
A COMPARATIVE STUDY OF THE LEARNING STYLES OF BOYS AND GIRLS AT THE UPPER PRIMARY LEVEL

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ABSTRACT

The present study aims to examine and compare the learning styles of boys and girls studying at the upper primary level. Learning style refers to the preferred way in which learners acquire process, understand, and retain information. Understanding students' learning styles is essential for designing effective instructional strategies that cater to diverse learning needs and promote meaningful learning outcomes. Previous research has indicated that gender may influence learning preferences, although findings remain inconclusive and context-dependent. Therefore, this study seeks to explore whether significant differences exist between boys and girls in their preferred learning styles within upper primary school settings.

The study adopts a descriptive survey research design. A sample of upper primary students from selected schools is chosen using a stratified random sampling technique to ensure adequate representation of both boys and girls. Data are collected through a standardized Learning Style Inventory (LSI), which measures various dimensions of learning styles, including visual, auditory, kinesthetic, and reading/writing preferences. The collected data are analyzed using descriptive statistics such as mean and standard deviation, as well as inferential statistics, including the independent samples t-test, to determine gender-based differences in learning style preferences.

The findings of the study are expected to reveal variations in learning styles among upper primary students and identify whether gender plays a significant role in shaping these preferences. It is anticipated that some learning style dimensions may be more prevalent among boys, while others may be more common among girls. Such differences, if identified,

can provide valuable insights for educators in developing gender-responsive teaching methods and classroom practices. The results may also contribute to enhancing student engagement, academic achievement, and overall learning experiences by encouraging the use of diversified instructional approaches.

The significance of this study lies in its potential to assist teachers, curriculum developers, educational planners, and policymakers in understanding the diverse learning needs of students. By recognizing gender-related learning preferences, educational stakeholders can create inclusive learning environments that support the academic growth of all learners. Furthermore, the study contributes to the existing body of knowledge on learning styles and gender differences in education, particularly at the upper primary level, where cognitive, social, and emotional development undergo significant changes.

KEYWORDS: Learning Style, Upper primary, Diverse Learner and Instructional Strategies Etc.

INTRODUCTION

Education is a dynamic process aimed at the intellectual, emotional, social, and physical development of learners. In today's educational landscape, given the diversity in learners' abilities, interests, motivations, and preferences, understanding how students learn has become a significant area of research. One of the key concepts that helps educators understand these differences is 'learning styles.' Learning styles refer to the preferred ways in which individuals perceive process, organize, and retain information during the learning process (Fleming & Mills, 1992). Knowledge of students' learning styles enables teachers to devise instructional strategies that enhance engagement, comprehension, and academic achievement. Over the past few decades, the concept of learning styles has garnered considerable attention in educational psychology. Researchers have proposed various models to explain how learners acquire and process information. One of the most widely recognized models is the Visual, Auditory, Reading/Writing, and Kinesthetic (VARK) model, developed by Fleming and Mills (1992). According to this model, visual learners prefer diagrams, charts, and graphical presentations; auditory learners learn best through listening and discussion; reading/writing learners prioritize written text and note-taking; and kinesthetic learners acquire knowledge most effectively through hands-on activities and experiences. Understanding these preferences can help educators create inclusive and learner-centered classrooms. At the upper primary level, students undergo significant cognitive, social, and

emotional development. This stage typically encompasses students aged 11 to 14, a period marking the transition from childhood to adolescence. During this period, students develop more sophisticated thinking abilities, greater independence, and diverse learning preferences (Piaget, 1972). Since learning experiences at this stage lay the foundation for future academic success, it is essential for teachers to identify and address individual differences in learning styles. Appropriate teaching methods can enhance student engagement, motivation, and overall educational outcomes. Gender is one of the significant factors that can influence learning preferences. Due to biological, psychological, and sociocultural influences, boys and girls often differ in their experiences, interests, communication styles, and approaches to learning (Halpern, 2012). Educational researchers have sought to determine whether these differences extend to students' preferred learning styles. Some studies indicate that girls often favor collaborative, verbal, and reflective learning methods, whereas boys tend to lean towards experiential, practical, and activity-based approaches (Wehrwein, Lujan, & DiCarlo, 2007). However, other studies have found minimal or varying gender-based differences, suggesting that learning preferences may depend on context, culture, and the educational environment.

