The Relationship between Gardner’s Multiple Intelligence and Kolb’s Learning Style

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Abstract

In a diverse work environment, it is important to have diverse managers, and people with different talents and intelligence in order to deal with different problems. In this case, each individual can know their own strength and weakness, and know which position works best for them. The concept of learning styles is used to describe individual differences in the way people learn. According to Kolb (1984), each person has a unique way to absorb and process experiences and information. He has identified four statistically prevalent learning styles—diverging, assimilating, converging, and accommodating. On the other hand, Gardner’s Multiple Intelligence Theory is very helpful to recognize that people have differing aptitude in different subject areas. In the study, the participants consisted of 153 bachelor students of Management of Multimedia University of Malaysia. They were given two questionnaires, one for Kolb’s learning style and other for Gardner’s Multiple Intelligence inventory and a correlation was conducted. The results showed that there was a significant relationship between Kolb’s Learning Style and Multiple Intelligence. The relationship could be seen particularly in Abstract Conceptualization (AC) and Multiple Intelligences which were Nature, kinesthetic, music, word, interpersonal, and picture. There were also a slight relationship between Concrete Experience (CE) and kinesthetic and nature; and also between Active Experimentation (AE) and Music. There was no relationship between Reflective Observation (RO) and Multiple Intelligences. The results also indicated that the majority of the participants are between AC and AE which means they are convergers and the second in lead was between AE and CE, which means they are accommodators. Having the right information for companies can be beneficial since knowing how their employees learn can lead to a diverse workplace that would have significant results on organizational structure, planning, development, and operation.

Key words: Gardner’s Multiple Intelligence, Abstract Conceptualization, Concrete Experience, Active Experimentation, Reflective Observation
Introduction

Learning to learn is a competence of which has great universal value. Knowledge is crucial for continual improvements to existing products and services and for radically innovative measures. Each individual needs to master this ability so that they can adjust to the constant changes in the working environment (Kessels, 2001). Due to the fact that knowledge productivity has become more crucial to the survival of most organizations, there is more stress on how one can learn faster and more productively. Organizations spend billions on training their employees every year according to Training Magazine's 2012 Industry Report who found that the training budget has grown to 58.5 billion.

Research by Warmerdam and van den Berg (1992) confirm the increasing importance of knowledge-based work. Simple, routine and low-level functions are decreasing, while complex high-level functions are increasing. Organizing educational provisions that promote learning to increase the knowledge productivity of individuals and teams have become part of the day to day business policy. Organizations are more aware about the importance of learning and on their way to promote it in every way possible. According to Kessels (1996), there are seven critical learning functions. The first one is the professional knowledge which is closely related to the organization’s core competencies. This is due to the fact that professional knowledge is what the work is related to and all objectives are drawn to it. It can be both implicit and explicit knowledge and it can be transferred, codified and shared throughout the organization. The second and third functions are problem solving and reflecting which is learning to deal and identify new problems, Argyris’s double loop learning is a good example of questioning the existing values and therefore proceeding to consider other solutions and ideas. This tends to bring new visions and creativity. The fourth learning function is the communication skills which is foundation of how knowledge is transferred from one individual to another. Good communication skills help knowledge sharing and provide an environment where employees can be friendlier and work more effectively. The fifth function is self regulation of motivation which is the personal interest of learning. According to Pink (2010), people are motivated, when their job is challenging and they learn from it, he later states that intrinsic motivation is a powerful tool to get employees to go that extra mile. Personal interest is very much linked to inspiration, passion and sense-making (De Leenheer, 2004). The sixth learning function is the creative turmoil. According to Senge (1992) distance between vision and reality is the source of creative tension as distance makes it necessary to take action in order to come closer to the objective. A certain degree of chaos, disorder or even failure may prevent complacency, and could stimulate organizations to stretch beyond their strategic focus. Creative chaos can stimulate individuals to fundamentally change their ways of thinking and create new knowledge. The last function is peace and stability which is the need to reflect, learn and share. It gives the opportunity to assess one’s performance and effectiveness. Peace and stability gives the certainty and the time which is required for specialization and improvement (Lakerveld, 2005). The learning functions peace & stability and creative turmoil may seem to be conflicting; however, they are supposed to balance one another.
Learning therefore, leads to better thinkers, vision, and personal mastery which is defined by Senge (1990, p.141), is “the discipline of personal growth and learning.” It is a motivating factor for people who have high personal mastery skills to step towards their desired goals. Personal mastery according to Senge (1990) is recognized in several ways:

