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Association Between Learning Styles And Academic Achievement In Economics Among Undergraduate Students At The University Of Calicut

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Abstract
This study explores the association between Learning Styles and Achievement in Economics among undergraduate students under the University of Calicut. Grounded in the Felder-Silverman Learning Style Model (FSLSM), the research investigates how four key learning style dimensions—Active-Reflective, Sensing-Intuitive, Visual-Verbal, and Sequential-Global—relate to academic performance in economics. A sample of 300 students was selected using a simple random sampling technique. Data were collected through two standardized tools: a Learning Style Inventory and an Achievement Test in Economics. Statistical analyses, including descriptive statistics, t-tests, and chi-square tests, were conducted using SPSS 26. Findings revealed significant differences in learning style based on gender and locale, with girls and rural students demonstrating stronger learning styles. Achievement in economics showed significant variation by locale, favoring urban students, but no significant gender-based differences were observed. Chi-square analysis indicated that certain learning style dimensions (Sequential-Global and Visual-Verbal) were significantly associated with academic achievement, while others (Active-Reflective and Sensing-Intuitive) were not. The study underscores the importance of considering individual learning preferences in instructional design to enhance educational outcomes in economics.

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I. Introduction

Education is essential for every society and individual. It is the means through which the aims and habits are sustained, transformed and transmitted from one generation to the next. It is a foundational element of human society, playing a crucial role in the development of individuals and communities. It encompasses a wide range of processes through which individuals acquire knowledge, skills, values, beliefs, and habits. These processes occur in various settings, including formal institutions like schools and universities, as well as informal environments such as homes, workplaces, and community centres. Education is not only about imparting academic knowledge but also about fostering critical thinking, creativity, social skills, and moral values.

Learning styles are the various ways individuals prefer to receive, process, and retain information. The concept of learning styles has been widely discussed and applied in educational settings. While the effectiveness of learning styles in improving educational outcomes is debated, understanding these preferences can help educators create more inclusive and engaging learning environments.

Learning styles refer to the different ways in which individuals prefer to acquire and process information. There are several commonly recognized learning styles, including Active and Reflective, Sensing and Intuitive, Visual and Verbal, Sequential and Global.

The Felder-Silverman Learning Style Model (FSLSM) is a framework for understanding how students prefer to learn and process information. Developed by Richard M. Felder and Linda K. Silverman in the late 1980s, this model identifies specific dimensions along which individual learning preferences can vary. Understanding these preferences can help educators tailor their teaching methods to better suit the diverse needs of their students, thereby enhancing the learning experience and improving educational outcomes.

The Felder-Silverman Learning Styles Model (FSLSM) categorizes learning preferences along four dimensions:

1. Active vs. Reflective Learners
2. Sensing vs. Intuitive Learners
3. Visual vs. Verbal Learners
4. Sequential vs. Global Learners

Each dimension represents a spectrum, and learners can fall anywhere along this continuum.

Active vs. Reflective Learners

Active Learners*:* Active learners prefer to engage with material through direct interaction and physical activity. They learn best by discussing, applying, or explaining information to others. Group work, hands-on activities, and practical applications are particularly beneficial for active learners, as these methods allow them to process information actively.

Reflective Learners: Reflective learners, on the other hand, prefer to think things through and reflect on the material. They benefit from time to ponder and absorb information before acting. Reflective learners thrive in environments that offer opportunities for individual study, contemplation, and internal processing.

Sensing vs. Intuitive Learners

Sensing Learners*:* Sensing learners are practical and detail-oriented. They prefer learning that is concrete, methodical, and based on real-world applications. Sensing learners enjoy facts, data, and a step-by-step approach to problem-solving. They are often more comfortable with tasks that have clear instructions and predictable outcomes.

Intuitive Learners*:* Intuitive learners, in contrast, are more abstract and innovative. They enjoy exploring concepts, theories, and possibilities, often looking for connections and patterns that may not be immediately apparent. Intuitive learners are drawn to complexity and novelty, thriving in environments that encourage creative thinking and exploration.

Visual vs. Verbal Learners

Visual Learners*:* Visual learners absorb information best through visual aids such as diagrams, charts, graphs, and pictures. They benefit from seeing information presented in a spatial format and often prefer to use visual tools for organizing their thoughts and understanding complex concepts. Visual learners prefer to see information presented in a visual format. They learn best through graphs, charts, diagrams, and other visual aids. They often benefit from using colour coding, mind maps, and visual summaries to organize and remember information. Visual learners may find it helpful to watch videos or use online resources that provide visual representationsofconcepts.

