Relationship between Learning Styles and Content Based Academic Achievement among Tertiary Level Students’

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Abstract  
Students’ academic achievements are highly related with their learning styles. Every individual have their distinctive learning style in which they feel comfortable with their personality. Due to this phenomenon, this paper aimed to determine the relationship between learning styles and achievement of tertiary level students’. It also aims to identify the different learning styles based on gender and variety field of study. This paper will look into academic performance based on the mid semester test results of student in content based subjects from difference faculties. The implication of this study is to identify the necessity for effective learning and teaching strategy based on the majority preferences in different teaching and learning context.

Keywords: Learning Style, student achievement, gender, fields of study

Introduction

In this globalised world, knowledge is well supported in various domains. A typical learning situation is no longer restricted to the talk and chalk method. However, it should be noted that individuals have different learning styles, characteristics, strengths and preferences in the way individual takes in and process information (Hong and Chan, 2000). Knowing students’ learning styles can help in various ways to enhance learning and teaching (Garf, Kinshuk, Liu, 2009). The diversity in teaching and learning styles has beginning to gain more attention as many studies match their preferred learning styles (Reid 1987; Zhenhui 2001; Too 2009). It is indeed vital for teachers to have awareness of their learners’ needs, capacities, potentials and learning styles preferences for effective classroom teaching and learning in this fast growing world. The subject
of learning style had been researched popularly in the past. With little empirical knowledge about the relationship of learning styles and students’ academic achievement, the need for research in this area is not only timely, but imperative.

In this study, gender and the different fields of study served as moderator variables in order to investigate the impact of students’ preferred learning style on their academic achievement. Educators have to be sensitive to identify and accommodate different learning styles according to current trends. Sample size of the study was determined by 30 students’ in a tutorial class in a typical scenario. As such, teachers cannot assume that all their students’ would be able to learn equally well from what is presented in class. Studies focused on perceptual learning styles have shown that there are significant differences in learning styles according to gender and different fields of study (Alumran, 2008).

**Model of Kolb’s Learning Style**

Kolb’s Learning Styles had been researched popularly in education field such as biology, science, programming, accounting and engineering (Othman & Othman 2002, Sendil 2009, Hargrove et al. 2008, Wing and Hoi 2010, Yusof, Othman & Karim 2005). In Kolb’s learning style model, there are four basic learning mode, named concrete experience (CE), Abstract conceptualization (AC), Reflective observations (RO) and Active experience (AE). The differences between each learning styles is further classified into the following four types: diverging, assimilating, converging and accommodating (Kolb, 1984).

i) Diverging Style

CE and RO have dominant learning ability found in an individual with diverging learning style. They have sharp observation in viewing concrete situations from many different points of view to generate new ideas. Therefore, they have broad culture interest and interested to gather information. They are interested in people and tend to be imaginative and emotional, and tend to specialize in the arts. In formal learning situations, students’ in this learning style prefer to work in groups, listening with an open mind to different point of views and receiving personalized feedbacks.

ii) Assimilating Style

AC and RO have dominant in learning ability found in an individual with assimilating learning style. They are able to understand a wide range of information and putting it into concise and logical form, and they are less focused on people and more interested in ideas and abstract concepts. Generally, people with this style will find it more important to accept logical value rather than practical value. This kind of style is important for effectiveness in information and science career.

iii) Converging Style

AC and AE have dominant in learning ability found in an individual with converging learning style. They are able to solve problems and make decisions based on finding solutions to questions
or problems. They prefer to deal with technical tasks and problems rather than with social issues and interpersonal issues. This learning skill is valuable for effectiveness in specialized and technology career. In formal learning situations, students’ with this style prefer to experiment with new ideas, simulations, laboratory assignments and practical applications.

iv) Accommodating Style

CE and AE have dominant in learning ability found in an individual with accommodating learning style. They rely on people for information rather than their own technical analytical analysis in solving problems. They have the ability to learn from primary “hands on” experience and enjoy carrying out plans in new and challenging experiences. Jobs such as marking and sales are suitable for these learners.

<table>
<thead>
<tr>
<th>Concrete Experience (CE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Experimentation (AE)</td>
</tr>
<tr>
<td>Accomodators</td>
</tr>
<tr>
<td>Divergers</td>
</tr>
<tr>
<td>Reflective Observation (RO)</td>
</tr>
<tr>
<td>Convergers</td>
</tr>
<tr>
<td>Assimilators</td>
</tr>
<tr>
<td>Abstract Conceptualization (AC)</td>
</tr>
</tbody>
</table>
Learning styles according to fields of study

In Alumran (2008) research showed that the information technology students were found to be more Active Learners than the Science students and Law students measured by Index Learning Styles instrument. Some researchers compared the learning styles of American students across some academic colleges such as education, Liberal Arts and Business found that the most preferred learning style was the visual Learning Style (Litzinger et. al. 2005).

Learning styles according to academic achievement

Sendil (2009) conducted a study based on Kolb’s learning styles inventory described that there is no significant correlation between the student’s learning styles and the academic achievement. Meanwhile, a quasi-experimental study using Kolb’s learning Cycle strategy showed no significant interaction effect between learning style and treatment toward student achievement (Yusof, Othman & Karim 2005).

However, Wing and Hoi (2009) found that there were statistically significant learning style group effects on student achievement in programming subject using Gregorc Style Delineator (GSD) learning style.

