotient (EQ) and argued that it mattered twice as much as the traditional IQ (Intelligence Quotient). Gardner's (1983) Multiple Intelligences theory was another ground breaking discovery in the field of psychology. Later Goleman (2006) introduced Social Intelligence to argue that it is another important intelligence required for human survival.

In his thought-provoking book, Goleman (2009) defines *Ecological Intelligenceas individuals' ability to apply what they learn about their impact on the environment to make changes in their behaviour and live more sustainably*. He further argued that *Ecological Intelligence* is a concept that has wide implications in the field of education also. Because it examines topics at the intersection of environmental studies, economics, business, and psychology, and would enhance courses of study in any of these disciplines and provide a real-world, everyday context for exploring them. *Ecological Intelligence* examines the profound environmental, social, and health consequences of our everyday choices. Teachers, being social engineers, are supposed to cater to all these intelligences present in the students.

For that to happen, they themselves must possess a high level of these intelligences, which its proponents argue, are *not inherent, but acquired.*

2. Objectives of the Study

The objectives of the study are as given.

- To identify the level of Ecological Intelligence of teachers for the whole sample and relevant sub samples based on gender, age, educational qualifications, subject taught, length of teaching experience, training, type of management of institution and level of institution.
- To compare the mean scores of Ecological Intelligence of teachers for the relevant subsamples based on gender, age, educational qualifications, subject taught, length of teaching experience, training, type of management of institution and level of institution.

3. Methodology of the Study

3.1. Research Design

The study is an empirical one. Researchers used primary data for the study. The design of the study is Cross Sectional in nature. Normative Survey method was used for the study.

3.2. Sampling Design

The population for the study consisted of teachers teaching in different educational institutions ranging from Kindergarten to college level in the state of Kerala. Two districts from the state of Kerala have been selected for the collection of samples. From these districts, 300 samples were collected conveniently. Samples were collected from 37 schools, 4 arts and science colleges and 6 professional colleges. Due consideration has been given to gender, age, educational qualifications, subject taught, training, length of teaching experience, level of institution and type of management in order to make sub sample comparison meaningful.

3.3. Tools used for the study

Ecological Intelligence Inventory (Najmuddeen&Areekuzhiyil, 2013), has been used for the collection of data. The Inventory consisted of four parts. The first part was a general data sheet. The second part consisted of 5 point Likert type scale on the component of Ecological Intelligence, ‘awareness’. The third part also comprised of 5 point Likert type scale on the components of Ecological Intelligence ‘practice’ and ‘teaching’. The last part of the inventory consisted of multiple choice questions based on the component ‘deliberate

practice'. Content validity of the Ecological Intelligence Inventory was assured through field testing and modifications made based on expert opinion. The internal reliability of the Ecological intelligence Inventory for teachers was estimated by calculating Cronbach Alpha and Split-half co-efficient of correlation. The Cronbach Alpha is 0.85, which indicates that the Ecological Intelligence Inventory possesses high reliability. Split half co-efficient of correlation was found to be 0.94 which is also high.

3.4. Statistical Techniques used for Analysis

The collected data has been analysed descriptively and inferentially. Specific statistical techniques like One sample t-test, Independent sample t-test, One-way ANOVA, and Tukey's HSD test for post-hoc analysis has been carried out.

4. Results and Discussion

4.1. Descriptive Analyses

The statistical measures of Ecological Intelligence of Teachers showed that the distributions of scores are approximately normal. This indicates that the sample drawn for the study is fairly representative of the population. The obtained value of Kurtosis is 0.13 and Skewness is -0.067 for Ecological Intelligence. These values indicate that the distribution is symmetrical.

Table 1: Important Statistical Measures of Ecological Intelligence of Teachers

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Awareness	111.2	7.4	-0.34	-0.34
Practice	37.28	6.2	.024	-0.28
Educating	31.16	6.5	-0.44	-0.08
Deliberate Practice	7.35	2.5	.09	-0.13
Ecological Intelligence	***186.99***	***15.5***	***-0.067***	***0.13***

Further inferential analyses were carried out based on the values obtained from descriptive analyses of the collected data.

