



USING ASSESSMENT TO CREATE STUDENT-CENTERED LEARNING: A CORRELATION BETWEEN MATCHED LEARNING STYLES AND STUDENTS' ACADEMIC PERFORMANCE

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ABSTRACT

Higher education institutions have traversed a lot of challenges to achieve Outcome-Based Education which reasonably requires the adoption of different teaching and learning methods that are largely student-centered. Student-Centered Learning, as the term implies, focuses on the student and how he applies learning to be able to develop lifelong learning skills. To achieve this end, the use of assessment will allow the teachers to know his student and his learning styles in order to create a student-centered classroom. As they respond to the individual and group learning needs of their students, they become aware on how they learn and be able to help them become more efficient and effective learners.

KEYWORDS : assessment, learning styles, VAK, project management, teaching and learning

INTRODUCTION

Educators have to help students achieve success and to make this happen, tools are used to be able to identify students who are at risks. In such manner, they will be able to adjust and find appropriate instructional strategies to meet the needs of their students. It is vital for the teacher to determine the personal preferences of their students when it comes to learning. Learning is acquired when an individual absorbs knowledge from something he/she does not know. In learning, learners are motivated to study when their preferred learning style is applied in teaching.

Different educational researchers also have found that the mismatch of learning styles has led to frustration, demotivation and failure of learning as students have their own learning strengths, weaknesses and learning styles. Educators find ways and means to identify the most useful and effective teaching strategies that could cater to the kind of learning styles of their students. Students have their distinct and diverse learning styles; some can easily learn from visual forms such as pictures and diagrams, some from written and spoken forms and others from their active involvement in groups and their individual interaction in class activities.

THEORETICAL BACKGROUND

A number of studies have found that students' performance increases when the teaching methods match their learning styles (Csapo, 2006; Gilakjani & Ahmadi, 2011; Al Mekhlafi, et. al., 2015). However, a number of studies also suggested the compelling need for a deeper proof of the effectiveness of the different learning styles modalities (Glenn, 2009; Pashler, 2008). Consequently, this study aimed at exploring the same sphere of knowledge to determine where and how learning styles work. It focuses on the use of assessment in order to identify students' learning styles which will directly link to the teaching of the Project Management course and the grade results of the students.

• Definition of Learning Styles

The motivation of this research paper is to improve the delivery of the Project Management course. The researchers thought of first identifying the preferred learning styles of students as every student conforms to any of the three basic learning styles, such as visual, auditory and kinesthetic. Hence, this research collected basic ideas of learning styles to get different perspectives in various angles.

According to Brown (2015), learning style refers to the selection of a learning condition or situation over another which is considered an aspect of learning style preference. Understanding the manner how

students absorb information and learn will improve the selection of best suited teaching methods and strategies that will enhance student learning (Zapalka & Dabb, 2002). Learning style is the way the individual learner seeks to learn which includes his approach to learning, experience of learning and use of information (Ducket & Tatarowski, n.d.). Learning styles is widely used to describe the process on how learners gather information, sift through information, interpret information, organize information, come to conclusions and store information for further use (Chick, n.d.). Instructional strategies matched to individual learning styles of students have "consistently evidenced positive results" in empirical studies (Minotti, 2005). On the other hand, other researchers negate the existence of significant correlation between learning style and performance and they contend that the practice of diverse teaching methodologies irrelevant to learning preferences is educationally advantageous (Wilson, n.d.).

From the many definitions gathered from different authors, it is concluded that a learning style is a way a learner could absorb information more to be able to assimilate knowledge faster. It refers to the understanding that different individuals learn information in many different ways (Pashler, et. al., 2008). A learning style is known as an individual signature towards learning.

• Importance of Identifying Learning Styles

Having a wider view of learning styles and the understanding of the importance of learning styles in the teaching and learning process is a vital element in effective teaching. Moreover, having a wide understanding of learning styles is beneficial to the teacher in designing classroom activities and learning increases when teachers and students understand the preferred ways of how students learn and how they learn (Csapo, 2006).

Because one is naturally different from another, identification of learning styles gives the opportunity for educators to teach with the use of wide and effective range of methods and techniques, varied communication strategies and manage instruction (Gilakjan & Ahmadi, 2011).

