Learning Styles among High School, Pre-University and Degree Students

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Abstract:

This study aimed at exploring visual, aural, read/write and kinesthetic learning styles among high school, pre-university and degree students. The sample consisted of a total of 90 students from Bangalore, 30 from each education level. Random sampling technique was used to draw the sample. The sample was administered the Learning styles Inventory by Dr. S.V. Suryarekha. The obtained data were analyzed using One-Way ANOVA to find out the difference between the education level, and independent samples 't' test to study gender differences. The findings revealed that there is a significant difference between High School and Pre-university students, and High School and Degree students in Read/Write learning style. Also, gender differences exist in the area of kinesthetic learning style.

Keywords: *Learning Styles; Education level; Gender Differences*

I. INTRODUCTION

A learning style is the way in which an individual consistently responds to stimuli and uses them in the context of learning. Keefe (1979) has defined learning styles as the "composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment."

There have been many theories and psychological and educational views on different learning styles, how they can be improved and be incorporated into academics for betterperformance. Neil Fleming's VARK model expanded upon earlier notions of sensory modalities such as the VAK model of Barbe and colleaguesand the representational systems (VAKOG) in neurolinguistic programming. The four sensory modalities in Fleming's model are: (1)Visual learning- this preference includes using pictures, diagrams, graphs,flow charts, arrowscircles,hierarchies,etc. in order to learn.(2)Auditory learning-this preference includes information that is "heard". Students with this preference will do by listening to lectures, class discussions with teachers and talking to other students. (3)Read/write learning-this preference is for information displayed as words. Students with this preference will do well if they read text books,articles,practice writing answers etc.(4) Kinesthetic learning-this preference refers to using models,making charts,practical experience,fieldtrips etc.

Kolb's learning theory (1974) sets out four distinct learning styles, which are based on a four-stage learning cycle involving four components- (1) Concrete Experience - (a new experience of situation is encountered, or a reinterpretation of existing experience), (2) Reflective Observation (of the new experience. Of particular importance are any inconsistencies between experience and understanding), (3) Abstract Conceptualization (Reflection gives rise to a new idea, or a modification of an existing abstract concept), (4) Active Experimentation (the learner applies them to the world around them to see what results).Kolb explains that different people naturally prefer a certain single different learning style. Various factors influence a person's preferred style.

Shah, Ahmed, Shenoy and Srikant (2013) conducted a study on how different are students and their learning styles. The responses from 200students were classified into multi-modal (VARK), tri-modal (VRK, VAK, VAR, ARK), bi-modal (VR, VA, VK, RK) and uni-modal (V, A, R.K) categories. Results showed that subjects had a higher preference for multimodal learning and preferred multimodal and more of Kinesthetic of learning.

Bhat and Govil (2014) conducted a study to investigate the preferred learning style of secondary level students and its role in academic performance. The study also explored the differences in learning styles in relation to gender, residential background and type of institution. The sample of the study consisted of 510 secondary school students. Kolb's (1999) learning style inventory (LSI) was used to assess the preferred learning style of 10th grade students of South Kashmir. The students'previous examination scores were used to study the relationship between learning styles and academic achievement. The findings of the study revealed that majority of the students showed accommodator and assimilator as their most preferred learning styles. The analysis of data reveals that learning styles affect academic performance of students. The study also depicts that demographic variables like gender, place of living did not affect learning styles. However, the type of institution in which the learner studies (Govt. /Private) significantly affected the preference of learning style.

Bhat (2014) studied the learning styles and its influence on teaching/learning process, and found that students' learning styles enabled teachers to organize their instruction

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according to their needs. And, identifying their learning styles facilitated the learning and learners to become more self-confident.

Learning styles are measured by points along a scale that help us to discover the different forms of mental representations; however, they are not good characterizations of what people are or are not like. We should not divide the population into a set of categories (i.e., visual and auditory learners). What these various instruments attempt to do is to allocate a person on some point on a continuum (similar to measuring height or weight).This study aims to explore Visual, Aural, Read/Write and Kinesthetic learning styles and gender differences among high school, pre-university and degree students, based on Fleming's model.

II. METHOD

Objectives

- To explore the learning styles among high school, pre-university and degree students
- To find out gender differences in learning styles

Hypotheses

- "There is no significant difference in the various learning styles among high school, pre-university and degree students"
- " There are no significant gender differences in the learning styles of high school, pre-university and degree students"

Variables

Dependent variable: Learning styles- Visual, Aural, Read/Write and Kinesthetic

Independent variable: Level of education-High school, Pre-university and Degree; Gender

Sample

The sample for this study comprised of a total of 90 students, 30(15 boys and 15 girls) from high school, 30 (15 boys and 15 girls) from pre-university and 30(15 boys and 15 girls) from degree, urban setting. Simple Random Sampling procedure was used to draw the sample for the study.

