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Revenge of the Nerds Revisited: Do Accounting and Finance Majors Differ from other Business Majors in Their Learning Styles, and do They Earn Higher Grades in a General Business Course?

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ABSTRACT

Decades of research spanning a range of educational domains have confirmed that students differ in their learning styles and that student performance is impacted by the degree of fit between these styles and the teaching and assessment methods deployed in courses (Allinson & Hayes, 1988; Cegielski, Hazen & Rainer, 2011; Drissi & Amirat, 2017; Honn & Ugrin, 2012; Visser, McChlery & Vreken, 2006.) In this study, the researchers investigate whether a capstone business course— designed to accommodate a diverse range of learning styles— can succeed in leveling the playing field, yielding results showing no significant differences in course grades as a function of students' learning styles. The second focus is examining the myth of bookish, nerdy accountants (Brighenti, 2010; Tuttle, 2016). The findings 'bust' the myth that more 'bookish' accounting and finance majors will earn higher course grades in a general business course. The paper concludes by noting some important implications of our study for future research and practice.

Introduction

Decades of research have confirmed that students differ in their learning styles and that student performance is impacted by the extent to which the teaching and assessment methods that are deploy in courses fit these styles (Allinson & Hayes, 1988; Cegielski, Hazen & Rainer, 2011; Drissi & Amirat, 2017; Honn & Ugrin, 2012; Visser, McChlery & Vreken, 2006.) The implication for practice is clear: Learning style research is relevant to all educators who are concerned with designing and implementing effective course curricula addressing the diverse learning preferences that students bring to real and virtual classrooms of the 21st Century (Al-Omari, Carter & Chiclana, 2016; Coffield, Mosely, Hall & Ecclestone, 2004; Hayes & Allinson, 1996; Yang, Hwang & Yang, 2013.)

Learning style refers to a student's preferred modality for learning, including types of learning materials, media, tasks, processes, and assessments (Drissi & Amirat, 2017; Visser, McChlery & Vreken, 2006.) Although several learning style models have been proposed over the years—including models developed by Honey & Mumford (1992) and Kolb (1984)—the validity and reliability of Felder-Silverman model (1988) has made it the most dominant and widely-used approach in the literature (Al-Azawei & Badii, 2014; Litzinger, Lee, Wise & Felder, 2007; Riding & Reyner, 1998; Yang, Hwang & Yang, 2013.)

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Working with Solomon, Felder developed a 44-item *Index of Learning Styles (ILS)* instrument to differentiate learning styles on four key dimensions outlined in the Felder-Silverman model (Felder & Solomon, 1996.) The validity and reliability of the *ILS* has been firmly established across a number of studies spanning multiple domains of inquiry (e.g., Al-Azawei & Badii, 2014; Felder & Spurlin, 2005; Litzinger, Lee, Wise & Felder, 2007; Graf, Viola, Leo & Kinshuk, 2007; Riding & Reyner, 1998; Zwyno, 2003.) Table 1, compiled by Cegielski, Hazen & Rainer (2011), provides a succinct overview of the four *ILS* dimensions:

Table 1
Description of the Constructs Associated with Learning Styles

Construct	Description	Example
Active-Reflective	The manner in which one engages in processing information	Active learners prefer to engage in group discussions and apply information to common situations Reflective learners prefer to cogitate and internally process new information
Sensing-Intuitive	The extent to which one is inclined to embrace concrete or abstract forms of information to form a frame of reference for learning	Sensing learners prefer the empirical facts and tangible work Intuitive learners prefer theories and rely on their ability to identify general relationships
Visual-Verbal	The degree to which one favors either visual or textual input as the primary input mode in the learning process	Visual learners prefer to use pictures, diagrams, and charts in the learning process Verbal learners prefer textual input (written or spoken) of information in the learning process
Sequential-Global	The degree to which one prefers the presentation of information in an incremental linear series or holistic broad strokes	Sequential learners are inclined to apply a stepwise approach to assimilating new information, perhaps recognizing the "big picture" after comprehending the underlying components of the information Global learners more readily grasp the "big picture" but often miss the details that support the overall message of the information

The primary purpose of this study is to determine whether or not a capstone business course—designed to address a diverse set of learning styles— can succeed in overcoming individual differences

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in learning preferences by yielding results showing no significant differences in course grades as a function of students' learning styles. This finding would support a key practical implication in the learning style literature for business educators: Designing courses to address diverse learning styles can help educators level the playing field for students bringing different learning preferences to the classroom (Al-Omari, Carter & Chiclana, 2016; Coffield, Mosely, Hall & Ecclestone, 2004; Hayes & Allinson, 1996; Yang, Hwang & Yang, 2013.)