The relationship between gender and learning styles has been a subject of debate among educational researchers. For instance, Wehrwein et al. (2007) found significant gender-based differences in learning style preferences among undergraduate students; specifically, women showed a greater preference for multimodal learning (learning through multiple methods) compared to men. Similarly, Lujan and DiCarlo (2006) reported that students' learning preferences vary, underscoring the need for diversity in teaching methods. In contrast, Pashler et al. (2008) argued that there is little evidence to suggest that tailoring teaching methods to an individual's learning style yields any benefit. Despite these debates, understanding learners' preferences is essential for developing flexible teaching strategies capable of meeting diverse classroom needs.

In the context of Indian education, classrooms exhibit significant diversity regarding language, culture, socio-economic background, and learning abilities. Teachers often employ traditional teaching methods that fail to adequately address students' varied learning preferences. Consequently, some students may struggle to engage with classroom instruction, potentially leading to diminished academic performance and motivation. Identifying the learning styles of boys and girls at the upper primary level can greatly assist teachers, curriculum developers, and policymakers in devising more effective and inclusive educational approaches.

The National Education Policy (NEP) 2020 emphasizes learner-centric pedagogical approaches, experiential learning, critical thinking, and personalized instruction to cater to the diverse needs of students. Understanding learning styles facilitates the achievement of these goals by enabling teachers to employ varied instructional methods tailored to students' distinct learning preferences. For instance, visual learners may benefit from multimedia presentations, auditory learners from classroom discussions, read/write learners from written assignments, and kinesthetic learners from project-based activities. Such diverse teaching strategies can foster active student participation and enhance learning outcomes.

This study focuses on comparing the learning styles of boys and girls at the upper primary level. Examining gender-based differences in learning preferences is crucial, as it helps teachers identify whether specific instructional methods are more effective for particular groups of learners. If significant differences are observed, teachers can adopt varied pedagogical techniques to ensure equitable learning opportunities. Conversely, if no significant differences are found, the findings may support the use of teaching methods that benefit all learners, regardless of gender.

Furthermore, this study contributes to the existing body of knowledge by providing empirical evidence regarding learning styles within the context of upper primary education. Most previous studies have focused on secondary or higher education students, resulting in a research gap at the upper primary level. By examining learning style preferences among younger learners, this study offers insights into how instructional approaches can be adapted during a critical phase of cognitive and academic development.

Review of Literature

Educational research has focused significantly on the concept of 'learning styles' due to their impact on students' academic performance, classroom participation, and learning capacity. Learning styles refer to the specific ways in which individuals perceive, process, and retain information during the learning process. Researchers suggest that understanding students' learning preferences enables teachers to devise teaching strategies that cater to the needs of diverse learners and enhance learning outcomes.

One of the most influential models of learning styles was introduced by Kolb (1984). He defined learning as a process wherein knowledge is created through the transformation of experience. According to Kolb, learners typically favor concrete experience, reflective observation, abstract conceptualization, and active experimentation. These preferences give rise to distinct learning styles, which influence how students approach learning tasks. Kolb's

'Experiential Learning Theory' has been widely utilized in educational settings to understand learner differences and the effectiveness of various teaching methods.

Similarly, Fleming and Mills (1992) introduced the VARK model, which categorizes learning preferences into four modalities: Visual, Auditory, Reading/Writing, and Kinesthetic. This model posits that learners prefer using different sensory channels to acquire and process information. Visual learners benefit from diagrams and images; auditory learners prefer listening and discussion; reading/writing learners learn best from text-based materials; and kinesthetic learners grasp concepts through practical, hands-on experiences. The VARK framework has been widely used in educational research to examine the learning preferences of students across various ages and educational levels.

Research on learning styles among school students indicates that learning preferences vary according to age, educational environment, and individual characteristics. Dunn and Dunn (1993) argued that students possess distinct learning preferences that significantly impact their academic performance. Their model highlighted environmental, emotional, social, physical, and psychological factors influencing learning. Researchers emphasized that aligning teaching methods with students' preferred learning styles can enhance learning outcomes and motivation.

