Learning Style Analysis of Diploma Engineering Students

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Abstract- *This Paper is focussing on the learning styles of students undergoing diploma programmes in engineering. Students grasp different things with different learning styles. Data acquisition, processing and understanding can be done in different manner. Despite of having vast variety of educational profiling tools, very few reveal the learning psychology of student's. After surveying nearly 100 students of diploma engineering, theory revealed that there is an existence of different learning styles among the students.*

Keywords- Learning Style Analysis (LSA), diploma engineering Student

I. INTRODUCTION

Every student grows in different environment developing variety of abilities. Technically students acquire knowledge in different ways, different perspectives and with different views in mind. For example, while learning to ride a bicycle some understand it through process of verbal instruction, some may understand it through physical illustration or some may understand it through personal experience while riding a bicycle. Such different learning styles are now gaining lot of importance, as learning style majorly depend upon individual past experiences, cognitive psychology, psychomotor abilities and affective domain. So to satisfy such a diverse need of learner, educator need to first understand different learning styles of students and then act accordingly to yield better results.

Using theory developed by Dr Richard Felder and Barbara Soloman of Index of learning style which focuses on four dimensions viz active/reflective, sensing/intuitive, visual/verbal, and sequential/global analysis is conducted of diploma engineering students.

One of the most widely used models of learning styles is The Index of Learning Styles™ developed by in the late 1980s, and based on a learning styles model developed by Dr Felder and Linda Silverman.. According to this model (which Felder revised in 2002) there are four dimensions of learning styles. Thinking of these dimensions Analysis is taken on diploma Engineering students.

II. LITERATURE SURVEY

Our literature survey describes the previous research carried out by the researcher in the field of Learning Style Analysis (LSA). The researches were carried out considering the learning style Analysis of student in Engineering.

Tulsi P.K., Poonia MP and Anu Priya [6]. determined the learning styles of students pursuing master's degree programmes in engineering.

Saravana Perumaal S [7], focused on blended teaching strategies and their sequence on improving students' learning. In this course he assessed through structured feedback and informal interactions. The results demonstrate a significant improvement in students' learning experience through a set of active learning strategies

III. LEARNING STYLE ANALYSIS (LSA)

Learning styles refer to a range of competing and contested theories that aim to account for differences in individuals' learning. These theories propose that all people can be classified according to their 'style' of learning, although the various theories present differing views on how the styles should be defined and categorized. A common concept is that individuals differ in how they learn.

Elements of interaction for individual learner are detailed below.

3.1) Active-Reflective (ACT-REF)

Active learners are those who gain and understand information by doing activities on their own in discussion with others. On the other side reflective learners emphasize more on absorption of information rather than acting first on it.

3.2) Sensing-Intuitive (SEN-INT)

Sensing learners are those who focus to learn facts and like solving problems by proven methods, they avoid complications and emphasize on memorizing the facts and

practical experience. Intuitive learners will tend to work on probabilities and things that 'could be'. They despise repetitive work and find rejoice in exploring new things.

3.3) Visual-Verbal (VIS-VBL)

Visual learner, use images, pictures, colour, graph and other visual media to learn.

Verbal learners prefer activities which are based on language reasoning rather than visual information.

3.4) Sequential-Global (SEQ-GLO)

Sequential learners understand things in step by step process where each step is logically related to previous step.

Global learners sees overall picture first and then they relate all information being presented hence they solve complex problems effectively.

This study was undertaken the differences in the learning styles of students pursuing Diploma engineering and act accordingly to meet the need of students with different learning styles.

