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# Differences in Perceived Value of Team Projects and Learning Styles of Accounting and Marketing Students

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## Abstract

This study investigates the learning styles of accounting and marketing students and, whether specific learning styles favour team projects. Based on a student sample from a Mid-Western University in the USA, our research indicates that marketing students are more active and visual learners than accounting students. In contrast, accounting students are more reflective, sensing, and sequential learners compared to marketing students. Our study also indicates that active learners and visual learners perceive higher value from participating in team projects. Overall, it appears that marketing students value team projects more than accounting Students. Our study also suggests that team projects are not for everybody. In general, marketing students value team projects more. When teaching an introductory marketing course, which is more likely to be a mix of students with different learning styles, educators may give team projects along with individual projects.

**Keywords:** learning styles, students, team projects, Felder-Silverman, visual learners.

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## I. INTRODUCTION

Learning style is defined as “the characteristic strengths and preferences in the ways individuals take in and process information” (Felder & Silverman, 1988, p. 674). In the last three decades, education researchers have understood that all students do not learn in the same manner but prefer different learning styles (Hawk & Shah, 2007). This has led to the development of several frameworks for identifying students’ learning styles and as many as 71 different learning style instruments were reported by Hall and Moseley (2005). Utilizing these frameworks, scholars have investigated popular learning style preferences of students in many disciplines including business fields such as accounting (Baker et al., 1986; Brown & Burke, 1987; Loo, 2002; Novin et al., 2003; and Henry, 2004) and marketing (Tom & Calvert, 1984; Karakaya et al., 2001).

There are several reasons for this interest among scholars. Understanding students’ preferred learning styles can help instructors develop more effective teaching strategies. When instructors design their courses and lectures incorporating learning styles, students’ learning is enhanced due to better comprehension (Graf et al., 2007). On the other hand, if there is a mismatch, students may have difficulty in understanding the material. This is especially true with students who have a strong preference for a particular type of learning style (Felder & Silverman, 1988; Felder & Soloman, 1993). Overall, the most critical aspect of understanding learning styles is to design effective instruction (Felder & Spurlin, 2005).

Although several studies have investigated the learning styles of management, marketing, and accounting students, there are no studies, to the authors’ knowledge,

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which compare the learning styles of accounting and marketing students. Accounting and marketing students are thought to be opposites on various personality dimensions, a notion with support in the literature (Kochunny et al., 1992; Noel et al., 2003; and Pringle et al., 2010). We seek to determine if differences exist in the domain of preferred learning style. Therefore, this study's first purpose is to investigate the learning styles of accounting and marketing students and make pedagogical recommendations based on the findings.

Our second objective is to investigate the learning styles that favour team projects. Team projects are prevalent assignments in business schools. However, team projects have also received criticism. Students complain about the lack of shared time to meet and problems with interacting with team members. Faculty members complain that team projects require more time and effort to grade and listen to their presentations. However, there is an agreement that if team projects are designed well addressing the criticisms, they can be beneficial to the students learning (Pragman et al., 2010). To date, this topic has not been investigated about accounting and marketing students' learning styles.

Our study uses the Felder-Silverman learning style model or index of learning styles (ILS). Although there are many different learning style frameworks, we chose ILS because researchers in business disciplines have widely used it. The 44-item measure is found to be a reliable and valid measure of learning style (Zywno, 2003; Felder & Spurlin, 2005). The other reason for our choice is that the Felder and Silverman model describes learning style in great detail along four dimensions and can capture the student's tendency toward a high preference for a particular learning style (Graf et al., 2007). Additionally, it can assess the different ways students learn (Zywno, 2003).

The rest of the paper is organized as follows. First, we provide an overview of Felder-Silverman's index of learning styles (ILS) and our research questions. Second, we present a description of our methodology, followed by an analysis of results and a discussion of the findings' implications. We conclude with limitations and directions for future research.

## **II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### **2.1. Background of the Study**

#### **2.1.1. Felder–Silverman learning style model**

The Felder–Silverman learning style model (Felder & Silverman, 1988) was first developed to understand engineering students' learning styles. According to this model, students' learning is a two-step process: (a) reception, and (b) processing of information. In the reception step, students select the external information that is received through the five senses and internal information that arises through introspection for processing. The processing step involves what students do with the information. The model consists of four dimensions:

Input (visual-verbal), perception (sensing-intuitive), processing (active-reflective), and understanding (sequential-global). This model is shown below in Table 1.

