

## A Study of Learning Styles of Upper Primary School Students

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### Abstract:

*This study investigated the learning style of upper primary school students in relation to academic achievement and gender at Anand district Gujarat, INDIA. Descriptive research survey design was adopted for this study. The sample consisted of five hundred thirty five (535) of standard eight students. The participants were selected using random sampling methods. Instruments used to collect data were developed by Prof. K. S. Likhia and for academic achievement collect from school. Hypotheses were tested at 0.01 level of significance. Data collected were analyzed using Chi-square statistics and t-test. The result showed that there is a significant difference between different learning style of students and their academic achievement. Findings of the study reveal that, visual learning style was found to be more prevalent than kinesthetic and auditory learning styles among secondary school students. Visual, auditory and kinesthetic are significant on academic achievement. Also gender difference with different learning styles was significant.*

**Key words:** Learning Style, academic achievement.

### Introduction:

Using “a variety of teaching methods to accommodate different learning styles” is the most-used educational strategy reported by respondents in North America, Europe, Asia, and Africa

(Johnson, Creighton, & Norland, 2006, p.38). When evaluated using the learning process Questionnaire, South African students (i.e., 14 and 15 years old) “reported greater use of deep and achieving strategies,” as opposed to understanding the material only on the surface (Watkins & Mboya, 1997, p.637). Every child follows its own unique way to learn and process information. They learn material in different ways. Some learn by oral repetition, some may learn by writing it out, while others may learn through practical work. Individuals thus differ in the way they learn. Learning style can be described as a set of factors, behaviours and attitudes that facilitate learning for an individual in a given situation. It is the ability of learners to perceive and process information in learning situations. Learning style is the characteristic cognitive, affective, social, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. Learning styles can be defined, classified, and identified in many different ways. Generally, they are overall patterns that provide direction to learning and teaching. Learning style can also be described as a set of factors, behaviours and attitudes that facilitate learning for an individual in a given situation. Styles influence how students learn, how teachers teach, and how the two interact. Each person is born with certain tendencies toward particular styles, but these biological or inherited characteristics are influenced by culture, personal experiences, maturity level and development. Style can be considered a ‘Contextual’ variable or construct because what the learner brings to the learning experiences is a part of the content as well as the important features of the learner’s experience itself. Each learner has distinct and consistent preferred ways of perceptions, organization and retention. Students learn differently from each other and it has been determined that brain structure influences language structure acquisition. It has also been shown that different hemispheres of the brain contain different

perceptions avenues. Some researchers claim that several types of cells present in some brains are not present in others are responsible for different pattern of perception among individuals. Some students are visual learners, while others are auditory or kinesthetic learners. Visual learners learn visually by means of charts, graphs, and pictures. Auditory learners learn by listening to lectures and reading. Kinesthetic learners learn by doing. Students can prefer one, two, or three learning styles. Because of these different learning styles, it is important for teachers to incorporate in their curriculum activities related to each of these learning styles so that all students are able to succeed in their classes. While we use all of our senses to take in information, we each seem to have preferences in how we learn best. In order to help all students learn, we need to teach to as many of these preferences as possible (Cuaresma, 2008). When we think about a typical class room situation, it is rare to find all three of these approaches to learning incorporated into a class. While it may seem impossible to do this, it can be done through thoughtful planning and preparation. It does force us to conceptualize the class differently with a focus on the variety of ways in which students learn. The various inventories on learning styles allow teachers to gain insight into which areas they can use further development in and which are already well developed (Cuaresma, 2008). One of the most significant advances in education has come from a considerable amount of research done in the area of learning styles which recognizes that the students in classrooms have variety of different learning profiles. Some of the dimensions which have been investigated in the area of learning style are perceptual learning styles, field dependence/independence, analytic/global learning styles and reflective/ impulsive learning styles. Some of the benefits of increasing learners' awareness of their own learning styles: "higher interest and motivation in the learning process, increased student responsibility for their own learning, and greater classroom community. These are affective changes,

and the changes have resulted in more effective learning” (Reid, 1999). Gardner’s research has shown that human cognitive ability is pluralistic rather than unitary and that learners of any subject will make greater progress if they have the opportunity to use their areas of strength to master the necessary material. He recommends that teachers use a wide variety of ways to deal with the subject because “genuine understanding is most likely to emerge and be apparent to others (Gardner, 1991). In the classroom it is possible to motivate learners by activating multiple ways of meaning-making through the use of tasks relating to the different intelligences. Providing a variety of language activities that stimulate the different tools or intelligences proposed by Gardner (1999) makes it possible to engage multiple memory pathways necessary to produce sustained deep learning (Schumann, 1997). In order to achieve the ultimate goal of student learning it is important to use a combination of teaching methods and to make the classroom environment as stimulating and interactive as possible. Students learn in many different ways.