The other key component of the study will examine the veracity of the perception that accounting and finance majors earn better grades in their courses than other majors in the business program at our institution. To this end, we will investigate whether or not a significant relationship exists among type of major and course grade earned, all within the comparatively field- and major-neutral setting of a required, senior-level strategic management capstone course expressly focused on the inclusion and integration of all functional areas in the analysis, decision-making, and conduct of a company's operations. Using the *ILS* to gain an increased understanding of how different business majors vary in their learning style preferences will provide crucial insights for instructors, department chairs, program administrators, and others charged with the task of ensuring the design and delivery of effective learning experiences targeting the needs of a diverse student body.

Hypotheses

Relationships between Learning Style Preferences and Course Grades

Felder and Spurlin (2005) advocated using the *ILS* to identify the diverse learning style profiles characterizing students enrolled in one's classes. This approach can help instructors to design and implement course activities addressing the learning needs of all of their students. Ironically, the true test of how well an instructor succeeds in this regard is a null finding in the form of an observation that no significant differences in course grades exist in the sample as a function of learning styles.

The researcher investigated this hypothesis in the context of a capstone course required of all business majors as part of their core experience. To control for unwanted variance due to differences in instruction and instructors, the same teacher was used across all three course sections in the study. Although many of the primary learning activities were delivered in a traditional live mode, the online learning materials, assignments, and grade-reporting were all made available through use of the web-based Desire2Learn (D2L) course management system. D2L is similar in features and functions to Blackboard and other online course management systems.

Online learning resources were leveraged in a second way through integrating a team-based competitive web-based computer simulation into the course. The *GLO-BUS* simulation is a popular entry-level strategic management simulation available through the McGraw-Hill Irwin family of learning resources (McGraw-Hill Irwin, 2017). A full one-third of the course grade depended on students' performance in the online simulation, requiring student teams to compete through making

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management decisions across a range of business functions— operations, marketing, human resources, accounting, finance— all within the context of running a digital camera company.

Every effort was made to ensure that this capstone course in the business core was designed and implemented in such a way that it provided a rich learning experience covering the range of learning styles through including:

1. *Active and Reflective learning components*— the online simulation (learning through Actively *doing*) and the traditional examinations (learning through Reflectively *thinking*);
2. *Sensing and Intuiting learning components*— a focus on facts/details (Sensing) and seeing new relationships and the big picture (Intuiting) were both necessary for success in the online simulation and the examinations;
3. *Visual and Verbal learning components*— supported through the use of 21st Century learning materials incorporating greater use of visual/graphical learning approaches to balance and augment the more traditional verbal/textual word-based approach, as found in the textbook and online materials, including those available via the *GLO-BUS* simulation web-site; and
4. *Sequential and Global learning components*— Sequential learning supported through face-to-face lectures, textbook readings, and examinations, with Global learning supported through seeing complex interrelationships in a holistic manner via the online simulation.

The study builds on Felder and Spurlin's (2005) research by explicitly examining whether or not a sample comprised of students with diverse learning styles, taking a course designed to address the learning needs of these students, will yield a finding of no significant differences in course grades as a function of learning style:

Hypothesis 1: No significant differences in course grades will be observed in students preferring an Active learning style versus students preferring a Reflective learning style (*ILS* Dimension #1-Active—Reflective).

Hypothesis 2: No significant differences in course grades will be observed in students preferring a Sensing learning style versus students preferring an Intuiting learning style (*ILS* Dimension #2-Sensing—Intuiting).

Hypothesis 3: No significant differences in course grades will be observed in students preferring a Visual learning style versus students preferring a Verbal learning style (*ILS* Dimension #3-Visual—Verbal).

Hypothesis 4: No significant differences in course grades will be observed in students preferring a Sequential learning style versus students preferring a Global learning style (*ILS* Dimension #4-Sequential—Global).