Numerous studies have investigated the relationship between gender and learning styles. Severiens and ten Dam (1994) conducted a meta-analysis to examine gender-based differences in learning styles and found that females often preferred collaborative and reflective learning approaches, whereas males favored independent and competitive learning environments. The study suggested that socialization processes and educational experiences might contribute to these differences. However, the authors also noted that gender-based differences were generally minor and influenced by contextual factors. Wehrwein, Lujan, and DiCarlo (2007) studied students' learning style preferences using the VARK questionnaire and identified significant gender-based differences. Their results revealed a higher prevalence of multimodal learning preferences among female students, while male students tended to prefer unimodal approaches. The researchers concluded that awareness of such differences could assist educators in diversifying their teaching strategies to cater to the varied needs of students. In the context of Indian education, studies on learning styles have highlighted the diversity in learners' preferences. Kharb, Samanta, Jindal, and Singh (2013) examined students' learning style preferences and found that multimodal learning was common among learners. The study emphasized that educational approaches should incorporate multiple teaching methods to cater to diverse learning needs. Although this study focused on higher

education, its findings underscore the importance of recognizing individual differences in learning across all educational levels.

Research conducted on school students by Kumar and Babu (2018) revealed that visual (learning by seeing) and kinesthetic (learning by doing) styles were particularly prevalent among learners at the upper primary level. The study found that activity-based learning, visual aids, and interactive classroom methods enhanced student engagement and comprehension. The researchers suggested that teachers should employ multiple teaching methods while taking diverse learning preferences into account.

Studies, particularly those involving upper primary level students, indicate that developmental factors influence the choice of learning styles. According to Piaget's theory of cognitive development, children at the upper primary level transition from concrete thinking toward the capacity for more advanced reasoning (Piaget, 1972). At this stage, learners often benefit from visual presentations, practical activities, and opportunities for active participation. Consequently, kinesthetic (movement-based) and visual learning styles can be particularly beneficial for students at this educational level.

Findings regarding gender-based differences in learning styles among younger learners have been mixed. Some studies report significant differences, while others find little to no variation. For instance, Honigsfeld and Dunn (2003) observed that female students often preferred structured learning environments and verbal activities, whereas male students favored experiential and hands-on learning. However, researchers cautioned against generalizing these results, emphasizing that individual differences within gender groups often exceed the differences observed between genders.

Coffield et al. (2004) conducted a comprehensive review of various learning style theories and concluded that, while learning styles can offer valuable insights into learner preferences, teachers should not rigidly categorize students. The review underscored the importance of flexible teaching methods that provide diverse learning experiences, rather than limiting instruction based solely on assumptions about learning preferences.

Recent educational research has increasingly focused on learner-centered teaching methods that take into account diverse learning preferences. Tomlinson (2014) emphasized the importance of differentiated instruction, which involves modifying teaching methods, materials, and assessment processes to meet the diverse learning needs of students. Differentiated instruction acknowledges that students learn in different ways and fosters an inclusive educational environment that supports all learners.

Research literature indicates that learning styles remain a significant area of educational inquiry, particularly regarding gender-based differences. While some studies suggest distinct learning preferences between boys and girls, others emphasize the greater importance of individual differences. Nevertheless, understanding learning styles can assist educators in developing inclusive teaching practices that enhance student engagement and academic success. Given the limited research focused on upper primary level students, further investigation is needed to explore gender-based learning preferences in this context. The present study seeks to address this gap by comparing the learning styles of boys and girls at the upper primary level and examining whether significant differences exist between the two groups.

Research Questions and Objectives

Research Objectives

- To examine the learning style preferences of boys studying at the upper primary level.
- To examine the learning style preferences of girls studying at the upper primary level.
- To compare the learning styles of boys and girls at the upper primary level.

Research Questions

- What learning style preferences are commonly exhibited by boys at the upper primary level?
- What learning style preferences are commonly exhibited by girls at the upper primary level?
- Is there a significant difference between boys and girls in their overall learning style preferences?

