

The Multiple Intelligence Profile of Grade Eight Students of Aishwarya Vidya Niketan, Dhangadhi, Kailali

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Abstract

The present study is intended to find out the Multiple Intelligence (MI) profile of 268 Grade Eight students of Aishwarya Vidya Niketan, Dhangadhi, Kailali, Nepal. A 40-item MI Inventory based on Howard Gardner's theory of Multiple Intelligences with a 5-point Likert scale was used in a quantitative survey research design. The study aimed to identify dominant and dormant intelligences among students. Naturalistic Intelligence was found to be the highest among students (Mean = 20.75) followed by Intrapersonal (Mean = 19.51) and Bodily-Kinesthetic (Mean = 19.34) intelligences. Linguistic intelligence was the least developed (Mean = 16.32). The data showed that students have more than one dominant intelligence at the same time. There was a positive correlation between each pair of intelligences. The strongest correlations were between Logical-Mathematical and Spatial ($r = .49$) and between Linguistic and Logical-Mathematical ($r = .47$). This explained the multidimensionality and interrelationship of human intelligences. Inferential analysis indicated significant differences between genders in Linguistic, Logical-Mathematical, and Bodily-Kinesthetic intelligences. However, no significant difference was observed among the studied major ethnic groups (Brahmin, Chhetri, and Janajati). The study suggests substituting the traditional lecture-based and language-loaded instructional processes with experiential, nature-based, self-reflective, and activity-oriented learning.

Keywords: Ethnicity Competencies; Gender Gaps; Howard Gardner; Nepal Education

Introduction

Howard Gardner's Multiple Intelligences (MI) theory, first introduced in 1983, challenged the traditional view of intelligence that conceptualized a single construct measured by an Intelligence Quotient (IQ) test. Gardner (1999) defines intelligence as “a biopsychological potential for processing information that can be activated within a cultural setting to carry out a problem-solving task or create a product that is of value in a culture” (p. 34). This view gives us a radical expansion of our understanding of human ability.

Initially, Gardner identified seven separate intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal. Later, he added Naturalistic Intelligence (Gardner, 1999). Each intelligence is a different way of processing information and solving problems. Unlike traditional IQ tests that try to measure a person's intelligence, MI theory recognizes that people have strengths in some areas and not in others.

The application of MI theory in educational settings is to recognize students' diverse strengths and nurture them accordingly. As Armstrong (2009) stated, the question for teachers should not be “How smart is this student?” but “How is this student smart?” A Multiple Intelligence-based approach can lead to higher student engagement, self-confidence, and academic success when teachers use approaches that cater to multiple intelligences.

Historically, the Nepali education system has focused on Linguistic and Logical-Mathematical intelligences and the MI theory is a relatively new concept in Nepal. Some work in this direction has been started in Nepal. For example, Neupane et al. (2018) found that the

secondary school students ranked Linguistic intelligence on top and Spatial intelligence at the bottom, and there are significant differences across grades. The use of MI-based instructional activities provides teachers with practical means to address individual students' needs (Dhakal, 2015).

Most of the MI research in Nepal has been of a general nature. There is a need for special studies in specific schools for localized educational planning. This study fills that gap by providing a baseline MI profile for Aishwarya Vidya Niketan to help the school build on student strengths and address diverse learning needs.

Materials and Methods

The study used a quantitative survey design. Cohen, Manion, and Morrison (2018) define survey research as the collection of information at one point in time to describe a trend in a population. A cross-sectional survey design was used to capture a “snapshot” of the Multiple Intelligence profiles of Aishwarya Vidya Niketan students.

Population and Sample

The study population consisted of all 268 Grade Eight students of Aishwarya Vidya Niketan, Dhangadhi, Kailali. Instead of sampling, all Grade Eight students were selected as respondents. Therefore, the MI profile was representative of the entire target population.

Data Collection Method

The main instrument for data collection was a self-administered questionnaire. The questionnaire was divided into two parts:

Section A: Demographic information about Gender (male, female) and Ethnicity (Chhetri, Bahun, Janajati, Madhesi, Dalit, and Muslim).

Section B: Multiple Intelligences Inventory (40 items; 5 items for each of the 8 intelligences). Each item was a statement of an action or preference for a particular intelligence. Respondents were asked to rate their agreement with the items on a 5-point Likert scale (1 = Strong Disagree to 5 = Strong Agree). The questionnaire was designed based on the theory of Gardner and the framework of McKenzie (1999).

