

## TEACHING STYLES OF HIGH SCHOOL PHYSICS TEACHERS

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### Abstract

*The teaching styles of high school physics teachers were put into focus in this study. It was found out that physics teachers have secondary visual, auditory, kinesthetic, group, individual and tactile teaching styles. In addition, teachers who give students opportunities for physical movements while learning provide hands-on activities and teach with visual aids to students in groups.*

### Introduction

In the 1991 Annual Report of the Department of Science and Technology – Science Education Institute (DOST-SEI), only 35.7% of science and mathematics secondary teachers in the Philippines are qualified in their fields (Bacay, et al., 1992). In a more recent survey related to science teaching in the Philippines, 92% were found not qualified to teach high school physics (Ogena and Brawner, 1998). This would imply that 92 out of 100 high school physics teachers do not hold the necessary program, degree or training preparatory for high school physics teaching. This scenario is an alarming situation since teachers not holding the right degree/training cannot impart generally scientific concepts to students. This gives threat to the basic idea that “science, technology and development are linked” (Sibolbora, 1995). This would mean further that if high school physics students are taught by an unqualified teacher, they may not acquire the necessary tools and concepts. This will hinder them in pursuing science and technology-related careers which bring about national development.

According to Golla and de Guzman (1998), “the teachers form the single strong causal factor in defining the quality of education in schools.” Thus, it cannot be denied that the physics teachers form the strongest force to mold the youth so that they become knowledgeable and skillful in understanding physics concepts and the natural world. These teachers see to it that students have acquired creative and critical thinking abilities ready to face the realities of life. Thus, central to these purposes is the ability of teachers to design teaching sequences that develop among the students the abilities to properly respond to situations that beset them in aspects that make their learning meaningful.

What makes physics learning truly meaningful?

The physics learning experiences provided by the teachers are very important. Doing laboratory activities, making science research projects and engaging in lively classroom discussions of scientific data are very important especially when the students can make use of mathematics to give more meaning to many physics concepts. According to Jack Snowman (as cited by Bernardo, 1998), “educators and policy makers should consider to be the basic purposes of schooling curiosity, exploration, problem solving, and communication.”

Related to these purposes are the teachers' abilities to create an atmosphere that allows verbal interaction with students. Verbal interactions are very evident in classrooms where both the teacher and students are engaged in discussing the lessons at hand. In the verbal interactions, teachers normally initiate the discussion through asking questions. The types of questions teachers use to structure the teaching skills play an important role in (1) the kinds of thinking skills learners employ; (2) the range of information to be covered; and (3) the thinking skills they may learn (Romey, 1968). The students' verbal and non-verbal responses to the questions asked to them may contribute to students' skills, competencies and attitudes in handling the physics principles under exploration.

Related to these learning principles are focused on the teaching styles of high school physics teachers. What are teaching styles? As cited by Salem (2001), teaching styles refer to the procedures or processes adopted and employed by the teacher in order to achieve the day-to-day objectives of the lesson. They are also the conglomerations of one's views, convictions, and approaches on the attainment of maximum results in the teaching-learning process. Teaching styles are personal attributes of a teacher. They vary from one teacher to another. The teaching styles may be classified as visual, auditory, group, kinesthetic, individual and tactile teaching styles.

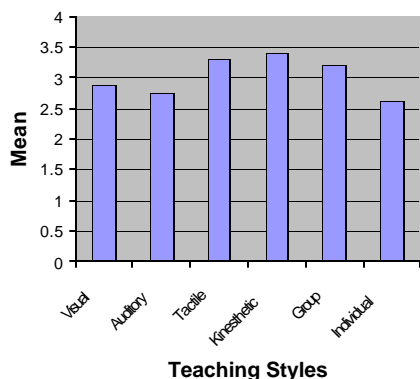
1. *Visual teaching style.* The teacher presents the lesson through pictures, sketches, diagrams, graphs, or other related illustrations.
2. *Auditory teaching style.* The teacher lectures or gives oral explanations most of the time.
3. *Tactile teaching style.* The teacher adopts “hands-on” activities.



Table 2. Teaching Styles of Teachers

Teaching Style	Mean	SD	Meaning
Visual	2.87	0.40	Secondary
Auditory	2.76	0.44	Secondary
Tactile	3.31	0.36	Secondary
Kinesthetic	3.42	0.35	Secondary
Group	3.20	0.45	Secondary
Individual	2.61	0.54	Secondary

Teaching Styles of HS Physics Teachers



The table above shows that high school physics teachers possess dominantly each of the teaching styles at a SECONDARY level. Even if KINESTHETIC, TACTILE and GROUP teaching styles are secondary, teachers regard them as the most preferred teaching styles. This is important for high school physics teaching because there are lots of opportunities for students in group as they move about and manipulate materials to discover concepts and physical relationships.