• Identification of Learning Styles

Indeed learning styles must be identified to be able to match the learning style of students to the teaching style of the teacher. The varied learning styles would make teaching difficult. It is suggested that the teacher must identify students' dominant learning styles. It has to be noted by teachers that students' learning styles are not the same. Teachers have to tailor classroom activities to the preferred learning style of their students to assimilate knowledge. Paying

special attention to students' learning styles is "one important measure to attain diversity which is a key standard to measure success of any higher education institution" (Al Mekhlafi, et. al., 2015).

Reliable and valid instruments can be used and are available to be able to assess learning styles of students of all ages. Results gathered from such assessment can be effectively used to be able to develop proper instructional materials and lessons that are responsive to students' needs (Dunn & Burke, 2006). It is important to meet the needs of students to make substantial and significant progress toward achieving the goals of developing lifelong and self-directed learners (Williamson & Watson, 2007).

VAK (Visual-Auditory-Kinesthetic) Model

The VAK model is a framework that describes the learners as visual, auditory and kinesthetic. It is based on the senses and the simplest and most common way of identifying different learning styles. It uses 3 main sensory receivers like the Visual, Auditory and Kinesthetic (movement in order to determine the preferred learning style) (Barbe, et. al., 1979).

The three learning styles are visual, auditory and kinesthetic. (LdPride, n.d.)

Some individuals may be a visual, auditory, kinesthetic or a combination of two or three of the learning styles.

• Identification of Learning Styles

"Instruction begins when you, the teacher, learn from the learner. Put yourself in his place so that you may understand what he learns and the way he understands it" - Soren Kierkegaard (Pescosolido & Aminzade, 1999).

Although it is vital that the teacher has to be proficient in his/her subject area, this is not enough. A teacher should have a personality of a caring, trustworthy and genuine concern to his/her students (Galbraith, 1991). Teaching methods and strategies differ from one instructor to another (Felder & Brent, 2005). Some of them mainly do lecturing and others do more on demonstration or other classroom activities. Some also focus on theories, concepts and principles and the rest on applications. Others give emphasis on memory while others focus on understanding. The amount of information absorbed by the students in class is governed by the students' ability and prior preparation as well as the teaching style of the instructor. It is important to good teaching to know who your students are as individuals and as a group (<http://cet.usc.edu>, n.d.). One of the points given if a teacher would like to facilitate the learning process is to use a variety of teaching styles to be able to respond to the needs of diverse learners.

DESIGN/METHODOLOGY/APPROACH

A correlational research design was used to assess the relationship between and among the identified learning styles, the delivery of appropriate teaching methodologies and the academic performance of students. The study was conducted in the Department of Management, College of Economics, Management and Information Systems of University of Nizwa, Sultanate of Oman. Fifty-eight (58) Project Management students for Fall 2015, assigned as Group A, were utilized as a control group for the purpose of executing a better comparison. No data was taken from Group A and was taught using the regular lecture and discussion. Thirty-five (35) students of the same course for Spring 2016, assigned as group B, were taken as respondents for this study. To determine the preferred learning styles of Group B, the VAK was used which is the most common and widely used type of learning styles model. It also provides a very simple way on how to explain and understand the different learning styles such as Visual, Auditory and Kinesthetic. Visual learners can learn better through seeing, better think in pictures with the use of visual aids, hand-outs, images, etc. Auditory

learners can better learn through listening, better understand through lectures, discussions, etc. Kinesthetic learners can better learn through doing and be able to explore the world.

The VAK (Visual, Auditory and Kinesthetic) Learning Styles Self-Assessment Questionnaire was used and translated in Arabic language for better understanding and comprehension of the questions by the Omani students. The questionnaire was distributed and collected at the first day of the semester before the commencement of teaching. From the survey, a score was generated which indicated the preferred learning style of each student. Percentage was used to rank the learning style preferences of the students. After which, Group B was taught according to their preferred learning styles. The academic performance of Group A and Group B was compared using the t-test for two independent samples. The data was fed to Microsoft Excel for statistical treatment/t-test calculation.

DISCUSSIONS AND FINDINGS

Project Management is a course offered at the Department of Management, College of Economics, Management and Information Systems, University of Nizwa. This course provides the students an overview of the basic framework for managing general projects. It covers the whole process of project management which includes project planning, project implementation and project termination.