Table 1: Constructs of the Multiple Intelligence Inventory

Intelligence Type	Sample Indicator (Based on Gardner's Descriptions)	No. of Questions	Min/Max Score
Linguistic	Loves reading, writing, and playing word games	5	5/25
Logical-Mathematical	Good in problem-solving, Understanding patterns, and logical reasoning	5	5/25
Spatial	Good at visualizing	5	5/25
Bodily-Kinesthetic	Good at controlling body movements and handling objects	5	5/25

Intelligence Type	Sample Indicator (Based on Gardner's Descriptions)	No. of Questions	Min/Max Score
Musical	Sensitive to beats, pitches, and melodic patterns	5	5/25
Interpersonal	Appreciates and cooperates well with others	5	5/25
Intrapersonal	Knows one's own internal moods and gifts	5	5/25
Naturalist	Identifies and categorizes forms in nature	5	5/25
Total		40	40/200

Process of Data Collection

The researcher visited the school during school hours after getting the approval from the school administration to carry out the research. Students received a clear overview of the purpose of the study and step-by-step instructions. Participation was voluntary and anonymous. Students were given around 40 minutes to fill the form with enough space to allow independent responses.

Validity and Reliability of Instrument

Items were constructed directly from the theory of Multiple Intelligences by Howard Gardner (1983). The items were designed to measure the eight types of intelligence. Each type was represented by some items. Questions were reviewed for precision, relevance, and clarity, on multiple occasions. Cronbach's Alpha, McDonald's Omega and mean inter-item correlation were used to assess internal consistency. Reliability coefficients greater than .70 are acceptable (Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011). Good values of mean inter-item correlations are between .15 and .50 when dealing with broad psychological constructs (Clark & Watson, 1995). Most subscales showed acceptable internal consistencies, which supports the use of this instrument for exploratory analysis.

Table 2: Reliability Test Results

Intelligence Type	Cronbach's α	McDonald's ω	Mean inter-item correlation
Linguistic	.59	.60	0.23
Logical-Mathematical	.74	.74	0.31
Spatial	.73	.73	0.35
Bodily-Kinesthetic	.77	.78	0.40
Musical	.31	.50	0.15
Interpersonal	.74	.75	0.37
Intrapersonal	.64	.67	0.28
Naturalist	.68	.69	0.30

Results

Descriptive and inferential statistics were employed. Descriptive statistics (mean, frequency, percentage) were used to summarize the MI profile. Inferential statistics were chi-square tests for gender comparisons and Kruskal-Wallis tests for ethnic comparisons. Statistical significance was achieved at a 95% confidence level ($p < 0.05$).

Descriptive Statistics

Gender wise distribution: The sample was somewhat male-dominated, but enough of both sexes were represented for meaningful comparisons.

Table 3: Gender wise distribution

Gender	Frequency	Percentage
Boys	162	60%
Girls	106	40%
Total	268	100%

Ethnicity-wise Distribution: The composition of the sample was skewed towards upper caste groups, and Janajati, Dalit and Madhesi communities were under-represented.

Table 4: Ethnicity-wise Distribution

Ethnicity	Chhetri	Brahmin	Janajati	Madhesi	Dalit	Total
Frequency	133	100	22	4	9	268
Percentage	49.63	37.31	8.21	1.49	3.36	100

Ranking of Intelligences based on mean score: Naturalistic intelligence was at the highest level, which shows that students have a high appreciation for nature and environmental issues. Intrapersonal Intelligence was ranked second, with high self-awareness. Third was Bodily-Kinesthetic intelligence, which refers to a preference for kinesthetic learning. Linguistic intelligence was rated the lowest, suggesting a comparatively lesser preference for language-based learning strategies.

Table 5: Rank of intelligence

Rank	Intelligence	Mean Score
1	Naturalistic	20.75
2	Intrapersonal	19.51
3	Bodily Kinesthetic	19.34
4	Interpersonal	18.82
5	Musical	18.77
6	Logical Mathematical	17.74

7	Spatial	17.54
8	Linguistic	16.32

Distribution of Students by Dominant Intelligence: A student is considered in the specific intelligence if he/she scores 20 or more. According to dominant intelligence, naturalistic intelligence is the most dominant type of intelligence in the sample (71.64% scored as dominant). The next highest number of respondents have scores indicating dominance in intrapersonal intelligence (51.49%) and musical intelligence (49.25%). The second highest types of dominance for this sample are bodily–kinesthetic (45.52%) and interpersonal (44.78%) intelligence types, indicating that a large number of students prefer to actively and socially interact with others in their learning environment. The two intelligence types rated at moderate dominance are logical–mathematical intelligence (34.33%) and spatial intelligence (31.34%), while linguistic intelligence (17.16%) is rated at the lowest amount in terms of dominance by students.

It is important to remember that the total percentage goes over 100%, which tells us that students have more than one dominant intelligence at the same time, instead of just one dominant type. It confirms the fact that intelligences are overlapping and have multi-dimensions in nature.

Table 6: Distribution of Students by Dominant Intelligence (Score $\geq$ 20)

Intelligence	Frequency	Percentage out of total students
Naturalistic	192	71.64%
Intrapersonal	138	51.49%
Musical	132	49.25%
Bodily–Kinesthetic	122	45.52%
Interpersonal	120	44.78%
Logical–Mathematical	92	34.33%
Spatial	84	31.34%
Linguistic	46	17.16%

Correlation Among Intelligences: All eight intelligences were positively correlated. The strongest correlations were between Logical–Mathematical and Spatial ($r = .49$) and between Linguistic and Logical–Mathematical ($r = .47$). Cohen (1988) describes correlations ranging from .30 to .49 as moderate. These results support Gardner's idea that intelligences are interdependent, not independent.