4.2. Level of Ecological Intelligence of Teachers

In order to identify the level of Ecological Intelligence of teachers, test of significant difference in single mean (One Sample t-test) has been employed. The mean score of Ecological Intelligence for the whole sample was found to be 186.99 with standard deviation 15.5. The average score of Ecological Intelligence Inventory is 142.5. The difference is

44.87, which is significant at 0.01 level (t = 49.839, P < 0.01). Hence it can be concluded that the teachers possess above average level of Ecological Intelligence.

Table 2: Level of Ecological Intelligence of Teachers

Sub samples	Sample Size	Mean	Standard Deviation	t Value	P value
Male	107	184.1	16	26.89	***<0.001****
Female	193	188.6	15	42.69	***<0.001****
Trained	247	187.7	15.4	46.12	***<0.001****
Untrained	53	183.9	15.5	19.43	***<0.001****
Young	89	184.2	16	24.52	***<0.001****
Middle Aged	168	187.8	14.5	40.45	***<0.001****
Elder	43	189.5	17.4	17.73	***<0.001****
Entrants	197	186.16	14.76	41.54	***<0.001****
Moderately Experienced	68	187.84	15.73	23.78	***<0.001****
Highly Experienced	35	189.97	18.49	15.21	***<0.001****
Languages	94	189.36	14.39	31.58	***<0.001****
Science	124	185.24	16.36	29.09	***<0.001****
Humanities	82	186.9	15.07	26.68	***<0.001****
Govt.Owned	110	184.9	15.67	28.38	***<0.001****
Govt. Aided	117	188.3	14.97	33.09	***<0.001****
Unaided	73	188	15.8	24.61	***<0.001****
Primary & Pre Primary	53	188.68	15.61	21.54	***<0.001****
Secondary & Higher Secondary	139	189.8	15.05	37.04	***<0.001****
Arts & Science Colleges	76	182.86	15.66	22.47	***<0.001****
Professional Colleges	32	181.72	13.55	16.38	***<0.001****
Total	***300***	***186.99***	***15.5***	***49.839***	***<0.001****

Significant at 0.001 level

Analyses of data for the sub samples revealed that all the sub samples of teachers possess higher than average Ecological Intelligence (Table 2.).

4.3. Comparison of Ecological Intelligence of teachers based on sub samples

4.3.1. Results of Independent Sample t-Test

Test of significance of difference between means of two samples (Independent Sample t-test) was done to test whether there exist any significant differences in the Ecological Intelligence of teachers based on gender and training.

Independent sample t-test revealed that the difference of 4.5 between the mean scores of Ecological Intelligence of male teachers and female teachers is significant at 0.05 level (t = 2.41, P < 0.05). Female teachers possess higher Ecological Intelligence (188.6) compared to their male counterparts (184.1).

The P value of the independent sample t-test was found to be 0.104, which indicated that there is no significant difference between the mean scores of Ecological Intelligence of trained teachers (187.7) and untrained teachers (183.9), (t = 0.80, P > 0.05).

Table 3. Comparison of Ecological Intelligence of Teachers Based on Gender and Training

	Sample Size	Mean	Standard Deviation	t Value	P value
Gender					
Male	107	184.1	16	2.41	0.017*
Female	193	188.6	15		
Training					
Trained	247	187.7	15.4	0.80	0.104
Untrained	53	183.9	15.5		

**** Significant at 0.05 level***

4.3.2. Results of One way ANOVA

The P value of the One way ANOVA was calculated as 0.114, which indicated that there is no significant difference between the mean scores of Ecological Intelligence of young teachers (184.2), middle aged teachers (187.8) and elder teachers (189.5).

The results of One wayANOVA (P = 0.356), indicated that there is no significant difference between the mean scores of Ecological Intelligence of entrants (186.16), moderately experienced teachers (187.84) and highly experienced teachers (189.97).

One wayANOVA revealed a P value of 0.15, which indicated that there is no significant difference between the mean scores of Ecological Intelligence of language teachers (189.36), science teachers (185.24) and humanities teachers (186.9).