The ILS is an instrument used to assess students' preferences in the four dimensions: sensing-intuitive, visual-verbal, active-reflective, and sequential-global. There are four scales to measure these four dimensions. Each of these four scales has eleven items. Each item has a possible 'a' and 'b' response that corresponds to either one or the other category of the dimension of that scale (for example: verbal-visual dimension, which can be thought of as end-points on a continuum). For each of the four scales corresponding to the four dimensions, the 'a' responses and 'b' responses are totaled. Then the smaller total is subtracted from the larger one and the letter (a or b) is

added to the difference to obtain a score from 11a to 11b. If the score on a scale is 1 or 3, the student has a balanced learning style on the two categories on the dimension. If the score on a scale is 5 or 7, the student has a moderate preference for one of the categories on the dimension of that scale. Such a student will learn better in a teaching environment that favours that category. Finally, if the score is 9 or 11, the student has a very strong preference for one category of that dimension and such a student may find the learning environment very difficult if the teaching method does not match his/her preference (Felder & Solomon, 1993).

Table 1

**Dimensions of Felder–Silverman Learning Style Model**

Dimension		Description
Visual Auditory	} <span style="border: 1px solid black; padding: 5px;">Input</span>	Visual learners: learn best through visual means such as pictures. Verbal learners: learn best through words and spoken explanations.
Sensing Intuitive	} <span style="border: 1px solid black; padding: 5px;">Perception</span>	Sensing learners: prefer to learn facts and solve problems; prefer hands-on work, tend to be practical. Intuitive learners: prefer to discover possibilities and relationships; like innovation and working with ideas; tend to look at the big picture.
Active Reflective	} <span style="border: 1px solid black; padding: 5px;">Processing</span>	Active learners: learn best by applying the concepts; like activities and group work. Reflective learners: like to think about what they have learned; try to relate the knowledge learned to their own lives; prefer to understand first and then act; and prefer working alone.
Sequential Global	} <span style="border: 1px solid black; padding: 5px;">Understanding</span>	Sequential learners: learn best in steps; do well when information is presented in a logical manner in a sequence. Global learners: learn in large jumps, are open to a wide range of ideas; are self-critical, and self-evaluate.

Several studies in business disciplines have investigated students' learning styles by applying the ILS. For instance, Henry (2004) investigated students enrolled in accounting courses and found the learning style profile of business students to be like that of engineering students, supporting the results of prior studies. Clark and Latshaw (2012) investigated the interaction of learning styles and teaching styles on student effort and performance in marketing and accounting courses. Results indicate that a learning style/teaching style match affects student performance.

### 2.1.2. Team projects

Working in teams effectively is considered a valuable skill for professionals in both accounting and marketing. For example, the American Institute of CPAs (AICPA) considers it a "core competency" for entry-level accountants (AICPA, 2005). McCorkle et al. (1999) assert that the ability to work in a team environment is a skill "prized by practitioners." McCorkle et al. (1999) note that working in groups teaches students to accommodate diversity, such as cultural diversity. Campion et al. (1993) study workgroups in a large corporation and assert that heterogeneity in team members' knowledge and experience allows employees to learn from one another and improve team results. Working in teams teaches students skills that can benefit them in their business careers. The importance of teamwork has long been recognized by accounting faculty. For instance, in a survey, it was found that nearly three-quarters of accounting faculty

incorporated teamwork into their classes (Bryant & Albring, 2006, quoting Albrecht & Sack, 2000, p. 54).

## **2.2. Research Questions**

### **2.2.1. Differences in learning styles**

There is not enough existing literature to indicate which majors differ in learning styles in business disciplines. Some research, however, has been done in other fields. For instance, engineering students were found to be significantly more sequential and more sensing compared to students from liberal arts and education (Litzinger et al., 2005). Engineering students were also considerably more visual than liberal arts students (Litzinger et al., 2005). Similarly, Alumran (2008) investigated the preferred learning styles of Bahraini university students. He found that information technology students were more active learners than science and law students, and education students were more active learners than science students. Given this paucity of research, we ask the following research question:

**RQ1:** do the learning styles of accounting students differ from those of marketing students?

### **2.2.2. Learning styles and perceived value of team projects**

To our knowledge, the relation between student learning style, and the perceived value of team projects has not been studied empirically, especially concerning accounting and marketing students. We anticipate that students with certain types of learning styles may be predisposed to value team projects. We find some support for this in the literature. For example, Napier and Johnson (2007) study teamwork in an introductory information systems course. Citing Kolb (1984), Napier and Johnson (2007) speculate that students with a verbal learning style preference may be predisposed to like working in groups.