### **Learning style and students’ achievement**

Griggs and Dunn claim that students who learn from an approach compatible with their preferred learning style experience greater academic achievement and have a more positive attitude towards learning. Moreover, Dunn, Beaudry and Klavas assert that through voluminous studies, it has been indicated that both low and average achievers earn higher scores on standardized achievement tests when they are taught within the realm of their learning styles. Dunn and Dunn believe that low achievers tend to have poor auditory memory. Although they often want to do well in school, their inability to remember information through lecture, discussion, or reading causes their low achievement especially in traditional

classroom environment where teachers dominate and students mostly listen or read. It is not only the low achievers learn differently from the high achievers, they also vary among themselves. According to Felder students learn more when information is obtainable in a variety of approaches than when only a single approach is applied. Much experiential research indicates that learning styles can either hamper or increase academic performance in several aspects even though not much research has been conducted on the relationship between instructional design of learning materials and learning styles. As such, studies carried out conclude that students retain 10% of what they read, 26% of what they hear, 30% of what they see, 50% of what they see and hear, 70% of what they say, and 90% of what they say as they do something. These facts reveal that each learning style has its own strengths and weaknesses. Some students learn in many ways, while others might only favor one or two. Those students with multiple learning styles tend to gain more and obtain higher scores compared to those who rely solely on one style. Drysdale et al. carried out a study on the effect of learning style on the academic performance of 4,546 first-year students. Although they found academic performance based on learning style to be significant in 19 of the 19 courses, they found no significant differences between the learning style and academic performance of liberal arts and social sciences' students. In another study, O'Brien, whose subjects represented a variety of majors including business, education, and arts and sciences, found that differences in learning styles were associated with academic achievement. Snyder (2000) sought to determine the relationship between learning styles and academic achievement of high school students. The result of the study suggested that the majority of high school students benefited from Tactile-Kinesthetic intelligence and were global learners. The researcher concluded that an awareness of how students learn is in fact indispensable to successful classroom.

### **Learning style and gender:**

Mulalic, MohdShah, and Ahmad (2009) attempted to determine the learning styles of the students, and the differences in learning styles of the students according to their gender and ethnicity. Results revealed that the students 'preferred learning style was Kinesthetic. They expressed minor preference for Visual, and Auditory (Mulalic, A., Mohd Shah, P., & Ahmad, F. (2009)). Wehrwein, Lujan, and DiCarlo (2007) carried out a search on gender differences in learning style preferences among undergraduate physiology students. Their findings showed that male and female students have significantly different learning styles (Wehrwein, E., Lujan, H., & DiCarlo, S. (2007). Bricheno, and Younger (2004) revealed some unexpected results of a learning styles intervention. The analysis of data from the common VAK questionnaire suggested that contrary to expectations derived from assertions within some of the literature, there was no significant relationship between gender and preferred learning styles. Individual boys did not necessarily prefer a kinesthetic learning style compared to a visual or auditory one ;indeed, data from across the four schools reveals that few boys apparently held such preferences and that the proportions of boys and girls identified as having a kinesthetic learning style were very similar (Bricheno, P. &Younger, M. (2004). Babapour, Rasoulzudeh Taba Tabei, Fathi Ashtiani, and Ezhehei (2003) conducted a study on the relationship between problem solving styles and psychological well-Being among university students. They revealed that there is a partial difference between males and females in problem solving styles, so that females utilize avoid ant problem solving style more than males (Babapour, K.J., RasoulzudehTabaTabei, k., Fathi Ashtiani, A. & Ezhehei, J. (2003)). Erica A. Wehrwein, Heidi L. Lujan and Stephen E. Di Carlo (2007) Gender differences in learning style preferences among undergraduate physiology students. The result showed that male and female

students have significantly different learning styles. Gabe Keri (2002) Male and female college students' learning styles differ: an opportunity for instructional diversification. Chi-square statistic performed to compare males' and females' learning styles indicated that significant differences exist between males and females, [chi square] (8, N=585) =50.68612,  $p < .0000$ ). More females than males demonstrate strong preferences for the social/conceptual learning style (27.1% to 13.0%). Females are more of the conceptual learning style type than males (12.3 % to 7.5 %). Furthermore females than males demonstrate a proclivity for independent/applied type (15.9% to 8.4%).

