



Learning Styles of Undergraduate and Post-graduate Students

K.S. Misra

Dean, Faculty of Arts, University of Allahabad, UP, India

Corresponding author: ksmisra1955@yahoo.co.in

ABSTRACT

The present study has been done to find out whether students studying in B.A. part II, B.A. part III and M.A. previous differ from one another on various learning styles. Sample for the study consisted of 180 students. 60 students were selected from each of the three classes. Learning Style Inventory constructed by the investigator was used to measure eleven learning styles. One way Analysis of Variance and LSD Test were used to analyze the data. Results revealed that- as compared to students of B.A. Part II and B.A. Part III, students of M.A. previous give more preference to various learning styles, students of B.A. Part III give more preference to reproducing specially verbal reproducing learning styles than students of B.A. part I, and students of B.A. part II and III have equal preferences for enactive, figural, verbal, reproducing and constructive learning styles.

Keywords: Learning styles, students, LSD Test

Learning styles refer to how a learner perceives, interacts with, and responds to the learning environment. Enactive and figural representations of the subject matter have much impact on learning outcomes. Our teachers usually do not measure students' learning styles and match them to instructional methods employed by them. But there is no doubt that matching students' learning-style preferences with instruction can improve students' academic achievement and attitudes toward learning. Most people favour some particular method of interacting with, taking in, and processing stimuli or information. Dunn, *et al.* (1995) suggested that matching students' learning-style preferences with educational interventions compatible with those preferences is beneficial to their academic achievement.

Geiger, Boyle and Pinto (1992) performed factor analysis of Kolb's revised Learning Style Inventory (LSI) using data from 718 introductory accounting students. The results

supported two bipolar learning dimensions different than those theorized, and only one separate learning ability. Learning dimensions running from Concrete Experience (feeling) to Reflective Observation (watching), and from Abstract Conceptualization (thinking) to Active Experimentation (doing) were found, along with the distinct construct of Abstract Conceptualization. Busato, *et al.* (1998) studied four different learning styles viz.- a meaning directed, a reproduction directed, an application directed and an undirected style. Fox, Mcmanus and Winder (2001) used 18-item version of the 'Study Process Questionnaire (SPQ)' which measures three learning orientations: surface, deep, and achieving. Overman (2008) prepared 'I Like Your Style: Learning Style Inventory' to assess three learning styles namely, visual (learning by seeing), auditory (learning by hearing), and tactile (learning by touching/doing). According to him, visual learners make up around 65% of the population, auditory learners make up about 30% of the population and tactile learners make up about 5% of the population.

The author is of the view that students usually use six main learning styles namely- enactive reproducing, enactive constructive, figural reproducing, figural constructive, verbal reproducing and verbal constructive. They can be defined as given below:

1. **Enactive reproducing:** It indicates one's preference for action based concrete experiences. The emphasis is on imitation and practice. It is reproduction oriented.
2. **Enactive constructive:** It indicates preference for conceptualizing one's experiences based on the processing of enactive information.
3. **Figural reproducing:** It refers to one's preference for visual experiences related to making diagrams, charts, pictures, maps and photographs. The emphasis is on imitation and practice. It is reproduction oriented
4. **Figural constructive:** It refers to the preference for processing of figural experiences which will lead to conceptualizations.
5. **Verbal reproducing:** It refers to written or spoken information related to subject matter communicated through words.
6. **Verbal constructive:** It refers to the preference for reflective accommodative, abstract thinking about subject matter so as to develop conceptualizations.

The present study has been done to study the learning styles of students of B.A. Part II, B.A. Part III and M.A. Previous.

Objective of the Study

The objective of the present study is- to compare the learning styles of students of B.A. part II, B.A. part III and M.A. Previous.

Methodology

Sample: Sample for the study consisted of 180 students. 60 students were selected from each of the three classes namely- B.A. part II, B.A. part III and M.A. Previous.

Tool used: Learning Style Inventory constructed by the investigator was used to measure eleven learning styles.

Statistics used: One way Analysis of Variance was used to analyze the data. Multiple comparisons of means were done by using LSD test.

RESULTS AND DISCUSSION

Table 1: Summary of results of ANOVA showing differences in reproducing and constructive learning styles of students of different grades

Sl. No.	Learning style	Source	Mean square	F-Ratio
1	Reproducing	Between Groups	1826.506	17.730**
		Within groups	103.017	
2	Constructive	Between Groups	3010.972	17.128**
		Within groups	175.791	

*df = 2, 177, ** significant at .01 level.*

Table 1 shows that F ratio for reproducing and constructive learning styles are 17.730 and 17.128 respectively. Both are significant at .01 level. This reveals existence of significant differences in reproducing and constructive learning styles of students studying in undergraduate and post-graduate classes. Further analysis was done with the help of LSD Test. Its results are shown in Table 2.

