Visual, Auditory and Kinesthetic Approach to Enhance the Information Processing Ability in Teaching Learning Teaching Chemistry

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Abstract

It is well known fact that learners basically perceive information through senses. Hence are categorized into three types known as Visual, Auditory and Kinesthetic. Visual learners learn primarily through the written word. Auditory learners learn primarily through listening. Kinesthetic learners learn better by doing. The present work is based on the implementation of a teaching model catering the need of all the three types of learners. A sample consisting of boys and girls in the age group 17 to 19 years were selected for the study. The sample selected was further divided into experimental and control group. The V.A.K. teaching model was implemented to the experimental group during teaching learning of chemistry for a period of about six weeks. To find out the effectiveness of V.A.K. model a pre and post test was conducted in order to judge the academic performance and the category of learners.

KEYWORDS: Visual, Auditory, Kinesthetic, Academic performance, and Teaching model

Introduction

The VAK learning style uses the three main sensory receivers: Visual, Auditory, and Kinaesthetic (movement) to determine the dominant learning style. It is sometimes known as VAKT (Visual, Auditory, Kinesthetic, & Tactile). It is based on modalities -- a channel by which human expression can take place and is composed of a combination of perception and memory.

VAK is derived from the accelerated learning world and seems to be about the most popular model nowadays due to its simplicity, however, its main weakness is that the research does not support it. This is probably because it is more of a preference, rather than a style. Learners use all three modalities to receive and learn new information and experiences. However, according to the VAK or modality theory, one or two of these receiving styles is normally dominant. This dominant style defines the best way for a person to learn new information by filtering what is to be learned. This style may not always be the same for some tasks. The learner may prefer one style of learning for one task, and a combination of others for a different task.

Classically, our learning style is forced upon us through life like this: In grades kindergarten to third, new information is presented to us kinesthetically; grades 4...
to 8 are visually presented; while grades 9 to college and on into the business environment, information is presented to us mostly auditory through the use of lectures.

According to the VAK theorists, we need to present information using all three styles. This allows all learners the opportunity to become involved, no matter what their preferred style may be. While there is some evidence for modality specific strengths and weaknesses (Rourke, et al. 2002), what has not been established is matching the instructional style to individual learning strength improves their learning abilities. For example, one study (Constantinidou and Baker, 2002), found that visual presentation through the use of pictures was advantageous for all adults, irrespective of a high or low learning-style preference for visual images. Indeed, it was especially advantageous for those with a strong preference for verbal processing. Auditory learners often talk to themselves or talk to a colleague or recording the subject and hearing what was said. The teaching-learning method includes brainstorming sessions allowing the learners to make connections of what they leaned and how it applies to their situation. Visual learners are found to have two sub-channels - linguistic and spatial. Learners who are visual-linguistic like to learn through written language, such as reading and writing tasks. Learners who are visual-spatial do better with charts, demonstrations, videos, and other visual materials. Kinaesthetic learners do best while touching and moving. It also has two sub-channels: kinesthetic (movement) and tactile (touch). They tend to lose concentration if there is little or no external stimulation or movement. When listening to lectures learners may want to take notes for the sake of moving their hands. When reading, learners like to scan the material first, and then focus in on the details.

Several learning models have been proposed by researchers like David A. Kolb (1984), according to his view a learner to be a Converger, Diverger, Assimilator and Accommodator in order for ideal learning process to take place. An individual learner has to attempt four of these approaches to strengthen his/her learning capability. Kolb further suggested that

- **Convergers** are good at making practical applications of ideas and using deductive reasoning to solve problems.
- **Divergers** are imaginative and are good at coming up with ideas and seeing things from different perspectives.
- **Assimilators** are characterized by abstract conceptualization and reflective observation and are capable of creating theoretical models by means of inductive reasoning.
- **Accommodators** are good at actively engaging with the world and actually doing things instead of merely reading about and studying them.

Honey Mumford model (1970) suggested that learners could adapt themselves as Activist, Reflector, Theorist and Pragmatist based on the following steps they follow in the process of learning.
1. Having an experience
2. Reviewing the experience
3. Concluding from the experience
4. Planning the next steps.

Based on the two learning model, the present paper work suggests a VAK teaching learning model in which a teacher consciously follows specific vocabulary to cater the needs of Visual, Auditory and Kinaesthetic learners.