I. The Learning Styles Preferences of Project Management Students for Spring 2016 was identified.

Ranking was used to determine the order of learning style preferences of the students.

TABLE – 1 : LEARNING STYLES PREFERENCE OF THE PROJECT MANAGEMENT STUDENTS FOR SPRING 2016

Learning Style Type	Number of Students	Percentage
Visual	19	54 %
Auditory	4	11 %
Kinesthetic	9	26 %
Visual and Auditory	1	3 %
Visual and Kinesthetic	2	6 %
Total	35	100 %

Table 1 and Figure 1 show that among the 35 students 54% strongly favored visual learning style, 11% favored auditory, 26% kinesthetic, 3 % preferred visual and auditory, and 7% visual and kinesthetic learning styles.

The learning style preferences of the students are ranked as follows:

1. Visual
2. Kinesthetic
3. Auditory
4. Visual and Kinesthetic
5. Visual and Auditory

II. The t-test for independent samples was utilized in comparing the performance of the two groups of student respondents. Group A consist of the project management students for Fall 2015 and group B consist of the project management students for Spring 2016 whose learning styles preferences were identified and conforming instructional materials for each of the learning styles were developed and utilized in the teaching and learning processes.

The null hypothesis is: The Spring 2016 result is better than the Fall Semester 2015 result. $\mu_1 \leq \mu_2$

The t statistic is used for both equal and unequal variances. The one – tailed test is utilized.

TABLE – 2 : COMPARISON OF THE AVERAGE RESULTS OF THE TWO GROUPS OF STUDENTS

Semester	Number of Students, n	Average Grade,	Standard Deviation, s
Fall 2015 (Group A)	58	59	12.69495
Spring 2016 (Group B)	35	62	12.26301
t statistic for equal variances	0.113776	t statistic for unequal variances	0.112152
5% Level of Significance	Not Significant		

Table 2 reveals that there is no sufficient evidence at the 5% level to reject the null hypothesis. Therefore, Group B performed better than Group A. This statistical finding shows that identification of learning styles and delivery of appropriate teaching methodologies according to these learning preferences is significantly correlated to the academic performance of the students. Additionally, the findings implies that group B performed academically better than group A indicating that the identification of students' learning styles before the commencement of teaching the Project Management course and using proper instructional strategies and teaching styles contributed in improving the academic performance of students.

CONCLUSIONS AND FURTHER STUDIES

This paper has led the authors to realize the effects of identifying students' learning styles in teaching. It was proven that if a teacher is more focused to students' needs then the educative process will be enhanced. Clearly understanding that individual students have distinct modes for learning, the teacher has to be more motivated to think critically and creatively. With the varying learning styles of students, the use of different teaching strategies to effectively meet the learning needs of the students is encouraged.

There is a big possibility that students' learning style may vary from age to age, from semester to semester, from a year to another year. Another study could also be explored by investigating the possibility that the learning style of students may change as they grow and mature or in various subject areas (Glenn, 2009).

Teachers are encouraged to use research-validated instructional methods and strategies to be able to improve the teaching and learning process. To measure the effectiveness of using students' learning styles in teaching, it is recommended to conduct a pre-test and post-test in two groups (experimental and control) in the same semester to come up with a more decisive evidence. The instructional materials used by the instructor reflecting the preferred learning styles of students must also be validated for usefulness and effectiveness.

A transition from the VAK to VARK Self-Assessment with a larger sample size is suggested to differentiate the two models. The VARK model focuses on the visual, aural, read/write, kinaesthetic learning styles of students (<http://www.vark-learn.com>, n.d.). More studies must be conducted to determine the effectiveness of the VAK and VARK models. Other learning styles models should also be used to identify students' learning styles. Although some authors claim that the identification of learning styles of students improved the teaching and learning process, further investigation has to be made to validate this claim as the findings from previous studies were not conclusive.

Nevertheless, it is encouraged that teachers use the VAK and any other leaning style models to inform students that they also contribute to their learning experience which may increase their level of self-confidence and self-esteem. Thus, they will be more motivated to learn and perform better in class. Teachers, on the other hand, are also encouraged to be more involved in the teaching process and make use of different teaching strategies to address the learning needs of students.

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