Verbal Learners: Verbal learners, on the other hand, excel with written and spoken words. They prefer reading, writing, and listening to lectures. Verbal learners often find it easier to express their understanding and ideas through language rather than through visual representations.

Sequential vs. Global Learners

Sequential Learners**:** Sequential learners understand information in a linear, orderly fashion. They prefer to learn in logical steps, building on previous knowledge incrementally. Sequential learners thrive with structured lessons and clear progressions through the material.

Global Learners**:** Global learners, however, tend to grasp the overall picture before understanding the details. They often make intuitive leaps and may struggle with step-by-step instruction. Global learners benefit from seeing the big picture and understanding how individual pieces of information fit into a broader context.

Understanding your learning style can be helpful in designing study techniques and finding resources that align with your preferences. However, it's also important to be open to different methods and adapt your learning approach as needed. Experimenting with different strategies and incorporating a variety of resources can enhance your overall learning experience.

Objectives of the Study

- To compare the mean scores of Learning Style of Undergraduate Students studying Economics on the basis of Gender and Locale

- To compare the mean scores of Achievement in Economics of Undergraduate Students studying Economics on the basis of Gender and Locale
- To find out the Association between Learning Style and Achievement in Economics of Undergraduate Students studying Economics.

Hypotheses of the Study

- There exists no significant difference in the mean scores of Learning Style of Undergraduate Students studying Economics on the basis of Gender and Locale
- There exists no significant difference in the mean scores of Achievement in Economics of Undergraduate Students studying Economics on the basis of Gender and Locale
- There exists significant Association between Learning Style and Achievement in Economics of Undergraduate Students studying Economics

II. Methodology Of The Study

The present study investigates Learning styles and Achievement in Economics of Under Graduate students studying in various colleges under University of Calicut. The investigator conducted survey. Survey method is an organized attempt to analyse, interpret and report the present status of social institution, group or area (Sidhu, 1944)) to find out the Association between Learning Style and Achievement in Economics by giving due representation to Gender of Student (Male and Female) and Locale of the student (Rural an Urban).

Tools used for Data Collection

Data was collected from sample using the tools developed and standardized by the investigator with the help of supervising teacher. Two tools were developed and standardized in order to measure the variables. The **Learning Style Inventory** assessed undergraduate students' learning styles initially comprising 71 items; the tool was refined after administration to 120 students and finalizing 43-items, two-point self-report scale based on four components: Active-Reflective, Sensing-Intuitive, Visual-Verbal, and Sequential-Global, derived from relevant theoretical frameworks. The **Achievement Test in Economics** measured student performance across four domains Knowledge, Comprehension, Application, and Analysis using 31 objective-type questions. It was developed and standardized based on Bloom's taxonomy procedure with a sample of 300 students.

Analysis of the Study

In the present study, Learning style and Achievement in Economics are the variables. A representative sample of 300 Under graduate students was selected using the simple random sampling technique. Tabulation of the data was done and statistically analysed using the IBM SPSS STATISTICS 26 software. Descriptive statistics is a branch of statistics that aims at describing a number of features of data usually involved in a study. The main purpose of descriptive statistics is to provide a brief summary of the samples and the measures done on a particular study

Preliminary Analysis

Before conducting major statistical analyses, key statistical measures—mean, median, mode, standard deviation, skewness, and kurtosis—were calculated for two variables across a sample of 300 students.

Learning Style

Mean: 31.74 **Median:** 32 **Mode:** 33 **SD:** 4.360 **Skewness:** -0.329 **Kurtosis:** 0.670

The close values of mean, median, and mode suggest a near-normal distribution. Slight negative skewness and a positive kurtosis indicate the distribution is approximately normal and slightly platykurtic.

Achievement in Economics

Mean: 17.56 **Median:** 18 **Mode:** 17 **SD:** 1.872 **Skewness:** -0.459 **Kurtosis:** 0.178

Similar to learning style, the values point to a near-normal distribution with slight negative skewness and a platykurtic tendency.

Major analysis

Major analysis of the study involves test of significance of difference between the mean score and Pearson's product moment correlation analysis.

Mean Difference Analysis

To examine differences in mean scores based on students' stream of study and locale, t-tests were conducted. A t-value ≥ 1.96 was considered significant at the 0.05 level, and ≥ 2.58 at the 0.01 level. Results are detailed in the following section.