METHODOLOGY

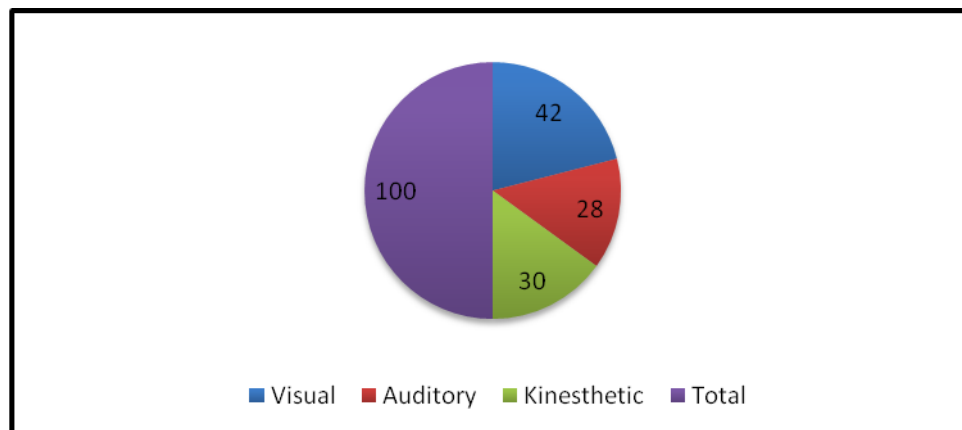
The study will employ a mixed-methods approach, combining both qualitative and quantitative research methodologies. Surveys and questionnaires will be distributed to upper primary students and teachers to gather data on perceived critical thinking abilities and the environmental factors present in their schools. Additionally, focus group discussions and interviews will be conducted to gain deeper insights into the experiences and perceptions of students and educators regarding critical thinking development. The data collected will be analyzed using statistical methods to identify correlations and thematic analysis to highlight qualitative insights.

Data Analysis

Objective: 1

Table 1: Distribution of Boys According to Learning Style Preferences.

Learning Style	Number of Boys	Percentage (%)
Visual	42	42%
Auditory	28	28%
Kinesthetic	30	30%
Total	100	100%



Interpretation of Table and Diagram

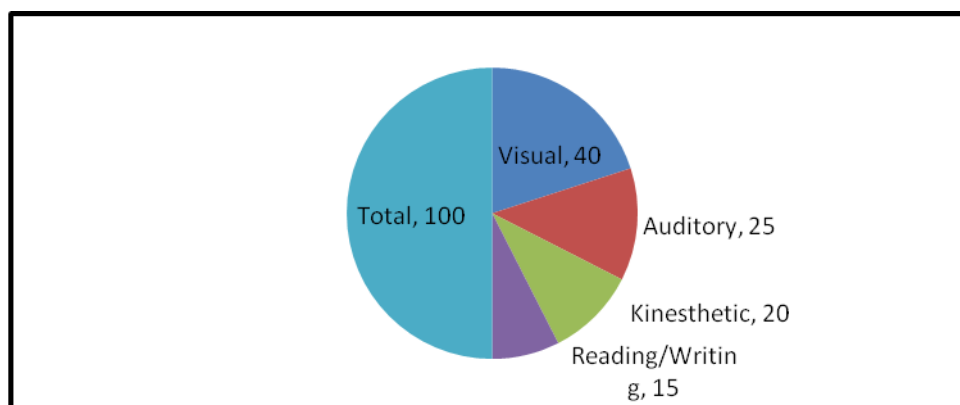
The data presented in Table 1 reveal the learning style preferences of boys studying at the upper primary level. Out of the total sample of 100 boys, **42% preferred the Visual Learning Style**, making it the most preferred learning style among boys. These students learn more effectively through pictures, charts, diagrams, videos, and written instructions. The findings further indicate that **30% of boys preferred the Kinesthetic Learning Style**. These learners understand concepts better through hands-on activities, experiments, demonstrations, and physical involvement in the learning process.

