

HOW TO BETTER MEET OUR STUDENTS' LEARNING STYLE THROUGH THE COURSE RESOURCES

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Publishers of the course resources for business higher education are willing to help professors and instructors to develop the learning process. An important part of the learning process is affected by the each student's learning style. Our paper focuses on how meeting students' learning styles can be done through the course resources we use. The scope of the paper is to identify a way to link students' learning preferences with the available course resources. The literature on this topic is limited, the interest in research being focused less on resources used and their useful diversity. We heavily relied in our research on the preliminary results of a market research study conducted by the Higher Education Group from Harvard Business Publishing among instructors who use resources from Harvard Business School's library. The research methodology is based on the case study method. We tried to recommend a treatment to our students and then analyze the effect of the applied treatment. The main instruments used are the VARK test followed by tailored recommendations for each student. The first conclusion of the research is that identifying the learning styles is extremely useful for students in terms of learning process. Knowing and exploiting their particular learning style helped students to maximize their learning. The second conclusion is that recommending resources based on learning styles is useful because it really helps students to learn in their own styles. The results of our paper show, firstly, that learning process could be facilitated by professors' directly identifying students' learning styles. Secondly, our findings underline the importance of having a diversity of resources available for our students, and to be able to offer them a constructive solution regarding their learning styles. Moreover, our contributions are reflected in the methodology we used in linking the learning styles with the course resources and in building our personal approach in issuing our students individual recommendations on study strategy based upon their learning styles.

Key words: learning process, learning styles, VARK test, course resources, identify students' learning styles

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1. Introduction

Teaching is defined as building a bridge from the subject taught to the student learning (Engel, cited by Gardner and Jewler, 2006: 64). Based on this idea, the bridge is the teaching process, which includes both a learning process and knowledge transposed via textbooks, articles, case studies, videos, and other media.

One of the crucial elements of the learning process is the learning style which may be defined as the tendency to adopt a particular strategy in learning. (Pask, et al., 1977). The term "learning styles" refers to the concept that individuals differ in regard to what mode of instruction or study is most effective for them. (Pashler *et al.*, 2009: 105)

Learning styles are characterized as cognitive, affective, and psychological behaviors that indicate how learners perceive, interact with, and respond to the learning environment (NASSP, 1979). The physiological dimension views learning as it relates to biological characteristics of an

individual; for instance, what senses (auditory, visual or kinesthetic) are used in learning (Drago and Wagner, 2004: 2). The learning style has its roots in the human representational systems, which comprises the basic five senses: visual, auditory, touch, taste and smell. Individuals have a preference for one of these systems, and communication to these people can be improved by relating it to their unique models of the world (Fatt, 2000, 34). Some cognitive styles and dispositions do seem to influence how and what students learn...some individuals seem to learn better when information is presented through words (verbal learners), whereas others seem to learn better when it's presented through pictures (visual learners). (Omrod, cited by Pashler *et al.* 2008:106). A short description of these learning styles is given below (extras from Fleming and Mills, 1992, p.140-141):

- *The visuals (V)* prefer to learn from maps, spider diagrams, charts, graphs, flow charts, labeled diagrams, and all the symbolic arrows, circles, hierarchies and other devices, that instructors use to represent what could have been presented in words.

- *The aural (A)* perceptual mode describes a preference for information that is "heard or spoken." Students with this modality report that they learn best from lectures, tutorials, tapes, group discussion, email, using mobile phones, speaking, web chat and talking things through. It includes talking out loud as well as talking to oneself.

- The preference for *read and write (R/W)* is for information displayed as words. Many academics have a strong preference for this modality. This preference emphasizes text-based input and output - reading and writing in all its forms. People who prefer this modality are often addicted to PowerPoint, the Internet, lists, and words, words, words.

- The *kinesthetic (K)* modality refers to the "perceptual preference related to the use of experience and practice (simulated or real)." Although such an experience may invoke other modalities, the key is that people who prefer this mode are connected to reality, "either through concrete personal experiences, examples, practice or simulation".

Since the learners could have different representational systems, they will prefer different resources to learn. As a consequence, the students' learning styles determine the resources they can best use in the learning process.

Literature is not much concerned regarding the topic of the resources used within the classroom in business schools. In 2010, the Higher Education Group from Harvard Business Publishing ran a market research project among instructors which use resources from Harvard Business School's library. The Group invited instructors to submit the syllabi they use in their courses in order to understand the future needs in teaching and curriculum development. The preliminary results were shared among the instructors who responded the Group's request and they are not available to the public. Since we submitted our Accounting for Managers' syllabus, we received the preliminary results of the research.