- They have a special sense of purpose or a calling.
- They accurately assess their current reality; in particular, they quickly recognize inaccurate assumptions.
- They are skilled at using creative tension to inspire their forward progress.
- They see change as opportunity.
- They are deeply inquisitive.
- They place a high priority on personal connections without giving up their individuality.
- They are systemic thinkers, that is, they see themselves as one part in a larger system.

Developing personal mastery is a lifelong process, in order for that process to begin, one must be ready to learn. In order for learning to happen, each individual must understand one’s own learning style. The concept of learning styles is used to describe individual differences in the way people learn. One must understand the individuality of learners and the need to raise awareness their learning style. Therefore, different students may prefer different learning environments, learning modalities and the all exhibit unique strengths, talents and/or weaknesses. If we are to be successful in leading our learners through the task of learning, we must provide a variety of learning approaches so that these differences can be recognized and provided for in a learning environment. It helps them understand their learning styles, and thus “make transitions to higher levels of personal and cognitive functioning.” (Knox, 1986, p.117). There have been many different approaches to measuring and identifying different types of learning styles, each of them having their merits and drawbacks. However, an amalgamation or blending of these concepts is probably more effective than any other approach.

According to Kolb (1984), each person has a unique way to absorb and process experiences and information. He argues that development in learning sophistication results from the integration of the dual dialectics of the learning process, i.e., conceptualizing or experiencing. Learning theory defines as “the process whereby knowledge is created through the transformation of experience(Kolb, 1984).The learning model portrays two dialectically related models of grasping experiences-Concrete Experience(CE) and abstract Conceptualization(AC) and two dialectically related modes of transforming experience-Reflective Observation (RO) and Active Experimentation(AE). Individual learning styles are determined by an individual’s preferred way of resolving these two dialectics, favoring one mode over the other.
In 1971, David Kolb developed The Learning Style Inventory (LSI) to assess individual learning styles. While individuals tested on the LSI show many different patterns of scores, research on the instrument has identified four statistically prevalent learning styles - diverging, assimilating, converging, and accommodating. The following summary of the four basic learning styles is based on both research and clinical observation of these patterns of LSI scores (Kolb, 1984).

Diverging

The diverging style’s dominant learning abilities are concrete experience and reflective observation. People with this learning style are best at viewing concrete situations from many different points of view. It is labeled “Diverging” because a person with it performs better in situations that call for generation of ideas, such as brainstorming session. People with a diverging learning style have broad cultural interests and like to gather information. Research shows that they are interested in people, tend to be imaginative and emotional, had broad cultural interests, and tend to specialize in the arts. In formal learning situations, people with the diverging style prefer to working groups, listening with an open mind and receiving personalized feedback.
Assimilating

The Assimilating style’s dominant learning abilities are abstract conceptualization (AC) and reflective observation (RO). People with this learning style are best at understanding a wide range of information and putting it into concise, logical form. Individuals with an assimilating style are less focused on people and more interested in ideas and abstract concepts. Generally, people with this style find it more important that a theory have logical soundness than practical value. The assimilating learning style is important for effectiveness in information in a science career. In formal learning situations, people with this style prefer reading, lectures, exploring analytical models, and having time to think things through.

Converging

The converging style’s dominant learning abilities to be abstract conceptualization (AC) and active experimentation (AE). People with this learning style are best at finding practical uses for ideas and theories. They have the ability to solve problems and make decisions based on finding solutions to questions or problems. Individuals with a converging learning style prefer to deal with technical tasks and problems rather than with social issues and interpersonal issues. In formal learning situations, people with the style prefer to experiment with new ideas, simulations, laboratory assignments, and practical applications.