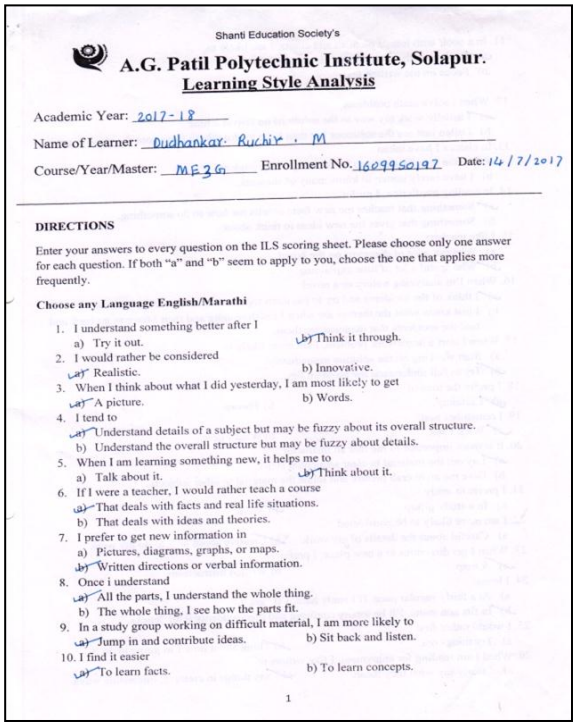
IV. SAMPLE

The sample questionnaire was distributed among 99 students of second year Mechanical Engineering at A. G. Patil Polytechnic Institute, Solapur.

4.1 Sample form and Tool Used

Index of Learning Styles (Felder and Soloman, 1994) was used to determine the learning styles of students.

A questionnaire as shown in fig. 5.1 was distributed among the students comprising of overall 44 questions in it. Based on the responses given by the students ILS scoring sheet is prepared in each response carries some weightage. Finally Index of learning style is calculated from which individual students learning style is found and these students are treated accordingly. Improved interest is further observed in students.



Shanti Education Society's

A.G. Patil Polytechnic Institute, Solapur.

Learning Style Analysis

Academic Year: 2017-18

Name of Learner: Dudhankar Ruchir . M

Course/Year/Master: ME 2 Yr Enrollment No. 160995O197 Date: 14/7/2017

DIRECTIONS

Enter your answers to every question on the ILS scoring sheet. Please choose only one answer for each question. If both "a" and "b" seem to apply to you, choose the one that applies more frequently.

Choose any Language English/Marathi

1. I understand something better after I
   a) Try it out. (b) Think it through.
2. I would rather be considered
   (a) Realistic. b) Innovative.
3. When I think about what I did yesterday, I am most likely to get
   (a) A picture. b) Words.
4. I tend to
   (a) Understand details of a subject but may be fuzzy about its overall structure.
   b) Understand the overall structure but may be fuzzy about details.
5. When I am learning something new, it helps me to
   a) Talk about it. (b) Think about it.
6. If I were a teacher, I would rather teach a course
   (a) That deals with facts and real life situations.
   b) That deals with ideas and theories.
7. I prefer to get new information in
   a) Pictures, diagrams, graphs, or maps.
   (b) Written directions or verbal information.
8. Once i understand
   (a) All the parts, I understand the whole thing.
   b) The whole thing, I see how the parts fit.
9. In a study group working on difficult material, I am more likely to
   (a) Jump in and contribute ideas. b) Sit back and listen.
10. I find it easier
    (a) To learn facts. b) To learn concepts.

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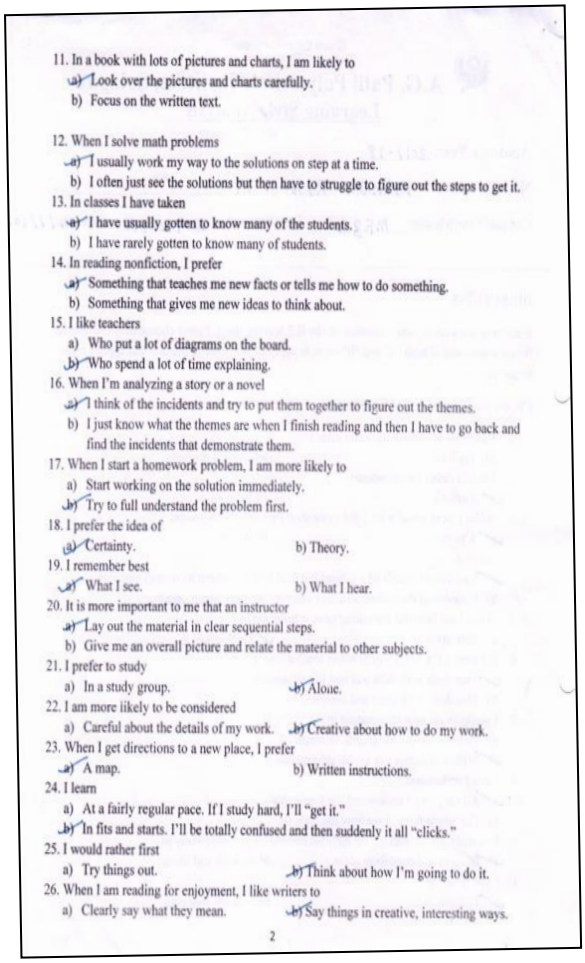
Fig. 5.1 Index of Learning Styles Question paper