The final database includes 771 course syllabi submitted by 601 faculties from 457 universities. Participating regions were: Western Europe (14 countries), Australasia (11), Central/South America (11), Africa/Middle East (7), Eastern Europe (2) and North America (3). By tenure, 33% are full professors, 28% adjuncts, 22% assistant professors, and 17% associate professors. By educational level, 52% are MBA syllabi, 28% are undergrad syllabi, 9% Executive Education, and 11% other. By discipline, the largest are: Marketing (23%), Technology & Operations Management (17%), Finance (12%), and Organizational Behavior (11%).

An analysis of the resources used in the learning process reveals that from the total analyzed syllabi an average* of:

- 43% represents book chapters (of which 49% are assigned at the undergraduate level and 39 % at the master level)

- 32% cases (of which 32% are assigned at the undergraduate level and 33% at the master level)

- an average of 24% articles (of which 17% are assigned at the undergraduate level and 27% at the master level)
 - 2% media (equally distributed among the undergraduate and graduate levels)
- *percentage totals do not sum to 100 due to rounding, and to the exclusion of the “Executive Education” and “Other” categories.

Moreover, the research results reveal how many syllabi assign at least one mandatory reading or homework from the following product types or learning resources:

- 74% to book chapters at the undergraduate level and 77% to book chapters at the graduate level
- 92% to cases at the undergraduate level and 97% to cases at the graduate level
- 54% to articles at the undergraduate level and 73% to articles at the graduate level
- 23% to multimedia resources (same percentage both at undergraduate and graduate levels)

The preliminary results indicate to us that a lot of resource types, from textbooks, articles, and case studies to videos and more are used in courses. Good questions can rise from here: What type of resources should students use? Do they have enough physical time to investigate all the resources available? Or maybe some of the resources are redundant and therefore a lot of time might be wasted in reading the same things expressed in different words.

The scope of this paper is to identify a way to link students’ learning preferences with the available course resources. Moreover, we want to emphasize the necessity of building or providing different types of resources based on students’ varying learning preferences.

2. Methodology

VARK is a questionnaire that provides users with a profile of their learning preferences (Fleming and Mills, 1992, p.140-141). The acronym stands for visual, aural, read (and write) and kinesthetic which represent the physiological dimension of the learning style.

We tried to use VARK questionnaire in order to link the students’ learning style with the course resources. The steps of our methodology are:

I. Applying VARK questionnaire

We applied VARK questionnaire to two online MBA classes in an American University, in the Accounting for Managers course. A total of 34 students were investigated from different areas of US and with different backgrounds.

The VARK test was introduced as a mandatory assignment called “*The VARK Questionnaire - How Do I Learn Best?*” in the first week of each course, graded with 2% of the final grade.

Students were informed that the scope of the VARK is to determine what type of learner they are and then they can choose the learning methods that fit their learning style. They were asked to take the test at <http://www.vark-learn.com/english/page.asp?p=questionnaire> for free.

The VARK test employed by us was recommended as a good one by the literature: (see also the work of Drago and Wagner, 2004) and also by the American Accounting Association (AAA) members in one of the debates during the Annual Meeting in San Francisco, USA, in 2010.

Once the students got their scores, they were asked to submit them in order to receive from us individual recommendations on how to study more efficiently than they did previously.

II. Tailor individual recommendations for each student based on the resources we had.

The resources recommended to be used in the course were a textbook, PowerPoint presentations, narrative slides, video presentations, quizzes (standard and enhanced), and case studies. Some of the resources like PowerPoint presentations, narrative slides, video presentations, and quizzes

(standard and enhanced) were available online for free, and the rest of them: textbook and cases studies had to be purchased by students.

The content of the course was structured based on the textbook's chapters and for each chapter a case study was assigned as a mandatory assignment, besides problems and exercises.

Generally speaking, for each week students were asked to read one or two chapters, do the problems and exercises assigned and then solve the case study assigned. The syllabus was designed to guide students in how to learn efficiently. Thus, recommendations on how to read the textbook, how to solve the problems and exercises, and how to deal with the case studies were given in the syllabus.

In order to maximize the outcome of the learning process, and to make it more efficient, we recommended students to use only those resources that fit better their learning styles. Moreover, we gave them detailed instructions on how to use the resources indicated.