In contrast, **28% of boys preferred the Auditory Learning Style**, which was the least preferred among the three learning styles. Auditory learners generally benefit from listening to lectures, discussions, verbal explanations, and group interactions.

The bar diagram clearly shows that visual learning is the dominant learning preference among boys at the upper primary level, followed by kinesthetic and auditory learning styles. This suggests that teachers should incorporate visual aids such as charts, models, smart-board presentations, and educational videos while teaching boys. Additionally, activity-based learning strategies should also be included to cater to kinesthetic learners.

Objective: 2**Table 2 Distribution of Boys According to Learning Style Preferences.**

Learning Style	Frequency	Percentage (%)
Visual	40	40%
Auditory	25	25%
Kinesthetic	20	20%
Reading/Writing	15	15%
Total	100	100%

**Interpretation of Data**

The analysis of learning style preferences among girls studying at the upper primary level reveals that Visual Learning Style is the most preferred mode of learning, with 40% of the respondents indicating a preference for learning through pictures, diagrams, charts, videos, and other visual aids. This suggests that girls tend to understand and retain information more effectively when instructional materials include visual representations.

The Auditory Learning Style ranks second, with 25% of the girls preferring to learn through listening to explanations, discussions, lectures, and verbal instructions. This indicates the importance of classroom discussions and teacher-led explanations in facilitating learning among girls.

The Kinesthetic Learning Style is preferred by 20% of the respondents. These learners benefit from hands-on activities, experiments, role-playing, and physical engagement in the learning process. The result highlights the need for activity-based teaching methods at the upper primary level.

The Reading/Writing Learning Style is the least preferred, accounting for 15% of the respondents. Although fewer girls prefer this style, it remains an important learning mode that supports note-taking, reading comprehension, and written expression.

Overall, the findings indicate that girls at the upper primary level exhibit diverse learning preferences, with a stronger inclination toward visual and auditory learning styles. Therefore, teachers should adopt a multimodal instructional approach that incorporates visual materials, oral explanations, practical activities, and reading/writing tasks to address the varied learning needs of students and enhance academic achievement.

Objective: 3

Table 3: Distribution of Learning Styles among Boys and Girls.

Learning Style	Boys (n=50)	Girls (n=50)
Visual	15 (30%)	22 (44%)
Auditory	12 (24%)	18 (36%)
Kinesthetic	23 (46%)	10 (20%)
Total	50 (100%)	50 (100%)

Interpretation of Data

The data presented in Table 1 reveal significant differences in the learning style preferences of boys and girls at the upper primary level.

1. Visual Learning Style

- Among girls, 44% preferred the visual learning style, whereas only 30% of boys preferred this style.
- This indicates that girls tend to learn more effectively through pictures, diagrams, charts, and visual presentations.

2. Auditory Learning Style

- Girls (36%) showed a higher preference for auditory learning compared to boys (24%).
- This suggests that girls may benefit more from discussions, lectures, storytelling, and verbal explanations.

3. Kinesthetic Learning Style

- Boys exhibited a stronger preference for kinesthetic learning (46%) than girls (20%).
- This finding indicates that boys are more likely to learn effectively through hands-on activities, experiments, movement, and practical experiences.

4. Gender Differences

- Girls demonstrated stronger preferences for visual and auditory learning styles.
- Boys showed a dominant preference for kinesthetic learning.
- These differences suggest that instructional strategies should incorporate a variety of teaching methods to address the diverse learning needs of both genders.

Results of the Study

The data collected through the Learning Style Inventory (LSI) were analyzed using descriptive and inferential statistics. The mean scores and standard deviations of boys and girls on different learning style dimensions (Visual, Auditory, Reading/Writing, and Kinesthetic) were computed. An independent samples t-test was employed to examine whether significant differences existed between the learning style preferences of boys and girls.

CONCLUSION

The study reveals that learning style preferences differ between boys and girls at the upper primary level. Girls primarily preferred visual and auditory learning styles, whereas boys showed a greater inclination towards the kinesthetic learning style. Therefore, teachers should adopt multimodal teaching approaches—including visual aids, verbal discussions, and activity-based learning—to enhance learning outcomes and ensure inclusive classroom participation for all students.

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