11. In a book with lots of pictures and charts, I am likely to
    (a) Look over the pictures and charts carefully.
    b) Focus on the written text.
12. When I solve math problems
    (a) I usually work my way to the solutions on step at a time.
    b) I often just see the solutions but then have to struggle to figure out the steps to get it.
13. In classes I have taken
    (a) I have usually gotten to know many of the students.
    b) I have rarely gotten to know many of students.
14. In reading nonfiction, I prefer
    (a) Something that teaches me new facts or tells me how to do something.
    b) Something that gives me new ideas to think about.
15. I like teachers
    a) Who put a lot of diagrams on the board.
    (b) Who spend a lot of time explaining.
16. When I'm analyzing a story or a novel
    (a) I think of the incidents and try to put them together to figure out the themes.
    b) I just know what the themes are when I finish reading and then I have to go back and find the incidents that demonstrate them.
17. When I start a homework problem, I am more likely to
    a) Start working on the solution immediately.
    (b) Try to full understand the problem first.
18. I prefer the idea of
    (a) Certainty. b) Theory.
19. I remember best
    (a) What I see. b) What I hear.
20. It is more important to me that an instructor
    (a) Lay out the material in clear sequential steps.
    b) Give me an overall picture and relate the material to other subjects.
21. I prefer to study
    a) In a study group. (b) Alone.
22. I am more likely to be considered
    a) Careful about the details of my work. (b) Creative about how to do my work.
23. When I get directions to a new place, I prefer
    (a) A map. b) Written instructions.
24. I learn
    a) At a fairly regular pace. If I study hard, I'll "get it."
    (b) In fits and starts. I'll be totally confused and then suddenly it all "clicks."
25. I would rather first
    a) Try things out. (b) Think about how I'm going to do it.
26. When I am reading for enjoyment, I like writers to
    a) Clearly say what they mean. (b) Say things in creative, interesting ways.

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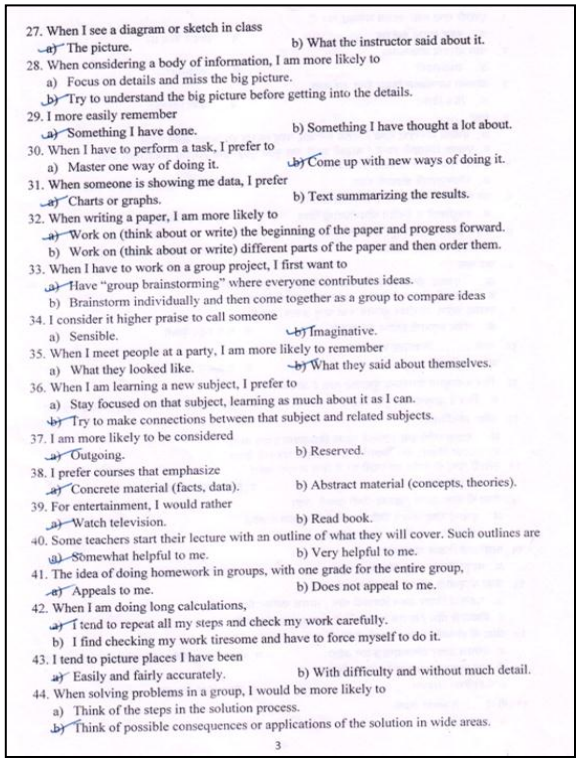
Fig. 5.2 Index of Learning Styles Question paper