Table 4.: Comparison of Ecological Intelligence of Teachers Based on Age, Teaching Experience, Subject taught, Type of Management and Educational Qualifications

Sub sample	Sample Size	Mean	Standard Deviation	F Value	P value
Age Group					
Young	89	184.2	16	2.186	0.114
Middle Aged	168	187.8	14.5		
Elder	43	189.5	17.4		
Teaching Experience					
Entrants	197	186.16	14.76	1.036	0.356
Moderately Experienced	68	187.84	15.73		
Highly Experienced	35	189.97	18.49		
Subject Taught					
Languages	94	189.36	14.39	1.912	0.15
Science	124	185.24	16.36		
Humanities	82	186.9	15.07		
Type of Management of School					
Govt.Owned	110	184.9	15.67	1.569	0.210
Govt. Aided	117	188.3	14.97		
Unaided	73	188	15.8		
Level of Teaching					
1	53	188.68^{ab}	15.61	5.001	<0.001**
2	139	189.8^{a}	15.05		
3	76	182.86^{b}	15.66		
4	32	181.72^{b}	13.55		

***** Significant at 0.01 level***

1-Primary and Pre-primary, 2-Secondary and Higher Secondary, 3- Arts and Science Colleges,4-Professional Colleges Note: Different alphabets shows difference in Tukey's HSD test

The P value of the ANOVA (0.210), indicated that there is no significant difference between the mean scores of Ecological Intelligence of teachers working in government institutions (184.9), teachers working in aide institutions (188.3) and teachers working in unaided institutions (188).

The P value of the ANOVA was 0.835, which indicated that there is no significant difference between the mean scores of Ecological Intelligence of teachers who have Ph. D. (187.3), teachers who have M. Phil. (186.8), teachers who have P. G. (186.3), teachers who have degree (188.8) and teachers who have other qualifications (189.3). Component wise analysis also showed no significant differences.

The results of ANOVA revealed that there is significant differences between the mean scores of Ecological Intelligence of teachers who teach at different levels (F = 5.001, P <0.01). Tukey's HSD test revealed that there is a significant difference of 6.95 between the mean scores of the Ecological Intelligence of teachers of secondary and higher secondary schools (189.81) and teachers of arts and science colleges (182.86) as well as a difference of 8.09 between teachers of secondary and higher secondary schools (189.81) and teachers of professional colleges (181.72). There were significant differences in the Ecological Intelligence of teachers teaching at secondary level and college level. Secondary level teachers were found to have higher Ecological Intelligence than College level teachers.

5. Findings

Teachers were found to have higher level of Ecological Intelligence. Female teachers were found to have higher Ecological Intelligence than their male counterparts. There was no difference between the Ecological Intelligence of trained and untrained teachers. Also there was found to be no significant differences in the Ecological Intelligence of teachers based on age. Experience of teachers also did not cause any significant differences in their Ecological Intelligence. The results showed no differences between the Ecological intelligence of teachers teaching different subjects. No significant differences were found in the Ecological Intelligence of teachers working in institutions having different types of management. But secondary and higher secondary level teachers were found to have higher Ecological intelligence than college teachers.

References

Alam, M.M. (2010). *Ecological Intelligence: A concept for discussion.* Retrieved in March 2013 from http://www.slideshare.net/mukhtaralam/ecological-intelligence-an introduction.

Areekkuzhiyil, S. (2013). A new paradigm for the professional development of teachers in higher education. *University News*, *51*(15), 8-9.

Bowers, C.A. (2010). Educational Reforms that Foster Ecological Intelligence.*Teacher Education Quarterly*, 37, 9-31.

Cassell, J. A.& Nelson, T. (2010). Visions Lost and Dreams Forgotten: Environmental Education, Systems Thinking, and Possible Futures inAmerican Public Schools. *Teacher Education Quarterly*, 37, 179-197.

Dawson, V. (2012).Science Teachers' Perspectives about Climate Change.*Teaching Science,* 58(3),8-13.

Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books

Goleman, D. (1995). *Emotional Intelligence: Why it matters more than IQ?* New York: Bantam Books.

Goleman, D. (2006). *Social Intelligence: The New Science of Human Relationships*. New York: Bantam Books

Goleman, D. (2009). *Ecological Intelligence*: *Knowing the Hidden Impacts of What You Buy*. London: Allen Lane.

Goleman, D.; Barlow, Z.&Bennett, L. (2010). Forging New Norms in New Orleans: From Emotional to Ecological Intelligence.*Teacher Education Quarterly*, 37, 87-98.

Najmuddeen & Areekuzhiyil, S. (2013). *Ecological Intelligence Inventory*. GBCTE, Thalassery