Baldwin and Sabry (2003) provide an analysis of the Felder-Solomon index of learning styles (ILS), elaborating on the types of activities students of different learning styles prefer. Concerning the active versus reflective dimension of information processing, they posit that students with an active learning style will like group work. In contrast, reflective students will prefer to work alone. Hence, we ask the following research question:

**RQ2:** irrespective of major, which learning styles cause students to value team projects?

## **III. RESEARCH METHODOLOGY**

### **3.1. Measures**

ILS is used to collect data about the learning styles of students. It has 44 items on four dimensions and consists of four scales. Each of the four scales has eleven items per dimension. The four dimensions are Active- Reflective, Sensing-Intuitive, visual-verbal, and Sequential-Global. We subtract the lower score from the higher one “a or b” which results in a score indicating the learning style that the student prefers. The perceived value of team projects was measured using a four-item, five-point Likert scale used by Pragman et al. (2010). The ‘value of team project’ scale has a Cronbach’s Alpha of 0.73 above 0.70 indicating acceptable reliability (Nunnally & Bernstein, 1994). An overall mean score was computed with a higher score indicating a greater perceived value of team projects.

### **3.2. Participants**

Business majors from a Mid-West university in the USA participated in the study for an extra credit. Survey instruments were distributed in classrooms, mostly in upper-division accounting and marketing classes spanning two semesters. The students filled

out 151 surveys. Surveys filled out by undergraduate accounting, and marketing majors were retained, and other majors such as Finance, Management, and non-business majors were excluded. If a student indicated a double major, his/her primary major was considered for classification. This resulted in a sample of 101 students (46 marketing and 55 accounting students). The mean age of the respondents is 24.10 years (SD= 6.81). There were 49% males and 51% females, 90% were Caucasians, and 72% were seniors.

## IV. RESULTS AND DISCUSSIONS

### 4.1. Preferred Learning Styles

Our first research question asked if there are any differences in learning styles between accounting and marketing students. Percentages of students that exhibit each of the eight learning styles (two poles each for four dimensions) are calculated and presented in Table 2. Marketing students have significantly Active (64.4%) and Visual (89.12%) learning styles compared to accounting students. In contrast, accounting students have significantly reflective (65.5%), sensing (90.1%), and sequential (85.5%) learning styles compared to marketing students.

Table 2

Percentages of Learning Styles and Z-Scores

Learning Style	Accounting		Marketing		z-scores	Sig.
	N	%	N	%		
Active	19	34.4	29	64.4	2.12	.017*
Reflective	36	65.5	16	35.6	2.08	.019*
Sensing	50	90.1	33	71.7	2.17	.015*
Intuitive	5	9.1	13	28.8	1.10	.156
Visual	38	69.1	41	89.1	2.24	.013*
Verbal	17	30.9	5	10.9	1.12	.154
Sequential	47	85.5	29	63.0	2.18	.015*
Global	8	14.5	17	37.0	1.32	.093

Notes: \* significant at  $p \leq 0.05$ .

### 4.2. Value Derived from Group Projects

Our second research question asked which learning styles among students led them to prefer team projects. To answer this question, responses to each of the four dimensions are recoded into three groups. For example, the active-reflective dimension was coded as follows: balanced= 1, active= 2, and reflective= 3. Following the same procedure for the other three dimensions resulted in three groups for each dimension. An ANOVA was conducted to determine if there are any significant differences between the means of the three groups for each of the four dimensions on the dependent variable, value of team project (SPSS 20.0 was used). Where required to do a post hoc test, we used Gabriel's procedure (as sample sizes are slightly unequal), as recommended by Field (2013).

Insert Table 3 here.

### 4.3. Active-Reflective Dimension

The ANOVA main effect was significant,  $F(2,98) = 8.50$ ,  $p(.000) < .05$ . The post hoc analysis was done to examine individual mean difference comparisons across the three groups of the active-reflective dimension (balanced, active, and reflective) and the dependent variable. The results of the post hoc analysis are presented in Table 3. Active learners had the highest mean for the value of team projects (4.18). Active learners are significantly different from balanced learners ( $p(0.042) < .05$ ) and from reflective learners

( $p(0.000) < 0.05$ ). However, there is no significant difference between balanced learners (3.8) and reflective learners (3.43) ( $p(0.060) > 0.05$ ).