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Relationships among Major and Learning Style Preferences

Of the many stereotypes surrounding the various fields, majors, and careers in business, perhaps none is so enduring as the myth of the nerdy, bookish accountant and financier, perpetuated through decades of media exposure and marked through such archetypal images as the veritable 'black-rimmed, thick-lensed glasses' (Brighenti, 2010; Tuttle, 2016.) One of the prevailing cultural myths at the academic institution is that if you are one of the 'cream of the crop' top students in the business program, you have what it takes to join the elite and become an accounting or finance major. Years of anecdotal evidence culled from dozens of students over the past two decades document the staying power of this culture-bound perception at the institution.

Before one can so quickly dismiss the power of anecdotal evidence as a basis for formulating testable hypotheses, one must not forget that focus groups or other qualitative methods— and even common sense or intuition— are acceptable methods of selecting mediating factors where little prior research exists on the topic of interest, as noted in Table 2 (MacKinnon, Coxe & Baraldi, 2011):

Table 2
Methods of choosing mediators

When there is substantial prior research on the topic	**When little prior research is available on the topic**
Literature review to determine conceptual theory and action theory links	Look for correlates of the outcome measure to determine conceptual theory links
Based on a psychological theory of the process	Focus groups and other qualitative methods
Prior mediation analysis	Common sense or intuition

To examine the myth of nerdy, bookish accounting and finance majors earning higher course grades in the context of a capstone business course, the researcher searched the literature and found no explicit learning style profile for these majors.

However, a meta-analytical study by Felder and Spurlin (2005) documented a consistent learning style profile among engineering students, measured by Felder & Solomon's (1996) *Index of Learning Styles (ILS)* across a dozen different institutions providing engineering programs. Administering the *ILS* to engineering majors produced a consistent picture of learning styles for those majors: engineering majors display a pronounced preference for Active, Sensing, Visual, and Sequential learning approaches.

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This learning style profile is not surprising, given the fundamental nature of the engineering field and its focus on mastering facts regarding mathematics and the physical world (Sensing), acquired in a linear and rational method (Sequential), developing the ability to see and diagram how various parts/components will fit together in proper design (Visual), using physical and computer models to test one's knowledge (Active). These four learning style preferences increase the chances that an engineered bridge will not collapse but will instead function to support the desired weight capacity.

In contrast, engineers trained primarily through learning in a Reflective, Intuitive, Verbal, and Global mode would produce bridges designed through thought experiments involving flashes of creative insight, expressed in words with few diagrams, based on a 'big-picture' (Global) view of how a bridge should function. Of course, most if not all people would prefer the bridges they cross to be designed by engineers trained to design and build bridges in a more grounded, detailed, and visual manner.

Consistent with the meta-analytical findings of the Felder and Spurlin (2005) study, it was expected that like the engineers, the accounting and finance majors would express a learning style preference for mastering facts and details associated with their number-based fields (Sensing), acquiring these facts and details in a linear and rational mode (Sequential). Unlike the engineers, however, we expected the accounting and finance majors to focus more on thinking (Reflective learning) as opposed to doing, aligned with a preference for precise, detailed Verbal descriptions providing more less interpretive ambiguity and greater exactness of meaning (as opposed to Visual, graphical depictions providing far greater interpretive ambiguity and less precision in meaning).

At the other extreme, it was expected that other business majors— including marketing, management, human resources management, operations, and information systems majors— would manifest a preference for learning associated with developing an ability to see new and important relationships unfolding in social contexts (Intuiting), grasping the big picture of how these relationships are interconnected (Global), acquiring knowledge through a predominantly Visual style (seeing relationships, the big picture, etc.), all within a context of Active learning. Thus the researcher predicts that:

> *Hypothesis 5:* Accounting and finance majors will express a preference for a Reflective learning style, while other business majors will prefer an Active style (*ILS* Dimension #1- Active—Reflective).
>
> *Hypothesis 6:* Accounting and finance majors will express a preference for a Sensing learning style, while other business majors will prefer an Intuiting style (*ILS* Dimension #2- Sensing—Intuiting).
>
> *Hypothesis 7:* Accounting and finance majors will express a preference for a Verbal learning style, while other business majors will prefer a Visual style (*ILS* Dimension #3- Visual—Verbal).