Objective of the study

➢ To find the effectiveness of VAK model in enhancing the information processing ability of the students.

Research Question

How VAK teaching –learning model is related to information processing ability?

Sample

A sample constituting 50 boys and 50 girls are chosen in the age group 17 to 19 years were chosen for the study.

Tools of the study

Information processing ability questionnaire (C.Girija Navaneedhan2007) consisting of 30 statements were given to the students and were asked to read each and every statement carefully to choose the appropriate choice based on the likert scale. The minimum score is one and the maximum is one hundred fifty. The scores thus obtained were subjected to statistical analysis.

Methodology

Study conducted was experimental in nature, initially the Information processing questionnaire was distributed to all the students, based on the scores the total number of the students were divided in to experimental and control group. Those students who obtained scores ranging from 1- 50 were kept as experimental group and above 50 were considered as control group. To the experimental group VAK teaching –learning model was used to teach chemistry subject for 11th standard children for a period of three months. At the end of the third month Information processing ability questionnaire was given to find out any difference in score. The VAK teaching-learning model is represented as given below. In the VAK teaching-learning model designed by the author considers teacher playing the main role as the instructor stimulating the response of the students providing information to cater the need of visual, auditory and kinesthetic learners.
consciously using sub-modalities (using specific words at definite intervals throughout the period of delivering the lecture).

**VAK teaching–learning model**

The model shows certain specific words to be used while delivering the lecture in a repeated manner at regular periodic intervals consciously in order to draw the attention of all the three types of learners during her regular teaching–learning sessions along with other instructional teaching–learning materials. A regular practice of VAK model improves the teaching methodology as the words used in communication are powerful tools helping to assimilate the information thus bringing desirable behavioral changes among the learners.

**Results and Discussion**

Table 1: To differentiate between the pre and post test scores of information processing ability of boys and girls from the total sample.

<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Test type</th>
<th>Mean</th>
<th>S.D</th>
<th>C.R</th>
<th>L.S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>Boys</td>
<td>Pre test</td>
<td>100.82</td>
<td>15.47</td>
<td>3.43</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post test</td>
<td>106.80</td>
<td>8.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>Pre test</td>
<td>112.99</td>
<td>9.43</td>
<td>8.17</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post test</td>
<td>122.81</td>
<td>6.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>Boys</td>
<td>Pre test</td>
<td>107.90</td>
<td>15.63</td>
<td>1.12</td>
<td>N.S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post test</td>
<td>107.97</td>
<td>10.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td>Pre test</td>
<td>109.88</td>
<td>10.46</td>
<td>1.83</td>
<td>N.S</td>
</tr>
<tr>
<td></td>
<td>Post test</td>
<td>112.37</td>
<td>8.47</td>
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</table>

*p< 0.05, **p< 0.01, ***p< 0.001, N.S = not significant

From the table 1, it is clear that the calculated C.R were significantly greater than that of table C.R values in the case of pre test and post test scores of the experimental group in comparison to the control group proving that the implementation of the VAK model had appreciable impact on the information processing ability providing a suitable answer to the research question.

The result of the above experimental study is supported by research conducted by Fleming’s VARK model (2007). Fleming suggested that visual learners have a preference for seeing (think in pictures; visual aids such as overhead slides, diagrams, handouts, etc.). Auditory learners learn through listening (lectures, discussions, tapes etc). Tactile/Kinaesthetic learners prefer to learn via experience, moving, touching and doing (active exploration of the world by doing science projects, experiments etc.) Therefore, VAK model used as pedagogical approach allows teachers to prepare for classes that address each of these areas. Students can also use this model to identify their learning style and maximize their educational experience by focusing on what benefits them most.

**Conclusions**

The study concludes by claiming that when VAK teaching- learning model is used by the teacher consciously has the following benefits as it caters the need of any individual who operates on these modalities.

1. Visual learners are likely to prefer mind-maps, diagrams, picturesque language, flow charts, use of color, white space on the page etc.
2. Auditory learners prefer discussion, explaining things to others, using a tape recorder, anecdotes /jokes etc.
3. Kinaesthetic learners prefer group work, use of models, hands-on activities etc.

The use of VAK model enables the teacher to be aware of VAK preferences among the students and should encourage the students to develop strategies to use their learning styles independently promoting lifelong learning.

**References**


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