Table 1

The comparison of mean scores of Learning Styles among undergraduate students on the basis of Locale

Variable	Locale of the Student	N	Mean	Standard Deviation	t-value	Level of Sig.
Learning style	Urban	153	31.13	4.62	2.384	p>0.05
	Rural	147	32.32	4.02		

Table shows that urban students had a mean learning style score of 31.13 (SD = 4.62), while rural students had a mean of 32.32 (SD = 4.02). The critical ratio (t = 2.384, p < 0.05) exceeds 1.96, indicating a significant difference at the 0.05 level. Rural students scored significantly higher in learning style than urban students. Thus, students from rural areas demonstrate stronger learning styles than their urban counterparts.

Table 2

The comparison of mean scores of Learning styles among undergraduate students on the basis Gender

Variable	Locale of the Student	N	Mean	Standard Deviation	*t*-value	Level of Sig.
Learning style	Girl	222	32.07	4.051	2.263	p>0.05
	Boy	78	30.78	5.047		

A mean difference test showed that undergraduate Economics students differ significantly in learning styles based on gender (t = 2.263, *p < 0.05). Girls had a higher mean score (32.07) than boys (30.78), indicating that girls exhibit stronger learning styles. Thus, Economics students under Calicut University show gender-based differences, with girls scoring higher than boys.

Table 3

The comparison of mean scores of Achievement in Economics among under graduate students on the basis of Local

Variable	Locale of the Student	N	Mean	Standard Deviation	*t* - value	Level of Sig.
Achievement in Economics	Urban	154	18.08	1.738	4.811	p<0.01
	Rural	146	17.07	1.869		

A mean difference test showed a significant difference in Economics achievement between urban and rural undergraduate students (t = 4.811, *p < 0.01). Urban students had a higher mean score (18.08) than rural students (17.07), indicating greater achievement. Thus, Economics students from urban areas under Calicut University perform better than their rural counterparts.

Table 4

The comparison of mean scores of Achievement in Economics among under graduate students on the basis of Gender

Variable	Locale of the Student	N	Mean	Standard Deviation	*t* - value	Level of Sig.
Achievement in Economics	Girl	225	17.63	1.940	1.069	p<0.05
	Boy	75	17.36	1.649		

The mean difference test showed no significant difference in Economics achievement between girls (M = 17.63) and boys (M = 17.36) among undergraduate students (t = 1.069, *p > 0.05). Thus, under Calicut University, gender does not influence achievement in Economics.

Chi-Square Analysis

Table 5

Investigation of the Association between Learning Style-1and Achievement in Economics among under graduate students for Total Sample

	Value	*df*	p

χ^2		40	0.037
N	300		

The chi-square test showed no significant association between Learning Style and Achievement in Economics among undergraduate students, χ^2 (40, N=300) = 0.03, p = 0.371. Thus, learning style is not associated with Achievement in Economics for students under Calicut University.

Table 6

Investigation of the Association between Learning Style- 2 and Achievement in Economics among under graduate students for Total Sample

	Value	***df***	**p**
χ^2		100	0.039
N	300		

The chi-square test showed no significant association between learning style two and Achievement in Economics, χ^2(100, N=300) = 0.03, p = 0.390. Thus, no link exists between Learning Style Two and Achievement among Calicut University undergraduate students.

Table 7

Investigation of the Association between Learning Style- 3and Achievement in Economics among under graduate students for Total Sample

	Value	**df**	**p**
χ^2		120	0.033
N	300		

The chi-square test shows a significant association between Learning Style three and Achievement in Economics, χ^2 (120, N=300) = 0.03, p = 0.33. Thus, Learning Style Three is linked to Achievement among Calicut University undergraduate students.

Table 8

Investigation of the Association between Learning Style-4and Achievement in Economics among under graduate students for Total Sample

	Value	***df***	**p**
χ^2		70	0.032
N	300		

The chi-square test indicates an association between learning style four and achievement in Economics, χ^2(100, N=300) = 0.03, p = 0.32. Thus, Learning Style Four is linked to Achievement among Calicut University undergraduate students.

III. Conclusion

Data analysis shows that. significant differences were found based on locale and gender in learning style, but not in achievement by gender. Urban students performed better than rural students. The result of chi-square analysis (Pearson's chi-square) shows that, there exists a Association between learning style three and four to Achievement in Economics and also there is no association between learning style one and two to Achievement in Economics of under graduate students studying in various arts and science colleges under University of Calicut.

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