### **Objective of the study:**

- 1 To find level of learning styles of upper primary school students.
- 2 To study the learning style of upper primary school student in the context of academic achievement.
- 3 To study the learning style of upper primary school student in the context gender.

Present research is in the field of advanced psychology, its sub field - learning style. Statistically it is a quantitative type of research and also a descriptive type research.

### **Hypothesis of the study:**

H<sub>01</sub>: There will be no significant difference between the mean scores of the achievement of visual and auditory learning style.

H<sub>02</sub>: There will be no significant difference between the mean scores of the achievement of visual and kinesthetic learning style.

H<sub>03</sub>: There will be no significant difference between the mean scores of the achievement of auditory and kinesthetic learning style.

H<sub>04</sub>: There will be no significant difference between the mean scores of visual learning style of boys and girls.

H<sub>05</sub>: There will be no significant difference between the mean scores of auditory learning style of boys and girls.

H<sub>06</sub>: There will be no significant difference between the mean scores of kinesthetic learning style of boys and girls.

H<sub>07</sub>: There will be no significant difference between observed values of the visual, auditory and kinesthetic types learning style of boys.

H<sub>08</sub>: There will be no significant difference between observed values of the visual, auditory and kinesthetic types learning style of girls.

### **Limitations of the study:**

Present research limited to the upper primary Gujarati medium school of standard 8 of Anand district.

### **Method**

**Participants:** Researcher selects a total student of 8<sup>th</sup> standard student of upper primary schools of Anand districts as a population. Researcher selected randomly seven schools. Out of those schools researcher selected classes randomly. Total sample was 535 out of them 401 boys and 129 girls (age between 13 and 14).

For solving the problem of the study, researcher used survey research method and parametric techniques t-test.

**Instrument:** For the study the measurement of learning style, developed by prof. K. S. Likhia. It measured three dimensions of learning style. It comprised a set of 30 statements with 10 statements for assessing each of learning style (visual, auditory and kinesthetic). For the measurement of academic



achievement the result of last semesters were taken as a student's achievement score.

**Procedure:** Prof. K. S. Likhia's learning styles was administered on 535 participants. The participants were required to complete inventory by choosing among 3 alternatives, ranging from often, sometimes to seldom. For often give 3, sometimes gives 2 and seldom give 1. maximum scores for any one type learning styles will be 30 and minimum scores 10 of each learning style. Total scores on each subscale learning style is called learning style of the students. Also academic achievement of the students collected from the schools. Both scores were continuous type data. To find significant difference researcher use t-test parametric techniques.

**Significance of the study:** It is observed from the literature on learning styles that knowing students learning styles can be useful for both teachers and students and make the learning process more Fruitful (Reid, 1995). The results of this study may help instructors in understanding the various learning styles favored by their students.

The result of this study may help curriculum developers and material producers in upper primary level teachers to integrate the appropriate activities, aids, drills.....etc that match the preferred styles by upper primary students. The result of this study will also help fill in the gap in the literature related to the lack of research in higher education and the contradictory results regarding the relationship between learning styles and different factors such as gender, academic achievement and field of study.

## Result and discussion

**Table 1: Different learning style s levels**

Learning style	N	Range	Minimum	Maximum	Mean	Standard deviation	variance
Visual	535	16.00	14.00	30.00	21.41	2.61	6.831
Auditory	535	21.00	9.00	30.00	18.02	3.21	10.30
Kinesthetic	535	18.00	12.00	30.00	21.24	2.72	7.41

Here highest range for auditory learning style while lowest was visual learning style. Mean value more for visual learning style while low for auditory learning style. Standard deviation was higher to lower Kinesthetic, Visual and auditory respectively. Also variance was higher to lower auditory, Visual and Kinesthetic respectively.