27. When I see a diagram or sketch in class
a) The picture. b) What the instructor said about it.
28. When considering a body of information, I am more likely to
a) Focus on details and miss the big picture.
b) Try to understand the big picture before getting into the details.
29. I more easily remember
a) Something I have done. b) Something I have thought a lot about.
30. When I have to perform a task, I prefer to
a) Master one way of doing it. b) Come up with new ways of doing it.
31. When someone is showing me data, I prefer
a) Charts or graphs. b) Text summarizing the results.
32. When writing a paper, I am more likely to
a) Work on (think about or write) the beginning of the paper and progress forward.
b) Work on (think about or write) different parts of the paper and then order them.
33. When I have to work on a group project, I first want to
a) Have "group brainstorming" where everyone contributes ideas.
b) Brainstorm individually and then come together as a group to compare ideas
34. I consider it higher praise to call someone
a) Sensible. b) Imaginative.
35. When I meet people at a party, I am more likely to remember
a) What they looked like. b) What they said about themselves.
36. When I am learning a new subject, I prefer to
a) Stay focused on that subject, learning as much about it as I can.
b) Try to make connections between that subject and related subjects.
37. I am more likely to be considered
a) Outgoing. b) Reserved.
38. I prefer courses that emphasize
a) Concrete material (facts, data). b) Abstract material (concepts, theories).
39. For entertainment, I would rather
a) Watch television. b) Read book.
40. Some teachers start their lecture with an outline of what they will cover. Such outlines are
a) Somewhat helpful to me. b) Very helpful to me.
41. The idea of doing homework in groups, with one grade for the entire group,
a) Appeals to me. b) Does not appeal to me.
42. When I am doing long calculations,
a) I tend to repeat all my steps and check my work carefully.
b) I find checking my work tiresome and have to force myself to do it.
43. I tend to picture places I have been
a) Easily and fairly accurately. b) With difficulty and without much detail.
44. When solving problems in a group, I would be more likely to
a) Think of the steps in the solution process.
b) Think of possible consequences or applications of the solution in wide areas.

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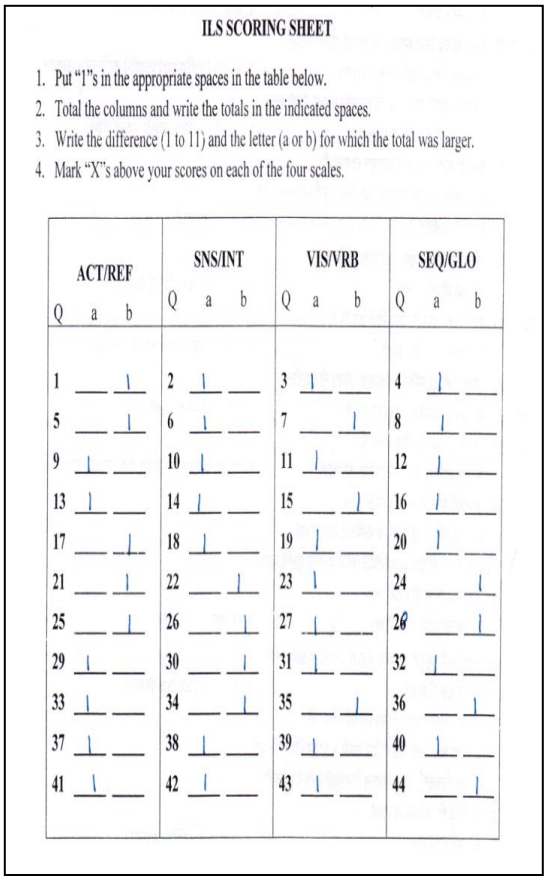
Fig. 5.3 Index of Learning Styles Question paper