The results of this study confirmed the findings of Salem (2001) that College English teachers have secondary teaching styles except that these teachers have a negligible or poor to fair tactile teaching style. The table 3 below shows the teaching styles of high school physics teachers according to gender.

Table 3. Teaching Styles According to Gender

	Male (33)	Female (93)	t	p
Visual	2.81	2.88	-0.88	0.38
	0.35	0.41		
Auditory	2.80	2.74	0.69	0.49
	0.39	0.46		
Tactile	3.25	3.34	-1.24	0.22
	0.31	0.37		

Kinesthetic	3.31	3.46		
	0.35	0.35		
Group	3.10	3.24	-1.49	0.138
	0.42	0.45		
Individual	2.68	2.57	1.00	0.11
	0.57	0.51		

\*significant at  $p < 0.05$

It can be gleaned above that male and female teachers possess SECONDARY teaching styles. However, female teachers have higher means in visual, tactile, kinesthetic, and group teaching styles than the males while males have higher means in auditory and individual teaching styles than the females. Thus, male teachers have greater tendencies to simply lecture where students work independently. Yet, these results show no significant difference as shown by the p values greater than 0.05 except for kinesthetic teaching style where  $p < 0.05$ .

Do married teachers have better teaching styles than singles? The table 4 below answers it.

Table 4. Teaching Styles According to Civil Status

	Single (39)	Married (87)	t	p
Visual	2.89	2.85	0.55	0.59
	0.34	0.41		
Auditory	2.82	2.73	1.09	0.28
	0.36	0.48		
Tactile	3.37	3.29	1.15	0.25
	0.35	0.36		
Kinesthetic	3.51	3.38	1.94	0.054
	0.38	0.34		
Group	3.23	3.19	0.43	0.67
	0.43	0.46		
Individual	2.68	2.56	1.17	0.24
	0.57	0.51		

\*significant at  $p < 0.05$

It can be gleaned above that married and single teachers possess SECONDARY teaching styles. However, single teachers have higher means in all the

teaching styles than the married. This result shows no significant difference as shown by the p values greater than 0.05.

(d) Is there correlation between or among the teaching styles? Table 5 answers it.

Table 5: Inter Correlation of the Teaching Styles

	AUD	TAC	KIN	GRO	IND
VIS	<b>0.44*</b>	<b>0.48*</b>	<b>0.47*</b>	<b>0.43*</b>	<b>0.24*</b>
p	0.00	0.00	0.00	0.00	0.01
AUD		<b>0.25*</b>	<b>0.23*</b>	<b>0.27*</b>	<b>0.31*</b>
p		0.01	0.01	0.00	0.00
TAC			<b>0.61*</b>	<b>0.40*</b>	<b>0.09*</b>
p			0.00	0.00	0.34
KIN				<b>0.58*</b>	<b>0.07</b>
p				0.00	0.44
GRO					<b>0.07</b>
p					0.43

\*significant at  $p < 0.05$

The values of Pearson r were interpreted as follows

0.00 – no correlation

0.01 – 0.24 very low correlation

0.25 – 0.44 low correlation

0.45 – 0.64 moderately high correlation

0.65 – 0.84 high correlation

0.85 – 0.99 very high correlation

1.00 – perfect correlation

**KINESTHETIC-TACTILE RELATIONSHIP** ( $r = 0.61$ ).

This is positive, significant and moderately high correlation. This implies that if teachers provide students opportunities to do hands-on activities they also allow students to move and interact while learning.

**GROUP – KINESTHETIC RELATIONSHIP** ( $r = 0.58$ ).

This is positive, significant and moderately high correlation. This implies that if teachers provide students opportunities to move inside the classroom they also allow students to work in groups.

**TACTILE-VISUAL RELATIONSHIP** ( $r = 0.48$ ). This is positive, significant and moderately high correlation. This implies that if teachers allow students to do hands-on activities they also present the lesson through pictures, sketches, diagrams, graphs, or other related illustrations

**VISUAL–KINESTHETIC RELATIONSHIP** ( $r = 0.47$ )

This is positive, significant and moderately high correlation. This implies that if teachers present the lesson through pictures, sketches, diagrams, graphs, or other related illustrations they also provide opportunities for physical movements as students learn.

Moreover, very low and weak correlations were obtained for individual teaching style with auditory, kinesthetic and group learning styles.

## Conclusions

It was found that:

1. High school physics teachers teach using a combination of secondary visual, auditory, tactile, kinesthetic, group and individual teaching styles.
2. Female teachers significantly provide students more opportunities for physical movements in the classroom while learning than male teachers.
3. Married and single high school physics teachers do not differ significantly in their secondary teaching styles.
4. Teachers who allow movements in the classroom provide hands-on activities; allow group work and present lessons with visual aids. Moreover, teachers who use visual aids in teaching give opportunities for performing experiments.

## Recommendations

This study recommends that (a) learning styles of high school physics students be studied and (b) a qualitative study be made regarding the teaching styles of outstanding high school physics teachers.

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