Table 2: Means for students of B.A. part II, B.A. part III and M.A. Previous on reproducing and constructive learning styles and significant mean differences

1	Reproducing	1	B.A. part II	67.6667	1 and 2	3.6833*
		2	B.A. part III	71.3500	1 and 3	10.8500**
		3	M.A. Previous	78.5167	2 and 3	7.1667**
2	Constructive	1	B.A. part II	71.6000	1 and 2	3.9167
		2	B.A. part III	75.5167	1 and 3	13.7500**
		3	M.A. Previous	85.3500	2 and 3	9.8333**

/ significant at .05/.01 level*

On constructive learning style students of B.A. part II and III do not differ but students of M.A. previous exhibit better constructive learning styles as compared to students of B.A. part II and III. This seems to be a reflection of the thrust on more constructive thinking while learning in and outside the classroom during curriculum transaction in M.A. classes. On reproducing learning style students of M.A. previous are better than those of B.A. part II and III, and students of B.A. part III are better than the students of B.A. part II. This points to increase in the thrust on memory based learning with increase in grade level. The real conditions of the B.A. and M.A. classes bear testimony to the fact that both reproducing and constructive learning styles are emphasized by students of undergraduate and post-graduate classes.

Table 3: Summary of results of ANOVA showing differences in enactive, verbal and figural learning styles of students of different grades

Sl. No.	Learning style	Source	Mean square	F-Ratio
1	Enactive	Between Groups	1383.2000	18.757**
		Within groups	73.743	
2	Figural	Between Groups	693.106	12.212**
		Within groups	56.758	
3	Verbal	Between Groups	1174.506	14.001**
		Within groups	83.888	

*df=2, 177, ** significant at.01 level.*

Table 4: Means for students of B.A. part II, B.A. part III and M.A. Previous on enactive, figural and verbal learning styles and significant mean differences

Sl. No.	Learning style	Group No.	Group	mean	Groups compared	Mean difference
1	Enactive	1	B.A. part II	46.8833	1 and 2	3.000
		2	B.A. part III	49.8833	1 and 3	9.4000**
		3	M.A. Previous	56.2833	2 and 3	6.4000**
2	Figural	1	B.A. part II	43.7333	1 and 2	1.3667
		2	B.A. part III	45.1000	1 and 3	6.4500**
		3	M.A. Previous	50.1833	2 and 3	5.0833**
	Verbal	1	B.A. part II	48.6500	1 and 2	3.2333
		2	B.A. part III	51.8833	1 and 3	8.7500**
		3	M.A. Previous	57.4000	2 and 3	5.5167**

*** significant at.01 level.*

Efforts have also been made to compare students of various grade levels on verbal, figural and enactive learning styles. Results of ANOVA in table 3 show that F-ratios for enactive, figural and verbal learning styles are 18.757, 12.212 and 14.001 respectively. All of them are significant at .01 level. On all the three learning styles students of M.A. are better than the students of B.A. part II and III while students of B.A. part II and III exhibited similarity in the use of enactive, figural and verbal learning styles. Perhaps students have understood how to use the three learning styles by the time they reach class B.A. part II and afterwards the exposure to the curriculum of B.A. part II and III does not make any significant difference in adoption of enactive, figural and verbal learning styles. When students start studying in M.A. classes, they are exposed to subject specific advanced curriculum and while learning the subject matter they feel the need to change their three learning styles.

Table 5: Summary of results of ANOVA showing differences in the learning styles of students of different grades

Sl. No.	Learning style	Source	Mean square	F-Ratio
1	Enactive	Between Groups	229.756	10.881**
	Reproducing	Within groups	21.116	
2	Enactive	Between Groups	485.489	17.990**
	Constructive	Within groups	26.987	
3	Figural	Between Groups	74.217	4.019*
	Reproducing	Within groups	18.465	
4	Figural	Between Groups	314.022	13.766**
	Constructive	Within groups	22.811	
5	Verbal	Between Groups	368.006	19.125**
	Reproducing	Within groups	19.242	
6	Verbal	Between Groups	230.006	6.493**
	Constructive	Within groups	35.425	

$df=2, 177$, **/*** significant at .05/.01 level.

Table 5 shows the values of F-ratios for six learning styles. All of them are significant. So, it can be inferred that students of different grade levels differ ion their enactive reproducing, enactive constructive, figural reproducing, figural constructive, verbal reproducing and verbal constructive learning styles. Further comparisons have been made by employing LSD Test. Results have been shown in table 6.

