

Effects of Visual and Verbal Learning Styles on Learning

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Abstract

This article examined the visual and verbal learning styles of on campus learners as correlated with their academic progress. Learning styles models have been used regularly within the learning and teaching environment. This study used the *Index of Learning Styles* to survey the learners. Results indicated that the majority of the learners were Visual (n=15) and the remaining were categorized as Verbal (n=7). Academically, the Visual learners maintained higher academic success rates. This study reinforces the importance of meeting individual learners' learning styles in an educational setting as well as instructor awareness and curriculum enhancements possibilities.

Introduction

An emerging issue in education is the understanding and application of individual learning styles. Knowing the learning styles of the learners aids the designer or instructor to develop a curriculum to address various needs of the learners in a group or class. Kirby (1979) mentioned that the term learning style came into use when researchers began to look for ways to combine course presentation and materials to match the needs of each learner. Keefe (1979) indicated that learning style may be defined as the cognitive, affective, and physiological factors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment.

Claxton & Murrell (1987) have discussed learning styles extensively in their research. Presently a considerable amount of attention is being given to learning styles constructs that have paved the way to several learning style theories and instruments (Felder, 1993; Felder & Brent, 2005; Felder & Henriques, 1995; Hall, 2005; Heiman, 2006; Manochehri & Jon, 2006; Mupinga, Nora, & Yaw, 2006; Price, 2004; Sheridan & Steele-Dadzie, 2005; Silverman, 2006; Ware, & O'Donoghue, 2005.)

Methods

The pilot study explored the visual/verbal learning styles of on campus learners and their academic success. The purpose of the study was to determine whether the visual/verbal learning styles affect the learning of the learners. The two domains of learning styles for this study were Visual and Verbal.

The research question addressed in this study was “What are the differences between the visual /verbal learning styles that affect the learning (their grades) of undergraduate learners on campus?” The null hypothesis was that visual/verbal learning styles do not have an affect on the learning of learners. The alternative hypothesis was that the visual/verbal learning styles have an affect on the learning of learners.

Felder & Solomon (2007) explained that visual learners remember best what they see--pictures, diagrams, flow charts, time lines, films, and demonstrations. They tend to find diagrams, sketches, schematics, photographs, flow charts or any other visual representation of course material that is primarily verbal very useful to learn. They use concept maps listing key points, enclosing them in boxed or circles, drawing lines between concepts to show connections. They color code notes with highlighter so that everything relating to one topic is the same color.

Felder & Solomon (2007) explained that verbal learners get more out of words--written and spoken explanations. They write summaries or outlines of course material in their own words, work in groups to have more effective learning experience, gain understanding of material by hearing classmates' explanations and learn even more when they do the explaining.

The sample for this study included those taking classes on campus at a major four-year southeastern university. Participants in this study were majoring in Education. A total of 22 individuals were surveyed. Montecinos and Neilsen (1997) indicated that teacher-preparation programs are predominantly attended by female students.

There were several limitations to this study. The small sample size representing the learners does not address all learners' learning style preferences. A larger sample size would be more appropriate for future research. This study does not reflect the participant's strengths in other learning styles. Different courses and different instructors might provide adequate assistance in other learning styles and aid the learners learn better and faster.

There were several assumptions associated with this study. It was assumed that visual learners learn better than the verbal learners. The sample used in this study represented a normal distribution. Equal homogeneity assumption is maintained according to the Levene's Test of Equality of Error Variances $F(1, 20) = 2.513, p = 0.129$. The sample was randomly and independently selected.

The information about this sample was obtained by contacting the instructor of a specific class at the university. The participants were eligible to participate in this study only if they are enrolled in on campus courses. The purpose of the study was explained

and surveys were provided to those who showed interest in learning about their learning styles.

Instrumentation

The *Index of Learning Styles* by Richard M. Felder, and Barbara A. Solomon, North Carolina State University, Raleigh, North Carolina was used to survey the learners (Felder & Solomon, 2006). The survey contains questions related to four domains – Active/Reflective, Sensitive/Intuitive, Sequential/Global and Visual/Verbal. However, for this study only the Visual/Verbal scores were taken into consideration to examine the visual and verbal learning styles of the participants. The paper pencil learning styles survey consisted of 44 questions with forced-choice items with two options – a and b. The participants were expected to select the appropriate answer for each question. The researcher designed a survey to collect demographic information from the learners. Demographic data consisted of gender, race, age and academic level.

Instrument Reliability/Validity

Felder et al. (2005) found estimates of reliability score from 0.56 to 0.77 using the Cronbach's Alpha statistical technique. In an unpublished study, Felder and Spurlin (2005) and Livesay, Dee, Felder, Hites, Nauman, and O'Neal (2002) examined the Index of Learning Styles survey responses of 584 learners at North Carolina State University, and found Cronbach's alpha coefficients to be in the range of 0.55 to 0.76.

Results

There were seven verbal and 15 visual learners in this group. The sample consisted of 1 male (4.5%), and 21 females (95.45%) All participants were Caucasian (100%), between the age of 20 – 25 years and were seniors. Statistical Program for Social Science 13.0 (SPSS, 2004) software has been used to analyze the data. To address the research question, data were analyzed using an Independent Samples T-Test with statistical significance set at 0.05. The independent variable was the learning style (visual/verbal) and the dependent variable was the grade.

The dependent variable is operationalized by the points achieved (score) in the course. It was found that the learners' grades have significant statistical difference between visual and verbal learners, $F(1,20) = 40.151, p < 0.001$. When the means are compared, the visual learners ($M=164.267, SD=14.71$) achieved higher scores than the verbal learners ($M=115.714, SD=20.70$). The effect size assessed by partial Eta square was 0.668 which was large.

Conclusion

Regardless of learners' background of education, teachers or instructors have the enormous task of meeting individual learners' learning styles in the educational setting. It is the nature of learners to learn in a specific way depending on the learning style. The results of this study yielded a statistically significant difference between the visual and verbal learners. The majority were visual learners which has implications in the classroom and learning environment. They learn better with pictures, diagrams, flow charts, time lines, films and demonstrations. This information should be considered important in design and development of courses, instructional or training programs. The differences of learning styles are affecting the learning and hence if addressed appropriately, there will be an enormous improvement in the learning and that more learning will occur substantially faster.

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