4.2 ILS Scoring Sheet Sample



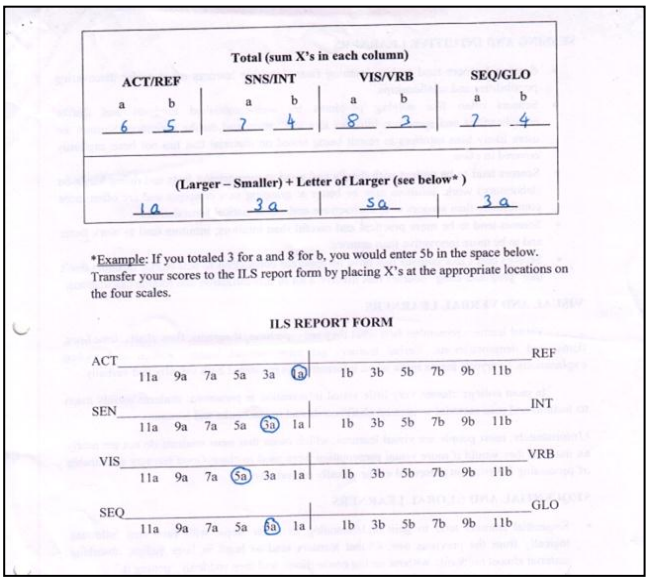
ILS SCORING SHEET

1. Put "1"s in the appropriate spaces in the table below.
2. Total the columns and write the totals in the indicated spaces.
3. Write the difference (1 to 11) and the letter (a or b) for which the total was larger.
4. Mark "X"s above your scores on each of the four scales.

ACT/REF			SNS/INT			VIS/VRB			SEQ/GLO		
Q	a	b	Q	a	b	Q	a	b	Q	a	b
1		1	2	1		3	1		4	1	
5		1	6	1		7		1	8	1	
9	1		10	1		11	1		12	1	
13	1		14	1		15		1	16	1	
17		1	18	1		19	1		20	1	
21		1	22		1	23	1		24		1
25		1	26		1	27	1		28		1
29	1		30		1	31	1		32	1	
33	1		34		1	35		1	36		1
37	1		38	1		39	1		40	1	
41	1		42	1		43	1		44		1

Fig. 6 ILS Scoring Sheet

4.3 ILS Report Form Sample



Total (sum X's in each column)

ACT/REF		SNS/INT		VIS/VRB		SEQ/GLO	
a	b	a	b	a	b	a	b
6	5	7	4	8	3	7	4

(Larger – Smaller) + Letter of Larger (see below*)

1a	3a	5a	3a

*Example: If you totaled 3 for a and 8 for b, you would enter 5b in the space below. Transfer your scores to the ILS report form by placing X's at the appropriate locations on the four scales.

ILS REPORT FORM

ACT — REF: 11a 9a 7a 5a 3a 1a | 1b 3b 5b 7b 9b 11b
SEN — INT: 11a 9a 7a 5a 3a 1a | 1b 3b 5b 7b 9b 11b
VIS — VRB: 11a 9a 7a 5a 3a 1a | 1b 3b 5b 7b 9b 11b
SEQ — GLO: 11a 9a 7a 5a 3a 1a | 1b 3b 5b 7b 9b 11b

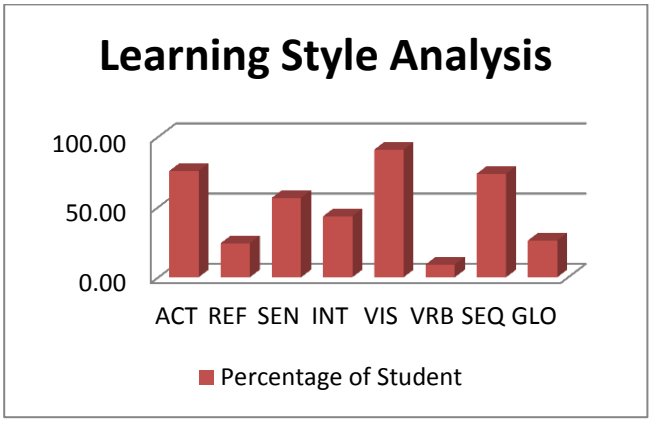
Fig. 7 ILS Report Form

V. DATA ANALYSIS AND RESULTS

The data collected by filling questionnaire by our student is shown in Table 1. which shows that existence of variety of learners.

Learning Style	No. of Students	Percentage of Student (%)
ACT	75	75.76
REF	24	24.24
SEN	56	56.57
INT	43	43.43
VIS	90	90.91
VRB	9	9.09
SEQ	73	73.74
GLO	26	26.26

Table 1 Preference for various learning styles.



Graph 1-Learning style Analysis with percentage of student.

VI. CONCLUSIONS

From the analysis of students pursuing diploma in engineering, it is observed that most of the students are Active, Visual and sequential learners on the other part there is existence of other type of learners also, for which a faculty should take effort. Overall it is the need of this hour to cater such a diversified need of students from an educator.

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