Accommodating

The accommodating style’s dominant learning abilities are concrete experience (CE) and active experimentation (AE). People with this learning style have the ability to learn from primarily “hand-on” experience. They enjoy carrying out plans and involving themselves in new and challenging experiences. Their tendency may be to act on “gut” feelings rather than on logical analysis. In solving problems, individuals with an accommodating learning style rely more heavily on people for information and then on their own technical analysis. This learning style is important for effectiveness in action-oriented careers. In formal learning situations, people with the accommodating learning style prefer to work with others to get assignments done, to set goals, to do field work and to test out different approaches to completing a project.

Multiple Intelligence Theory is very helpful to recognize that people have differing aptitude in different subject areas, but it still requires the application of different kinds of learning strategies to be effective. Gardner defines intelligences as “The capacity to solve problems or fashion products that are valued in one or more cultural setting” (Gardner & Hatch, 1989, p.44). Using biological as well as cultural research, he formulated a list of eight intelligences. The new outlook on intelligence differs greatly from the traditional view which usually recognizes only two intelligences, verbal and computational. Even though Gardner’s multiple intelligences theory has been applied to the field of education, multiple intelligences can go much further and be used in business and other fields. Although research on multiple intelligence and leadership is still rather new, there are important implications to
grasping the true relationship between multiple intelligences and leadership effectiveness (Green, Hill, E. Friday, S. Friday, 2006). Leaders with different intelligences may be able to deal with different approaches to promote the productivity of the organization.

**Method**

In the study, the participants consisted of 153 bachelor students of Management of Multimedia University of Malaysia. All participants were provided with a thorough explanation of the research, and its purposes, and how the findings would be valuable to the field of teaching and training. All participants were free to leave the project at any time, and incentives were not provided for their participation.

The participants in this study were given two questionnaires, one was Kolb’s Learning Style Inventory and the other was the Multiple Intelligence Development Scale (MIDAS) which was administered to find one of eight dominant intelligence of the learner. It should be noted that, the scores were processed according to the MIDAS instruction Manual. In addition, the scores were tested on the skewness, in order to determine the normality of the data.

It is important to note that in order to encourage the students to answer with more care, they were told that the results of the test will have an impact on their final class grade.

**Testing the null hypothesis**

In order to investigate the relationship between Kolb’s Learning Styles and the Multiple Intelligence Theory, a correlation matrix was carried out for every learning style and eight intelligence. Table 1 gives insight on the correlation between CE and Multiple Intelligence. As it is revealed from Table 1, there seems to be no relationship between RO and MI.
Table 1. Correlation between RO and MI

<table>
<thead>
<tr>
<th></th>
<th>RO</th>
<th>word</th>
<th>math</th>
<th>Kinesthetic</th>
<th>music</th>
<th>interpersonal</th>
<th>intrapersonal</th>
<th>nature</th>
<th>picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>RO</td>
<td>1</td>
<td>-0.012</td>
<td>0.123</td>
<td>-0.035</td>
<td>0.018</td>
<td>0.008</td>
<td>-0.088</td>
<td>-0.042</td>
<td>0.029</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td>0.884</td>
<td>0.131</td>
<td>0.665</td>
<td>0.822</td>
<td>0.924</td>
<td>0.279</td>
<td>0.608</td>
<td>0.721</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.884</td>
<td>0.131</td>
<td>0.665</td>
<td>0.822</td>
<td>0.924</td>
<td>0.279</td>
<td>0.608</td>
<td>0.721</td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>27%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2tailed).

Table 2 shows, the correlation between CE and MI, as it is revealed by the table, there is a slight positive correlation between CE and Kinesthetic, and CE and Nature.

Table 2. Correlation between CE and MI

<table>
<thead>
<tr>
<th></th>
<th>CE</th>
<th>word</th>
<th>math</th>
<th>kinesthetic</th>
<th>music</th>
<th>interpersonal</th>
<th>intrapersonal</th>
<th>nature</th>
<th>picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>1</td>
<td>0.097</td>
<td>0.034</td>
<td>0.332**</td>
<td>0.286**</td>
<td>0.140</td>
<td>0.073</td>
<td>0.386**</td>
<td>0.150</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td>0.234</td>
<td>0.675</td>
<td>0.000</td>
<td>0.000</td>
<td>0.084</td>
<td>0.369</td>
<td>0.000</td>
<td>0.065</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>0.234</td>
<td>0.675</td>
<td>0.000</td>
<td>0.000</td>
<td>0.084</td>
<td>0.369</td>
<td>0.000</td>
<td>0.065</td>
</tr>
<tr>
<td>Percentage</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2tailed).