**Table 3**

**Gabriel's Post Hoc Comparisons**

Dimension	(I)	(J)	Mean Difference (I-J)	Std. Error	Sig.
<b>Active-Reflective</b>	Balance	Active	-.38	.15	.042*
		Reflective	.37	.16	.060
	Active	Balance	.38	.15	.042*
		Reflective	.74	.18	.000*
	Reflective	Balance	-.37	.16	.060
		Active	-.74	.18	.000*
<b>Visual-Verbal</b>	Balance	Visual	-.48*	.13	.002*
		Verbal	-.14	.28	.934
	Visual	Balance	.48*	.13	.002*
		Verbal	.34	.28	.460
	Verbal	Balance	.14	.28	.934
		Visual	-.34	.28	.460

Notes: the mean difference is sig. at the 0.05 level. The ANOVA main effects for sensing-intuitive and sequential-global dimensions were not significant so post hoc comparisons were not conducted.

#### 4.4. Group Projects: Sensing-Intuitive Dimension

The ANOVA main effect was not significant  $F(2,98) = 1.76$ ,  $p(0.177) > .05$ . In other words, there is no statistically significant difference among sensing (3.95), balanced (3.71), and intuitive learners (4.08) on the perceived value of team projects.

#### 4.5. Group Projects: Visual-Verbal Dimension

The ANOVA main effect is significant  $F(2,98) = 6.321$ ,  $p(0.003) < .05$ . The post hoc analysis was done to examine individual mean difference comparisons across the three groups of the visual-verbal dimension (visual, balance, verbal) and the dependent variable. The results of the post hoc analysis are presented in Table 3. Visual learners had the highest mean for the value of team projects (4.04). Visual learners (4.04) are significantly different from balanced learners (3.57) ( $p(0.002) < .05$ ). However, there is no significant difference between visual learners (4.04) and verbal learners (3.70) ( $p(0.460) > 0.05$ ). Similarly, there is no significant difference between balanced learners (3.57) and verbal learners (3.70) ( $p(0.934) > 0.05$ ).

#### 4.6. Group Projects: Sequential-Global Dimension

The ANOVA main effect is not significant  $F(2,98) = 1.194$ ,  $p(0.307) > .05$ . In other words, there is no statistically significant difference among sequential (3.69), balance (3.90), and global learners (3.96) on the perceived value of team projects.

## V. CONCLUSION

### 5.1. Discussion and Implications

The present study investigated the preferred learning styles of accounting and marketing students. Additionally, the study examined the preferred learning styles of students who value team projects.

First, our study found that marketing students are more active and visual learners compared to accounting students. In contrast, accounting students are more reflective,

sensing, and sequential learners compared to marketing students. Second, our study found that active learners and visual learners perceive higher value from participating in team projects. Overall, it appears that marketing students value team projects more than accounting students.

Our study has the following implications for instructors. Marketing instructors should design courses incorporating pictures, diagrams, videos, and demonstrations to cater to their visual learning needs. Such a design enhances marketing students' reception of course-related knowledge. Marketing students like to process information more actively, which means instructors should provide more group projects and hands-on assignments. Accounting instructors should consider take-home assignments or assignments that have an extended due date so that students have sufficient time to reflect upon them. Accounting assignments should be designed in logically connected steps, so the information is imparted systematically. This appeals to the accounting students' preference for sequential learning. There is considerable literature extolling the benefits of team projects. Our present study suggests that instructors be cautious. If a class consists of predominantly active and visual learners, instructors may give team projects irrespective of business major. However, it is unrealistic to expect only active and visual learners in any class- there are likely to be students with preferences for other learning styles. So, the best possible course of action is to mix individual assignments along with team projects. Giving only team projects may keep active and visual learners happy, but it might make other types of learners unhappy.

## 5.2. Limitations and Future Research

As with any study, the present study has limitations. Our sample size was obtained from one university located in the Midwest of the U.S. The student body draws mostly from the surrounding region and is not culturally or internationally diverse. Further, all students were undergraduates. As a result, caution must be exercised when extending the results to contexts involving more diversity and/or graduate students.

These limitations present opportunities for extensions of the existing work. It would be interesting to include graduate students and students from different cultural backgrounds in future research. Apart from learning styles, there are other individual characteristics such as introversion and shyness, which could affect the perception of the value of team projects, and future research may investigate the modifying effect of these variables. Additionally, the present study focused on how the learning styles of students who choose to study marketing are different from those who choose to study accounting. Future researchers could address a broader research question-are marketing students different from other students and not just accounting students?

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