Test Used

Learning Styles Inventory by Dr. S. V. Suryarekha: This inventory consists of 40 questions that assess the areas of visual, aural, read/write and kinesthetic styles.

Procedure

The principals/heads of three High schools, Pre-university and DegreeCollegesin Bangalore were approached to obtainthe permission to conduct the study. After obtaining the permission, fifteen boys and fifteen girls from each level were randomly selected. The purpose of the study wasbriefed and rapport was established. Socio-demographicdetails were collected in the data sheet prepared, and wasfollowed by the instructions separately to answer the questionnaire. The subjects and the principals of the respectiveEducational Institutions were thanked for their co-operative participation.

III. RESULTS AND DISCUSSION

The obtained scores were analyzed using SPSS to compute descriptive statistics and One-way ANOVA to study the differences between High school, Pre-university and Degree students and't' test to study gender differences in Learning Styles.

Table-1: Summary of One-Way ANOVA for learning styles in High School, Pre-University and Degree Students

	Sum of Squares	df	Mean Square	F
VisualBetween Groups	8.95	2	4.47	1.33
Within Groups	291.76	87	3.35	
Total	300.72	89		
Aural Between Groups	21.62	2	10.81	2.71
Within Groups	346.70	87	3.98	
Total	368.32	89		
Read/Write Between Groups	138.95	2	69.47	12.31**
Within Groups	490.86	87	5.64	
Total	629.82	89		
Kinesthetic Between Groups	8.60	2	4.30	0.85
Within Groups	437.50	87	5.00	
Total	444.10	89		

** P< 0.01

Table-2: Summary of Scheffe's Post-Hoc Test

Dependent Variable	Education (I)	Education (J)	Mean Difference
Read/Write	High School	PUC	2.43*
		Degree	2.80*
	PUC	High School	-2.43*
		Degree	0.36
	Degree	High School	-2.80*
		PUC	-0.36

*P<0.05

An observation of Table-1 suggests that the 'F' values are not significant at .05 levels for Visual, Aural and Kinesthetic learning styles among High School, PUC and Degree Students. Therefore the null hypothesis, " There is no significant difference in Visual, Aural and Kinesthetic learning styles among high school, pre-university and degree students", is proved and accepted. The F value for Read/Write learning style is significant at .01 levels and therefore, the hypothesis; "There is no significant difference in Read/Write learning styles among high school, pre-university and degree students" is disproved and rejected.

An inspection of Table-2 shows the post-hoc test for Read/Write learning style. The mean difference between high school and pre-university students is significant at 0.05 levels; and the mean difference between high school and degree students is also significant at 0.05 levels. Therefore, the hypothesis, "there is no significant difference in read/write learning styles among high school and pre-university, and high school and degree students", is disproved and rejected. However, the mean difference between pre-university and degree students is not significant at 0.05 levels. Thereby substantiating the hypothesis, "there is no significant difference in read/write learning style between pre-university and degree students."

Table 3 : Mean, S.D. and 't' for gender differences in learning styles

	Gender	N	Mean	SD	df	t
Visual	Male	45	6.93	1.85		
	Female	45	6.96	1.84	88	.05
Aural	Male	45	6.91	2.10		
	Female	45	6.40	1.94	88	1.19
Read/Write	Male	45	6.36	2.57		
	Female	45	5.56	2.71	88	1.43
Kinesthetic	Male	45	5.93	2.18		
	Female	45	4.93	2.18	88	2.16*

* P< .05

An observation of Table-3 suggests that't' value for Visual, Aural, Read/Write learning styles is not significant at .05 level. Therefore, the null hypothesis, "there is no significant gender difference in visual, aural and read/write learning styles among students", is proved and accepted. However, the't' value for Kinesthetic learning style is significant at .05 level, thereby disproving and rejecting the hypothesis, " there is no significant gender difference in kinesthetic learning styles among students".

IV. CONCLUSION

The aim of the study was to explore the learning styles among high school, pre-university and degree students, and to find out gender differences in learning styles from a sample of a total of 90 students from Bangalore. The following conclusions can be drawn:

- High school students and pre-university students differ significantly in Read/Write learning style
- High school students and degree students differ significantly in Read/Write learning style
- Significant gender differences can be indentified in kinesthetic learning style

V. IMPLICATIONS AND SCOPE FOR FURTHER STUDY

This study provides an insight about how there is a change in the read/write learning style as function of age. This can be further correlated to the academic performance of the students and intervention programs can be developed to improve the learning styles, if need be. Also, the study can incorporate a larger sample size, and qualitative study about using the learning styles.

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