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Hypothesis 8: Accounting and finance majors will express a preference for a Sequential learning style, while other business majors will prefer a Global style (*ILS* Dimension #4- Sequential—Global).

Relationships between Major and Course Grades

The final hypothesis concerns a test of the myth of a main effect for major on course grades, i.e., the perception that accounting and finance majors will earn higher course grades than other business majors:

Hypothesis 9: Accounting and finance majors will not earn significantly higher course grades in the capstone course than other majors in the business program.

The main effect prediction expressed in this final hypothesis completes the foundation for exploring the truth behind the myth of bookish accounting majors earning higher grades in a general business course. Hypotheses 5-8 will reveal crucial information regarding the veracity of the perception of bookish accounting majors characterized by learning style preferences for Reflective, Sensing, Verbal, and Sequential approaches such as those embodied in the traditional 'textbook' mode of learning.

While Hypotheses 1-4 show that the researcher does not expect to observe significant differences in course grades as a function of learning style preferences per se, it is important to investigate whether any differences in learning styles associated with different business majors have a *mediating* effect on the major—course grade relationship in the sense that learning style may augment or enhance the effects predicted in Hypothesis 9 above.

Taken together, the above hypotheses present an intriguing set of predictions relevant to all instructors who are concerned with designing and implementing effective course curricula addressing the diverse set of learning styles that students will inevitably bring to the real and virtual classrooms of the 21st Century. Results consistent with the predictions will advance the field through providing empirical support for the value in using Felder and Solomon's (1996) *ILS* as a means of: (1) testing whether a class aimed at addressing the diverse learning styles of these different majors can succeed in this regard through yielding no significant differences in course grades as a function of students' learning styles, and (2) identifying diverse learning styles associated with different disciplinary fields or majors.

Method

Participants and Procedures

Study data were obtained from 84 students (43 males, 41 females) enrolled in three sections of a capstone senior-level strategic management course offered at a regional Midwestern university with a total enrollment of 10,000. This class was the capstone business course required of all business majors as part of their core experience. To control for unwanted variance due to differences in instruction and instructors, the same teacher was used across all three course sections in the study. Participants

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completed the 44-item Felder and Solomon *Index of Learning Style* instrument and results were entered into an SPSS data file for subsequent analysis.

Variables and Measures

Two *control variables* were examined to rule these factors out as sources of undesired variation in the research study: age and gender. These data were obtained through self-reported background information provided by study participants on the final survey instrument page. Age was coded as the whole number value of each students' chronological age. Applying a dummy variable approach to gender in a regression paradigm, male students were coded as a "0" and female students were identified as a "1."

Since the study examined differences in learning styles associated with different business majors— and the effects of learning style in mediating the major-grade relationship— the researcher again applied a dummy variable approach, operationalizing the *independent variable* (major) in the following manner:

0= accounting and finance majors
1= all other business majors

Felder and Solomon's (1996) 44-item *Index of Learning Styles (ILS)* was used to measure students' preferences on the four style dimensions noted earlier. A copy of the *ILS* is attached in the Appendix. Following the recommendations of Litzinger, Lee, Wise, and Felder (2007), each "a" response to an item was coded as a "1", and each "b" response was coded as a "-1". With 11 items measuring key aspects of each of the four learning style dimensions, this approach yielded a score ranging from -11 to +11 for each dimension, providing the researcher with numerical measures of the four *mediating variables* employed in our study.

The Active—Reflective learning style dimension is measured by *ILS* items #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, and 41. The Sensing—Intuiting dimension is assessed through items #2, 6, 10, 14, 18, 22, 26, 30, 34, 38, and 42. The Visual—Verbal dimension is evaluated via items #3, 7, 11, 15, 19, 23, 27, 31, 35, 39, and 43. The fourth and final Sequential—Global dimension is measured by items "4, 8, 12, 16, 20, 24, 28, 32, 36, 40, and 44.

Once again, each "a" response on an item is coded with a "1", indicating the presence of a preference on that item for the first pole or endpoint on the relevant dimension (Active, Sensing, Visual, or Sequential, depending on the dimension represented by the item in question). Each "b" response is coded with a "-1", marking a preference on that item for the second pole/endpoint on the relevant dimension (Reflective, Intuitive, Verbal, or Global).