For example, we present here the recommendations we gave students with a certain approach for learning:

We recommended those who feel comfortable with the *read/write learning strategy*, to learn Accounting for Managers using the following steps, in this order:

1. *“Read the chapter and take a notebook in which to write main ideas, concepts, or to draw a chart.*
2. *Analyze the case study. I would recommend you to take a sheet of paper and a pen and write down the important ideas and useful data. After you have fully understood the case, open an Excel file to solve it.*
3. *Do the problems assigned (if any). You can use the same strategy I recommended for case studies.*
4. *Then, take the quizzes. I recommend you to check the book/notes before answering the questions, which will help you to consolidate your knowledge”.*

Students with a preference for *visual learning* received recommendations as follows:

1. *“Start your learning by reading the chapter first: read, underline the sentences you consider important, make notes on the book (not separately in a copybook), and look at graphs, charts and tables. You need to “photograph” all the information available and so you will feel more comfortable doing this.*
2. *Watch the PowerPoint presentation for each chapter*
3. *Take the quizzes. I recommend you to check the book before answering the questions, which will help you to consolidate your knowledge.*
4. *After this, it is time to do the problems assigned (if any) and to analyze the case study. Write down (using a pen or an Excel file) the given information and then start to solve the problem”.*

For students with *aural preference* for learning we recommended the following:

1. *“Start learning by listening to the Narrative slides (you can find them on the Web Links area). They will help you to get familiar with the main objectives of the chapter and introduce you very well in the topic.*
2. *Read the book chapter to receive more details regarding the topic.*
3. *Listen the video presentation (you can find them on the Web Links area)*
4. *Do the problems assigned (if any) and analyze the case study.*
5. *Do the quizzes.”*

For the *kinesthetic learners* we recommended:

1. *“Read the chapter and take a notebook in which to write main ideas, concepts, or to draw a chart.*
2. *Analyze the case study. I would recommend you to take a sheet of paper and a pen and write down the important idea and useful data. After you fully understood the case open an Excel file to solve it.*

3. Do the problems assigned (if any). You can use the same strategy I recommended for case studies.

4. Then, take the quizzes. I recommend you to check the book/notes before answering the questions, which will help you to consolidate your knowledge.”

But students with a single learning preference are only few of the total number of students. For those who have more than one learning preferences, called multimodal learners, we combined our recommendations written above for individual learners.

III. Evaluate the results

At the end of the course we asked students to give us their feedback regarding the recommendations based on their learning style identified with the VARK test. Our message to them was:

“I would really appreciate if you can give me your feedback regarding the VARK test. I am interested to know if you did you use my recommendations. And if so, were they helpful? If not, please indicate to me the reason(s). More, I would like to know your perception about learning based on these recommendations.

If your feedback is positive I will continue to give these instructions to my future students. But if you consider that those recommendations didn't help you much, please let me know what the reasons are. I really don't want to bore my future students with something useless.”

Feedback was not graded and no points or other benefits were given to students as a compensation for their feedback.

3. Results

The structure of students per learning styles is presented below:

Learning styles	V	A	R/W	K	Percentage in total	Total
One learning style (OLS)	0	3	6	4		13
<i>percentage in OLS</i>	<i>0.00%</i>	<i>23.08%</i>	<i>46.15%</i>	<i>30.77%</i>		<i>100.00%</i>
<i>percentage in total no of students</i>	<i>0.00%</i>	<i>8.82%</i>	<i>17.65%</i>	<i>11.76%</i>	<i>38.24%</i>	
<i>(first preference)</i>						
Multimodal learning styles (MLS)	V	A	R/W	K	Percentage in total	Total
V (2nd preference)	0	0	1	3	19.05%	4
A (idem)	0	0	1	1	9.52%	2
R/W (idem)	1	3	0	5	42.86%	9
K (idem)	0	0	4	0	19.05%	4
<i>percentage in MLS</i>	<i>4.76%</i>	<i>14.29%</i>	<i>28.57%</i>	<i>42.86%</i>	<i>90.48%</i>	
more than 2 equal preferences				2	9.52%	2
<i>total MSL</i>					<i>100.00%</i>	<i>21</i>
<i>percentage in total no of students</i>	<i>2.94%</i>	<i>8.82%</i>	<i>17.65%</i>	<i>26.47%</i>	<i>55.88%</i>	
<i>more than 2 equal preferences</i>					<i>5.88%</i>	
<i>total no of students</i>					<i>100.00%</i>	<i>34</i>

Table 1. Structure of students per learning style

Out of the total number of students, 13 persons (38 %) have one predominant learning style. 23% of them have a preference for aural learning, 46% have the kinesthetic learning preference and

30% have the read and write (R/W) learning style. As we can see, a strong proportion of the students with one learning style has the read and write learning style.