**Table 2: t-value table for different learning style with academic achievement**

	Visual	Auditory	Kinesthetic
Visual(N=257)	-	-	-
Auditory(N=58)	4.96**	-	-
Kinesthetic(N=220)	8.22**	5.58**	-

\*\* Level of significance 0.01

There will be significant difference between the mean scores of the achievement of visual and auditory learning style. t-value for that were 4.96 (level of significance 0.01). Academic achievement mean (M=50.31) of visual learning style was greater than academic achievement mean (M=43.45) of auditory learning style. So  $H_{01}$  rejected. There will be significant difference between the mean scores of the achievement of visual and kinesthetic learning style. t-value for that were 8.22 (level of significance 0.01). Academic achievement mean (M=51.34) of kinesthetic learning style was greater than academic achievement mean (M=50.31) of visual learning style. So  $H_{02}$  rejected. There will be significant difference between the mean scores of the achievement of auditory and kinesthetic learning style. t-value for that were

8.22 (level of significance 0.01). Academic achievement mean (M=51.34) of kinesthetic learning style was greater than academic achievement mean (M=43.45) auditory of learning style. So  $H_{03}$  rejected. It means kinesthetic learning style learner was better than visual learning style learner and auditory type learning learner. While visual learning style learner was better than auditory type learning learner.

**Table 3: t-value table for gender difference with different learning style**

learning style	t-value
Visual(N=257)	4.48**
Auditory(N=58)	4.18**
Kinesthetic(N=220)	4.90**

There will be significant difference between the mean scores of visual learning style of boys and girls. t-value for that were 4.48 (level of significance 0.01). Mean (M=22.30) of visual learning style girls was greater than mean (M=21.14) of visual learning style boys. So  $H_{01}$  rejected. There will be significant difference between the mean scores of auditory learning style of boys and girls. t-value for that were 4.18 (level of significance 0.01). Mean (M=18.85) of auditory learning style girls was greater than mean (M=17.57) of auditory learning style boys. So  $H_{02}$  rejected. There will be significant difference between the mean scores of kinesthetic learning style of boys and girls. t-value for that were 4.48 (level of significance 0.01). Mean (M=22.08) of kinesthetic learning style girls was greater than mean (M=20.71) of kinesthetic learning style boys. So  $H_{03}$  rejected. In gender differences girls were high learning style than boys. In girl's visual learning styles is better than kinesthetic and auditory learning style. While kinesthetic learning style is more batter than auditory learning style in girls, same as in boys.

**Table 4:  $\chi^2$ - value between the Observed frequency and Expected frequency of Visual, Auditory and Kinesthetic learning styles of boys**

	Visual	Auditory	Kinesthetic	$\chi^2$ -value
Observed frequency	205	42	159	104.37**
Expected frequency	135.3	135.3	135.3	

\*\* Level of significance 0.01

There will be significance difference between the Observed frequency and Expected frequency of Visual, Auditory and Kinesthetic learning styles of boys.

**Table 5:  $\chi^2$ - value between the Observed frequency and Expected frequency of Visual, Auditory and Kinesthetic learning styles of girls**

	Visual	Auditory	Kinesthetic	$\chi^2$ -value
Observed frequency	52	16	61	26.37**
Expected frequency	43	43	43	

\*\* Level of significance 0.01

There will be significance difference between the Observed frequency and Expected frequency of Visual, Auditory and Kinesthetic learning styles of girls.

The findings is against by the previous research work by Dobson (2010) in his study cites two of the studies (Alkhasawneh et al. 2008; Slater et al. 2007) which found no significant inferences in preferences between men and women, whereas one study (Wehrwein et al. 2007) did report a difference which was descriptive in nature and was not supported by statistical analysis. Also Dobson (2010) in his study found a significant trend in sensory modality preferences and sex.

## **Conclusion:**

Unmatched learning styles and teaching - learning methodologies may adversely affect the learning on the part of

the students. A student's choice of learning style affects his academic achievement in that subject. Visual learning style was the most preferred learning style among the students in both boys and girls. There was gender difference in the learning style preference among the students. Thus, we can conclude that we need to shift from classroom teaching and incorporate various different styles to teach our multimodal learners.

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