Table 6: Means for students of B.A. part II, B.A. part III and M.A. Previous on different learning styles and significant mean differences

Sl. No.	Learning style	Group No.	Group	Mean	Groups compared	Mean difference
1	Enactive Reproducing	1	B.A. part II	23.6000	1 and 2	1.2333
		2	B.A. part III	24.8333	1 and 3	3.8333**
		3	M.A. Previous	27.4333	2 and 3	2.6000*
2	Enactive Constructive	1	B.A. part II	23.2833	1 and 2	1.7667
		2	B.A. part III	25.0500	1 and 3	5.5667*
		3	M.A. Previous	28.8500	2 and 3	3.8000*
3	Figural Reproducing	1	B.A. part II	20.3833	1 and 2	0.3667
		2	B.A. part III	20.7500	1 and 3	2.0833**
		3	M.A. Previous	22.4667	2 and 3	1.7167*
4	Figural Constructive	1	B.A. part II	23.3500	1 and 2	1.0000
		2	B.A. part III	24.3500	1 and 3	4.3667**
		3	M.A. Previous	27.7167	2 and 3	3.3667**
5	Verbal Reproducing	1	B.A. part II	23.6833	1 and 2	2.0833**
		2	B.A. part III	25.7667	1 and 3	4.9333**
		3	M.A. Previous	28.6167	2 and 3	2.8500**
6	Verbal Constructive	1	B.A. part II	24.9667	1 and 2	1.1500
		2	B.A. part III	26.1167	1 and 3	3.8167**
		3	M.A. Previous	28.7833	2 and 3	2.6667*

*/** significant at .05/.01 level.

Table 2 depicts means and mean differences for paired comparisons on learning styles. 18 mean differences are significant at .01 level while six are significant at .05 level. The mean values for various groups reveal that:

- ❖ as compared to students of B.A. Part II and B.A. Part III, students of M.A. Previous give more preference to enactive reproducing learning style;
- ❖ as compared to students of B.A. Part II and B.A. Part III, students of M.A. Previous give more preference to enactive constructive learning style;
- ❖ as compared to students of B.A. Part II and B.A. Part III, students of M.A. Previous give more preference to figural reproducing learning style.
- ❖ as compared to students of B.A. Part II and B.A. Part III, students of M.A. Previous give more preference to figural constructive learning style;

- ❖ as compared to students of B.A. Part II and B.A. Part III, students of M.A. Previous give more preference to verbal reproducing learning style;
- ❖ as compared to students of B.A. Part II, B.A. Part III students give more preference to verbal reproducing learning style;
- ❖ as compared to students of B.A. Part II and B.A. Part III, students of M.A. Previous give more preference to verbal constructive learning style;
- ❖ students of B.A. Part II and B.A. Part III give equal preference to enactive reproducing, enactive constructive, figural reproducing, figural constructive, and verbal constructive learning styles.

To sum up it can be inferred that as compared to students of B.A. Part II and B.A. Part III, students of M.A. previous give more preference to all the six learning styles. This reveals the differences in the curricular demands and examination patterns for B.A. part II, B.A. part III and M.A. previous classes. Students of B.A. Part III give more preference to verbal reproducing learning styles than the students of B.A. part II. This seems to be a reflection of the importance assigned by students of B.A. part III to their examinations for students of these classes. By the time the students reach B.A. part III they understand that adoption of verbal reproducing learning style will help them in getting more marks. Our experiences show that in B.A. Part III examinations students who prefer verbal reproducing learning style are at an advantage. It implies that at university level more emphasis should be laid on verbal constructive learning style.

REFERENCES

- Busato, V.V., Prins, F.J., Elshout, J.J. & Hamaker, C. 1998. Learning styles: A cross-sectional and longitudinal study in higher education. *British Journal of Educational Psychology*, **68**(3): 427-441.
- Dunn, R., Griggs, S.A., Olson, J., Beasley, M. & Gorman, B.S. 1995. A meta-analytic validation of the Dunn and Dunn model of learning-style preferences. *Journal of Educational Research*, **88**(6): 353-362.
- Fox, R.A., Mcmanus, I.C. & Winder, B.C. 2001. The shortened Study Process Questionnaire: An investigation of its structure and longitudinal stability using confirmatory factor analysis. *British Journal of Educational Psychology*, **71**(4): 511-530.
- Geiger, M.A., Boyle, E.J. and Pinto, J. 1992. A Factor Analysis of Kolb's Revised Learning Style Inventory. *Educational and Psychological Measurement*, **52**(3): 753-759.
- Overman, J. (2008). *I Like Your Style: Learning Styles Inventory*. Honolulu: Honolulu Community.