From Table 3 it is revealed that there is a strong correlation between AC and MI, as it is revealed by the table, there is a positive correlation between AC and the following intelligences: Kinesthetic, Nature, Music, Word, and Interpersonal. There is also a slight correlation between AC and picture and math.
Table 3. Correlation between AC and MI

<table>
<thead>
<tr>
<th></th>
<th>AC</th>
<th>word</th>
<th>math</th>
<th>kinesthetic</th>
<th>music</th>
<th>interpersonal</th>
<th>intrapersonal</th>
<th>nature</th>
<th>picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.451**</td>
<td>.304**</td>
<td>.665**</td>
<td>.485**</td>
<td>.444**</td>
<td>.297**</td>
<td>.544**</td>
<td>.395**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Percentage</td>
<td>31%</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2tailed).

Table 4. shows, the correlation between AE and MI, as it is revealed by the table, there is a slight positive correlation between AE and Music.

Table 4. Correlation between AE and MI

<table>
<thead>
<tr>
<th></th>
<th>AE</th>
<th>word</th>
<th>math</th>
<th>kinesthetic</th>
<th>music</th>
<th>interpersonal</th>
<th>intrapersonal</th>
<th>nature</th>
<th>picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.149</td>
<td>.069</td>
<td>.231**</td>
<td>.286**</td>
<td>.114</td>
<td>.006</td>
<td>.221**</td>
<td>.084</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.066</td>
<td>.395</td>
<td>.004</td>
<td>.000</td>
<td>.162</td>
<td>.939</td>
<td>.006</td>
<td>.300</td>
</tr>
<tr>
<td>Percentage</td>
<td>26%</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2tailed).
According to this study, there was a significant relationship between Kolb’s Learning Style and Multiple Intelligence. The relationship could be seen particularly in AC and Multiple Intelligences which were Nature, kinesthetic, music, word, interpersonal, and picture. There were also a slight relationship between CE and kinesthetic and nature; and also between AE and Music. There was no relationship between RO and Multiple Intelligences. The results show, that the majority of the participants are between AC and AE which means they are convergers and the second in lead is between AE and CE, which means they are accommodators. Since the participants’ major is management, that kind of learning style may help them in the future, since it raises their awareness and knowledge on what works best.

Conclusion

According to Gardener(1983), all human beings have multiple intelligences. These multiple intelligences can be nurtured and strengthened, or ignored and weakened. According to Kolb(1984) each person has a unique way to absorb and process experiences and information. He argues that development in learning sophistication results from the integration of the dual dialects of the learning process, conceptualizing and acting. Learning theory defines learning as then process whereby knowledge is created through the transformation of experience (Kolb, 1984). According to Kolb (2000 p.14) certain learning styles tend to gravitate toward certain career types. However, people follow many different patterns. Even within a particular career, there may be sub-patterns of learning styles and interests to consider.

In a diverse work environment, it is import to have diverse managers, and people with different talents and intelligence in order to deal with different problems (Green, Hill, E. Friday, and S. Friday, 2006). In this case, each individual can know their own strength and weakness, and know which position works best from them. The company benefits by knowing how their employees learn and therefore can proceed to plan accordingly. This leads them to a workplace that would have significant results on organizational structure, planning, development, and operation, the organization will benefit from the increased knowledge and skill of all of its people resulting in greater productivity, innovation, and economical success.

According to Toms (1997,p 26), 'The market value of companies that succeed in the decades to come will be found principally in their intellectual assets: Their people and the knowledge these people have about the organization's core competencies". This due to that fact, that for companies to be successful in the future, they must be adaptive, innovative, and creative to be able to respond to changes in the marketplace, technological changes, and social changes. Therefore a more diverse workforce, continuous learning is necessary for organizations in order to survive.
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