For example, if a student answered with a "b" response on all 11 items on the *ILS* associated with the Active—Reflective dimension, they received a score of -11 on that particular mediating variable, indicating a strong preference for a Reflective learning style. Less extreme scores indicate less of a preference for one learning style over the other, on the given dimension of interest.

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For instance, a score of -1 on the Active—Reflective dimension signals the lack of a strong preference for one of those learning styles over the other, suggesting that the student was roughly equal in her/his preferences for Active vs. Reflective learning approaches. The sole *dependent variable* in the study—course grade— was entered in raw form as the numerical grade achieved by each student on a standard 4.0 scale (e.g., 3.33 = a B+, 3.67 = an A-, 4.0 = an A).

Model Construction and Data Analysis

To properly test for mediating effects of the learning style variables listed above, analyses were conducted in the manner prescribed by Baron and Kenny (1986). Regression equations were run to ascertain whether three conditions are met: 1) the independent variable affects the mediator, 2) the independent variable affects the dependent variable, and 3) the mediator affects the dependent variable. If the conditions are not met, there can be no mediating effect. However, if these conditions are indeed met, the dependent variable is regressed on both the independent and mediating variables.

According Baron and Kenny (1986), if we find the effect of the independent variable is less in the final regression equation than in the second, a mediating effect exists. Using this conservative approach ensures that mediator variables remaining in the model are significantly related to the independent variable and the dependent variable. If we find a significant effect of the independent variable on the dependent variable, we will then be able to run a stepwise, hierarchical regression analysis to test for significant mediating effects of the four learning style variables on the major-course grade relationship.

Results

All statistical tests were carried out at the .05 level of significance using the IBM SPSS 24.0 software package. Table 3 provides the descriptive statistics and correlations for the independent, control, mediating, and dependent variables.

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Table 3
Descriptive Statistics and Correlations for Study Variables (N = 84)

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Descriptive Statistics and Correlations for Study Variables (N = 84)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Major (IV)	.62	.49	----							
2. Age (CV)	22.50	1.44	.07	----						
3. Gender (CV)		.49	.50	.12	-.04	----				
4. Active—Reflective *ILS* Dim. (MV)		2.14	4.35	.15	.09	-.17	----			
5. Sensing—Intuiting *ILS* Dim. (MV)		3.14	5.30	-.26*	-.10	.12	-.31**	----		
6. Visual—Verbal *ILS* Dim. (MV)	5.26	4.58	.36***	.06	.19	.44***	-.26*	----		
7. Sequential—Global *ILS* Dim. (MV)		1.76	4.39	-.05	.18	.11	-.26*	.31**	-.29**	----
8. Course Grade (DV)		3.64	.43	-.08	.07	.03	.06	.26*	-.09	.22*

Note: * $p < .05$. ** $p < .01$. *** $p < .001$.

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Accounting and finance majors (coded as "0") comprised 32 of the 84 participants (38.10%). All other business majors (coded as "1") constituted 52 of the participants (69.10%). The mean for this dummy independent variable was 0.62 (*SD*= 0.49).

Two *control variables* were included in the model in order to rule them out as sources of undesired variation: age and gender. The mean age of students in the sample was 22.50 (*SD*= 1.44). Gender, the second control variable, yielded a mean of 0.49 (*SD*= .50), with 43 male students and 41 female students.

In accordance with the procedures outlined in Baron and Kenny (1986), we applied the three-step process to determine which learning style variables to retain in the final model for hypothesis testing. Table 4 presents the results of the regressions performed during this three-step test for mediation. As we noted earlier, if we obtain a significant effect for the independent variable on the dependent variable, we will then be able to run a stepwise, hierarchical regression analysis to test for significant mediating effects of the four learning style variables on the major-course grade relationship.

Table 4

Results of the Test for Mediating Variables

Model Construction Step 1: IV & CV → MV Regressions

IV	MV	Beta	*t*	Sig.
MAJOR	**ACT—REF**	.15	1.333	.186
	SEN—INT	-.26	-2.443	.017**
	VIS—VRB	.36	3.441	.001***
	SQL—GLB	-.05	-.412	.681
CV	**MV**	**Beta**	***t***	**Sig.**
AGE	**ACT—REF**	.09	.838	.419
	SEN—INT	-.10	-.947	.386
	VIS—VRB	.06	.481	.624
	SQL—GLB	.18	1.764	.093

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Results for Step 1 of model construction— regressions of MAJOR (the *Independent Variable*) on the four learning style dimensions (the *Mediating Variables*)— show that MAJOR was significantly related to two of the four dimensions: Sensing—Intuiting (SEN—INT) and Visual—Verbal (VIS—VRB). Regressions of AGE and GENDER (the *Control* Variables) revealed no significant relationships among these variables and learning style.

