

AN EXPLORATION INTO THE LEARNING STYLES OF UNDERGRADUATE TELECOMMUNICATIONS STUDENTS

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ABSTRACT

In order to improve teaching effectiveness, one school of thought suggests that one should match the methods of instructional delivery to the learning styles of the students. This paper represents a starting point for the process of identifying the learning styles for students in an undergraduate Business Telecommunications Course.

INTRODUCTION

For over a decade Richard Felder [1] [2] has researched the learning styles of engineering students. His Index of Learning Styles (ILS) has been used in a growing number of studies exploring and characterizing how engineering students learn and how that impacts instructional design. The purpose of this study is to use Felder's ILS to characterize students in an undergraduate Business Telecommunications Course. This study is important for two reasons: to serve as an indicator of learning styles for undergraduate MIS students, and to serve as a guide for instructional delivery modifications for the instructor of an undergraduate Business Telecommunications Course. A third reason for this study is the author's belief that successful MIS students have certain characteristics in common. If indeed, learning styles are common for successful MIS students, we can take advantage of that when we examine content and delivery issues in our respective curricula.

FELDER'S INDEX OF LEARNING STYLES

Felder's ILS is currently based on four dimensions:

- Active And Reflective Learners
- Sensing And Intuitive Learners
- Visual And Verbal Learners
- Sequential And Global Learners

As described by Felder and Solomon [3], the Active/Reflective Dimension refers to the difference between learning by trying something and learning by contemplation. The Sensing/Intuitive Dimension refers to the difference between learning by knowing facts or details and learning by knowing relationships. The Visual/Verbal Dimension refers to the difference between learning more through pictures and diagrams and learning more through reading and hearing. The Sequential/Global Dimension refers to the difference between learning by following logically sequential steps and learning seeing the 'big picture'. Initially there was a fifth dimension (Inductive/Deductive), but this dimension has been dropped from the index.

Naturally, there are different instructional delivery techniques that would tend to work well with students who gravitate toward one end of any particular dimension. For instance, reflective learners would greatly benefit from frequent short pauses in lectures in order to process and think about what has been presented.

Zywno [4] talks about contributions to the validation of the ILS. Generally, Zywno finds that the scales are reliable and that the dimensions do assess different qualities.