Table 7: Correlation Among Intelligences

	1	2	3	4	5	6	7	8
1. Linguistic	1.00							
2. Logical Mathematical	0.47	1.00						

3. Spatial	0.37	0.49	1.00					
4. Musical	0.34	0.18	0.41	1.00				
5. Bodily Kinesthetic	0.22	0.16	0.27	0.32	1.00			
6. Interpersonal	0.37	0.26	0.29	0.37	0.31	1.00		
7. Intrapersonal	0.28	0.28	0.21	0.32	0.20	0.11	1.00	
8. Naturalistic	0.30	0.32	0.35	0.34	0.25	0.42	0.31	1.00

Inferential Statistics

Gender-wise Differences:

Null Hypothesis (H_0): No significant association between gender and intelligence.
Alternative Hypothesis (H_1): There is a significant relationship between gender and intelligence.

The chi-square tests showed significant relationships between gender and three types of intelligence (linguistic, logical-mathematical, and bodily-kinesthetic).

Table 8: Chi-square test results

Intelligence	χ^2	p-value	Null Hypothesis
Linguistic	4.70	0.030	Reject
Logical-mathematical	6.50	0.011	Reject
Spatial	0.0357	0.850	Fail to reject
Musical	0.67	0.411	Fail to reject
Bodily-Kinesthetic	6.51	0.011	Reject
Interpersonal	0.0619	0.803	Fail to reject
Intrapersonal	0.00692	0.934	Fail to reject
Naturalistic	1.89	0.169	Fail to reject

Ethnic Differences

There were no significant differences among Chhetri (n=133), Brahmin (n=100) and Janajati (n=22) groups for any of the eight intelligences (all $p > 0.05$) using Kruskal-Wallis tests. Because of small sample sizes, the Madhesi and Dalit groups were excluded from the analysis.

Discussion

This is different from the finding of Neupane et al. (2018) that the highest intelligence among the Nepalese secondary students was Linguistic intelligence. This contrast could be explained by the geographical context of Dhangadhi, rich in natural surroundings, agricultural lifestyles and proximity to forests. Students in this area are exposed to nature a lot, which may develop Naturalistic intelligence more strongly.

Bas (2016) found that Interpersonal intelligence was the most developed among Turkish secondary students internationally. Therefore, the predominance of Naturalistic intelligence in the present study is context-specific, highlighting that MI profiles are shaped by cultural and environmental factors.

The low Linguistic Intelligence score ($M = 16.32$) is contrast with Neupane et al. (2018) but is consistent with Armstrong's (2009) statement that traditional schools might not develop the Linguistic intelligence in all the students. Possible reasons include the medium of instruction and a curriculum that stresses rote learning rather than the creative use of the language.

The gender differences in Linguistic, Logical-Mathematical and Bodily-Kinesthetic intelligences are in line with Bas (2016) who reported females scored higher on Linguistic and Interpersonal intelligences and males scored higher on Logical-Mathematical and Bodily-Kinesthetic intelligences. This finding is not consistent with Bas (2016) who found significant gender differences in Interpersonal intelligence. Perhaps, this could be due to the cultural norms in urban areas of Far-Western Nepal where boys and girls both participate equally in family and public interactions.

It is worth noting the absence of ethnic differences, indicating that Multiple Intelligences are more influenced by personal experience, family environment and education than by ethnicity. This finding has not been previously reported in Nepal and provides the basis for future investigations.

All eight intelligences were positively correlated, which is consistent with Gardner's (1983) notion that intelligences are interrelated. The correlation between Naturalistic and Interpersonal intelligences ($r = 0.42$) indicates that those with a high sense of nature may also be socially aware.

Conclusion

The intelligence profile of students of Grade Eight at Aishwarya Vidya Niketan is multifaceted with dominance of Naturalistic, Intrapersonal and Bodily-Kinesthetic intelligences. Linguistic intelligence, the least developed, indicates that traditional language-based instruction may not be suitable for these students.

Linguistic, Logical-Mathematical, and Bodily-Kinesthetic intelligences show significant gender differences. Females have more developed Linguistic and Logical-Mathematical intelligences. Males have more developed Bodily-Kinesthetic intelligence. "There were no significant gender differences for other intelligences.

Ethnicity does not affect the MI profiles of Chhetri, Brahmin, and Janajati students. The findings confirm the overlapping and multidimensional nature of intelligences and not their independence.

Author Contributions

HPB: Conceptualization, writing original draft, methodology, data collection, formal analysis, discussion, and conclusion.

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Data Availability

The data used in this study are available from the author and can be provided upon request.

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