The Step 1 results for MAJOR provide strong support for two of the four learning style dimensions, exactly in the directions predicted in Hypotheses 2 and 3. The significant negative relationship observed on the SEN--INT dimension in the step 1 phase of model construction confirms, as predicted, that management majors preferred an Intuitive learning style, while accounting and finance majors preferred a Sensing style.

In addition, the significant positive relationship found for the VIS—VRB dimension confirms our prediction that management majors will prefer a Visual learning style, while accounting and finance majors prefer a verbal style. These intriguing results show that accounting and finance majors will prefer the more fact-based (Sensing) and word-based (Verbal) approaches to learning as represented in the prototypical textbook format, while management majors will prefer more of a graphical focus (Visual) focused on helping them to learn by seeing new patterns of relationships in the world (Intuiting).

Moving to the second model construction step in the Baron and Kenny approach, Table 4 shows that we found no significant relationships when we regressed the independent variable on the dependent variable; by itself, MAJOR was not significant as a source of variation in course grades. In addition, we found no significant impacts of AGE and GENDER on course grades.

The good news is that the study was looking for no significant results on Hypotheses 1-4, providing evidence that a general business course incorporating elements supporting a diverse set of learning styles can level the playing field for earning course grades. In particular, we found that differences in learning styles revealed between Accounting and Finance majors and other business majors in the step 1 regressions did not translate into significant differences in grades earned in the capstone course.

The bad news revealed in Step 2 of the *model construction phase* is that finding no significant difference in course grades as a function of major means that we will not be able to proceed with the *model testing phase*.

Turning to the third and final step in model construction, we regressed the four learning style mediating variables on the dependent variable and found that two of the four mediators were significantly related to the dependent variable, shown in the lower portion of Table 4. Both the SEN—INT and the SQL—GLB dimensions were positively related to GRADE, meaning that students preferring the Sensing and Sequential learning styles achieved higher course grades.

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In summary, the three-step *model construction phase* of data analysis showed that one of the four learning style mediators (Sensing—Intuiting) had qualified for use with the independent variable (MAJOR) in the model testing phase, with significant impacts in steps 1 and 3. However, since the second step of the model construction phase revealed no significant relationship among MAJOR and COURSE GRADES, following Baron and Kenny's (1986) procedures we have no sound psychometric basis for continuing the analysis to the *model testing phase* for mediating effects using a stepwise regression approach.

Conclusions and Implications

This study makes an important contribution to the growing body of research on the use of the *ILS* as a means of identifying patterns in learning style preferences associated with different majors at post-secondary institutions of higher learning. More specifically, we succeeded in documenting some key truths behind the myth of bookish accounting and finance majors. In particular, our results show that accounting and finance majors are more 'bookish' insofar as they displayed a significant preference for a more Reflective, Sensing, Verbal, and Sequential learning style. Other business majors, on the other hand, preferred a more Active, Intuitive, Visual, and Global learning style.

Following the advice of Felder and Spurlin (2005), the researcher will apply the results to practice through communicating the findings with the instructor of the course involved in the study. Knowledge of this sort will play an increasingly important role as the instructor works to ensure that course activities remain focused on addressing the full range of diverse learning styles in an era offering a veritable explosion of new pedagogical technologies, from online resources to podcasts, from blogs to 'twittering', and beyond. Similar rich implications exist for department chairs, program heads, and other administrators charged with designing and implementing effective learning approaches in the 21st Century.

Felder and Spurlin (2005) highlight a second set of key implications of *ILS*-based research for practice: communicating the results with student participants can help them attain a greater awareness of their own learning style preferences, as well as those expressed by other individuals and other groups of individuals (including other majors). Greater insight into the strengths, weaknesses, and precise nature of one's learning style preferences can yield deeper levels of understanding regarding which courses, parts of courses, and teaching approaches provide better and worse fits with one's own style of learning.