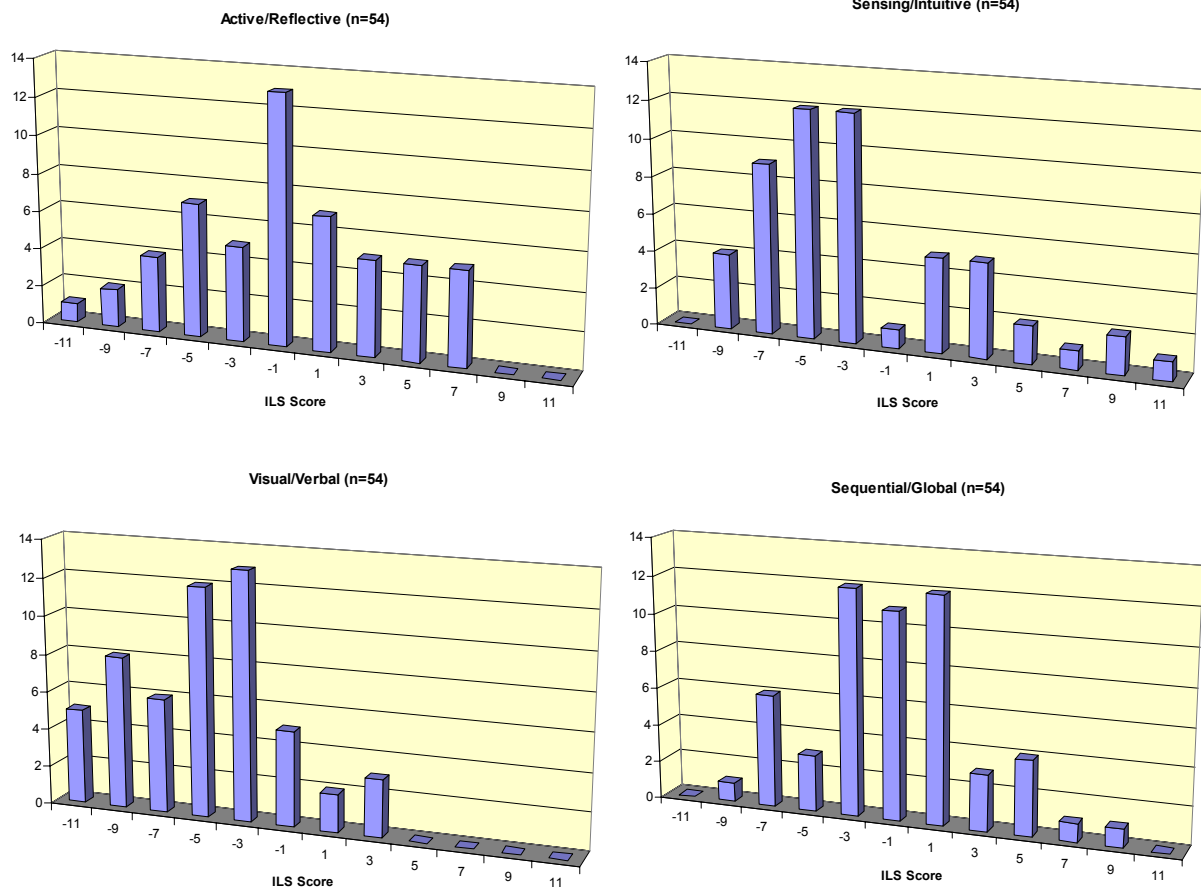
DATA COLLECTION

All students in the Undergraduate Business Telecommunications course were given a homework assignment related to the ILS. The course is supported by the WebCT environment at our University. According to the WebCT website, WebCT is a leading provider of ‘e-Learning’ solutions for higher education [5]. Through this environment, students completed their ILS and submitted their scores via a ‘quiz’ that captured their responses and ‘rewarded’ them with points toward their final grade (about 1% of their final grade). The specific instructions to students were:

The ‘quiz’ that captured their responses is shown at the end of the paper. There were five questions: one for each of the dimensions, and a fifth question to see if the student was actually at the ILS Web site. The quizzes were automatically graded. Since there is no ‘correct’ answer of the 12 possible dimension answers, students received a point for any answer. The fifth ‘control’ question was either right or wrong. The five point quiz accounted for approximately 1% of the course.

PRELIMINARY DATA ANALYSIS

Fifty four students completed the ILS. While the data has yet to be analyzed, the cursory information is interesting. Distributions of the ILS scores are shown in the graphs below.



The students, as a whole, seem to be slightly more toward the Active Learner end of the Active/Reflective Dimension. They are more strongly toward the Sensing end of the Sensing/Intuitive Dimension. Most notable is the very strong indication that the students are Visual learners on the Visual/Verbal Dimension. Finally, the students seem to be slightly Global learners on the Sequential/Global Dimension. The initial data summary is shown below in Table 1.

TABLE 1. INITIAL DATA (N=54)

	Active/Reflective	Sensing/Intuitive	Visual/Verbal	Sequential/Global
Mean	-0.70	-2.41	-4.85	-1.04
Median	-1	-3	-5	-1
StDev	4.57	4.94	3.70	3.84

PRELIMINARY SUMMARY

While it is clear that this study is very preliminary, there are implications already present for serving as a guide for instructional delivery modifications for the instructor of an undergraduate Business Telecommunications Course. Clear presentation of facts and details is indicated, but more importantly, there must be an effort to incorporate visual effects into the traditional lecture. In this particular case of an Undergraduate Business Telecommunications course, this was ratified by comments from the students indicating how appreciative they were of very small animations depicting concepts related to Ethernet broadcasts and CSMA-CD error control.

While this is currently a preliminary study, the intent is to continue capturing and analyzing this type of data over a several year period.

REFERENCES

[1] Felder, RM, "Learning and Teaching Styles in Engineering Education," *Engineering Education*, 78(7), 1988

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[3] Felder RM and Solomon BA, "Learning Styles and Strategies," <http://www.ncsu.edu/felder-public/ILSdir/styles.htm>

[4] Zywno, MS, "A Contribution to Validation of Score Meaning for Felder-Solomon's Index of Learning Styles," *Proceedings of the ASEE Annual Conference*, 2003.

[5] WebCT home page, <http://www.webct.com/company>.