Out of the total number of students, 19 persons (56%) have a multimodal learning preference. Most of them have the read and write component as a predominant learning style. The second dominant learning style was the kinesthetic component. As it is presented in the table above, 4 students have as first preference the R/W learning style combined with the kinesthetic component, 5 students have as first preference the kinesthetic learning style combined with a R/W approach, 3 students have the kinesthetic and visual learning approach, and only one student has the kinesthetic and aural preferences for learning.

Based on the individual learning styles, we issued recommendations for each student, as we presented in the methodology. We provided the recommendations in the first week of the course in order to help students to learn more efficiently. All the students took the VARK test and submitted their results via the e-learning platform.

At the end of the course, students were asked about their feedback related with VARK test. In this way, they were asked to answer the next main questions: did you use the recommendations? Were they helpful? Also, they were asked to write their perception regarding this test.

Out of the 34 students, 9 students didn't send their feedback (26% of the total no of students). Therefore, we got the feedback from 25 students.

Regarding the first question: did you use the recommendations? 23 students (92% of the respondents) answered affirmatively. Same percentage of the students found the recommendations helpful and contributing to their learning. Moreover, some of them wrote that they didn't hear about the existence of the learning styles so far. Their perception about learning based on VARK test's results varies from "the perception of my own self" to the "very useful".

Overall, their feedback strongly encouraged us to use the VARK test in the next classes.

We've presented further parts of the feedback received to emphasize the impact the test had on our students:

"I just wanted to Thank you for your feedback on the VARK score. This is the first time I have actually had this type of analysis done and appreciate your feedback greatly. After receiving your feedback, I actually implemented this into my regular study habits in medicine, along with accounting as well. I try to write separate notes in a notebook now and read them aloud to myself and it definitely has helped me improve my understanding of the concepts I am learning about. Just wanted to say thank you for this advice, as it has helped me not only in your course, but with others also." (Student with R/W and aural learning preferences)

"I feel the VARK test has shown me which areas I should focus on and what I already do when studying or reading. Furthermore, I do see the VARK test as an important part of this course, especially in the beginning. I have never had a test like this where it displays results regarding what kind of reading and studying suits your style. I found them to be very helpful, because I have never seen recommendations as such, and I have found myself doing more of the things the VARK test recommended. I fully recommend you use it for your next batch of students as it can have a lasting impact not only on this course, but future courses ahead. Thank you for a wonderful class and your help thus far!" (Student with kinesthetic learning preferences)

"Concerning the VARK test, You made some excellent suggestions to my learning style. This tool was very helpful to me because when I am studying, it gives me a technique to learn the most material and retain the material and also to understand concepts instead of just memorizing. I am also studying for USMLE and have used some of your recommendations and have been very

productive in my learning. I think this is great for students to use because it helps you to study smarter not harder." (Student with R/W and visual learning preferences)

"I did find the VARK test interesting. At this point in my education experience, I have found some good techniques that help me to learn, and I think they follow the guidelines of what I learned from the VARK test, so I can't say I changed anything based on this. However, I did find it interesting and it was a nice intro to see that you actually cared about my learning." (Student with kinesthetic learning preference)

"I liked the overall test, because the test gave me a perspective of my own self that I thought I would not realize on how I learn school/college/university work load materials. After reviewing the score in those categories, and after reading your suggestions or recommendation based on my score, some parts did help me, for example, I thought that I follow through by simple observation and then performing them along with practice, I eventually get better in performance. Little did I know, that I learn even better from just reading/writing along with some parts of your recommendation... The test is just ideal for your understanding, not an in-depth quality per say, on how your students learn their course material either in your class or others." (Student with R/W and kinesthetic learning preferences)

4. Conclusions

The results of our research reveal the following two main conclusions:

The first conclusion is that identifying the learning styles is extremely useful for students in terms of learning process. Knowing and exploiting their particular learning style help students to maximize their learning. This conclusion can be depicted from the feedback received.

The second conclusion is that recommending resources based on learning styles is absolutely necessary because it really helps students to learn in their own styles. But this conclusion involves the existence of myriad resources, so they can be suitable for each possible learning style.

The results of our paper show, firstly, that the learning process can be facilitated by professors' direct efforts in identifying students' learning styles. Secondly, it underlines the importance of having a diversity of resources available for our students and to be able to offer them a constructive solution regarding their learning styles. Moreover, our contributions are reflected in the methodology we used in linking the learning styles with the course resources and in building our personal approach in issuing students' recommendations.

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