Another crucial implication of the study is that sometimes a failure to reject the null hypothesis is exactly what one should be hoping for, as in the case of our finding of no significant differences in course grades as a function of major. Although we did find evidence for some truth to the perception that accounting and finance majors are more 'bookish' vis-à-vis their learning style preferences, we failed to find proof that these majors earned higher grades in a general business class not focused on any one major: the capstone business course.

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The success in busting this myth is good news for the instructor of the course involved in our study, as the capstone course is expressly focused on including and integrating all functional areas into the analysis, decision-making, and planning efforts of a firm's ongoing operations. This curricular design was intentional, providing students with a varied menu of learning modalities targeting the full range of learning styles (Karns, 2006).

Ideally, this approach equips instructors with an expanded learning delivery toolkit, helping them reduce cognitive misfits among learning styles and tasks, enhancing learning outcomes as a result (Honn & Ugrin, 2012). Prior research supports this thesis, confirming that a 'smorgasbord' approach can indeed level the playing field so that learning style differences are no longer a source of advantage or disadvantage in course performance (Ng, Pinto & Williams, 2011).

The study lends additional credence to this curricular design strategy, especially when diverse sets of majors are required to take the same core course within a broader program of learning, and when educators are charged with designing and implementing effective course curricula addressing the diverse learning preferences that students bring to real and virtual classrooms in the 21st Century (Al-Omari, Carter & Chiclana, 2016; Coffield, Mosely, Hall & Ecclestone, 2004; Hayes & Allinson, 1996; Yang, Hwang & Yang, 2013.)

This study raises some intriguing implications for future research utilizing the *ILS* instrument. Additional studies should examine the potential impacts of the amount of studying and nature of studying on course grades. Measures of the latter could readily be developed by translating the defining endpoints or poles of the four *ILS* learning style dimensions into different types of study activities associated with or supporting the different endpoints (types of activities associated with Active learning, Reflective learning, etc.)

Future research should not overlook potential differences in learning style preferences arising from cross-cultural factors. Valuable nuggets of insight await further studies focused on mining the potentially rich connections between the *ILS* and validated approaches for measuring cross-cultural differences, including work by Triandis (1994) and Hofstede's (1984) renowned 'work-related values differences' focusing on four dimensions: *individualism/collectivism, masculinity, power distance,* and *uncertainty avoidance.*

The above implications for future research and practice highlight several inherent limitations of our study, however. First and foremost, our findings are limited by the fact that our study relied on a sample drawn exclusively from a population of undergraduate business students enrolled at a medium-sized Midwestern university. Drawing samples from other populations of learners– different majors at the undergraduate level, students from other types of secondary and post-secondary schools, in other regions of the country and the world, and samples from different types of work-related environments– will help future studies examine the generalizability and ecological validity of our findings.

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A second set of limitations derives from inherent constraints in the nature and scope of single research studies. This study was focused on: (a) examining impacts of learning style differences on course grades in a capstone general business class, and (b) documenting systematic differences in learning styles by major. Although the curricular design strategy in this capstone course provided students with access to a varied menu of learning modalities, targeting the full range of learning style preferences (Karns, 2006), we did not investigate impacts of learning styles on a more granular performance level. Future studies are needed to unpack the impacts of learning styles on specific tasks and outcomes when a menu-based curricular approach is deployed, tracking the amount and nature of study and task activities.

In conclusion, the study adds significant value to the existing literature by using the *ILS* to document that different business majors do indeed hold different learning style preferences. In particular, we succeeded in revealing some truth behind the myth of the bookish accounting major. The researcher also succeeded in 'busting the myth' that bookish accounting and finance majors earn higher grades than other business majors, in a general business course.

By so doing, this study provides a useful example of how *ILS*-based research can inform practice through generating valuable information regarding the different learning styles that students bring to their classes and how an intentional and expressed desire to design and implement a course addressing the full range of learning styles can promote successful learning regardless of one's preferred learning style. Expanding this research to additional learning contexts– including samples drawn from secondary schools, graduate schools, technical schools, work-related learning programs, and other post-secondary schools– will yield further insights as we contribute to the growing body of research on the nature and impacts of different learning styles in the 21st Century.

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