Based on literature review above, conceptual framework adopted from Kolb’s Learning Styles to identify students’ academic achievements based on gender (male and female) and fields of study (Computer science, Finance and English Language students’) is developed. Kolb’s learning style served as independent variable and student achievement (SA) is dependent variable.

![Conceptual framework adopted from Kolb’s Learning Styles](image)

Figure 2: Conceptual framework adopted from Kolb’s Learning Styles

Methodology

Research Design

The sample groups were conveniently taken from finance, statistics for computer science students’ and basic professional writing for language classes. Questionnaires were distributed to 30 respondents from each field of study using convenient sampling. Direct observation is
conducted by the focus on participants’ involvements in their tutorial class discussions. The data collected two weeks after the mid-term examination.

**Research Instrument**

The research instrument in this study was based on a self-administrated questionnaire. 10 items were adapted from Fleming and Mill’s (1992) VARK’s inventory to identify respondents’ preferred learning styles. This instrument was adopted to collect participants’ responses to identify their insights in real-life context as they can easily relate the questions and items with the scenario given. Modifications of the 10 items based on VARK’S inventory were to meet the research objectives derived from KOLB’s learning style model. In addition, adopting VARK’s inventory in this study helps to simplify and tabulate raw data based on numerical dominance. Pattern of learning style can easily be identified to meet the research objective.

**Findings**

**Learning Style Based on Student Achievement**

Student achievement had been categorized into three level named high (80 marks and above), medium (50-79 marks) and low (49 marks and below). As shown in Table 1 below, 35 students scored high in their mid-term examination, followed by 40 students scored medium and 15 students’ scores low. Students achieved high score preferred converging learning style, while majority of the respondents scored medium preferred diverging learning style. Meanwhile, there are no dominant learning styles found in student who score low.

<table>
<thead>
<tr>
<th>Student Achievement</th>
<th>Frequency</th>
<th>Learning Styles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Diverging</td>
</tr>
<tr>
<td>High</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Medium</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td>Low</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 1: Learning style based on student achievement

**Learning Style According to Gender**

45 respondents are selected from each gender and the result show that majority of female respondents preferred diverging, accommodating and assimilating learning styles while majority of male students’ preferred converging learning style. The result indicated that female and male students perceived different learning style as shown in Table 2 below.
<table>
<thead>
<tr>
<th>Learning Styles</th>
<th>Frequency</th>
<th>Gender</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Diverging</td>
<td>28</td>
<td>18</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Converging</td>
<td>26</td>
<td>5</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Accommodating</td>
<td>20</td>
<td>13</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Assimilating</td>
<td>16</td>
<td>9</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>90</strong></td>
<td><strong>45</strong></td>
<td><strong>45</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Learning style according to gender

**Learning Style According to Fields of Study**

In term of fields of study, finding show that finance students prefer diverging learning style, computer science students prefer converging learning style and English Language students prefer accommodating learning style. The finding proved that students from different fields of study preferred different learning style.

<table>
<thead>
<tr>
<th>Learning Styles</th>
<th>Frequency</th>
<th>Finance</th>
<th>Computer Science</th>
<th>English Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverging</td>
<td>28</td>
<td>15</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Converging</td>
<td>26</td>
<td>7</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Accommodating</td>
<td>20</td>
<td>3</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Assimilating</td>
<td>16</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>90</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Table 3: Learning style according to fields of study

**Discussions**

The task of a facilitator in a higher education institution is to clarify complicated concept and theories. Existing learning styles which are focus highly on lecturing, handouts/ notes and class discussion falls on the Assimilating (AS) learning style. Based on this, lecturers have less focus on student and more interested in putting concise information in a logical form to meet learning outcomes of student understanding from abstract concept. It is important to identify different learning styles needs across the different field of study and adopt the preferred learning styles accordingly.

In this study, the finding indicates that the majority computer science students, regardless gender, who scored well in mid-term examination, prefer to adopt converging (C) learning styles. They find it effective to solve problems and experiment with new ideas using practical theories rather than deal with social issues and interpersonal issues. However, a majority of finance students prefer diverging (D) learning styles by visualizing information in flow chart, diagram and graph form. Meanwhile, English language students learn better when they were exposed to group work and class discussions are fall under accommodating learning style (AC).
Conclusion

The findings of this study suggested that participants’ preferred learning styles have significant influence on students’ academic achievements. Hence, the finding confirmed the outcome study being carried out by Wing and Hoi (2009) that there are relationships between learning and student achievement.

The results also indicated that gender would have a significant influence on students’ achievements. This research finding supported Miller et. al.(1990) proposition that males and females have direct impact on achievement.

Although the design of questionnaires according to VARK’s is easily conducted in order to gain insights from students’ distributed across a variety of fields of study through a short period of time; the preferred learning styles of each students’ could not be clearly identified based on a single preferred learning style as students’ may adopt more than one learning style concurrently.

The findings of this study should be of interest to greenhorns in the academics who attempt to explore concepts and practices in teaching trends. New lecturers as well as experienced educators could be quite unaware of the impacts in current teaching and learning trends to cater students’ needs. Therefore it is evident that by activating and expending practitioners’ repertoire of strategy use in their respective fields of teaching. It is vital for a teacher to be sensitive and accommodate to cater for learners’ satisfactions and practitioner attainment.

References


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